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MIGRATION-DEVELOPMENT NEXUS: MACRO AND MICRO EMPIRICAL EVIDENCE

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Abstract

This thesis is concerned with the causal and complex relation between migration and development. A timely subject, especially with increasing flows of migrants and the remittances these migrants send home. Both the theoretical and empirical literature reviews address the complexity of this relation but consensuses on the causes and impacts of migration on development are generally inconclusive. On the causes of migration, our first empirical estimation shows that migration is part of the development process and not a simple result of its low levels: the increasing development level of the home countries increase the *aspirations* and *capabilities* of their populations and if these are faced with lack of *opportunities* at home, individuals seek migration provided they have the right capabilities (skills required, financial means, migration policies, etc.). On the impact of migration, our second empirical estimation gives evidence of a positive impact through remittances on the development of the home countries. The models show the positive contributions of remittances towards development through two main channels: capital investment and human capital (education and health). These two channels are believed to achieve long-term development of the home countries. At the micro level, we look at the mechanism of this impact at the household level, addressing the case study of Egypt. Our third models give evidence of the importance of these remittances in increasing both education and health status of the recipients' households'. These findings are believed to make a contribution towards the understanding of this complex relation between migration and development.

Keywords: Migration, development, remittances, Brain drain, Brain gain, New Economic of Labour Migration (NELM), Human capital, Aspirations, Migration transition, Dutch Disease, System Generalized Method of Moments (sGMM), recursive bivariate model.

Résumé

Cette thèse examine la relation complexe et la causalité entre la migration et le développement, sujet d'actualité vus les flux croissants de migrants et les transferts de fonds privés. La revue de la littérature théorique et empirique montre la complexité de cette relation, et l'absence de consensus dégagé par les travaux menés sur les causes et les effets de la migration sur le développement. Sur les causes de migration, une première estimation empirique montre qu'elle fait partie intégrante du processus de développement et n'est donc pas une simple conséquence de faibles niveaux de développement: le niveau de développement des pays d'origine s'accroissant, les *aspirations* et les *capabilités* des populations augmentent et si celles-ci font face à l'absence d'opportunités, elles vont migrer à condition d'en avoir les *capabilités* (compétences requises, moyens financiers, politiques de migration, etc.). Concernant l'impact de la migration, une deuxième estimation empirique montre un effet positif sur le développement via les transferts privés. Les modèles indiquent que leur contribution se fait à travers deux principaux canaux, l'investissement en capital et le capital humain (éducation et santé), lesquels sont susceptibles de permettre un développement à long terme des pays d'origine. Au niveau micro, une troisième série de modèles étudie le mécanisme de cet impact au niveau de ménages, à partir du cas de l'Egypte. Ces modèles confirment l'importance des transferts privés sur les niveaux d'éducation et de santé dans les ménages qui les reçoivent. Ces résultats sont censés contribuer à la compréhension de cette relation complexe entre migration et développement.

Mots clés : Migration, développement, Transferts Privées, La Nouvelle Economie des Migrations de travail (NELM), Capital Humain, Aspirations, Transition de la migration, Syndrome Hollandais, Brain drain, Brain gain, méthode des moments généralisés en système (sGMM), Modèle bivarié récursif.

Migration–Development Nexus: Macro and Micro Empirical Evidence

General Introduction

The complex relation between migration and development has earned its title as a "Nexus"[1] due to the inter-relations that exist between those two phenomena. Migration[2] is a dynamic process that is caused by a combination of social, economic and political factors, these are the features of the development process of the source countries. At the same time, these migration flows have considerable implications on the development of both source and destination countries[3].

1. Migration: An Old Phenomenon with a New Face

This dynamic relation between migration and development is often characterized by being 'unsettled', this is mainly due to the shifts in the views regarding the nature of this relation between optimism and pessimism for decades. These two views could be criticized by being exaggerated and unrealistic. However, in recent years, there has been some growing enthusiasm about the potential benefits that migration could bring to the development. This may appear to be 'yet another wave of optimism' but we have reasons to believe that it is much more than that. This enthusiasm is based on a better understanding of both the potential losses and gains of migration and its impact on the different aspects of development of those countries. We simply 'know more' than ever before about migration. New concepts such as: brain gain, skills formation, spillover of remittances, social remittances, circular migration (also known as 'brain circulation'), transnational and transitional migration, aspirations and capabilities, are evolving in the recent literature about migration.

This 'evolution' in understanding migration could be attributed to the growing interest from scholars, policy makers and the general public about this issue that is touching many lives and all the countries of the world. In addition to this, the improvements in the quality of data and the advanced capacity in sharing the information and knowledge could make a 'revolution' in better understanding this multifaceted relation. Despite this progress achieved compared to few decades ago, we are 'not there yet'. There is still a gap between what theories and empirical evidence have provided and what this phenomenon of migration represents for the individuals who make the decision to migrate, their communities that benefit from/bear the consequences and their home countries in terms of development.

This work is placed within this paradox about migration and development, with the main objective to contribute with another step, towards filling this gap.

[1] e.g. Volger, 2000; de Haas, 2008; King and Skeldon, 2010; Faist, Fauser and Kivisto (eds), 2011.
[2] The focus of this study is on socio-economic migration, hence migration refugees is not addressed.
[3] This includes both sending and receiving countries, however our study is focused on the sending countries only.

2. What's New on Migration?

Part of the growing interest on the potential benefits of migration and remittances on the development of the home countries emanates from the increasing trends of these flows in the past few years. The number of migrants across the world has reached 215 million persons. Surprisingly, most of the migration flows occur within the same level of development, about 60% (either between developing or between developed countries), while only 37% of these flows occur from developing to developed countries. This pattern seems to be changing, according to recent figures, where the share of migrants in developed countries' populations (and OECD countries in particular) has more than tripled reaching 11% in 2010.

More migrants means more remittance flows, or, according to recent trends 'much more' remittances. Developing economies have witnessed a dramatic increase in their remittances inflows reaching an unprecedented record of US$401 billion in 2012, compared to a net inflow of Foreign Direct Investment (FDI) of about US$610 at the same year. This is considered remarkable, realizing that FDI inflows include transfers towards national capital investment projects (e.g. oil and environmental projects), while remittances are personal transfers towards individuals' accounts and pockets (and are mostly used for consumption).

At the macro level, for many developing countries, remittances flows represent the main source of foreign currency surpassing other international sources (including aid transfers, FDI and exports revenues). They also have great potentials to impact the economic (in terms of growth, investment, trade, etc.) and social (in terms of human capital, poverty, labour markets, etc.) developments of these countries. At the micro level, these remittances represent an additional source of income that could have important impacts on the development of the households, including, at a minimum easing the liquidity constraints and alleviating poverty. They hold great potentials for human capital development of the households, increasing investment and entrepreneurial activities.

As migration flows could represent a challenge for home countries, they could represent opportunities, in the way they can directly and indirectly impact and boost their development process. This window of opportunity offered for many, is especially important for countries such as the Middle East and North Africa (MENA), who are facing economic slowdowns due to political instabilities following the Arab Spring. This has triggered unprecedented flows of remittances towards this region as a way to compensate this downturn. However, channelling these flows towards development brings us back to the importance of understanding the relation between migration and development.

Therefore this becomes the specific objective of this work.

3. Objectives and General Context

The main objective of this work is *to contribute to the ongoing debate on the migration-development nexus in search for new evidence that could untangle this complex relation.*

More precisely, *this work will attempt to provide new evidence on the developmental causes of migration (i.e. how development impacts migration) and the role of migration in boosting development of the sending countries) (i.e. how migration impacts development). Understanding how this causal relation works will help identifying the potential benefits of migration on development.*

Due to its complexity, many of existent theories and empirical studies have opted for addressing this relation from one angle or the other, this has created the general impression that literature on migration is fragmented and lacks accumulation of knowledge (Massey, 1993).

Therefore, in order to grasp all aspects of this relation, we will address this relation in two different dimensions.

First, at the horizontal dimension, the causality between migration and development is analysed. This means; (i) finding evidence on the developmental causes of migration; and (ii) finding evidence on the impact of migration on this development. The current approach considers development to constitute the overall context in which migration is taking place and where its impacts are mostly evidenced.

Second, at the vertical dimension, both the macroeconomic and microeconomic aspects of migration are addressed. Migration is a decision taken by the individuals (or households) due to a mix of economic and social reasons, which impact these individuals, this translates into a macro phenomenon when a large number of individuals take the same decision. At the same time, the impact of this migration and the remittances that these individuals send to their home countries, are initially sent to their households. Therefore, it is the behaviour of this household in response to both the migration of one of its member and the receipts of these remittances that will trace the overall picture of how these flows can boost the overall development.

The macro and micro analysis represent different perspectives of migration. While, the micro analysis reveals a lot of the mechanisms on the selectivity of migration and the households behaviour response, the macro analysis goes beyond the simple aggregation of these individual decisions/behaviour, with a great deal of externalises and spillover effects that cannot be observed at the micro level alone.

4. Methodological Approach

In achieving these challenging objectives we will adopt the methodological approach in three steps:

1. An in-depth review and analysis will be undertaken on the theoretical literature that surrounds the migration in general, and the migration-development relation in particular;

2. An analytical empirical review will be conducted on the major studies that addressed migration and remittances from the following dimensions:
   i. the macroeconomic causes of migration,
   ii. the macroeconomic impact of migration and remittances, and
   iii. the microeconomic analysis of migration and its impact.

3. An empirical analysis and methodological estimations will be undertaken where new evidence and findings will be brought up. This will include estimating econometric models for the following three relations:
   i. the macroeconomic developmental causes of migration;
   ii. the macroeconomic impact of migration through remittances on key aspects of development (investment and Human Capital); and
   iii. the microeconomic impact of migration through remittances on a key aspect of household development (the human capital) and where we address the special case of Egypt).

5. *Expected Contribution and Structure of the Work*

Our work will be structured around this methodology, and it will attempt to make the following contributions to the existent knowledge:

1. First (in Chapter 1) we will provide a theoretical review on the relation between migration and development. Theories are often separated from each other and the role of development is often not explicitly brought up. Therefore, our first contribution will be to review this theoretical literature with a maximum number of theories, classifying them in a comprehensive groups according to their main objectives, analyse and present their main hypothesis, assumptions, findings, contributions and shortcomings (in the first part). We will then attempt to establish a theoretical context for these theories which seem to be competing rather than complementing each other, this would put these theories in a developmental perspective (in the second part);
2. Second (in Chapter 2), in addressing the causal relation between migration and development at the macro level, we look into the causes of migration through an empirical review of a large number of studies. Starting from the standard empirical evidence addressing the determinants of migration to the most recent migration transition context and its relation with development (in the first part). This review will establish a link between the standard evidence of the causes of migration and the global context of migration transition. This latter looks at migration as part of the development process. This contribution will be completed with an empirical estimation of a model that is considered a modified or an advanced version of what has been found in the literature on migration transition evidence (in the second part).
3. Third (in Chapter 3), we address the other side of the causal relation by looking into the impact of migration on development through a large number of studies that addressed this issue. Classifying these studies according to the impact they are addressing, we highlight these studies' assumptions, contexts and main findings (in the first part). Based on this review and to complete the macro level analysis, an empirical estimation of a model measuring the impact of migration through remittances on two main channels of development: investment and human capital will be undertaken (in the second part).
4. Fourth (in Chapter 4), we look into the micro-level analysis of migration and its impact on the households' development. This includes an empirical review of the micro economic studies that addressed the selectivity of migration and the impact of migration and remittances on the households left behind (in the first part). This analytical review will feed-into our empirical estimation on the potential impact of receiving remittances on the households' human capital and where we take the case study of Egypt (in the second part).

These four expected contributions/chapters could make a comprehensive addition to the analysis of the controversial relation between migration and development, with the aim to better emphasize and advise on how to benefit the most from these flows and how to minimize the potential losses either at the country or the individual levels.

It is important to note, that the potential benefits have to involve the individuals, at first. Growing at a large scale, migration is involving growing numbers of individuals every day that have aspirations for better opportunities or simply better lives or better future. Contributing to this is the general increase in global

inequalities that can turn these aspirations into 'desperation'[4]: to know that crossing a 120 km of sea could radically change a person's life, increasing his income by more than 4,000% and giving him 30 more years to live (by increasing his life expectancy)[5], can make a person desperate to move, even if the journey could entail life threatening conditions[6]. A paradox that imposed itself on an already complicated issue.

Given this, increasing the knowledge about migration and the benefits it can bring to the development, can pave the way for better policy formulation that would involve the individuals, as a priority, and may eventually lead to development while avoiding the failures of precedent ad hoc policies.

"*Rules need to change, whether they are tighter or looser is not the issue, the fact is that this thing is broken and it needs to be fixed*." J. Muscat, Prime Minister, Malta (October, 2013, the day the world lost 500 lives in the sea for migration).

[4] This type of migration of refugees is not covered in our study, however it has raised a lot of concern and debate on migration policies.
[5] Calculated as the differences between Somalia/Eritrea (a common source of migration through) and Malta and Italy (common destination countries) for these migrants. Source: the Human Development Report of the UNDP, 2012.
[6] In recent months, news shocked the World with a series of consecutive incidents involving more than 500 persons who lost their lives while crossing the Mediterranean Sea from the north African shores to the south European countries.

Chapter 1

Migration and Development: A Theoretical Review

Introduction

Migration is an important phenomenon that is reshaping continuously the World's population map. Mobility around the world has changed the face of many countries, which have transformed into diverse and multiethnic societies, putting undeniable evidence on the strength, consistency and coherence of migration flows.

It is a complex dynamic phenomenon that involves many aspects of the societies (such as social, economic, political, etc.) at different levels (individual, communities, cities and countries). Migration itself is a broad subject that entails different types and dimensions (Annex 1.1. for details).

Given the large scope of migration, it is useful to start by specifying the type of migration we will be addressing across our research study. The research study will focus on the types of migration, that is:

1. International migration, i.e. across the borders;
2. Medium-term temporary and permanent migration;
3. Social and economic migration (political and environmental objectives are not addressed here, including refugees).

Moreover, we are addressing migration in a specific perspective: the relation between migration and the development of the home (or migration sending) countries. The migration-development relation is a complex one: it has many interrelated aspects and entails a great deal of causality. Moreover, the literature, either theoretical or empirical, holds controversy when it comes to understanding the causes or the impacts of migration in the context of development.

Despite the remarkable progress made by theories related to migration in better understanding this complex phenomenon and its relation with development, very few theories received general consensuses about their validities and capacities to explain many aspects of the causes of migration or its implications.

Despite the fact that they all addressed the same issue of migration, they were developed separately from each other. Each theory has its own concepts, assumptions, conclusions and hence policy implications. Often, it was sensed that these theories meant to compete each other rather than to complement each other. The result is that there is no single coherent theory of international migration, only sets of self-contained theories that can be applicable in special or theoretical cases. This general criticism could be attributed to the complexity of the phenomenon and its relation with development.

However, more precisely, existent theories have not been successful in explaining many of the aspects and concepts of these flows (Massey, 1993, Volger, 2000, Jenissen, 2007, de Haas, 2008 and King, 2012). After the migration boom that followed the end of the World War II, social scientists and economists were faced with an unexplained growing trend of migrants' flows, with enormous economic, social and political impacts on both sending and receiving countries. They hence opted for the existing social or economic models, most of them developed in the 19th century, to explain these increasing flows. This has created a feeble literature that is either too much based on the temporary migration boom (i.e. can't be

generalised) or that is either based on social models that are too abstract to understand the real economic value of the process or on pure economic models that are too static and materialistic to be able to grasp the dynamic feature and the role of the individual choice.

Moreover, despite the very much-interrelated relation between migration and development, we rarely found in the theoretical literature an explicit mention about the causality of this relation and how factors that are causing migration which are linked to the development's feature of the country are also affected by this migration. As will be noted in this chapter, the basis of the migration theories are inspired by basic principles from economic development theories and schools of thoughts, but none of these theories have addressed this complex relation in an explicit way.

This is the hard task and objective of this first chapter in reviewing the theoretical literature on the migration-development relation. The chapter is divided into two main parts. This first part presents the most important existent theories that addressed the issue of migration. Our starting point is naturally to go back towards the historical theories of 'Economic Schools of Thoughts' where migration was only implicitly addressed within development theories. We then move to the more recent literature when migration started to gain a lot of interest from different scholars who developed a number of migration theories that are meant to explain the causes of migration, while others looked into the persistence of migration. These have been addressed at the macroeconomic and microeconomic or individual levels.

Moreover, having explored the theories of migration, we noticed that in many of them there was no clear vision or insight about how these theories, in their different contexts and orientations, relate to the development level or process. This is the purpose of the second part of the chapter, where an emphasis is put on the migration and development relation within these reviewed theories in an attempt to bring some interesting insights and directions on how these theories see the migration-development relation. Following this, we suggest to bring together these theories, despite their differences, under one umbrella that of development. This is done through the presentation of the transition migration theories in the development process. Finally, and to complete the migration-development picture from the theoretical view, we look into the theories that have addressed the relation between migration and main social and economic indicators, which in turn would have an impact on development. These are considered to link migration to development and hence are called "channels".

I. An Overview of Theories Addressing the Migration Phenomenon

The phenomenon of migration started to gain interest in the writings of the early economists of the 16th century, at a time when migration flows substantially increased across the World, especially from Europe to North America, in addition to the mobility of large numbers of Africans (who worked as slaves or servants). It is estimated that more than 240 thousands Europeans entered the American continent during this time, some to explore new grounds and establish new lives and some seeking religious independence. A second large exodus of over 30 million Europeans took place in the 19th century. This was due to the industrial revolution, which encouraged people to move across the World in search for better and more advanced lives. This period was characterised by free movements (as there were no restrictions or visa requirement at this time). Migration to the Americas received the bulk of migrants (including migrants from Asia and Europe). Many waves of ups and downs of migration flows followed this massive migration era (Rystad, 1992).

In the past 50 years, the face of migration has changed and it became a major phenomenon across countries of the World; contributed to this the remarkable progress achieved in the transportation and communication facilities. Traditional receiving countries such as Australia, Canada, and the United states had accumulated an enormous stock of migrants that have become an integral part of their populations. The origins of those migrants have changed from being the historically dominant Europeans to other nationalities such as Asia, Africa and Latin America. Whereas, the European continent that was once a historically sending region became a receiving region, especially after the WWII and the European reconstruction as migrants from developing countries in Africa, Asia and the Middle East started to move towards Europe (Massey, 1993).

Given the importance of the phenomenon in shaping the world's population, many scholars developed theories in attempts to understand the causes and the consequences of these flows on their home countries, while looking into the already existent economic and social theories, as previously mentioned.

This first part of this chapter includes three major sections. The first section looks into how migration was addressed in the historical Economic theories in an attempt to look into some of their insights related to migration. The second section will look into the recent migration theories that addressed the causes of migration and the third section will look into theories that addressed the persistence of migration. Finally the section closes with a conclusion.

1. Migration: from the History of Economic Thought to Recent Theories

Most of the migration literature reviews track down the migration theories to the British geographer Ernest Ravenstein, 1885 as the first scholar to address migration in theory in his paper on "Laws of Migration". However, as we were digging out in Economic History and the theories of different Schools of thoughts, we found very interesting notions about migration (as part of the concept of factor mobility). More interestingly, these theories considered this kind of mobility an integral part of the development process: a concept that most recent theories of migration have adopted under the concept of "transitional theories of migration" and which is considered the basis of our research and analysis.

a. The Classical schools of thought (1776-1870) considered the mobility of factors of production in general (including labour), as an integral part of the development process that is needed to reach to the required economic balance. In a world of limited resources, this mobility was seen as a rational economic act that fills the gaps created by different levels of resources. From Smith to Marx, most of the Classical economists, believed in the unlimited supply of labour at basic minimum wages and that growth is in fact due to the accumulation of capital, which leads to income distribution. Moreover, the mobility of factors in these theories referred to domestic mobility (i.e. within the same nation) as the concept of international mobility was only mostly dominated by colonization processes (Sassen, 1990).

b. Adam Smith[7] (1723-1790), who is thought to be the Father of modern economics and free-market capitalism, is the first to introduce the concept of mobility of factors in his book on the Wealth of Nations (Smith, 1776). Smith believed that the benefits of the nation are achieved when each individual seeks his own interest and hence the market mechanism works as an 'invisible hand'.

[7] Smith, A. 1776. An Inquiry into the Nature and Causes of the Wealth of Nations 1 (1 ed.), London: W. Strahan, retrieved in 2012

In his writings, he also advocated the concept of free mobility of capital and free trade and reproached the rather immobility of the labour factor. At this early stage, it was already clear that immobility of factors of production in general, and labour in particular, would lead to a misallocation of resources and inefficiency. Labour immobility leads to decreased productivity as in order to improve standards, workers need to move where wages and working conditions are better and hence attract better quality capital.

Following the steps of Smith on economic development, **Ricardo** (1772-1823) introduced the theory of comparative advantage within the concept of free trade, arguing that there is mutual benefit from trade, even if one party (e.g. resource-rich country, highly-skilled artisan) is more productive in all possible areas than its trading counterpart (e.g. resource-poor country, unskilled labour), as long as each concentrates on the activities where there is a *relative* productivity advantage. This concept assumed that national goods are produced with national factors and the end products compete in international markets with other nations' products produced by their own labour and capital. In other words, it assumed the immobility of capital and labour between nations, while they can still be mobile within the nation. This controversial argument about how the international mobility of factors can affect (negatively) the benefits from Free Trade acquired through comparative advantage is currently topping research agendas within the concept of globalization. It was however an excluded possibility within the eighteenth and early nineteenth centuries (Sassen, 1990).

c. Malthus (1766-1834) was the first to introduce the concept of demography in economic growth in his paper on "*Essay on the Principle of Population*" in 1798. The basic concept of his theory is that the populations grow in geometrical ratios while subsistence produced by the earth grows in arithmetic ratio. This leads to over- population and hence threats of overall poverty and famine. Despite its influential role during this period, this theory was very much controversial. It has explained a lot about over-population and scarcity of resources, but its great controversy was to provide an enduring argument for the prevention of social and economic change and to obscure the real roots of poverty, inequality and environmental deterioration. His theory hence defends private property and clears the richer communities from any responsibilities for poverty. In his view, inequality is hence a normal consequence that should not be resolved. The Malthusian view saw migration as a form of redistribution of the population, which constituted a threat to the receiving country and an extra load on its resources. Ironically, these debates still exist today including welfare, distribution and migration (Ross, 2000 and Urdal, 2005). Some recent theoretical reviews found, for instance, that migration is caused by the Malthusian factor of over-population and the consequent worsening of living conditions, especially in rural areas. Despite the debates around the Malthusian and neo-Malthusian theories, they are considered the first theories to establish the association between demographic phenomenon and economic development (Kim, 2011 and Williamson, 2004).

d. Karl Marx's (1828-1993) ideas on "class struggles" were the foundation of modern communism. He saw capitalism as an evolutionary phase that will destroy itself due to internal tensions that will lead the communities towards classless societies, i.e. pure communism. Communism advocates common ownership and that the control of all production factors should belong to labour since it is the one producing the values in the society. This implies that on the political level all decisions should be made democratically. Based on these ideas, Marx writings were completely opposing to those of Malthus and saw that the abundance of labour is considered a 'reserve army', rather than leading to poverty. Marxism was the official doctrine of the most advanced and successful socialist movements in Europe that has gone beyond economics and touched virtually all aspects of

human existence. Marxist point of view regarding migration is not straightforward, however, one can understand its orientation from the basis of its philosophy. Migration is considered a characteristic of Capitalism that was consequently completely devalued or simply ignored. However in recent Marxist-based writings, migration was featured as a purely economic concept that is about demand for labour within a capitalist economy that involves expanded production and hence growth in the demand for labour. This grow in labour demand will be met with migration reflecting the desire of capitalists to depress the level of wages and minimize the rate of profit. Marxists view sees this kind of supply of migration labour is due to disposition of this class of workers to 'sell their labour power' as they do not have a choice. This basic idea, though recently revised, still dominates Marxist thoughts and represents a restrictive view about migration as functional economic capitalist phenomenon. These basic principles of neo-Marxist dependency theories encompass the structuralist theories on the relation between migration and development. These include the world systems theories, and cumulative causation as will be detailed in the next section (de Haas, 2008 and King, 2012).

As these fundamental theories seem too historic, we have pointed out how relevant they still are within today debates about migration and its impact on development. Moving from there, we introduce in the following section an empirical review of the recent migration theories that addressed two main questions related to migration: causes of migration and reasons for persistence of migration.

More recently, migration theories gained much more interest than earlier days. This was due to the increasing number of people migrating from their countries between the end of the nineteenth and early twentieth centuries for mainly economic reasons. The world has witnessed large movements of its populations: Europe between 1800 and 1925 in search for new opportunities in the Americas (Massey et.al., 1998). Asia also witnessed large mobility from India and China to Southeast Asia. The African continent was touched by migration flows during this period within the continent and from outside but it was relatively small compared to the huge migration it encountered during the previous centuries. These large movements were encouraged by the significant improvement in transportation techniques and it was motivated by rising industrial centres that attracted more labour while other areas were remaining poor and with low standards of living conditions. During this time, migration was viewed as an additional source of development for both sending and receiving countries, a position that became more controversial towards the last quarter of the twentieth century (Sorensen et al., 2002).

Recent migration theories were inspired by historical development theories and found their basis in their main principles. This confirms the strong links between migration and development that was clearly existent in historical theories. There are no doubts that migration theories made large contributions in better understanding this important phenomenon, in terms of its causes, reasons behind its persistence and the types of impacts it creates on the development[8]. However, the contradictions in these theories, where only a few are econometrically tested, reflect the complexity of the issue and that scholars are still far from reaching a consensus about the reality of migration, its causes and consequences.

[8] It is important to remind that we are only concerned with the economic migration and will not address migration related to refugees or other sorts of forced migration. Also, measuring the impact of migration is focused here on the impact on the sending countries only.

Classifying migration theories is a difficult task given the multifaceted nature of this phenomenon. Few attempts were made to classify them according to the science or discipline on which the theory was based (Bijak, 2006). However this has proved to be an impossible task due the involvement of different disciplinary in this process, just to name a few: demography, geography, urban development, economics, sociology, political sciences and very recently sustainable development. This diversity makes it more difficult to classify these migration theories into groups, which was an attempt made by few recent scholars (e.g. Massey, 1993; Bauer and Zimmerman, 1995; Arango, 2004; and de Haas, 2008). Others classified them according to their overall impact on economic and social outcomes, between Optimistic and pessimistic (more details in the second part of this chapter) (Massey, 1993 and de Haas, 2008).

Finally, some others have based their classification on the objective of the theory and what it tried to explain whether it is a theory of the causes of migration, or the persistence of migration over time (Massey, 1993); or an impact of migration.

Regardless of how those theories are classified, there is one important common agreement between these reviews that there is no single coherent theory that received consensus on international migration (Massey, 1993). A finding that was quite understandable by some scholars such as King, 2012, who agreed that despite the rigidities and the disconnections between these theories there are serious recent attempts to blend *"deductive with inductive reasoning"* reaching rather moderate theories which seem to be close to the reality of migration (King, 2012).

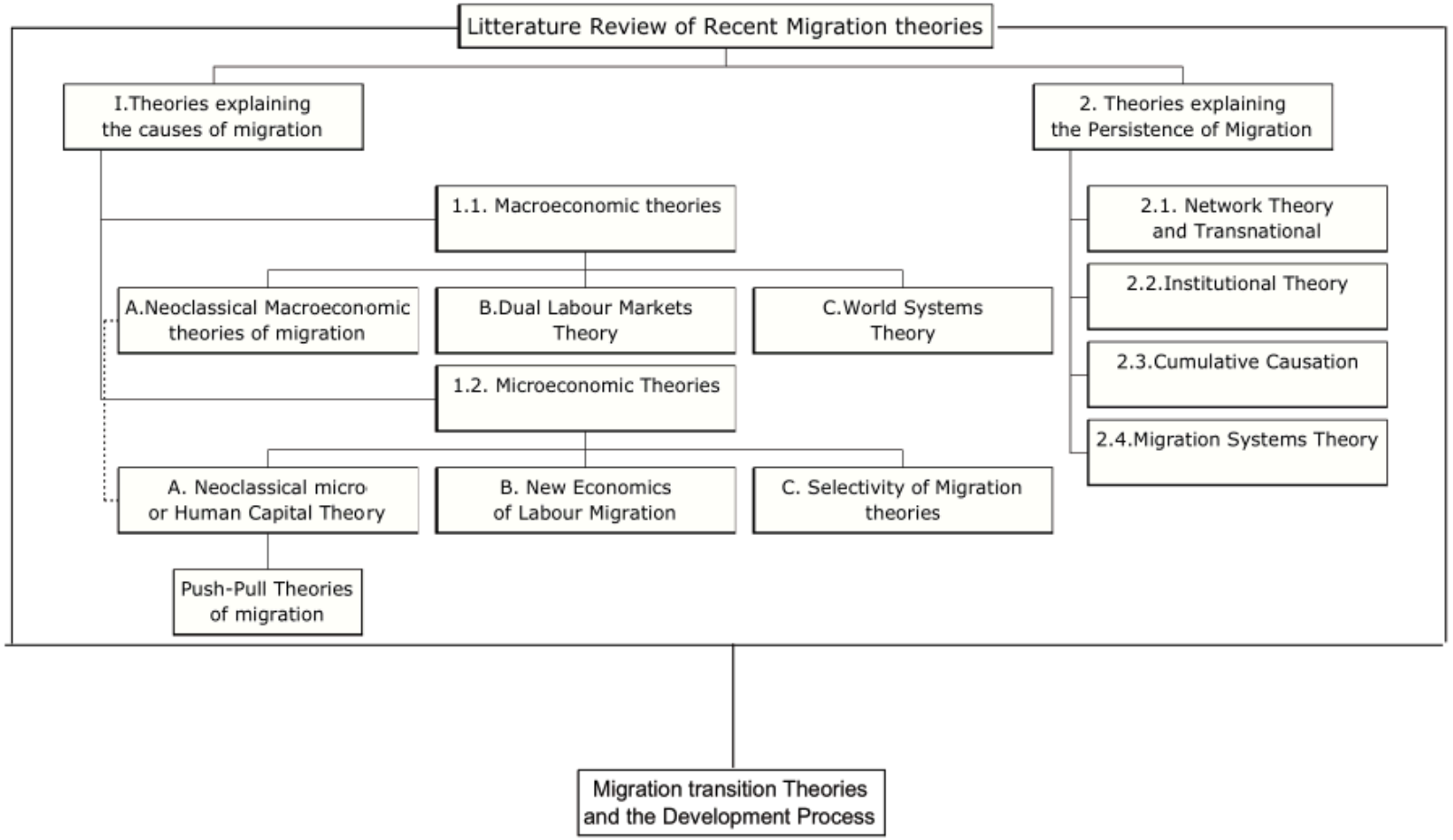
Given this and in an attempt to comprehensively include most of the important theories about migration, we have classified those theories into two main categories, partly inspired by the classifications of Massey, 1993 but to which we added the macro/micro dimension. Also, as will be explained in the part II of this chapter, we have added the Migration transition theories together with the theories of impact of migration.

This classification is hence based on the purpose of these basic theories about the migration and what they try to explain. This classification is as follows:

1. Theories explaining the causes of migration
    a. Macroeconomic theories
    b. Microeconomic theories
2. Theories explaining the persistence of migration

The following diagram 1.1 gives a summary of the classification we are adopting in addressing the theories related to migration. It is believed that this classification is the most comprehensive and is considered new in terms of mixing both the micro and macro aspects of migration.

Diagram 1.1. Classification of Recent Migration Theories



Source: Authors' classification

The remainder of this first part of the chapter will address the main principles of these theories while highlighting their value added to the knowledge and some of the criticism that was either reported or were found in those principles in an attempt to better understand migration and its complicated relation with development of the home or sending countries.

2. The Causes of Migration in a Theoretical Review

The earliest real migration theory known to history is the one developed by the geographer **E.G. Ravenstein (1834-1913)** in his paper on "Laws of Migration" (Ravenstein, 1885). He saw migration as an integral part of the development process. In this paper he attempted to explain the migration patterns within and between the nations. As mentioned earlier, the second half of the 19th century witnessed large migration trends due to the rise of the industrial age in some areas which made millions of people wanting to find better opportunities outside their home lands. Comparing census data of 1871 and 1881 for the UK, he could identify the pattern of movements by pointing out the difference between the rate of population growth and the rate of growth of the natives only, relating this difference to either internal migration or international migration. At this early time, the migration model of Ravenstein included the concepts of 'push' and 'pull' factors and absorbing vs. dispersion areas or countries. He believed that the main reason behind these migration flows is the search for better opportunities in industry and commerce and where "*…the deficiency of hands in one part of the country is supplied from other parts where population is redundant*". Based on these observations, Ravenstein stated a list of seven 'Laws of migration" that are summarized as follows:

1. Most of migrants travel short distances and they settle in the centre where trade and industrial opportunities are larger.
2. When migrants move to a faster growing area they leave gaps (normally in rural areas) that are filled by migrants from an even more remote districts, creating a series of migration flows, until the 'absorbing' city, step by step, influence the most remote corner of the country.
3. The process of dispersion is the inverse to that of absorption and exhibits similar features.
4. Each main current of migration produces a compensation counter-current.
5. Migrants moving long distances generally prefer great centres of commerce and industry.
6. The natives of towns migrate less than those in rural areas due to increase in transportation technologies.
7. There are many economic reasons behind migration (oppressive laws, heavy taxation, non-attractive climates, etc.) but the most important reason is the search for a better quality life. He also emphasized the fact that females are more migratory than males.

Ravenstein's added more laws (and revised some others) in his second paper (1889) where he looked more closely at migration patterns in Europe and North America. He added and revised the following points: (i) most migrants are adults; (ii) people can travel long distances to occupy new lands; (iii) that the main causes of migration are economic, and (iv) migration trends increase with the increase of development.

These eleven laws, especially the one related to the increase of migration flows with development, marked a turning point in the understanding of the migration process and opened the door for creating quantitative models to measure migration flows and their impact.

These principles are considered the main fundamental insights of the modern theories about migration, which were further developed to explain the causes of migration. It is to note, and as previously explained, that most of migration theories were developed to explain migration in the process of economic development, even though they don't explicitly emphasize this point. Also, even though migration is often addressed at the macro level, it is important to remind that as a process, migration initiates at the individual level. Hence addressing the causes of migration in theoretical literature will have to include both theories: macroeconomic and microeconomic theories. The former group of theories include all theories that address the causes of migration and the aggregate level and the latter will look more into those theories that addressed the decision to migrate itself either by the individual or his/her household. Of course, we understand that a cutting line between those two categories does not exist due to the interrelation between the causes of migration; hence the classification could be arbitrary however the main idea is to follow the criteria set for this classification.

2.1. The Macroeconomic Theories of the Causes of migration

Reviewing the theoretical literature of migration theories and following the classification showed in the diagram 1.1, we identify three theories that fall under this category of macroeconomics causes of migration:

2.1.1. The Neoclassical macroeconomic theory of Migration
2.1.2. The Dual Labour Markets Theory
2.1.3. The World Systems Theory

2.1.1. The Neoclassical Macroeconomic Theories of Migration

The Neoclassical school of thought based their theory on the concept of "rational expectations" where each individual seeks to maximize its utility and each firm would maximize its profits. This theory also assumed that individuals have full information about the markets. Basically in the neoclassical principles, free markets would eventually provide automatic full employment as long as the wages are flexible enough to adjust according to the supply and demand equilibrium. Within this global context of maximization, migration is seen as a way to minimize the wage differentials. Neoclassical Theories of Migration are based on this basic concept and were developed originally to explain labour migration in the process of economic development. They are divided into macro theories and micro theories. We will address in this section below the macro theory while the micro one will be addressed in the second section on theories related to the decision to migrate at the micro level[9].

The basic concept that represents the foundation of this migration theory is that international migration is caused by wage differentials due to geographic differences in the supply of and demand for labour. Countries that have a large endowment of labour (excess of supply) that cannot be absorbed by the market due to the low level of capital have a low equilibrium market wage. Whereas, countries that have a large endowment of capital but cannot supply the market with enough labour (lack of supply), have a high equilibrium market wage. This differential in wages causes workers from the low-wage country to move to the high-wage country. Consequently, the supply of labour decreases in the low-wages country (moving the supply curve backward) and hence raises wage levels.

[9] One of the main criticisms to the neoclassical school of thought was made by the Keynesian School, which has contradicting views regarding growth and development. These writings did not address migration explicitly, however they had an orientation towards a Malthusian approach (Jenissen, 2007).

At the same time, supply of labour increases in the high wage-country and wages level fall. These movements lead to an equilibrium reflecting the international wage equilibrium. This labour mobility is accompanied by flow of capital in the opposite direction: from rich-country to the poor-country. The relative scarcity of capital in the poor countries yields a high rate of return that should attract investment. The same concept could apply to the human capital mobility (i.e high skilled migration) (Massey, 1993, Bauser and Zimmermann, 1995 and de Haas, 2008).

According to the neoclassical concept this process of adjustment, called 'factor price equalization' will eventually lead to convergence of wages of both the receiving and sending countries. The neoclassical assumes that when this occurs, in the long run, there will be no incentives for migration:

To summarize, this theory is based on the following basic concepts:

1. Migration stems from wage differentials.
2. Narrowing and eliminating these differentials will eventually cease migration.
3. Migration of human capital (high skill workers) is due to differentials in the rate of return on human capital, which yields a different pattern that could be opposite to that of unskilled labour
4. Labour markets are the main mechanisms by which labour migration are induced.
5. Therefore, the best ways to control migration is by regulating or influencing the labour markets in both sending and/or receiving countries.

These neoclassical basic concepts were widely adopted by several scholars and economists while developing their migration theories. Of course, many of the assumptions were relaxed and more modernized orientations added, but their basics could be tracked down to these principles of the neoclassic migration theory. The following will give some details about these neo-classical based migration theories (Bauer and Zimmermann, 1995).

a. Lewis Model on Development with Unlimited Supplies of labour (Lewis, 1954)

The model developed by Lewis aimed to explain the process of development in a context of unlimited supply of labour (Lewis, 1954). Though his theory of development falls under the neoclassical orientation, he criticized the view of assuming that labour supply was limited (which was originally assumed by the Classical and the Marxists' schools of thoughts). In his view, this limited supply of labour assumption only served the EU economies where labour is scarce and where economic expansion could be achieved automatically. However other countries (mostly developing) have an abundant supply of labour and their economic expansion is not automatic; hence the traditional neoclassical thinking does not apply.

With this context, he constructed his model that explained the development process in this group of countries. In his influential two-sectors ('capitalist' sector and 'subsistence' sector) model he assumed that in these countries, the population are exceeding the existent resources and the available capital, and that there are large sectors of the economy where the marginal productivity of labour is negligible, zero or even negative[10]. This kind of labour is what he called 'disguised unemployment' and said to largely exist in the agriculture sector. The low (or negligible) productivity of labour brings wages at the 'subsistence' level

[10] He gave the example of Egypt and India and excluded European countries such as the UK or North West Europe from this assumption.

and the supply of labour is unlimited as long as it exceeds the demand. He considered three additional sources of labour: i) the household, including wives and daughters, (ii) increasing labour resulting from the net growth of population; and (iii) the unemployment generated by increasing efficiency, that was offered by Marx as an addition to the 'reserve army'[11]. However he restricted this unlimited supply to non-skilled labour, as skilled labour is, like the land and the capital, scarce and limited. In his model, the capitalist sector is the part of economy that uses reproducible capital and pays capitalists for this use. While the subsistence sector is that part of the economy that is not using reproducible capital and is where output per head is naturally lower than in the other sector.

In his view, the main key to economic development is capital accumulation (including knowledge and skills). In this setup, Lewis sees that new industries can be created and existent ones can expand. He then goes on and explains how a capital surplus and income of the capitalist sector increase relative to the national income due to expansion in the sector. However, since real wages are constant, this only translates into an increase in the number of workers whose wages are above the subsistence level. The accumulation of capital will continue until the marginal productivity of labour becomes equal to the current wage. In his model, he also added the role that could play the financial sector and the government.

As explained in Lewis theory, when capital accumulation catches up with the abundant labour supply, the level of wages starts to rise above the subsistence level affecting adversely the capital surplus. His solution to postpone this turning point, that would adversely affect the rapid capital accumulation, is one of two things: (i) encouraging immigration (to ensure more supply of labour); or (ii) exporting the capital to countries with abundance of labour at subsistence wage. He then explained that for the former solution, there is no fear of immigration of the skilled labour (i.e. 'brain drain') in this case since the main concern was the immigration of unskilled labour who are working at the subsistence sectors. In a positive note, the theory considers that the immigration of skilled labour will not likely reduce the demand on the national unskilled labour, but will rather introduce new investments and industries that might increase the demand on all kinds of labour, to be higher than the supply.

Without getting into much detail about this developmental theory, our interest is to assess how this context or theory affects the thinking about migration. The fundamental issue about his theory, relies on the mobility of labour from the subsistence sector (sometimes referred to as the agriculture sector) to the capitalist sector (sometimes referred to as the industrial sector) first in a closed economy, then in an open economy where migration was seen as a solution to sustain the abundance of labour, when the latter is absorbed by the expansion in the capitalist sector.

Lewis theory was seen as a tangible contribution to economic development, which was on its early stage at the time. He made two fundamental contributions to the understanding of economic development: (i) to present development economics as a political issue concerned with underdevelopment and low standards of living and (ii) to present the development as a multidimensional process of economic, social, political and institutional change (Kirkpatrick and Barrientons, 2004).

Lewis theory was however controversial. His basic assumption that the developing countries' labour is abundant ensuring that the conventional wage in the subsidence sector rules over the entire economy received many critics. He was

[11] This refers to the unemployed created by the advance in technology and use machinery to replace manpower.

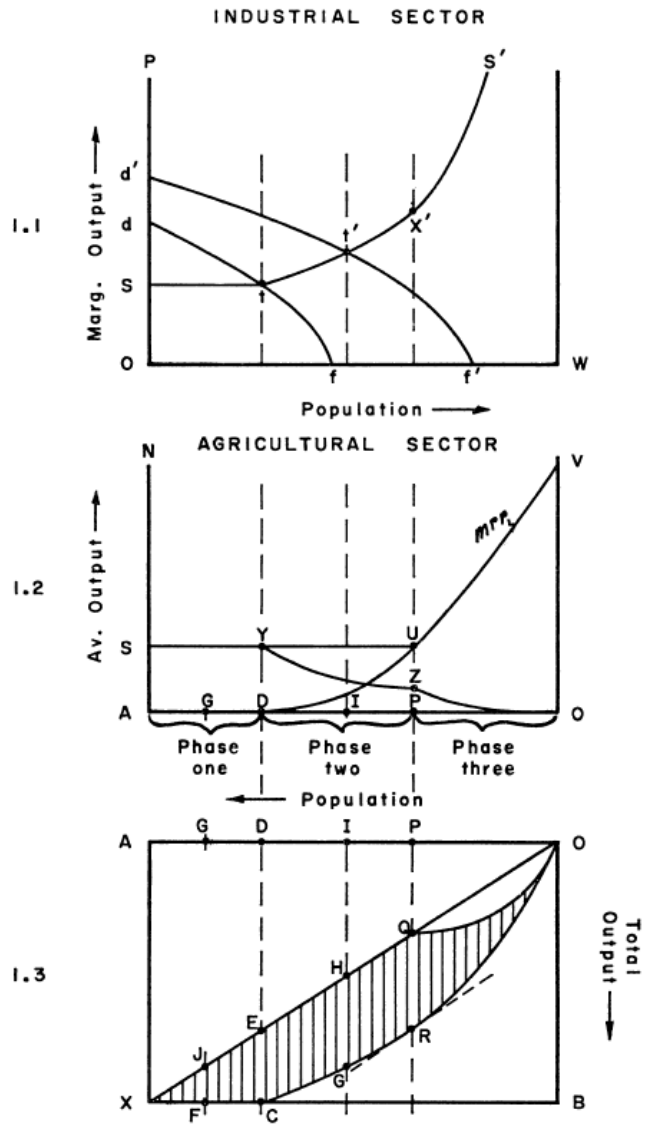
also criticized for assuming a process of labour migration from the subsistence sector of other countries to be employed in the capitalist sector in the presence of an already rising urban unemployment (Harris & Todaro, 1970).

More criticisms were made on the developmental issue related to this theory that is out of our scope of study.

b. Ranis and Fei's Model on Economic Development (Ranis and Fei, 1961)

The Ranis-Fei model is also based on the neoclassical theory that was developed to explain the process of development in a macro dynamic context based on underdeveloped concept. The authors relied primarily on the Lewis model and tried to include some of the points that this theoretical model has neglected, especially those related to the agriculture sector. In their two-sector model, the migration of workers from agricultural to industrial sectors is in the main dynamic of development. Contrary to Lewis, they took into consideration some basic problems that might affect this process, such as worsening of terms of internal trade, disguised unemployment, institutional wages, balanced growth and technological changes.

Fig 1.1.The Industrial and Agricultural Sectors in Ranis and FEi's Model



Avoiding the technical details of the model, (as we are only concerned with the implication on the migration), their principal ideas are summarised in the Figure 1.1, below where the first graph represents the industrial sector and the second and third represent the agricultural sector.

The first graph represents partially the diagram of Lewis model representing the functioning of the industrial (capitalist) sector. The horizontal axis OW measures the supply of industrial labour, while the vertical axis OP, is the marginal physical productivity (MPP). The labour demand curve (the MPP curve dtf) and the labour supply curve (Stt'S') determine the employment of the industrial sector (St) according to Lewis due to unlimited supply. Contrary to this belief, there is a turning point 't' where the supply curve shifts upward. According to Ranis and Fei this is explained when looking into the agriculture sector (third graph). Labour supply in this sector is measured on the upper axis OA and agriculture output measured on the vertical axis OB. The curve ORCX denotes the productivity of the labour (TPP) in the agriculture

sector. The concave part of the curve (ORC) denotes a diminishing marginal productivity and the horizontal part (XC) presents zero productivity. This means that as labour supply exceeds OD, additional labour is redundant and hence any mobility from the agriculture sector will not affect the output.

Ranis and Fei distinguished three phases in the development of surplus-labour countries: The first phase is when workers in the agriculture sector who are redundant move to the industrial sector, this will not raise the wage level (which is the slope of the curve OX and where at point R the MPP = institutional wage) since there is no reduction on agriculture output.

The second phase is when workers of the agriculture sector that having their productivity less than their wage level move to the industrial sector. Agriculture output declines and the terms of trade between the two sectors are transformed in favour of the agriculture sector, which raises nominal wage of the industrial sector. If migration to the industrial sector continues, where in this case it is the agriculture workers who are producing the output equal to their wages who move, the third stage is initiated. This marks the end of the take-off and the beginning of the self-sustained growth (Oshima, 1963).

In this developmental model that focused on explaining the process of transition from stagnation to self-sustained growth, we are seeking to understand what implication can this context has on migration. The mobility of labour from agriculture to industrial sectors through the different stages represents early insights of labour mobility that could be generalised on international migration. This was clearly suggested by Taylor et al, 1996, where the rural sector in their model could be considered as the sending countries and that the modern or industrialised sector is the receiving countries (Taylor et al., 1996).

c. The Harris-Todaro Model of Rural-Urban Migration (Harris and Todaro, 1970)

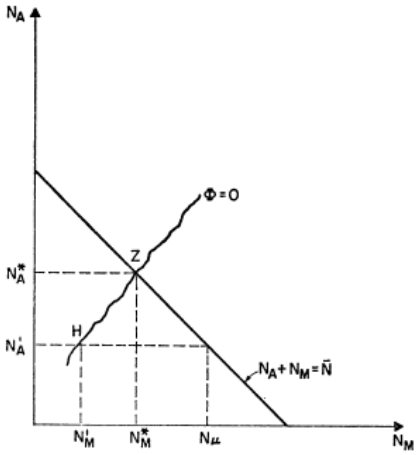
This influential model introduced by Harris and Todaro on labour migration called 'Harris-Todaro model' represents the real basis of the neoclassical migration theory. Even though the model was originally developed to investigate the reasons behind growing levels of rural-urban migration despite the increasing unemployment in destinations cities, it has greatly influenced international migration theories in explaining the causes of these flows.

The main characteristic feature of their model is that it explained internal migration on the basis of the urban-rural differences in *'expected earnings'* and not on the wage differentials as done by previous theories. The basic assumptions of the Harris-Todaro (H-T) model, which is composed of two sectors: rural working in manufacturing and urban working in agriculture are as follows:

(1) A pre-determined minimum urban wage is set at a level substantially higher than agricultural earnings.
(2) The marginal product of the agriculture sector is positive and inversely related to the size of the rural labour force. Unemployment in the agriculture sector does not exist.
(3) The agriculture real wage is equal to the value of the labour's marginal production in agriculture (expressed in terms of the manufactured good).
(4) There is a perfect competition in the behaviour of the producers in both sectors.

(5) The crucial assumption for this model is that rural-urban migration will continue as long as the expected urban real income exceeds the real agricultural one.

Fig 1.2. Equilibrium in The Harris-Todaro model



The model asserts that the equilibrium is reached when the agriculture real wage W_A (which is the value of labour's marginal product in agriculture expressed in terms of manufactured goods) is equal to urban *expected* wage W_u^e. The expected wage was defined as the real fixed minimum wage adjusted for the proportion of the total urban labour force (permanent urban plus migrants) actually employed (i.e. expected wage is equal to the minimum wage in full employment)). This was later adjusted to reflect the probability of obtaining employment in the urban sector (Levine, 1999).

In the case of equilibrium:

$W_A = W_u^e$

The concept of the model is that, as long as $W_A < W_u^e$, rural to urban migration will take place, which is in H-T view is a disequilibrium phenomenon and conversely if $W_A > W_u^e$ than urban to rural migration will take place. Hence, the main argument of the H-T model is that a fixed pre-determined minimum wage that is set at a much higher level than that of a free market equilibrium level would lead to an equilibrium point with considerable urban unemployment (point H in the below Figure 1.2). The figure represents the distribution of Labour between the manufacturing sector (N_M) and the agriculture sector (N_A). The line HZ represents the possible equilibrium points between the two sectors. Migration hence is considered as a tool or an adjustment mechanism to reach equilibrium, once it is reached migration flows would cease.

Given their analysis and results, the authors reached some conclusions, which also contain some policy relevant issues. A summary of these conclusions is given below:

1. The pre-determined high minimum wage makes rural-urban migration a rational choice since expected earnings differentials continues to exist despite the increasing rates of urban unemployment. Wages determined at a level substantially higher than that of free market equilibrium, lead to equilibrium but with high urban unemployment.
2. The equilibrium is achieved, as explained above, when the agricultural real wage is equal to the expected urban wage, and this is the point where migration would be expected to cease.
3. Overcoming the unemployment problem at the equilibrium point could be done by generating public sector employment opportunities and be paid 'shadow prices'[12] (or give subsidies to private sector to equalise this shadow wage). However, these subsidies or government hiring will not necessarily lead to improvement in welfare and may worsen the

[12] The shadow price (or wage) is the value of the Lagrange Multiplier (fixing the local maxima and minima of a relation) achieved at the optimal solution.

unemployment situation. Adding to this, the difficulty to determine the right shadow wage and the drawbacks of a continuous institutional wage paid to the employed. Implementing shadow wage will increase the manufactured good output, but creation of an additional job at the pre-determined minimum wage will increase migration from the rural sector and hence decrease the agricultural output. It is crucial to implement a wage subsidy that would lead to an improvement of the economy while keeping unemployment to a limited level.

4. Another solution suggested by the model to overcome unemployment would be to restrict migration (though the authors found this solution ethically not right), which could lead to improvement in the welfare of the economy and full employment of the urban sector at the high minimum wage but requires substantial compensation to the rural sector.
5. Finally a combination of policies are suggested: determining the wage level is not enough to solve the situation as it has effects on determining the level of employment in the industrial sector and the allocation of labour between rural and urban. Moreover, restricting migration prevents the economy from increasing the level of industrial employment. Therefore a mix of both policies will help the economy reach its best possible welfare.

This paper by Harris and Todaro was so influential that their model was widely researched, analysed and tested on different regions and across different countries, notably the idea of the influence of the expected incomes differentials rather than income differentials on generation migration, which was also generalised on international migration.

However his paradox idea regarding increasing unemployment was highly criticized. In his view, creating more employment opportunities in the urban areas to reduce unemployment, may in fact lead to an increase in unemployment since, according to his model, creating jobs encourage migration from the rural areas, that would outweigh and put pressure on the job creation process (such as Brueckner and Kim, 2001; Zenou, 2004; and Khan, 2007).

We will highlight here one of these theoretical studies on the H-T paradox and which reveals interesting facts. Zenou, 2004 showed that this contradiction related to unemployment only existed in certain conditions. The paper states that the paradox in H-T's model initiates from the fact that wages and employment in urban areas were considered both endogenous variables, and consequently there was difficulty in measuring the effect of an exogenous variable, which is the government policies to reduce unemployment, on those two endogenous variables. The presence of migration complicates the impact of this government policy. Hence, to develop his model he assumed a non-mobile, closed one-sector (urban) economy where a decrease in government's unemployment benefits will have the direct effect of increasing urban employment (and hence decreasing unemployment).

However, in order to measure this effect in a more realistic economy, the author proposes to measure these effects using two standard models of labour markets that have good supporting evidence: the 'efficiency wage model'[13] and the

[13] "Efficiency wage models" adopt wages that are higher than their market equilibrium to increase productivity and efficiency and avoid shrinking or high turnover of labour (George Akerlof and Janet Yellen (1986), 'Efficiency Wage Models of the Labour Market', Cambridge: Cambridge University Press).

'search-matching approach'[14]. In an 'efficiency wage model' the government policy to reduce unemployment benefits would lead to a decrease in urban wages and increase in urban jobs and hence there will be no paradox. This works as follows: reducing unemployment benefits, leads to increasing employment and a decrease in urban wages and when more jobs are created, this attracts workers from the rural areas that migrate to the urban areas, rural wages increase but since there is more jobs in the urban area and efficiency wages, wages in the urban areas are reduced as it become difficult to find jobs. Whereas if the Todaro paradox is addressed in 'search-matching' model where wages are bargained, the paradox might still exist. A decrease in unemployment benefits, leads to decrease in wages and more firms enter the urban labour market and hence more jobs are created, this leads to an increase in rural-urban migration. Another contradiction effect is that if wages in the urban areas decrease, less rural workers migrate. In this case the net effect is ambiguous.

Moreover, Bhagwati, 1984 criticizes the way many scholars generalised 'blindingly' the H-T model for internal migration on international migration. He argued that the expected wage (including the probably of being employed) should also include the probability of passing the border controls, which could reduce substantially the expected wage to be equal in fact to the domestic wage. Moreover, in case of international migration the physical location of the unemployed will not be in the destination country since he/she could not migrate, while in case of the H-T model the unemployed remains in the cities. This entails hence a large number of consequences and different interpretations and policies (Bhagwati, 1984).

For this reason, we found it important to highlight an example where the H-T model was expanded to an international migration while taking into consideration issues of immigration controls and illegal migration. Levine (Levine, 1999) applied the H-T model of migration from East to West of Europe, those countries enjoy a more open migration controls and policies. He introduced two modifications to the model: (1) wages are partially flexible in the two regions (this encompass the two extremes of wage flexibility: fully flexible with full employment and the H-T case of fixed real wages); and (2) there is a cost of migration measured by the incentives facing illegal migrants. Between the choice of having a fully flexible ('laissez faire') or controlled migration and their impacts on social welfare, results showed that for regions with large differences in GDP per head, migration might be at a lower level than that expected (and no migration controls will be needed) due to a combination of high wage flexibility in the West and a low one in the East, together with an inefficiency in controlling migration, an interesting result that contradicts the expected waves of migration from the East to the West due to differences in expected incomes.

Despite its critics the H-T model remained the most influential migration model in the neoclassical economics that have inspired a large number of models afterwards. Just to name a few: theories on individual's decision to migrate which are based on the expected income and a cost-benefit analysis (Borjas, 1989 and 1990); theories of neoclassical micro theory of migration (or human capital) which are based on expected returns and selectively of migration (Sjaastad, 1962)[15], etc.

[14] The "search and match approach" in the labour markets consists of firms and workers that engage in a costly search to find each other after they are randomly matched they engage in bilateral bargaining over the wage (Yashiv, E. 2007. "Labour Search and matching in Macroeconomics", Discussion Paper Series IZA DP No. 2743)

[15] These micro theories will be detailed in the section on Microeconomic theories of migration

In conclusion, the neoclassical approach to migration represents the main principal of a large number of theories and have been applied in the majority of empirical evidence (as will be seen in the following chapter). However, one could argue that despite their logical mechanism in the process of migration, this mechanism might not be efficiently applied in the case of developing economies. We can identify at least three challenges that face the application of this mechanism in practice:

- First, labour flows do not exactly follow these theoretical paths and other factors have come to play a major role in this complex relation between migrating and development. For instance, migration does not always occur from labour-abundant low productivity labour (unskilled). In fact, recent figures showed that migrants are more and more highly skilled and more and more educated (reaching 38% of total migrants in high income countries) and many studies showed that the higher the skill levels in a developing country the higher propensity of migration (Docquier and Marfouk, 2005);
- Second, the idea of redistribution of incomes between and within receiving countries could be beneficiary for the poor or low-income countries, but could be met with resistance from richer and high income country. The idea of migrants competing in the high-income labour markets is not easily accepted by nationals of the receiving countries[16]; and
- Third, it is clear that the flow of labour among countries is not subject to market mechanisms. Such as the case in most labour markets in developing countries: supply does not meet the demand of labour and hence wages are also distorted and the degree of flexibility of wages is at a minimum.

Moreover, there is a major role played by the governments in both sides of migration frontiers that makes migration rather a controlled phenomenon and hence its impact on the development of the sending countries will very much depend on external factors and circumstances where this migration takes place.

Within this category of macroeconomic theories on the causes of migration, we can identify the dual labour market theory that was developed in reaction to the optimism of the neoclassical theory.

2.1.2. Dual Labour Market Theory and Migration

The Dual Labour market theory was developed as a counter-reaction to the spread of the neoclassical theories and which was found unable to explain continuous migration flows together with increasing problems of unemployment and poverty. In developing the theory, dualist economists put three general hypothesis: (i) the economy contains two labour sectors: a primary one providing high wages and a secondary one providing low wages; (ii) there is a distinction between good and bad jobs rather than between skills and unskilled workers, good jobs are those of the primary sector, while bad jobs are for the secondary sector; and (iii) workers in the secondary sector developed a pattern of instability and high turnovers and unemployment (Wachter, 1979).

The dual labour market approach sees migration as part of the structural requirements and continuous demand for labour to feed-in the process of economic industrialization. This different mind-set from previously addressed models that are based on rational choices aiming to maximize benefits or to reduce risks of the neoclassical theories have been modified and extended by other scholars.

[16] Migrants' integration in the sending countries is outside the scope of this study.

Piore, 1979 explains this process in his famous book 'Birds of Passage' (Piore, 1979), which have made large contribution to understand the causes of migration, as the response to three main demands summarised as follows: (i) responding to the general labour shortages; (ii) filling the gaps in the bottom social hierarchy; and (iii) filling jobs in the secondary sector of a dual labour market. This concept is radically different from previous theories as it explains the migration by a 'pull' factor rather than by a 'push' factors, but it does not necessarily exclude the previous theories.

This theory is based on the following concepts and ideas:

1. International migration is demand driven which is originating from the receiving developed countries when recruiting workers.
2. The demand on international workers is initiated by the structural needs of the economies and hence internal wage differentials are not a necessary or a sufficient condition for migration.
3. International migration has no effect on increasing the level of wages in the receiving countries, since according to Piore, migrants occupy the secondary sector where low-level wages are held down and employees are not free to respond punctually to shifts in the supply and demand curves, given the hierarchy and social considerations.
4. However, low level wages may fall further in response to the increase in the supply of immigrant workers.
5. International migration is not influenced by policies affecting wages or employment rates. Immigrants fill gaps of demand structurally built into the economy.

More precisely, Piore argues that migration is the result of an unfilled labour demand in the (industrialised) more advanced countries (this is what he calls '*forces inherited in the nature of industrial economies*'). The dual market is clearly referring to capital-intensive labour as the 'primary' sector and the labour-intensive labour as the 'secondary' sector and where migration takes place to fill its gaps. Given this, those migrants are characterised as initially temporary ones, that move but with the intention to return home (however many fail to do so for various reasons and become (with their families) permanently in the host country and part of its labour force). Also these migrants are unskilled and many of them cannot speak the language and can be illiterate in their own languages.

Though the theory believes in the role of income differential and employment opportunities in the receiving country, it argues that these differentials do not seem to govern the migration process. This is argued by the following facts: (i) typically, the sending countries do not normally have the lowest incomes that would make a large income differential, specially in these types of low-income jobs; (ii) despite the large number of unemployment in the sending countries, migration is undertaken by those who can get jobs, as unemployment of migrants in the receiving countries seem to be relatively low; (iii) some argues that surplus of migrants seeking jobs might create jobs in the receiving countries, which does not seem to be the case due to institutional constraints (minimum wages, standards, safety) and unemployed migrants might seek to work informally; (iv) also, the surplus of labour does not drag upon wages in this sector at the bottom of the market hierarchy, this is also because of the minimum wage laws.

Piore argued that migration is driven rather by technological and sociological variables and not by the cost differentials as argued in the neoclassical theories, which, according to his view, could not resolve the paradox. Even recent theories that introduced the dimension of the cost and benefits of migration and of investment in human capital did not, in his view, manage to explain why Europeans migrated to North America, for instance, despite the high cost of

transportation and cultural and linguistic differences compared to Latin America (Piore, 1986).

Piore revised some of the hypothesis by adding a third sector, which includes: ethnic enclaves (where migrants occupy low wage jobs within the labour hierarchy), migrant's entrepreneurs (where migrants start to establish their own firms) and settlement process. Jobs in this sector provide low income wages but, contrary to the secondary sector, they provide some stability, returns on education and real prospects of upward mobility. Piore argued that the structure of the labour markets in the receiving counties affects the pattern of migration to this country. In Western Europe for instance, there has been stagnation in employment and increase in unemployment and a shift from manufacturing industries that offered a large range of low-cost working opportunities to migrants towards services. Even within the manufacturing sector, there had been a shift away from those heavy-duty demanding industries. As a result, there was a net decline in the demand for migration relative to national workers (Piore, 1986).

The theory of Piore added a new dimension to the theoretical thinking about migration and highlighted the dual patterns of advanced industrialised countries. However, the idea that migration is rather demand-driven by the receiving countries rather than supplied by individuals efforts, seem to be not very realistic, as this assumes that only 'pull' factors are the main reason behind migration. Especially that this assumption was not evidently verified by the author (some references are only made to some cases reflecting this aspect) (Massey, 1993). This was criticised in Piore's theory since many migrants move to their destination countries due to causes in their sending countries and start looking for jobs. Also, the constraint made by this theory that migration of labour concern low-skilled workers towards the 'secondary' sector could be not realistic. Many migrants to Europe are highly skilled employees that are seeking jobs in the primary sectors. In this case, the unfilled jobs are not because nationals are reluctant to take them, but rather because of a shortage in the labour supply in this category (Alonso, 1981).

We continue for the search for a macroeconomic theory that would not reflect any shortcomings or controversies, we address the last macroeconomic theory in our review on 'World Systems Theory'.

2.1.3. The World Systems Theory

Also part of the structuralist models, the World Systems theory or approach was first articulated by Wallerstein in 1974[17] and is considered a modern application to Marxism (or the neo-Marxism) concepts in an international dimension. The theory was developed close to the concept of the dependency (King, 2012).

This approach characterizes the world system as a set of mechanisms that aim to redistribute resources between two main groups of countries: the 'periphery' and the 'core'. The *core* is the wealthy, developed and industrialized part of the world whereas the *periphery* is the less developed world. The redistribution of resources is basically the exporting of raw materials and cheap labour from the underdeveloped to the industrialised. This is was Wallerstein called 'unequal exchange' where a differential strength is maintained between those two groups to reinforce the system and where the periphery countries are dependent through asymmetric ties of trade, capital penetration and migration A third group of

[17] some studies refer to the geographer Mabogunje (1970) as the real founder of migration systems theory.

countries called 'semi-periphery' also exist which are the intermediate countries in terms of wealth and dependency (Wallerstein, 1974).

Within this basic concept of the world system theory, migration is generated due to the penetration of capitalist relations between the core counties and the peripheral non-capitalist societies creating a population that is prone to migrate abroad. The motivation behind the penetration of the capitalists into poor countries' markets is for seeking higher profits and greater wealth, looking for new lands, raw materials, labour and new markets[18]. Migration becomes the natural result of dislocations and disruptions that accompany the process of capitalist development. In other words, migration is the outcome of political and economic organisation of an expanding global market. This theory is also addressed as the 'dependency theory) (de Haas, 2008).

This theory argues the six following hypotheses (Massey, 1993):

1. Migration is a natural consequence of the global capitalism induced in the developing countries.
2. International labour flows in the opposite direction of that of goods and capital. Investment of capitalists in non-capitalist counties induces changes that give incentives to the population to migrate towards this source of capital.
3. International migration occurs often between past colonial powers and their former colonies because the country's culture and economic and social behaviours are somehow impacted by this colonial power.
4. Given this, a way to manage or control international migration would be to control overseas investment activities, a concept that can't be accepted in the globalization and openness of today's world.
5. However, interventions by capitalists' government to protect their investment abroad, through political or military, could create refugees to the core countries.
6. Clearly this theory suggests that wage rates or employment differentials have limited roles to play in migration.

Despite being a rather historical sociological theory, the World System Theory was adopted and modified by many development economists as it addresses issues related to development, unequal opportunities across the nations.

One example of these extensions is the writings by Portes and Walton (Portes and Walton, 1981), where they explore four aspects around the basic theme of the changing structures and processes of the World System level on social relations within and between the periphery and the core. Their basic theme confirms the idea of classes at the countries level and how the 'class formation process' is increasingly taking place at the international level. One of the aspects they handled and which represent our interest here is the one on migration. The authors see migration as a process that unfolds by time with interactions among a variety of actors and where four components specify these interactions as follows:

1. Migration from poor to rich countries is not the result of a tendency toward equilibrium but occur as the result of a deliberate penetration of capitalistic actions that creates imbalances in a given peripheral area.
2. Sending countries have opposed the loss of labour because of migration, but the general trend should be to reduce migration and not to stop it. Migration should be taken as a way to alleviate tensions due to increasing labour force and with potential positive economic effects.

[18] These penetrations were sometime part of a colonial administration of the poor regions.

3. Migrants would normally occupy the jobs at the bottom of the hierarchy, which are normally called 'cheap labour', this situation would increase the vulnerability of the migrants.
4. The migrants seek to derive maximum personal advantage from 'networking'.

Portes and Walton conclude that this ongoing situation in which both the core and the periphery play important roles, leads to further increasing of structures of economic domination and perpetuates inequality. It is clear that the World System concept is focused on the European sphere as the centre of the world (core) and treats the other development countries as 'peripherals' to the world capitalist system. This hypothesis could be largely argued.

The work by Portes and Walton is thought to make some contributions in understanding the implications of the World System on the migration process and linking contemporary economic and social trends between developing and developed countries. However some shortcomings could be pointed out. One could see that it does not take into consideration that migrants could succeed in reducing their vulnerability, nor did he highlight the role of the core in opposing to what appears to be an advantage flows.

To conclude this section on the neoclassical macro theories on causes of migration we highlight the fact that neoclassical theories was characterised by have a 'migration optimism' (also called the "Functionalist Approach" (de Haas, 2008)) regarding the relation between migration and development in the way they see that an equilibrium will be eventually achieved through migration. This optimism was challenged by 'migration pessimism' theories (also called the "Structural Approach") (Taylor, 1999) that sees migration as an exploitative political and economics relationship between sending and receiving countries. Migration is seen as caused by social and spatial structures that create the conditions for labour migration. Two theories explaining migration could be identified under this approach: the Dual Labour market theory and the World System Theory (Mahmud et. al. 2009 and De Haas, 2008). These views will be addressed in details in the second part of this chapter.

2.2. Microeconomic Theories on the Decision to Migrate

This second group of migration theories that addresses the causes of migration are those related to the micro level (i.e. that relates to the individual or the household). These theories attempt to explain the reasons behind the decision to migrate at the individual and the household levels. Also, this group includes the issue of selectivity of migration that explains why some individuals migrate and others don't. Hence this category will address three theories:

2.2.1.The Neoclassical micro economic theory of migration
2.2.2.The New Economics of Labour migration Theory
2.2.3.The Selectivity of migration theory

The shift in the interest of theories from addressing the aggregate or macro theories explaining migration towards the micro behavioural ones took place towards the 1960s, when many scholars found that aggregate theories were enable to explain many of the aspects and causes of migration and their consequences. In fact, it is quite natural to go down to the micro level in understanding the reason behind migration after all it is the individual who actually performs this act, due to personnel/individual reasons and impacted by his/her surrounding macroeconomic environment.

The main assumption of these micro behavioural theories is that an individual *n*

at place *i* will migrate to a place *j* if there is a net benefit for this individual after taking in consideration the migration cost (not only financial but also social).

The differences in the theories here are either related to the unit of the analysis: whether the individual or his household that makes such as decision and related to the type of benefits that the individual is maximising. This will be shown in details below.

2.2.1. The Neoclassical Microeconomic Theory of Migration

Following the overall neoclassical context of maximizing benefits, the microeconomic theory of migration sees migration as a kind of human capital investment where individuals can employ their knowledge, skills and abilities more profitably abroad than in their home country. Hence assuming the rationality of the individual in making decision, the micro level theory's main assumption sees the decision to migrate as a way to maximize benefits at the individual level.

Hence individual's decision to migrate is made when the expected net returns out of the costs and benefits of migration is positive and higher than that at the home country on a certain period of time.

This idea was developed further by Massey, 1993, when he estimated that potential migrants move to the location where the 'expected discounted net returns' are greatest over time. The expected returns are the observed earnings that correspond to the migrant's skills in the destination country weighted by the probability of obtaining a job (or deporting in case of illegal migrants). The net returns is then calculated by subtracting the expected earnings in the country of origin also weighted by the probability of obtaining a job by the cost of migration. This net returns is calculated over time taking into consideration the greater utility of money earned at the present time than in the future. From this difference, the estimated costs of migration are subtracted. Costs include travel expenses, living expenses before obtaining a job, expenses of settling and learning the language and culture and understanding the labour markets and of course the non-materialistic and psychological costs due to moving from the country of origin. This could be summarized by the following equation (Massey, 1993):

$$ER(0) = \int_{\hat{}}^{n} \left[P_1(t)P_2(t)Y_d(t) - P_3(t)P_0(t)Y_d(t) \right] e^{-rt} dt - C(0)$$

Where:

ER(t=0) is the expected net return to migration calculated at time 't=0' (before departure; $P_1(t)$ is the probability of avoiding deporting (equal to 1 for legal migrants and <1.0 for illegal ones); $P_2(t)$ is the probability of employment in destination; and $Y_d(t)$ is the expected earning when employed in the destination; $P_3(t)$ is the probability of employment in the country of origin; $Y_0(t)$ is the earning if employed in the country of origin; r is the discount factor of the value of earning (present vs future); and C(t=0) is the expected costs of migration (including psychological costs).

Clearly, a potential rational migrant would migrate when E(0) is positive, stays in his home country if negative; and is indifferent if equal zero. Also, if choosing between different destinations, he would choose the one with the highest net value.

To summarize, this theory on the cause of migration on the individual level is based in general on the following concepts:

1. Migration is caused not only by earning differentials but also expectation of employment.
2. Human skills or characteristics (education, training, language skills, experience, etc.) can increase the probability of employment in the destination countries raising the level of expected earnings and hence could achieve positive net expected return.
3. At the same time, the increase in the human capital characteristics and skills reduce migration costs due to better initial social conditions and easier communication. This in return will increase the net expected return from migration and hence the likelihood of migration.
4. Migration occurs as long as there is a net positive expected return and will cease when expected earnings abroad (product of earnings and employment abroad) will be equal to the expected earning at home.
5. The larger the size of the differential in expected returns the larger the flows of migrants between countries.
6. Disequilibrium in the labour markets are the driving forces of migration, no other markets influence the migration decision.
7. Governments control immigration through policies that affect expected earnings in both sending and/or receiving countries. These policies can raise employment in the home country or underemployment in the receiving country and hence increasing the cost of migration, etc.

These basic concepts were adopted by several scholars in their attempts to explain the causes of the decision to migrate. We will highlight below some of the important ones.

a. Sjaastad theory on the costs and returns of human migration

Within this framework of maximizing benefits as a main cause for the decision to migrate, Sjaastad, 1962 questions the role of migration in eliminating income disparities and considers migration rather a way to promote efficient reallocation of resources. His approach is to evaluate the returns of the 'investment in migration' rather than to relate it to income differentials as stated by the traditional neoclassical school. His main objective was to try and answer two main questions: why in the presence of large differentials in current earnings, migration is still considered limited and why in the occurrence of migration there was no observed narrowing in geographic income differentials (Sjaastad, 1962)[19].

Below is a summary of his basic ideas and principles regarding this issue:

1. There is a positive relationship between net immigration and high level of incomes, however according to Sjaastad this evidence is very modest. Also, he refers to a study on income differentials where labour markets of the low income countries /states are dominated by low earnings' occupations relative to the national level and these countries' earnings within a particular occupations tend to have lower than the national average[20].
2. Given these observations, Sjaastad found support for his hypothesis that migration constitutes a response to a *'spatial earning differentials'* confirming the idea that migration is in fact a search for opportunities *'in higher paying occupations'.* This explains his conclusion that migration should be considered

[19] Though his paper focused on migration flows between US States, his observations and conclusions are very relevant to international migration.
[20] Frank, Hanna. 1959. Income Differentials, 1919-1954. Durham NC. Duke University press, p. 128

as an investment (and hence that includes costs) that could increase the productivity of human resources (and hence will render returns).

3. The cost side of migration includes money and non-money costs, which are both difficult but can be estimated. These costs include transportation (this include consideration of the distance) and any increase in the normal expenditure level due to migration such as food, lodging, etc. The non-money costs are considered to be significant and even higher than the money cost. These could include the opportunity costs (what the migrant could have earned if he stayed in his home country). It also includes the psychological costs due to this migration which would be even more difficult to measure. Sjaastad suggests considering them as '*they are of the nature of lost consumer (or producer) surplus on the part of the migrant*'. Part of these psychological costs is the lack of knowledge about what to expect in the destination country, hence if knowledge is perfect, these costs could explain the existence of earnings differentials more than those explained by the money and opportunity costs. Moreover, if these costs were zero, more migration is likely to take place. He argues however that these types of costs involve no resources for the economy and should not be part of the investment in migration and hence can be ignored. Sjaastad suggests to only consider persons with zero psychological costs.
4. At the same time, the individual or private returns side of migration consists of money and non-money returns. Similar to the argument given for the psychological costs, Sjaastad argues that one can ignore the non-money returns arising from 'location preferences'. However, it is clear that the money returns consist of the positive (or negative) change in the real earnings of the migrant. He suggests that this change will arise from a change in nominal earnings, a change in costs of employment, a change in prices, or a combination of the three. These will reflect not only the returns due to earnings differentials between the two places but also those related to the migrant as a consumer. Sjaastad argues that in this context, it is important to include the human capital concept and to consider migration (such as training and experience and education) as *investments in the human agent*.
5. Also, the age-income relation matters within the occupation, at least partially, due to the accumulation of experience. While a complementary investment is required to make migration feasible, even for older migrants, the nature of the occupation affects to a great extent this age-income relation[21]. Other variables of course could have been involved like the increase of money and non-money costs of migration with age. However, data from the US suggests that there is a decline in the rate of migration as age increases and this is suggested to be due to the increase in the money and non-money costs with migration. This also relates to the period of time the migrant will be able to accomplish the returns to ensure a net gain from migration[22].
6. Moreover, he suggests that the costs and returns of migration is not only related to the migrant (it is not only private), but non-migrant also (i.e. the societies) will bear costs and benefit from returns. Measuring the externalities of the decision to migrate on both the social costs and returns could be complicated, however measuring the market imperfections and institutional factors could be somewhat easier. He argues that as his main idea about migration was to optimize the allocation of resources and this will only be achieved with free movement of la labour, free levels of wages and free trade.

[21] According to Sjaastad, net migration from agricultural areas in specific region in the US in the 1950 was highest among the young (10-14 years) while only one out of 10 persons of 20 years of age and above migrated

[22] If retirement is between 65-70 years old, a migrant of 20 years old still has 45 years to accomplish a net gain from migration, while that of 50 years only has 15 years, which might not be worth the while.

Sjaastad was among the first to introduce the concept that migration is an investment on human capital and that free migration (together with other variables) will lead to an optimal allocation of resources. He also introduced the importance of age as an important factor of migration within the occupations and that the externalities of migration from private to the social communities depends on the market structure, resources mobility and policies of the countries.

The theory was somewhat criticized for not including some non-monetary gains from migration (e.g. amenities, better economic and political environment). Also one methodological problem that could occur in modelling migration as human capital investment is in mixing nominal earning differences with real costs of living and the possibility of mixing investment and consumption returns on migration (Bodvarsson and Van den Berg, 2009).

b. Todaro Model of Labour Migration and Urban Unemployment (Todaro, 1969)

Todaro's main objective in this paper was to create a behavioural model of labour migration that would represent a more realistic view than that of the wage differential approach (referring to Lewis, 1954 and Ranis and Fei, 1961) at the individual level and where migration is affected by the probability of finding a job in the modern sector. Hence, he argues that it is important to look into the 'expected' income differential rather than the actual real differentials. This model attempts to address at the micro level, and from a behavioural point of view, why rural-urban migration flows persist despite the already existent unemployment and underemployment in urban areas. This model is considered as an extension or modification to the wage differential approach developed by Lewis, 1954 and Ranis and Fei, 1961 and it sets up the fundamentals for the Harris and Todaro addressed in the macroeconomic section (Harris and Todaro, 1970).

Combining the idea (that was first addressed by Sjaastad) of the 'probability of finding a job' in the urban (or modern) sector, and this idea that what really matters for migration decision is the expected differential incomes and not the actual ones, he came up with the following conclusion: that what matters for an individual in his decision to migrate is '… *the income differential adjusted for the probability of findings an urban* (or modern or an elsewhere) *job*'. In fact the idea of Todaro to consider the 'expected' incomes in finding the equilibrium condition in the labour market was an innovative and original idea that has been substantially used later in many concepts (Khan, 2007).

Additionally, the new concepts that have been introduced by Todaro at this stage in his 1969 model, can be summarized in the following points:

1. The mobility of the labour from the rural sector (or traditional sector, or a sending country) to the urban sector (or modernized, or a receiving country) does not take place as a 'one-stage phenomenon' but rather a 'two-stage' one. This is due to the difference of skills required in each of the sectors (or countries) that need to be acquired by the migrant.
2. In Todaro's view this difference in the skills explains to a great extent the chronic unemployment and underemployment and the complexity of the migration process. The first phase of this process includes the migration of the unskilled rural worker to an urban area and spending some time in the 'urban traditional' sector. This is followed by the second phase when the worker (or migrant) has reached a certain level of skill that would allow him to integrate in the more modern sector.
3. Todaro sees that the decision to migrate is based on two essential variables: (1) the rural-urban expected income differential; and (2) the probability of

obtaining an urban job. Finding the balance between the two variables is challenging.
4. Based on some evidenced studies, there is no clear trend relating these two variables to the flows of mobility of the workers[23].

The behavioural model of rural-urban migration of Todaro is hence presented following the assumption; we will highlight here in the following lines the main equations of the model, without going into much details of how they were developed.

The percentage change in urban labour force due to migration to urban areas is caused by the differential of the discounted income expected in urban and the real income in the rural areas. This differential is expressed as follows:

$$\frac{\dot{S}}{S}(t) = F[\frac{V_u(t) - V_R(t)}{V_R(t)}]; F' > 0$$

where:

$\dot{S}$ represents net rural urban migration;
S is the existing size of the urban labour force;
$V_u(t)$ is the discounted present value of the expected urban real income flow over an unskilled worker's planning horizon; and,
$V_R(t)$ is the discounted present value of the expected rural real in-come flow over the same planning horizon.

The planning horizon (i.e. $V_u(t)$) of workers is identical and the fixed costs of migration are the same. Also the discount factor is constant over time on the planning horizon and is the same for all workers.

Following these assumptions and this set-up of rural-urban migration, Todaro constructed his behavioural labour supply model as follows:

$$V_R(0) = \int_{t=0}^{n} Y_R(t) e^{-rt} dt$$

where $Y_R(t)$ is the net expected rural real income in period (t) based on the average real income in x previous periods; and r is the discount factor reflecting the degree of consumption of rural unskilled worker.

Following the extension of Todaro to the model of including the probability of employment and the cost of migration this equation becomes:

$$V_u(0) = \int_{t=0}^{n} p(t) Y_u(t) e^{-rt} dt - C(0)$$

where $Y_u(t)$ is the net urban real income in period t; and C(0) is the initial fixed cost of migration and relocation in the urban area; and p(t) is the probability of

[23] Reversal trends of urban to rural migration were observed despite the explicitly higher incomes offered in the urban sector (in America in 1932 according to a study by Schultz). This was due to the lack of jobs in a depressed industrial sector and better opportunities to find agricultural jobs.

having a modern sector job in period t. This equation means that the expected urban real income in any period (t) is directly correlated to the probability of having a job in modern sector.

Based on these issues and other assumptions, Todaro built the supply side of the labour introducing the probability of being selected for a job from a pool of urban traditional workers (including those migrating from the rural sector).

He then built the demand for Labour (i.e. the number of jobs created), which is assumed to be at a constant exponential rate over time as a function of the growth rate of industrial output; and the growth rate of labour productivity in the modern sector.

The demand side is further developed and then the overall model is formulated based on the idea that the difference between the total urban labour force in period (t) S(t) and the total employment in the urban modern sector in the same period (t) N(t) is in fact the size of urban traditional sector.

Solving the equations and reaching the equilibrium model, Todaro concludes with interesting and very relevant remarks showing the interdependent effects of industrial expansion, productivity growth and the effect of the expected differentials in earnings in the urban and rural areas on the size and rate of migration and their effect on the occupational distribution.

The conclusions of the Todaro model can be summarized as follows (without getting into the details of the several equations of the model):

1. The starting point of the model is a developing country on an early stage of industrialization and where most of the workers are in rural areas. Migration to the urban areas starts and accelerates, and being at an early stage, the opportunity to find jobs in the urban areas is still high. If there is a significant difference between the urban real wages, the rural ones and the economy is still able to create jobs that exceed those of the population growth; then rural-urban migration is incited and will be exceeding the rate of creating jobs. This means an increase in the labour supply and the probability of finding a job in the urban sector will be lower. This would normally lead to a slow down of labour force accelerating rate but the supply of labour continues to be higher than the demand. In a simpler way, internal (or even international) migration can take place as long as the wage differential between the urban and rural (or between the sending and receiving countries) surpasses the unemployment rate in the urban sector (receiving country) (Groen, 2009).
2. Moreover, there is a need to increase productivity in the modern sector. However, if the gap between rural and urban earnings is still wide, the policies that are put in place to increase labour productivity and lower urban unemployment will not achieve their targets. For example, if the urban-rural income differential contracts by 20%, labour productivity could increase with an additional of 1.3% per year, but with no effect of unemployment rate; or, labour productivity could increase to an additional of 1% with a decline in the urban unemployment rate.
3. Also, increasing the productivity of the agriculture sector can make large contribution to economic development but this has to be coupled with expansions in the labour opportunities. Therefore, a premature modernization of the agriculture sector could have harmful effects on rural labour absorption.
4. A way to reduce the size of urban traditional sector is to make rural life more attractive. Instead of allocating scarce capital on low cost projects in urban areas that would raise urban real incomes which will lead to worsening the situation in the urban areas, governments should consider devote these funds

to improve the rural infrastructure and increase the living conditions in those rural areas. This is believed to be most beneficiary to the overall economy.

5. Following Todaro's model, if governments make efforts to decrease unemployment by creating more jobs (increase rate of industrial expansion, or subsidizing labour), without working on eliminating the wage differentials between rural and urban areas, this will not affect unemployment, due to the migration from rural and urban areas (and from outside). Hence these policies should be done with two important conditions: (1) real wage differentials between rural-urban sectors should not increase; and (2) output and productivity growth in the agriculture sector should be achieved by an efficient use of available resources and not by capital-labour substitution.

The value added of the 1969 Todaro model is that his model explained why migration continued despite the increasing unemployment in the receiving area on the basis of a neoclassical concept of cost-benefit analysis on the level of the individual. He introduced the concept of expected income differential between rural and urban areas, the cost and benefits of migration.

As mentioned earlier while addressing the 1970 Harris-Todaor's model, that Todaro's model though widely used and analysed, they were also widely controversial. One of the major critics of Todaor's model is related to his conclusion or paradox that policies aimed at creating jobs to reduce urban unemployment, might in fact increase this unemployment that was also mentioned for his Harris and Todaro model, 1970.

In his extended model (Todaro, 1986), Todaro adopted the same general concept of his previous theories, where migration is based on the expected wages differentials between the sending and receiving countries. Including the concept of international migration, Todaro's model included three sectors: in addition to the two standard ones of rural and urban, he added the foreign sector. This extended model confirmed further his idea that creating jobs could have ambiguous effect, and in some cases even increases unemployment in the urban areas of the sending countries. This paradoxical conclusion was based on Todaro's idea that migration is a step-wise process, addressing previously. However, he argued that as an overall, migration could have positive effects on the national unemployment of the sending country.

The following theory is a bit different in terms of its context and way to address the causes of migration. However, it is still considered inspired by the neoclassical concept as will be shown below.

c. The Push-Pull Theory of Migration (Lee, 1966)

Inspired by the main principles of Ravenstein's laws of migration (Ravenstein, 1885) and the idea of maximization of the neoclassical theories, the Push and Pull migration theory are considered the most widely used theory in empirical evidence, mainly due to its 'apparent' simplicity compared to other more complicated theories of migration (Bauer and Zimmermann, 1995).

This theory explains the causes of migration by separating between two groups of opponent factors that affect the individual's decision to migrate: 'pull' factors that are mostly in the destination countries and that encourage and attract the migrant and 'push' factors which are generally are repelling factor from the home countries that push them to leave. The dominance of one group of factors on the other determines the type of migration: if the pull factors at the destinations are more dominant this reflects positive selectively of migration (Borjas, 1991), while

if the push factors at the origin are the dominant factors, this could mean different types of migration.

Even though push and pull theory of migration does not classify as a neoclassical theory per se, it was seen to follow the overall context of utility maximization, rational choices and factor prices differentials (King, 212). Also the theory explains migration selectivity by marking the differences in human capital endowments and ways by which costs and risks are observed by individuals.

One of the early scholars that highlighted this idea was Lee (Lee, 1966) where he summarised the decision to migrate and the process of migration into four groups: (i) factors associated with the origin; (ii) factors associated with the destination; (iii) intervening obstacles; and (iv) personal factors. In each place, either origin or destination' there are factors that act positively and others that act negatively, while others are neutral. At the same time, there are factors that are perceived the same way by all individuals (such as the weather or a natural disaster) while others that are seen differently by different people. However, departing from the idea that there are some kind of agreement among individuals upon certain groups of factors, one can draw some insights of what can be a push factor at the origin country, especially that those individuals are acquainted of their origin and have full information. This might not be the case for the pull factors which are normally at the destination areas where full information might not be available for all. The author adds to these factors, a group of obstacles that affect the decision (so it is not a matter of calculating the negatives and positives only from migration). One main obstacle that was largely studied is the distance, as well as what it entails from cost. Finally there is a group of personnel factors that differentiate between the action of the people in exact the same situation. People responds differently to the positive and negative factors in both the origin and destination countries and cope differently with the obstacles , this explains the "selectivity of migration".

Two of the major factors that have been addressed in most push-pull studies are: (1) rural population growth, causing overpopulation pressure (that seen by Malthus) and pushing people to leave[24] and (2) the economic conditions such as wage, employment, etc.

Despite its contribution and widespread usage, as will be shown in the following chapter 2 on empirical evidence, push-pull theories of migration have been criticized by looking at migration as a cost benefit calculation by the individual while not taking into consideration structural constraints that related to the unequal access of resources (de Haas, 2008). It is considered as being a gravity model that tried to find equilibrium between the push and pull factors.

The theory was also criticized by being rather descriptive than explanatory of the causes of migration and hence could be even called a framework rather than a theory.

As one could imagine, this framework tends to be confusing on the levels of its analysis, shifting between micro and macro variables that many scholars found it difficult to classify it under micro (that concerns individuals decision) or under macro (more concerned with aggregate factors) theories[25]. Moreover, one of the

[24] This was later highly criticized by scholars, as people do not decide to migrate because of the over-population but rather because of specific consequences related to this over-population such as low wages, unemployment and less job opportunities (de Haas, 2008)

[25] we were also faced by this challenge, until we found more references in this framework for theories of migration decision at the micro level than those theories at the macro level.

most important problems of the push-pull models is not taking into consideration the internal stratification of the societies and the classification of what is considered push and what is considered pull factors, which could be different across levels of the societies. As a matter of fact what is found a pull factor at the receiving county, the lack of it could be considered a push in the county of origin (de Haas, 2008). The arbitrary question would be what side of the mirror should be considered in the analysis and what would be the proper weight.

2.2.2. The New Economics of Labour Migration Theory

The New Economics of Labour migration (NELM) theories introduced a new dimension in explaining the reason behind the decision to migrate. Introduced first by Stark, 1978 and then by Stark and Bloom, 1985, this theory argues that the decision of migration is made by the household and not the individual alone. By adopting this approach other factors that relate to the household could be included in the theory. This theory sees migration as a way to maximise benefits, and also to minimize risks for the household.

This theory is different from the neoclassical ones, not only in the focus of who makes the decision to migrate but also in the idea about maximizing benefits itself. The NELM argues that migration takes place not because of expected income differentials or to improve the absolute value of income but to improve the income of the household relative to other households, or in other words to reduce the '*relative deprivation*' compared with reference groups (Massey, 1993).

It is argued that migration is due to existence of different market failures, not only those associated to labour markets but other markets as well, which leads the household to seek minimizing its risk. This can explain why international migration continues when the income differentials between the two countries is small (or non-existent) (Massey, 1993 and Volger and Rotte, 2000).

This theory sees the larger picture where the decision is taken collectively to maximize benefits but also to minimise risks. Households are better positioned than individuals to control risks by diversifying their resources allocation, such as labour where a member of the household can be sent to work abroad. This concept is especially important for developing countries, where social security systems are hardly operative and the risk on incomes is high. In these countries, often market failures lead to difficulties in acquiring of credit this is accompanied by weak (or non-existent) social security or health coverage and hence large risks could be threatening the households[26].

Migration hence is seen as a solution for the household to diversify their resources and to maximize their relative incomes. This highlights the positive impact of remittance flows to the household of the migrant that is staying in the sending country. The principal of including the role of remittances in migration theory is considered another contribution of the NELM theory.

One could think of this as a Pareto-superior strategy for the household, to have a member migrating as a way to share the risk or as an investment increasing

[26] More specifically, Massey, 1993 in his paper identified 4 types of risks that exist in developing countries (and especially the rural sectors) that give incentive to the household to send one of their members to seek fewer risks outside. These risks are Crop insurance markets risk, where there is no insurance for farmers against bad harvest; Future markets risks, where farmers have risks of falling prices of their crops; Unemployment risks, where protective social programs in developing countries are either non-existent or non-efficient; and capital markets risks loans and credits are not accessible to small farmers.

resources (Lucas & Stark, 1985). Moreover, remittances can also contribute to overcome the market constraints or imbalances that normally exist in developing countries where most migration takes place. Contrary to the neoclassical migration theory, where remittances have no major role to play, within the NELM they are considered one of the most important reasons of migration. Moreover, NELM scholars have heavily criticized the empirical evidence that did not consider the indirect effects that migration could bring to the communities and just used simple and non comparative remittance-use surveys (these types of empirical studies are addressed in details in chapter 4).

According to this idea about relative deprivation addressed in several papers (e.g. Stark and Bloom, 1985 and Stark and Taylor, 1989 and 1991), the household sense of deprivation depends on how they class themselves compared to a reference group. Consider F(y) to be the cumulative income distribution of the household and h[1-F(y)] represents the dissatisfaction of the household with the current income (y), and wishing that it was slightly higher, let it be: (y+△). The relative deprivation of the household with this income y can be expressed as follows:

$$RD(y) = \int_{y}^{y\max} h[1 - F(z)]dz$$

where ymax is the maximum income in the community. And the expression $h[1-F(z)] = 1-F(y)$ is equivalent to the product of two terms: (1) the share of household with income greater than y; and (2) the average difference between these higher household income and y.

This equation shows that if the income of other households increase while one household's absolute income and expected gains from migration remained unchanged, this household's incentive to send a family member abroad increases.
The likelihood of migration grows with the change on other household's incomes.
This idea was empirically tested on migration micro data from Mexico to the US and results showed that relative deprivation plays a significant role in the migration decision at the household (Stark and Taylor, 1989).

According to Stark and Bloom, 1985, a lot of the decision to migrate relates to individual behaviour, including feelings and choice, and hence cannot be addressed in the same way trade theories are addressed. According to their paper, the decision to migrate is based on the following concepts:

1. Since the individual measures his satisfaction/deprivations in relation to a reference group, he might take the decision to migrate if he finds himself in a relatively deprivation position compared to his reference group. Moreover, this migration may lead to a change in the relative deprivation of non-migrants members of the reference group, which will lead them also to migrate;
2. The behaviour towards the decision to migrate depends also on the skill level of the person. This is especially true if the heterogeneous of workers is accompanied by a lack of information of the employers on the skills available in the market (i.e. asymmetry of information on skills)[27];

[27] Stark and Bloom illustrated this idea by giving an interesting example of a given profession, where workers with the same skill S receive wages from their employers P and R: $W_P(S)$ and $W_R(S)$. It is assumed that the skill is a uniform distribution and that the functions in wages are non-decreasing and linear and that employers P and R are aware of the skill S. For a low level of the skill S, say $S<S^*$, $W_P(S) > W_R(S)$, while for a level of a

3. The decision to migrate is not made by the individual, but is often made by the migrant together with a group of persons around him/her that are non-migrants. These decisions are made after calculating some of the costs and benefits that will be shared between the migrant and the non-migrant. In this sense, the remittances are often explained as an arrangement between the migrants and his family. The authors found that this arrangement shows the efficiency and flexibility and even the 'dynamic comparative advantage' of the family. This approach shifts the focus of the migration theory from individual independence to mutual interdependence.
4. In an earlier paper by Stark and Levhari, 1982, the authors criticized the migration theories present at the time such as those by Todaro, 1969, as being too focused on expected income differentials as the main reason for migration without addressing the question of risks. Stark & Levhari argue that a small farmer family that is faced by a risky situation in the rural areas would tend to diversify the sources of income by placing its best family member in the urban sector. Remittances in this case, show that both the migrants and his non-migrant family members are both better off since normally sharing the income provides a kind of reassurance.
5. The Stark and Bloom paper highlighted some interesting results based on evidence and experiments, of which we note: (1) There is a positive effect of the new migrants from previous migrants already existent in supporting and assisting the new comer(s); (2) Migrants can earn less than natives in the short run, but in the long terms, migrants outperform the local workers.

In summary, the NELM theory is based on the following concepts which are different from the neoclassical theory and hence leads to a different set of policy recommendations:

1. The unit of analysis of the migration is the household who makes the migration decision and not the autonomous individual.
2. Wage differential is not a necessary condition for migration; other incentives could be involved, such as minimizing or diversifying risks through mobility.
3. Migration and local employment are not mutually exclusives possibilities. Since the unit is the household, performing the two activities at the same time is possible. An increase in the return of local activities (wages or income) can be an incentive for migration as means to overcome risks. Hence, economic development in the sending countries will not necessarily reduce the pressure of international migration.
4. This means that international migration will not stop when wage differentials are narrowed or eliminated, as other incentives are involved.
5. The possibility of migration depends on the different levels of incomes of the households for the same expected gain in income.
6. This means that governments can influence migration not only by influencing the labour markets but also by reducing market risks, e.g. better performing insurance markets (specially unemployment policies), capital markets, etc.
7. Governments can affect the migration decision by changing the income distribution through policies of reforms.
8. These policies of reforms will affect migration decisions independently from the average income. In fact migration probability of a household can increase

higher skill level, say $S>=S^*$, $W_P(S)< W_R(S)$. Clearly the worker with low skill level will not want to migrate from P to R. Now if the employers R cannot see the true skill levels of the P workers (asymmetry of information on skills), but will pay the migrants from P a wage that is equal to the productivity of the migrant group, in this case, either no one will migrate or on the hand, all will migrate. Under perfect information, highly skilled will not migrate if the pooled wage is too low. However under asymmetry of information, the pooled wage is lowered so that highly skilled will not find an advantage in migration

if the average income is too high for the poor household that do not share the income gain.

Among the modern theories explaining the causes of migration, the NELM is considered the most widely accepted and applied, which soon became a valid alternative to neoclassical migration theories, since it gave a more realistic picture of the complexity of the migration and development interactions. The idea of including the family and community in the decision making and the involvement of remittance flows as part of the decision have made a contribution to the knowledge.

However, the theory received some criticism regarding the way many of its aspects were the result of deductive reasoning rather than true empirical testing. As much as the NELM theory was acclaimed to include remittance flows, it was also criticized for focusing too much on these flows as a return for labour migration, without giving drawback scenarios such when these remittances stop (for any reason or the other). Also, the theory focused on labour migration and the benefits it could bring, one could argue that there are other instances of migration where remittances could be sent (one extreme could be for a refugee to send remittances due to better than expected circumstances). Hence, it was advised to broaden the theory to include migration in general and not just labour migration. (de Haas, 2008)

2.2.3. Selectivity of Migration Theory

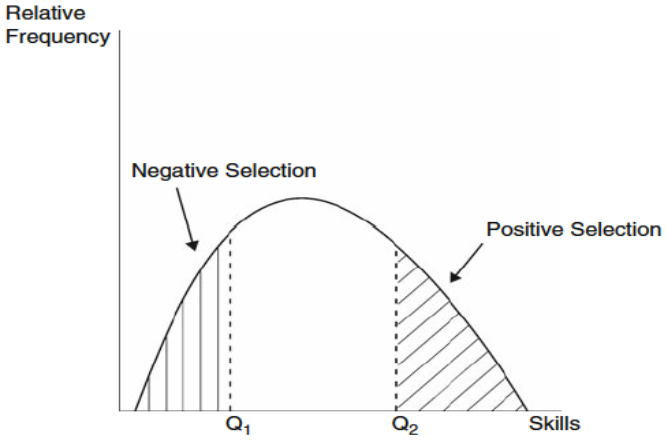
Despite the clear character of migration of being a selective process, this concept has not been addressed in the literature until recently, nor it was part of the commonly used theoretical review literature (e.g. Massey, 1993 and de Haas, 2008) and it did not have much analysis relative to other migration concept such as the neoclassical, push-pull and the NELM theories.

Migration is not a random phenomenon and only a 'selected' number of persons are actually migrating. In fact the process of migration goes through a series of selectivity and choices. It starts from the individual who selects to migrate (due to different individual, community and national causes) and assuming he/she has the necessary assets (human and financial facilitates), he/she then faced by the home country's policies that would allow or restrict this kind of movement. A final selectivity stage relies in the receiving or destination county and whether this potential migration is selected to enter their territories. Of course this very simplified trail holds many different stages and layers that are not addressed here.

The idea of selectivity was initiated following the failure of neoclassical theoretical and empirical models to explain the relatively low migration flows from poorer to richer countries despite the existence of increasing gaps between those countries, which does not seem to be filled. The main concept of these theories is to look into the potential migrants' characteristics that would allow his/her to be selected (or not) for migration. Based in their skills, migrants are either 'negatively selected' (i.e. selected migrant's skills and earnings are on average below the average levels of the home country's population) or 'positively selected' (i.e. selected migrant's skills and earnings are on average above the average levels of the home country's population)[28]. See figure 1.3 showing the Selection Bias of workers skills in their home countries.

[28] often also called 'unfavourable' and 'favourable' respectively. These terms are criticized for being unfavourable and insensitive (Bodvarsson and Van den Berg, 2009)

Fig 1.3. Distribution of skills in the source country and Selectivity of migration:



Source: Bodvarsson and Van den berg, 2009.

The selectivity of migration theories are considered an extension or update of the Human capital neoclassical migration theory where the decision to migrate reflected, in a way, two components of the selectivity of migration. These are based on: (i) the probability to find a job and (ii) the discounted expected income differential between migration and non-migration being the greatest over time (Mora and Taylor, 2006).

The basic concept of the selectivity was inspired by the paper of Roy, 1951 on distribution of earnings and occupational selectivity. In his general basic model, Roy argued that the distribution of the skills of the labour and the technologies used have an impact on the selectivity of individuals across different occupations. This will in return affect the distribution of output (and hence earnings) and the productivity in this community (Roy, 1951).

Another starting point of the migration selectivity concept was found in the study made by Chiswick, 1978, where the earnings of migrants were compared to those of native in the US (in the 1970s). He found that even though immigrants initially earn less than nationals, their earnings accelerate more rapidly as they accumulate experience and they become more productive than nationals. In fact, the study showed that after 10 to 15 years, migrants' earnings might equal and even exceed those of the nationals (Cheswick, 1978). In a further developed model, the author shows the more favourably selected the migrants, are the more successful they will be in their destination countries and hence the more integrated and have better earnings. The favourably selected migrants have by default higher skills (relative to their home population) and hence would be able to cover the high costs of migration and are also able to achieve better results in destination countries (Cheswick, 1999).

Within this concept of selectivity, however with a contradicting view, Borjas (1987,1988, 1989 and 1991) argues that migrants from developing countries tend rather to be less skilled, less productive and hence they earn less (Borjas, 1987 and 1991). He based his theory on the basic work of Roy, 1951 of self-selection in labour markets and linked it to the income differential concepts of the neoclassical theory (Sjaastad, 1962 and Todaro, 1979). The main concept of the Borjas models is that migration selectivity is the result of international differences in the returns to skills and depends on the degree of transferability of skills across the borders.

If a person's earning in his home country is denoted as follows:

$$\ln (w_0) = \mu_0 + \varepsilon_0$$

where μ_0 is the average income at home with a mean 0 and a variance of σ_0^2 and ε_0 is a random variable.

Similarly, a migrants earnings in the destination will be:

$$\ln (w_1) = \mu_1 + \varepsilon_1$$

where μ_1 is the average income at destination with a mean 0 and a variance of σ_1^2 and ε_1 is a random variable. The parameters σ_0^2 and σ_1^2 represent the income inequality in the source and destination countries respectively and the variance of earnings represents the distribution of earnings in a country.

A person decided to migrate if: $w_1 > w_0 + C$ (where C is the cost of migration) and also $[w_1 / w_0 + C] > 1$. Adding logs to this index, as person migrate if the index is larger than 0:

$$I = \ln (w_1) - \ln (w_0 + C) > 0$$

Borjas identifies C/ w_1 as the time equivalent measure of the cost of migration and denotes it by Π and hence:

$$I = (\mu_1 - \mu_0 - \Pi) + (\varepsilon_1 - \varepsilon_0) > 0 \quad \Rightarrow \quad (\varepsilon_1 - \varepsilon_0) > - (\mu_1 - \mu_0 - \Pi)$$

This equation means that the migration will occur if the rewards to the migrant's skill and net mean earnings in the destination country are higher than that at home.

To summarise, what determines the selectivity of the individual for migration is the position of his/her income level within the income distribution scheme as a reflection of his/her ability and skills or what Borjas called the "ethnic capital". This distribution matters in increasing the potential to migrate. His model argued for the presence of a negative selectivity where the less skilled (and hence receive less wages) have more potential to migrate from countries that have large differences between their levels of national skills and earnings (i.e. countries that have large skills and wages inequalities) to countries with small differences among skill and earnings levels (i.e. countries that have low skills and wages inequalities) (Borjas, 1987 and 1991).

It is argued by Borjas, 1987 that selectivity of migration depends very much on the expectations of the returns on skills or education in the potential host countries: the more the returns to education are, the more the probability to migrate and vice versa. To put evidence to his model, he regressed a dummy variable of the degree of income inequality on the sending country relative to the US (this also reflects the ratio of the top earnings to the bottom earnings in the sending country compared to the level and rate of change of migrants' earnings' (Borjas, 1990). This dummy variable was found inversely correlated with earnings and this was justified by the fact that there is an adverse selection of migrants based on their ability of skill differentials.

Despite the importance of these arguments, only few empirical studies, other than Borjas himself, tried to test their validities and they are concentrated on sources of countries towards migration to the US. This could be due to the data

requirements of these sorts of tests, which are rarely available outside the US. Some of these studies including that of Borjas are showed in chapter 4.

To conclude, migration selectivity theories have contributed to better understand the process of the decision to migrate at the individual level. Borjas model draws a lot from the neoclassical and historical theories of selectivity, but the additional component he integrated on the variation of people's ability (including skills, education, age, etc.) have made a large contribution in better understanding this process and to better predict the flows of different types of workers across borders (Bodvarsson and Van den berg, 2009).

This has inspired other scholars where they added other factors that can affect the decision to migrate. For instance Chiquiar and Hanson, 2005 extended Borjas model by including variables such as age, schooling and marital status and showed that there is no negative selectivity (using data of migrants from Mexico to US) but what they called intermediate selectivity (indicating that it is the medium skilled migrants).

As an overall, the microeconomic theories of migration have largely contributed to the understanding of the causes of migration at the individuals level. There are two main theories or concepts that have emerged from the literature review. First, the neoclassical human capital theory that sees migration as the decision of an individual to maximize his benefits and second the New Economics of labour migration, which sees migration as a way to maximize benefits and minimize the risks at the household level.

There is no consensus in the literature on which of these theories is more relevant to the actual migration decision. Moreover, the empirical evidence (as will be shown in details in the coming two chapters) though rich in addressing the causes of migration, is somewhat weak in adding relevance to the theoretical principles while constructing the methodological model.

3.Theories Explaining the Persistence of Migration

Migration is a persistent phenomenon that is not expected to cease, this interesting feature of migration lead scholars to investigate the reasons behind this persistence (some call it perpetuation) of migration. As seen this from the pervious section, theories tried to explain the reason behind the initiation of migration, however these theories cannot explain why these flows persist across time. Neoclassical theories argued for ceasing migration once the differential gaps between countries are filled. However, we observe migration flows between developed countries despite the small differential gaps. This made scholars think about the causes that make migration flows continue once it started and the driving forces that could make these flows self-generated. A number of theories were established to answer this question:

3.1. The Network Theory and the Role of Transnationals
3.2. The Institutional Theory
3.3. Cumulative Causation Theory
3.4. Migration Systems Theory

3.1. The Network Theory and the Role of Transnationals

It has been observed across history and time that migrants tend to communicate with other migrants from the same country in their country of destination setting up networks that link them with their families at home. Hence migrants' networks involve three actors that are linked to the process of migration: The migrants, the former migrants (mostly established in the same area few years earlier) and the non-migrants at the home country that are linked to the migrants in a way or another. According to the existent literature, migration networks are defined as those social relationships and ties that bind migrants to non-migrants and can help facilitate future migrants (Massey, 1993 and Boyd, 1989).

These established networks have important impacts on increasing the number of new migrants from the sending country due to several reasons: (1) migration networks have the evidenced advantage of lowering the cost of migration for the potential migrants. This cost could be either financial or psychological and mental; (2) they also decrease the potential of risks that accompany the movement as they can provide essential information and knowledge about the process and the destination; (3) according to previous theories, these two aspects would increase the net returns to migration encouraging non-migrants to migrate.

Migration networks, previously called 'migration chains', constitute a form of social capital that potential migrants can rely upon in order to access knowledge about employment opportunities. The principles of this theory could be summarised in the following points:

1. Each additional migrant to a certain destination would reduce further the cost of migration to the following one and that the first migrant is normally the one that bear the highest cost of migration. When migration networks reach a certain point, migration becomes self-perpetuating since each migrant creates new ties with his family at home and hence increases the number of potential migrants (Massey, 1993).
2. Other than those advantages of the migration networks, they have an important role in encouraging remittance flows towards the non-migrants; an issue that was often ignored in previous theories explaining the causes of migration (de Haas, 2008).
3. Migration networks could make changes in the way the causes of migration are perceived: (i) migration network could overshadow the wage differentials incentive of migration due to decreasing the costs and risks; (ii) the self-generating aspect of migration and how migration becomes institutionalized, would progressively fade-away the very causes of these migration flows; (iii) given this, the selectivity of migration would progressively become invalid as 'less selective' migrants would be able to migrate; and (iv) government policies to control migration can become less effective especially in the face of family reunification migration (Massey, 1993).
4. In fact, it was argued that migration network could reveal the real social forces of the migration decision, away from economic or political sources that would become much weaker (Boyd, 1989). Moreover, this theory has created the necessary link between the micro and the macro formulations of migration (King, 2012).
5. It is important to note that migration networks cannot be considered as a cause of migration, as migration is initiated for a set of other reasons, however, they can have an important impact on making this migration happen.

There is very little empirical evidence that attempted to test the impact of the migration networks on increasing migration flows. One could argue that this is

because of the obvious nature of the relationship that is often taken as given in the literature and observed through case studies. From the existing studies we could mention the study by Massey and Espana, 1987 who used a model to show that an individual with a connection to a migrant is more likely to migrate than other individuals with no connections. They also found that households with relatives abroad are more likely to send a member of their household to the same destination than other households with no migrants (Massey and Espana, 1987).

An important point raised against these theories is that they did not tackle the opposite role that these networks could play in restricting or downsizing further migration, due to the diffusion of social ties across time and space or other reasons where migrants would cut ties with the home countries (de Haas, 2008).

Closely related to the network theory is the concept of **transnational migrants**. This principle means that while the migrants are settling and integrating in their new societies, they keep close relations with their original communities and they keep circulating between the two countries. There is an increased recognition that due to the advanced technologies, easy and fast ways of travel and ways of communication, migrants can live being transnationals and adopt transnational identities (Levitt, P. and N. Nyberg-Sorensen, 2004). Given this, it is sometimes heard to draw a line between what is considered as origin and sending countries; temporary, permanent and circular and return migration. In fact, transnational is argued to be the new face of migration, where we can observe increasing transnational circulations of persons and increasing of across the borders' activities (Faist and Fauser, 2011)[29]. In fact, there is a strong link between transnational and the development of their home countries, which was identified by Levitt and Nyberg-Sorensen, 2004 as follows: *"These and other trends suggest that migrants and refugees' transnational practices are potential development resources and that the links between transnational activism and international development cooperation should be actively explored. However, realizing that potential is not straightforward."*

In a study conducted on migrants from Turkey in Germany and the relation between their social ties with their original country and how this affected their integration, it was found that the more the ties with the original country, the more productive and the higher the employment and participation rates of those migrants in their receiving societies. This was justified by the study that these ties were creating more opportunities, which led to more integration (Casey T. and C. Dustmann, 2010).

This concept does not separate between sending and receiving communities but consider them as one single field. In order to capture the impacts of migration on development this principal suggests to consider migrants as forming part of two or more dynamically related worlds and that migration is the process by which they form and sustain multi-stranded social relations that link together their two societies. Consequently, when studying the impact of migration, a different set of factors are considered, these relate to the transnational social fields including networks, through which ideas, knowledge and practise are exchanged, organised and transformed. This concept involves not only the migrants but those that are connected to them as well. This broader context of understanding migration takes into consideration all the individuals that are exposed to the migration effects including those that receive economic and social remittances.

[29] This new dimension is also crucial to take into consideration while studying the relation between migration and development and this implies that being integrated in the new society does not necessarily mean weakening links with the original ones (de Haas, 2008).

The same context was identified by Orozco, 2003 where he argued that the relation between migration and development is channelled through the '5 T's', which are remittances from transfers, transport, tourism, telecommunication and trade. He argues that migration creates transnational networks that increase demand in each of these sectors which would increase benefits of the country of origin and its development. These transnational families' practices are manifested in transfers of remittances or other sorts of donations, exchange of visits, tourism, making contact, more usage of telecommunication services and purchase of home countries' goods. Moreover, remittances generate demands in the national markets and sectors that are normally neglected by the private and pubic sectors and they alleviate poverty.

Furthermore, some economists argue that this idea of transnational ties can become 'trans-generational', meaning that these ties would include the different generations of the migrants through consistent remittances, marriages and the involvement of the Diaspora in projects and investment in their home countries. The idea that these ties with the original country could be translated into an inability or unwillingness to integrate is hence incorrect (De Haas, 2008).

3.2. The Institutional Theory

This theory explains how initiating of migration flows creates a sort of private and voluntary institution and organisation whose main objective is to facilitate the migration process for this growing number of potential migrants towards limited available opportunities abroad (Massey, 1993). These institutions are created as a response to the growing barriers from the receiving countries and they achieve profits by selling their services to those seeking to migrate and have no other way to communicate or to collect information. These services could include transportation facilities, labour contacts, legal advice, dwellings, etc. (Jenissen, 2007). Those private entrepreneurs are often looked at as a black market for migration and are often resisted by humanitarian organisation that fights against illegal and undocumented migration.

These institutions represent the social capital that potential migrants could draw upon in the lack of network or official channels for migration. It is clear that these sorts of institutions have an important role in facilitating migration and may lead to institutionalization of migration and hence overshadowing the real causes of migration.

3.3. Cumulative Causation Theory

The main principle behind the cumulative causation theory and its impact on the persistence of migration is that every act of migration alerts the social context in which the decision was made and hence creating more migration. The basic theory was originally developed by Mydral, 1957 when addressing the issues of economic growth and the impact of inequalities and defining the framework for constructing relevant development policies for the poor disadvantaged countries (Myrdal, 1957). He argues that the economic process is cumulative due to circular causation with increasing changes among the relevant variables. Hence a change in one form of an institution will generate successive changes in other institutions (Whitney, 1958).

This concept was hence applied to issues of migration and development. This theory believes that once migration occurs, it creates further differentials due to the loss of labour for migration, this feeds in the already existent pattern of underdevelopment aggravating the conditions that lead to migrate, which in return creates more incentives to migrate. According to Massey, 1993, scholars

have identified six factors by which cumulative causation could affect migration, which are summarised as follows[30]:

1. Distribution of income: this is related to the NELM theory and the relative deprivation, where households with migrants start to exhibit better wealth and quality of life relative to their community. This creates a sort of relative deprivation for the rest of community, who in return starts looking into migration[31];
2. Distribution of land: purchasing lands in rural households is a way for migrants to invest in their home country. When they do this, one of two things happen: either these lands turn into a non-productive phase as they are not properly attended to, which decreases the demand for framers who in return would seek migration to compensate their losses, or;
3. Organization of agriculture: this is the case when households of migrants use the remittances to replace heavy farming by advanced machineries. This leads to a decrease in the demand of labour and encourage farmer to seek migration;
4. The culture of migration: this refers to the culture that the migrant develops towards migration as an accessible and not complex action that opens the migrants to (normally) more advanced economies, larger markets and experience an overall better life not only due to increase in earnings but as an overall. This makes migrants more likely to migrate again;
5. Regional distribution of human capital as part of the selective nature of migration: where the relatively well educated and a minimum amount of skills are motivated to migrate and they stand better chances, this encourages non-migrant to seek education and increase their skill level to be able to migrate in the future (this could in a way compensate the loss of human capital to migration (brain drain)); and
6. The social labelling of migrants reflects the concentration of migrants into certain jobs because nationals are reluctant to work on them (or they just take over from nationals). The idea of having a specialised sector or job in a certain destination encourages non-migrants to seek migration towards this sector.

3.4. Migration Systems Theory

Migration systems theory stems from the increasingly believed idea that migration is a dynamic process that evolved from linkages between sending and receiving countries, building on the principles developed by the World Systems Theory of Boyd, 1989. Fawcett, 1989 broadened this concept to include not only linkages related to people (i.e. migration), but other linkages that are based on individuals in the system such as communications (between migrants and non-migrants), trade flows and economic dependency (Fawcett, 1989).

Massey, 1993 sees this theory as a generalization to other theories on the perpetuation of migration and which he summarised to have the following interesting hypothesis that puts in a framework the characteristics of this migration system such as: countries do not have to be geographically close to be in the same system (though being close facilitates the linkages); the possibility of being in a different systems; the possibility of joining in or dropping of as political and economic conditions change.

[30] Many of these factors are addressed in the empirical evidence, especially on the impact of migration as will be shown in details in the coming 2 chapters.
[31] As will be shown in the following chapters on the empirical evidence, the impact of migration on inequality is not a straightforward one but there is a majority of studies that found it to aggravate inequality at least in the short term.

4. Conclusion

This first part of the chapter has reviewed the most important theories that addressed the causes and the persistence of migration in the literature, starting from the basics and historical literature of early economic theories and where most recent and modern theories found their basis. There is a wide range of theories that addressed the issue of migration in the theoretical literature and hence a classification that included those that are concerned about the topic of this study was necessary.

Modern theories were classified into two main categories: theories explaining the causes of migration and this include macro and micro theories and theories explaining the persistence or the perpetuation of migration. This review does not pretend to be exhaustive as there are different theories, approaches, frameworks that that are related to the causes of migration. Many of these other theories are based on these fundamental basis explained in the basic theories. Just to name a few: "the early decision making theory" which is based on the Lee's, 1966 push and pull theory; "the consumption theory" which is based on value maximization and is attributed to the neoclassical theory.

There is no doubt that these theories have made considerable contribution to the knowledge about the migration issues and its causes and have taken us a step closer to understanding this complex and interrelated phenomenon.

However, there is a sort of consensus among scholars that these theories were only partially successful in explaining this complex phenomenon, which is quite understandable. Moreover, these theories seem to reflect a great deal of heterogeneity in the way the interaction between migration and development is explained. This heterogeneity could be due to one or more of the following factors (Massey, 1993):

(1) There is no consistency or continuity in developing theories related to migration as it seems that developing theories to explain this phenomenon is following the waves of flows of migrants (migration theory become important when there is an increase in the flows of migrants);
(2) There is a lack of accumulation of knowledge in developing theories on migration, the majority of theories seem to develop independently from each other. In fact one could feel that theories are competing against each other rather than trying to complement each other, while trying to achieve the same objective of better understanding the causes of migration. When it comes to migration theories there is '*…a striking level of amnesia of the insights that have emerged from decades of prior research and policy experience with the issue'* (de Haas, 2008);
(3) Migration has not been an exclusive domain of social sciences but has been addressed by almost all social scientists including, but not limited to, developmentist, geographers and economists. This multidisciplinary feature of migration has brought differences in the fundamental orientations and level of analysis. This has consequently increased the level of controversy related to this phenomenon in terms of its nature, causes and impacts;
(4) There is a tendency to separate issues related to the causes (determinants) of migration from those related to the impacts (outcomes) of migration, which have consequently developed separate literatures on migration; or just simply that:
(5) The phenomenon is too complex and diversified to be able to draw a general theory about it. Moreover, it is difficult to separate it from socio-economic and political processes. Additionally, and as explained earlier in the definition of migration, the process involves micro and macro decision and it is difficult to combine both.

Adding to this, there are two important missing components that we have observed across these theories:

1. The very limited emphasis that these theories have made on remittance flows (except for the NELM theory which took into consideration the benefits of the household in the remittance flows (Stark and Bloom, 1985)). In fact we found the most famous neoclassical theories on migration with no mention or reference to the role of remittance flows in the equilibrium mechanism (Taylor and Massey, 1996 , Todaro, 1969 and Harris and Todaro, 1970). This is considered a great drawback of the literature given the importance of remittance flows in the decision to migrate and its important contribution towards development (either at the household level or at the macro level).
2. Even though most of the causes of migration that were addressed across these theories are very much related to the development level of the sending countries (including micro theories that addressed the individuals' benefit maximization and risk minimization), an overall picture on the relation between migration and development was rarely explicitly given. This causal relation where the developmental factors that are affecting the migration decision are themselves likely to be affected by migration have not been properly addressed in the literature (Taylor, 1999).

This is why in the second part of this chapter will be mainly focused on the migration and development relation. We highlight more explicitly the outcomes of these theories on the relation between migration and development. We will then address the 'migration-development transition theory', which in our view wraps these theoretical theories under the umbrella of development. The second part will finally give an overview of theories that have connected migration to aspects of development (such as trade, human capital, etc.

II. Migration and Development: a Causal Relation in a Theoretical Review

Theories that addressed the causes of migration have addressed many of the development aspects of the origin countries that lead to this migration without explicitly emphasizing the complex relation between migration and development.

Until recently, this relation between migration and development was addressed implicitly (or maybe taken as given) in modern migration theories and has not come to the forefront of these theories or on the empirical evidence to which they relate (van Naerssen, et al. 2008). This complex relation has only gained increasing interest recently by scholars and researchers due to the growing number of migrants from the developing countries and the potential benefits or losses that have unveiled on the development of these sending countries, especially when considering the amount of migrants and remittance flows that have been injected in those countries' economies.

This complex relation was the subject of long debates and was been often called a 'nexus' by scholars (e.g. Volger, 2000; de Haas, 2008; King and Skeldon, 2010, etc.). Migration is a cause and a consequence of development, at the same time, development (or rather the insufficient development) is a cause of migration and has consequences on it. As will be discussed in this part, migration is seen as part of a transformation process that constitutes an integral part of the development process of a country. It is a dynamic process that has it own causes and self-sustaining factors, but also has large impacts on this transformation process.

As part of the theoretical review on migration, it was found important for the purpose of our research to look into this debate through theories and uncover the types of links they have identified with development and to highlight with some details the migration transition theory and its relation to development.

1. An Analytical Theoretical Review

Throughout the modem theories of migration one can identify two dominant views with regards to how this relation between migration and development is perceived (e.g. Jones, 1998; de Hass, 2008; van Naerssen, et al. 2008):

1. The first is the optimistic view, and this includes the balanced-growth (or neoclassical) theories and the developmentalist approaches and both are affiliated to the functionalist social theory; and
2. The second is the pessimistic view, which includes theories related to the dependency and migration systems and which are affiliated to the structuralist or the asymmetric development theory.

The views on the relation between migration and development have been swinging between optimism and pessimism depending on the dominant school of thought and the overall political orientation that was dominating the era.

1.1. Migration Boosts Development: An Optimistic Theoretical View

This view sees migration as contributing positively to the development of the sending countries. The first to address this view is Ravenstein, 1885 where the first theory of migration was formulated and which constituted the basis of migration theories. His early writings highlighted for the first time the link between growing development and growing migration (Ravenstein, 1885): a principle that is more and more accepted by recent scholars and studies despite its previous controversy.

Optimism was observed in the 'balanced growth' approach, which is clearly inspired by the neoclassical migration principals and which sees migration as a way to reallocate resources and factors of production in an optimal way that would positively affect development of the sending countries. This is achieved through the following mechanism: migration (transfer of labour) initiates a process of 'factor price equalization' where the flow of labour from sending (where labour is abundant) to receiving areas (where labour is scarce) in a process of re-allocation, will reduce the supply of labour in the sending area and hence increase productivity and wage levels. At the same time transfers of capital and knowledge will flow at the opposite direction (from the areas were capital is abundant towards the one where capital is scarce) which leads to an equilibrium. This provides a boost for the development process, which will eventually cause migration to decrease. Moreover, there is an important role that the migration returnees are expected to play, within this optimistic view, to invest and transfer their skills and knowledge to their home countries.

Based, on this basic belief, the 'developmentalist modernization approach' saw migration as a development tool and a solution to the under-developed or poor societies. One of the major developmentalist approach is the New Economics of Labour Migration (NELM), which contrary to other neoclassical migration theories, put a lot of emphasis on the role of remittances in reaching this development (Taylor, 1999)

This optimistic view was highly popular in the 60s and 70s and where decolonised countries were expected to follow the path of modernization and rapid growth (which was at the origin of their name as 'developing countries'). Labour migration was seen as a major part of this process and developing countries were encouraging their surplus labour to migrate to richer countries, as a way to ease the labour market pressures and to encourage the send of remittances. Consequently, thousands of workers migrated to the countries where capital was abundant. In 1972, migrants from the Middle East region, for instance, have reached 800 thousands towards the Gulf Stated during the oil boom and by 1974, these migrants reached about 40% of the host countries populations (Baldwin-Edwards, 2005). Remittances were considered a major contributor to development and were believed to improve income distribution and the quality of life, (Keely and Tran 1989). During this time, there was too much to expect from migrants and their imperative roles in boosting the development of the sending countries.

1.2. Migration Slows Down Development: A Pessimistic Theoretical View

On the other hand, the **pessimistic view** relies on the structuralist social theory, which takes its roots from the neo-Marxist dependency theory. This view saw migration as a negative phenomenon that will lead to slowing down the process of development and might lead to the underdevelopment of the sending countries (Lipton, 1980; Reichert 1981). This view, also called 'asymmetric development' encompasses different theories related to migration such as: world systems and cumulative causation.

According to this view, migration leads to widening the differential gaps creating more migration in perpetual cycle that was also called the 'vicious circle'. This was seen to decrease productivity and wealth of the sending countries due to the loss of their human capital. Hence, migration would have negative impacts on development, since it: 1) deprives the sending communities from their most needed labour force (brain drain) which leads to their under-development; 2) increases their dependence on the flows coming from those migrants (remittances) and hence be vulnerable to external chocks; and 3) stimulates further migration and hence aggravating the negative consequences in a cumulative causation process. This increasing underdevelopment due to migration will lead to asymmetric growth; (4) increases inequality amongst the community; and (5) remittance flows increase expenditures and lead to inflation.

Moreover, according to this pessimistic view, the somewhat positive impact of migration that could exist only relates to the migrant's family and hence is considered a temporary external positive impact that would soon disappear due to its vulnerability being based on the remittances. In fact, this view sees migration as leading to a "Dutch disease" or a 'migrant syndrome" perspective, in the fact that migration is self-generating and that the remittances sent by migrants lead to increasing inflation and exchange rates (Taylor, 1999)[32].

The pessimistic view dominated the socialists and economists' believes at a time when the optimistic view could not explain many of the negative consequences that resulted from migration. Even the reason behind migration was interpreted negatively such as escaping poverty or misery. The historical structuralist perspective were reflected on the empirical and theoretical work of the period from the late 1960s to early 70s following the increasing flows of migration from developing countries, especially from the Middle east region, raising fears of a

[32] This idea will be addressed in details in chapter 3 on the impact of migration and remittances.

brain drain. Despite that this view recognized the importance of the remittances that those migrants send to their home countries, it considered them as a way to increase disparities and social inequality.

1.3. Migration and Development: An Overall Assessment

As argued by several scholars, these two extreme views on the relation between migration and development show exaggerations on both sides of the relation. From one hand the optimistic view dropped off a lot of the complexity of the relation between migration and development: the mechanism of equilibrium and the concept of reallocation of resources were highly criticized for being unrealistic. From the other hand, the pessimistic view was found failing to integrate the positive externalities of migration and remittances, which violates the idea of the 'vicious circular' promoted by this view on how migration will lead to a continuous under-development of the sending countries (de Haas, 2008).

The following table 1.1. summarizes the two views characterising this relation.

Table 1.1. Migration and Development: Optimism vs. Pessimism

Migration optimists		Migration pessimists
Functionalist	↔	Structuralist
Neo-classical	↔	Neo-Marxist
Modernisation	↔	Disintegration
Net North-South transfer	↔	Net South-North transfer
Brain gain	↔	Brain drain
More equality	↔	More inequality
Remittance investment	↔	Consumption
Development	↔	Dependency
Less migration	↔	More migration

Source: de Haas, 2008.

Recent empirical evidence could not confirm or dismiss any of the two extremes, as a clear cut between those two views was not found (as will be demonstrated in the following chapters). Some early studies (between the 60s and 70s period) found a positive migration-development relation; these were dominated by the neoclassical approach, while others conducted in a later period (late 70s and 80s) were more towards the pessimistic view. This latter period witnessed the availability of micro data for migrating populations. The late 80s witnessed a new era of optimism with the appearance of new evidence on the positive impacts of migration and remittances on the households (eg. Adams, 1991 Keely and Tran, 1989 and Jones 1998). In the past ten years, there has been a tendency to see migration as contributing positively to development. Some case studies from Europe (Spain, Italy, and Greece) and East Asia (Malaysia and South Korea) showed that development has increased with outflows from these countries, which turned them from emigrations to immigration countries in the 1980s.

As an overall, there seem to be a non-satisfaction with either of the two views, and the belief that the reality is somewhere between these two extremes. Taylor, 1999 addresses the reasons behind the difficulty in finding the real interactions between migration and development (to which he also adds remittances) in this literature and related empirical evidence[33], as follows:

[33] These shortcomings were later addressed by several empirical studies, as will be shown in the coming chapters.

1. Most of the migration research has looked at migration decision in isolation of the community it belongs to which prevented research results from uncovering some of the important but indirect causes of migration and its positive externalities (including those related to remittance flows).
2. Even though remittances are mostly spent on consumption goods, this should not be considered as a waste since high levels of consumptions lead to increase demand and production.
3. There is a key point that has not been included in the search for the real orientation of the migration and development, which is the impact of the overall environment (in terms of markets, behaviour and national policies) on brining about the positive development outcomes that might be achieved through migration (Taylor, 1999).

It seems that the causal relation between migration and development have not been fully or explicitly addressed in the migration theories. The causes of migration represent, according to the theoretical review, features of the development level of the individual, the community or the country (this includes income levels, employment opportunities, human capital development and other social and economic aspects). At the same time, migration and remittances have evident impact on these same development features. Despite their contributions to the understanding of migration, most of these theories have not made such a direct link with development.

In search for better understanding of this relation, we identified an approach that strongly relates development to migration in a much broader and contextual way, which is the ***migration transition approach*** (this type of approach belongs to the Transitional theories). These theories have always been linked to spatial-temporal types of approaches, however, it has recently been shaped up to be more linked to the development and socioeconomic contexts, as will be addressed in details in the following section.

It is crucial to note that these types of theories are not intended to replace or substitute for developmentalist or structuralist theories addressed above explaining the causes of migration, we consider this approach as an interesting way to wrap these stand-alone theories under one umbrella that of: the level of development. A summary of this is presented in the same Diagram 1.1. as mentioned earlier.

2. Migration Transition Theories in a Context of Development

It is interesting to see how migration transition theories are increasingly gaining interest from scholars that are looking into the relation between migration and development. The fact that these theories are based on a Spatiotemporal approach have framed them into a gravity /geographical context, which, in our opinion, have not given these theories justice, especially that the most recent ones that have integrated socio-economic aspects of development.

Theories of 'transition' in general involve the notion of time and violate to a large extent the 'bipolar' vision, where a cutting line could be identified between different concepts, such as rural vs. urban, developed vs non-developed, agriculture vs industrial, etc. Development itself is in fact a transition from an initial status to another more advanced. Skeldon, 2012[34] argues that addressing the concept of 'transition' in general, could represent a challenge due to several

[34] As will be seen, Skeldon is of the scholars that addressed the issue of migration transition in an early stage (Skeldon, 1977).

features that were perceived about this principle, among them: (i) the idea of transition implies following a certain path that doesn't take into account the possible differences between countries; (ii) the transition was seen as a natural progress and that the lack of it transforms the country into a 'dependence' status; (iii) transition implies following a pre-determined path towards a certain condition or status (Skeldon, 2012).

Hence, this issue of migration and development transitions is addressed in this section highlighting the theories that addressed this concept in the initial phase and how they have progressed away from the spatiotemporal concept towards more socioeconomic features, which made this theory of transition more relevant to our context of migration.

2.1. Demographic and Migration Transition

Migration transition theory is based on an original work on demographic and migration transitions by Zelinsky in the early 70s **(Zelinsky, 1971)** when he addressed the issue of migration in a demographic context.

In his paper on spatiotemporal theoretical perspectives, Zelinksy links the 'vital transition' of a country (i.e. its rates of births and deaths of the population) to its 'mobility transition. The author argues that there are five phases of vital transition (or demographic development): (1) 'The pre-modern transitional society', where the population are characterised by high fertility but also high mortality rates and hence the natural increases are very low and even there could be decreases. This phase is characterised by very limited circular migration and hardly any international migration; (2) 'The early transitional society': which is characterised by small rise in fertility and a rapid decline of mortality, which leave to a relatively rapid increase of natural rate and hence major growth in population. This phase is linked with massive internal rural to urban migration as well as large outflows of emigrants and some insignificant immigration; (3) 'The late transitional society' are those where the fertility rates decrease substantially with continued decline in mortality rates, which result in a decrease in the natural growth. In this phase international migration decreases and internal migration stagnates but remain at high level, circular movement also increases. (4) 'The advanced society', where both mortality and fertility rates stabilise at low levels and the natural population hardly increases. In this phase internal migration from urban to urban, increased together with mobility from urban to rural. The countries transform from being net labour exporting to net labour importing of unskilled and semiskilled workers from underdeveloped countries; and the final phase (5) 'A future super-advanced society' which are those that continue to have low fertility and mortality rates. These will be still internal migration especially urban to urban and immigration of unskilled labour.

Linking migration to the demographic transition phases is an ongoing subject is an ongoing debate among scholars (economists, geographers and demographers, .etc). Moreover, this theory has clearly separated internal and international mobility transitions (King and Skeldon, 2010). This theory by Zelinsky's approach did not assume a negative linear relation between migration and development, as showed in neoclassical theories, but linked this relation to the developmental phase.

This is considered an important difference in this theory compared to the neoclassical approach and even the developmentalist who saw migration and development with an inverse relationship. In fact, this issue was highly debated especially that recent empirical evidence, using cross-country or time series data,

found that this relation is not linear and surely not a negative one (Martin, 2004); an issue that will be addressed in details below.

However, the theory was later criticized as follows: (1) the assumptions related to pre-modern society that population was immobile or with very little mobility, was found contradicting the facts about the age of industrialization where intense mobility between rural and urban sectors (King and Skeldon, 2012). (2) the theory was found too broad in the sense that the real link between demographic transition and mobility was not emphasized, which gave the impression that this theory was rather descriptive of facts rather than giving the causes of migration; (3) treating all societies the same way assuming that they will go through the same processes: and (4) also some criticisms were made towards the fact that this theory is a historical one that was rooted into modernization theory and was developed to explain the European transition where it cannot be applicable on other developing countries (Skeldon, 1992).

Despite these criticisms, the Zelinsky's theory is still considered the basis of spatiotemporal migration analysis that has recently gained interest from scholars and analysts. This theory was the basis of several theories that addressed the links between development phases and international migration (Skeldon, 1997 and de Haas, 2008 and 2010).

2.2. Development and Migration Transition

Inspired by Zelinsky's principles on mobility transition, **Skeldon, 1997,** geographer specialised on migration, brought in the missing link between the demographic transition and the mobility transition through the level of economic development. In other words, he established the link between phases of development and migration.

In order to achieve this, he identified 5 'development tiers' or groups of countries according to their levels of economic development, history and geography in an attempt to make a global regionalization of migration transition theories. These are as follows: (1) 'The old core' countries are identified as the transatlantic countries that received massive migration in the nineteenth and twentieth centuries and became destination countries after World War II. These democratic industrialised countries, such as West Europe and the USA, have developed in 1990s restrictive immigration policies to respond to the increasing inflows of migrants after being traditionally divided between sending (South Europe such as Greece, Italy) and receiving countries (France, UK, etc.); (2) 'the new core' countries are countries that have been newly industrialised such as the Southeast and West Asia, Japan and the tiger economies. These countries are characterised by their high population density that limits immigration for settlement; (3) 'the expanding core' countries such as China, Southern Africa, Eastern Europe, are both immigration and emigration countries and have level of internal migration. They are likely to become rapidly developed countries; (4) the 'labour frontier' are those countries that are major emigrants (e.g. Morocco, Egypt, Turkey, Mexico, the Philippines) and high levels of internal migration; and (5) the 'resource niche' (e.g. many sub-Saharan countries, parts of central Asia) which are characterised by a low development and a variable and rather weak migration flows especially to the Western regions (Skeldon, 1997; Martin, P, 1999 and de Hass 2005).

Skeldon highlights the strong conceptual links between the spatio-temporal migration model elaborated by Zelinsky and those of the transitional, modernized, and world system models. The value added of the transition approach of Skeldon

is threefold: (1) he integrated the role of 'state formation' within the contexts of social, economics and political developments. It is argued that the 'behaviour' of migration is very much linked to the process of formation of a nation as colonised or decolonised since this plays a major role in building certain cultures in those nations. An evident example can be seen in the high migration flows from the Francophone countries towards France or other French speaking countries while the Anglophone migrate towards English speaking countries; (2) within his theory he integrated the long-term structural changes in migration which are linked to the economic and social processes of development (this is in contrast to a short-term change for migration, called the 'migration hump' (Martin, 2004 and Martin and Taylor, 1996) that will be addressed in more details below): and (3) he gave evidence on the mechanism by which development is affecting migration flows. He emphasized the fact that migration does not occur in poor or underdeveloped countries (where development is low and high population growth), what he calls 'resource niche' countries but rather in those countries that have a certain amount of development level, which he called 'labour frontier'.

If we examine the example of the US and the EU that are considered the "old core countries" (according to Skeldon), they are also characterised by fertility and mortality rates that are stabilised at lower levels. These countries are at the top level of development: "the advanced society" (according to Zelinksy) and they attract high rates of migrants. Whereas counties of the upper lower to lower-middle income countries (such as Mexico, Morocco, Egypt) who have falling birth rates but still growing population which would make them the 'early transition society' or 'the late transitional society' (according to Zelinsky), these have moderate but increasing economic growth and a certain level of modernization and hence experience large outflows of migration, these are 'labour frontier' countries (according to Skeldon).

Despite their shortcomings the two theories by Zelinsky and Skeldon represent the core of spatiotemporal migration transition. They have succeeded in tracing a pathway for migration patterns based on the development phase of the region. From one hand Zelinsky gave more emphasis on the temporal dimension of the mobility transition and from the other hand Skeldon focused on the spatial dimension of the actual migration patterns.

Merging the different phases of the two theories together have resulted in an interesting outcome. De Haas, 2010 constructed a mapping of the two theories to which he added the context related to the World Systems theory (Wallerstein, 1974). As discussed earlier, this theory brings the regional dimension into understanding the causes of migration, which is based on flows and exchanges between the different regions or countries creating a kind of interdependence between those countries and grouping them into: core, semi-periphery, periphery and external areas depending on how far they are integrated in the global system.

The result of this mapping is presented in table 1.2 below where one could observe the connections between the 'advanced society' or 'core areas' and those that are in their transition (early or late) and more specifically the 'Labour frontier' countries. A major conceptual difference between the transition theories of Zelinsky and Skeldon and the world systems theory of Wallerstein is the way these links between countries are observed and their impact in the long term. While the transition theories see this link as part of regionalism and that these countries in transition will eventually complete their development phase and evolve into high development levels, the migration systems sees these 'periphery' countries as rather 'dependent' on the 'core' country and that their connections

and schemes of flows (capital and labour) will lead to increasing the gaps of development in a way that these countries will not evolve.

Table 1.2. Links between Temporal and Spatial Migration Theories

The Temporal Dimension ***(Demographic and vital transition)***			**The Spatial Dimension** ***(regionalization)***		**Examples of of countries**
Stages of demographic transition	**Vital Transition (Zelinksy, 71)**	**Mobility transition (Zelinksy, 71)**	**World Systems theory (Wallerstein, 74)**	**Development tiers (Skeldon, 97)**	
High stationary (high fertility and mortality)	Pre-modern traditional society	Mobility limited to circular migration	External Areas	Resource niche: weak migration	Sub-Saharan Africa and parts of central Asia and Latin America
Early Expanding (rapid declining in mortality with high fertility leading major pop growth)	Early Transitional Society	Increasing forms of mobility (circular, colonisation, international internal)	Periphery	Labour frontier: dominated by emigration	Morocco, Egypt, and Mexico
Late expanding (major decline in fertility and mortality leading to signification and decelerating natural increase)	Late transitional society	Immigration decrease, internal migration stabilises and high level, rural exodus decreases	Semi-periphery	Expanding core: existence of immigration and emigration and internal migration	Eastern China, South Africa, eastern Europe and Turkey
Low Stationary (fertility and mortality rates are stabilised at low levels leading to stagnate population increases)	Advanced society	Residential mobility, urban to urban and circular migration	Core areas	Old and new core countries with high level if emigration and internal decentralization	Western Europe, USA, Japan
Declining, continuing decrease of fertility and mortality, leading to shrinking population	A future's super advanced society	Internal migration of urban to urban and immigration		Old/declining core	

Source: De Haas, 2010

Despite their contribution in linking migration patterns to the development phases and revealing that the relation between development and migration is much more complex than a linear negative correlation (as believed by the neoclassical school), they have not completely sorted out the problem of understanding the causes of migration as they have not explicitly addressed the causal mechanisms behind the different characteristics of development that lead to migration. One cannot say that a person or a group of persons decide to migrate because his or her country is an intermediate or periphery level of development. It is however the feature of this level of development (from level of incomes, employment opportunities, education and health services, and many other individual aspects) that motivate the decision of migration. Moreover, the idea that all countries should be following the same path for the development and hence migration could not be necessarily true as conditions could be substantially different (for example, the conditions and challenges surrounding the actual developing countries are completely different from those of Europe during their development (Skeldon, 1992).

Finally, the transition approach has, as done by the structuralist and fundamentalist theories, limited the effect of ***structure*** and ***agency***[35]***.*** Migrants were assumed to be able to react to a number of variables that are changing exogenously, while the role of agency was not taken into account. In fact, each migrant could react differently to the same group of variables and here the issue of the individuality of the migrant was not considered.

We would like to remind here of our main statement about these transition theories that they are not meant to replace existent migration theories but they rather provide a wrap that could package these theories under the umbrella of development taking us a step closer to understanding the relation between migration and development.

After all, as Skeldon suggest that if the only contribution of the transition theories is to convince scholars and policy makers that, not only migration is not negative for development but that it is even a part of this development itself, and hence it cannot be stopped, then these theories have achieved a lot (Skeldon, 2008a). Moreover, he argues that if migration transition theories are linked to other economic, social and political processes, it will overcome the problem of the unique pathways of the transitions (Skeldon, 2012).

This brings us to the third phase of migration transition theories, where migration follows the development transition however with economic and social context as detailed below.

2.3. Migration Transition: a Socioeconomic Approach

To overcome the fundamental shortcomings of the transitional model, de Haas 2010, proposes some amendments to this approach that would reflect a more realistic view of the relation between migration and development. As previously explained the transition theories were missing some important economic and social aspects that could be linked to: (i) the role of agency, where the individuality of the persons was not considered and the fact that each person would act differently to the existent factors and (ii) the role of structure, where external factors could affect the capacity of the person to act according to his/her choice, such as existent environment and policies.

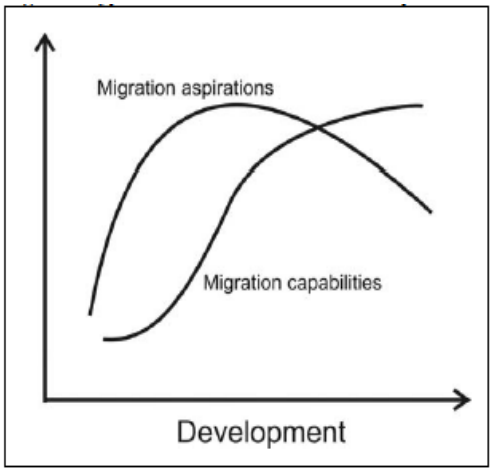
This was the starting point of de Haas (2008 and 2010) in his modified theory of migration transition: to include the effect of structure and agency, while going beyond the notions of distances and differentials of wealth (as per the functionalist). The new approach takes into account the effect of the independent choices of the individuals to migrate and the constraints that might restrict these choices (such as physical, political, barriers, limited knowledge or resources, etc). These are represented in the migration model as **(1) *capabilities*** and **(2) *aspirations*** to migrate.

[35] "Structure and agency" are two theories in social sciences that relate to human behaviour. *Agency* refers to the individual's capacity to act independently and to make free choices, while *Structure* refers to the patterned arrangements or factors that could influence or limit the choices such as social class, religion, gender, ethnicity, customs etc. (Barker, C. 2005. Cultural Studies: Theory and Practice. London: Sage. p448). There are ongoing debates among social schools on which factor dominates the other. These terms are also used in the economic context.

Migration capabilities are defined as the assets (social, human, material) that individuals have or able to mobilise to be able to migrate. The greater the costs or barriers (physical, geographic, social, etc.) to migration the more assets are needed to overcome them. In defining capabilities, de Haas refers to the Sen's, 2006 definition of development as the process of increasing freedoms of the individuals that are only operational within human capabilities. This reflects the assumption that development generally coincides with increasing capabilities.

Migration aspirations are defined as the person's choice to migrate. Aspirations in this definition was not reflected in previous migration theory, assuming that the decision to migrate was only based on exogenous factors such as income differentials and hence implicitly considering that preferences are constant or non-existent across individuals. This has affected the role of 'agency' in these models. Development affects the aspirations to migrate through education, better access to information with the advance in technology, communications with networks which increase awareness and hence increase aspirations. When aspirations of the individuals are greater than the opportunities offered in the home country, people tend to migrate[36].

Fig 1.4: Hypothesised effect of development on migration capabilities and aspirations



The combined effect of development in increasing the capabilities and the aspirations of the individuals explains how more development leads to more migration. The relation between aspiration and capabilities and development are presented in the figure (1.4). Capabilities are likely to keep increasing with development (however with a declining trend due to diffusion), while aspirations are likely to increase with a steep trend as development increases, until the gap between the opportunities outside and that of the home countries declines and that the aspirations of the people can be satisfied at home.
Source: De Haas, 2010

The idea here is to broaden the concept of income differential as a driver of migration to be 'opportunity' differentials. De Haas, 2010 argues that it would be misleading to consider that the population growth or the economic growth have direct effects on migration decision, it is rather the reflected results of these macro variables on the opportunities available to the individual that are actually the drivers to migration. This has the advantage of moving away from dividing forms of migration to economic (voluntary) or political (forced) and to reflect the social aspect.

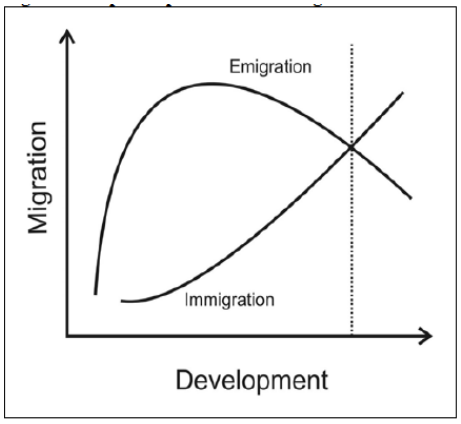
If migration can be looked upon as a response to a ***spatial opportunity*** and not only on economic differentials, this could lead to a more inclusive migration theory that takes into account most forms of migration.

[36] Here de Haas differentiates between the role of development in increasing the aspirations through education and skills and its role in increasing the inter-spatial perceptions and the relative deprivation.

At the aggregate level, and following De Haas analysis, the same idea could be applied: higher levels of overall human development would coincide with higher levels of migration. Following the relation between migration capabilities and aspiration with the development phases, we could expect that the relation between migration and development will be far from linear.

In fact, within this context, the relation between migration and development would have an inverted U shape curve (or a J curve). During the early development phases and after achieving a certain minimum level of human development (social and capital), it would be expected that the capabilities to migrate would increase exponentially (as previously explained). The creation of social networks would strengthen this trend since it will decrease the costs and risks of migration. This will help increasing aspiration to migrate. This reflects an increasing trend of migration-development relation in the early stages of development. Once development in the sending country reaches a certain level that closes the opportunity gaps, then the effect of development on migration capabilities and aspirations will diminish. This will lead to decreasing migration. If development levels continue to grow, the country which used to be an immigration country will be attractive to other individuals whose level of development is still causing opportunity gaps. This could be shown in Fig 1.5.

Fig 1.5. The relation between development and flows of migration



One interesting point regarding the migration pattern is that, despite the fact that the highly developed countries are clearly net emigration countries; this hides a considerable amount of immigration out of these countries. High levels of development require a high level of mobility of production for better allocations of resources and hence a concealed movement of labour within these countries. *Source: de Haas, 2010*

This theory also highlights the effect of migration of the distance travelled for migration. Small progresses in the human development of the poor societies can only lead to a short distances travel of migration either to the urban areas or to neighbouring countries. This is because small progress of development means small capabilities (in terms of human capital and in terms of costs) and hence only short distances are afforded by migrants. On another front, human development at the medium levels lead to higher capabilities and hence migration to longer distance destinations could be more feasible.

Even though the correlation between the development process and migration patterns where also addressed in the transition theories of Zelinsky and Skeldon, the amendments introduced by de Haas have marked fundamental differences The amended theory of transition suggested the following hypothesis on the relation between modern-era development and migration process in the following points:

1. Higher human development leads in general to higher migration levels and mobility due to the increase in the capabilities and aspirations of the individuals with growing development.
2. The process of increasing human development and what it entails from development in education, technology and economic growth leads to migration

transitions which starts off exponentially, then the acceleration decreases due to the diffusion and decreasing the opportunity differentials with destination countries which occurs with increasing levels of development.
3. This means that the relation between migration and development is an inverted U or J curve.
4. The mobility of more deprived countries with low human development is dominated by internal and circular migration.
5. There is no direct effect of the demographic factors on migration, but only the outcomes or the results of the demographic pressure that encourage migration
6. Reaching higher levels of development does not necessarily mean that the migration will cease due to the high mobility of advances countries

The amended theory of de Haas has added some innovative principles that were found interesting and worth investigating. The value added of this amended theory of transition could be summarised as follows:

1. The missing 'agency' and 'structure' components of the migration decision, which adds an individual micro level to the aggregate analysis has been integrated through the notion of migration aspirations and capabilities as explained;
2. The amended theory distinguished between the macro-level effects of development on migration, which are translated into spatiotemporal opportunity gaps and the effect of development on the individuals' capabilities and aspirations to migrate at the micro level. In this theory, migration would occur if the macro spatial differentiated opportunities happen at a development phase where individuals have both high capabilities and aspirations. This case is most common in medium development countries;
3. Within this new concept, ***reverse migration transition*** could also be explained. If a country's level of development decreases (not only in absolute terms but also in relativity to other countries) an emigration country could become an immigration one (this happened in some Latin American countries on the second half of the past century such as Argentina).
4. The theory did not put an end or a certain period of time to the progress in development phases as relative development can be a continuous process for medium level countries for decades.

We can conclude here, that the transition migration theories as presented in this section, despite being under the spatiotemporal title which made them gain their reputation amongst economists and social sciences migration experts of being too abstract or too broad, have added explicitly social and economic components which made them make a step closer to understanding the migration-development nexus. Satisfying the condition set by Skeldon, 2012 that migration transition theories are valid if they could include socio-economic components.

In fact, we conclude with a quote from de Haas, 2008: '*…migration is not an independent variable explaining change, but is an endogenous variable, an integral part of the change itself in the same degree as it may enable further change*' (de Haas, 2008).

The theories addressed so far on the relation between migration and development have focused mostly on the causes of migration in relation to macro and micro features of development. To complete the picture of the migration-development relation, we found important to tackle, in a summarised way, some of the theories that addressed the impacts of migration at the macroeconomic and social levels.

3. Migration and Development Channels: Some Basic Theories

The theoretical analysis of the relation between migration and development has showed that migration is not only caused by developmental features but is itself part of the development process. There was also an overall recent optimism that migration could in fact have some positive effects on development. Moreover, recent theories (such as NELM) have also emphasized the important role of remittances, which in return have brought even closer a rather positive impact. Even though these theories are meant to address the causes of migration, but in a way, they have also addressed implicitly the impact on development. For instance, as we saw, the neoclassical view sees that income differentials is the main cause of migration, this implicitly means that migration will eventually lead to filling the gap of these differentials: a belief of optimism of the neoclassical school.

However, what these theories have not addressed is the mechanism by which these impacts lead to development. In other words and following the example of the neoclassical given above, how does migration lead to close the income differential gaps?

This is the concern of this part of the theoretical review chapter. More precisely, this section of the chapter is intended to address some of the theories that have looked into the relation between migration and some economic and social indicators that we have called "channels" which links migration to development in an attempt to better understand this complicated relationship[37]. These channels could include both economic factors (such as growth, saving, investment, trade, etc.) or social factors (such as human capital development, alleviating poverty, etc.). Remittances are considered an important and integral part of migration that must be considered while addressing the causes of the impacts of migration due its direct effects on the household incomes and also the national incomes and balance of payment[38].

Existent theories addressing the impact of migration on economic and social indicators are rather scarce and recent. Until recently, theories and empirical evidence have not fully realised the complexity of the migration impact on development and its multiple interrelations with other variables, including indirect ones. Contrasting the analysis of the causes of migration, it is clear, that analysing the impacts of migration is more elaborately considered through empirical evidence rather than through theories. In fact, we will see in the following chapters on the empirical evidence that studies investigating the impacts of migration and remittances are relatively large compared to those investigating the causes of migration.

In fact, as spelled out in several parts of this study, looking at the impact of migration on development cannot be made without involving the remittance flows that these migrants send home, given their substantial impact on the home countries. There is vast theoretical and empirical literature about these flows, in terms of its causes and its implications. A snapshot about these flows and their causes is given in Annex 1.2. Whereas the following chapter 2 will give a literature review on how these flows are affecting development through a number of channels.

[37] This idea of the direct and indirect impact of migration on development and the channels will be addressed in details in the following chapters 2 and 3 on the empirical evidence.
[38] A detailed discussion about remittances is given in chapter 2

Given this context, in this last part of the theoretical review chapter, we give a rather brief overview about some of the theories that looked into the impact of migration on economic and social indicators. In order to be more focused we will only address those theories that are related to indicators that will be used in our empirical evidence estimation in the following chapters. This means that we will address here the theories related to the impact of migration on growth and human capital. However we also address here the impact of migration on trade. Even though this will not be addressed in our empirical estimations, we found it important to give an overview of this important relation while focusing on the 'complementary vs substitutes' debate.

Given this we will address from the theoretical literature, those theories that have addressed the following relations:

3.1. Migration and Trade theories: Complements vs Substitutes
3.2. Migration and Growth: Theoretical Review
3.3. Migration and Human Capital: Brain Drain or Brain Gain Theories

3.1. Migration and Trade Theories: Complements vs Substitutes

The relation between migration and trade is not a straightforward one and includes a great deal of complexity and causality: from one hand there is a potential impact on trade between two countries with an existing migration flows and from the other hand, it is believed that trade between two countries can in a way affect migration flows between them. In fact, this latter was the subject of long debates in between theories and evidence on whether these flows are substitutes or complements. As this is a quite a broad subject we will focus here on two main topics related to this relation: (1) the idea of complements vs substitutes between migration and trade; and (2) the impact of migration on trade (migration hump).

3.1.1. Complements or Substitutes?

Going back in history of theories of trade, **the Ricardian Trade models** (attributed to D. Ricardo at the beginning of the nineteenth century) sets the basic rules for the principles of comparative advantages. This theory represents one of the fundamental principles of trade (even for our recent times), which basically says that countries tend to export goods in which they have comparative advantage in producing (lower cost relative to other goods). This comparative advantage is due to differences in technology or natural resources. For this reason, if there is free mobility of factors, there will be movement towards the sectors that have higher productivity (i.e. with a comparative advantage). In the case of labour mobility, and according to this theory, labour will move towards the sector that has labour-intensive production if this sector has high productivity and hence high wages. On the international mobility level, this means increase in migration. The more there are differences in technology levels, the more there will be migration and trade (Hofmann and Konig, 2006 and Bruder, 2004).

Based on the Ricardian trade models, one of the most famous international trade theories emerged towards the early twentieth century is the **Hecksher-Ohlin (HO) trade Model.** The basic assumption in this theory is that trade is based on differences in factor endowments; consequently, countries export the goods that are produced using the abundant factor and in which it would have a comparative advantage. In this model, there is a basic assumption of perfect competition of international trade that will lead to equalization of relative and absolute prices of goods between trading partners. This will reduce prices of factors of production and hence reduce the incentives for factors' movements, as this theory sees that

mobility of factors could reduce the comparative advantage of the countries and hence trade potentials. This was translated later by the fact that trade and factors are substitutes (Bruder, 2004 and Hofmann and Konig, 2006). However most empirical evidence that tested this theory didn't find evidence to prove this theory (this is addressed in details in empirical evidence in Chapter 3).

The relation between trade and factor mobility was addressed in the work of Mundell, 1957, where he tackled in a rather general way the commodity movement (i.e. trade) and the factor movements. His analysis was based on the Classical school of thoughts and he argued that in the case of no barriers to trade, the H-O theory of trade implies that trade and factor mobility are substitutes (Mundell, 1957). More elaborately, this theory saw that an increase in trade barriers would reduce trade and raise migration, while an increase in migration barriers would reduce migration and raise trade (Schiff, 2006).

Venables, 1999, found contradicting results in his model where he assumed a specific factor's model where two sectors of production are assumed: one sector is used to produce the exporting goods and the other factor has intersectoral movements. In these models, the substitutional or the complementarity relation depends very much on which factor is used for production and which can be the mobile one. If the sector producing the intersectoral is mobile, then migration and trade are complementary.

In fact, the majority of the empirical evidence that addressed the trade-migration relation found that they are rather complementary (e.g. Venables, 1999, Poot and Strutt, 2010). Moreover, Krugman (1979 and 1995) showed that in internal increasing returns to scale model (also called the "new Trade Theory'), factors and trade are also complements. He based his theory on a two sector model where labour is the only factor of production and where one sector has constant returns to scale while the other has increasing returns and in the concept of monopolistic competition, the larger economy will be exporting from this sector with monopolistic competition. At the same time, factor prices will be higher in this country and hence will attract factors mobility towards this country. This will increase the differences in endowments between the two countries and hence increase trade. Within this context, factor movements and trade are complements.

In general, models of **Increasing Returns to Scale (IRS)** see trade and factor mobility as complements. According to these models, countries will specialize in the industries that achieve external increasing returns to scale. The returns of the factor intensively used will increase returns in this case and hence movement of factors will lead to increase in the output of countries and hence increase trade. Markusen, 1983 model presented a confirmation of the complementarity between trade and factor movements in five different cases: (i) identical technology; (ii) constant returns to scale; (iii) perfect competition; (iv) absence of domestic distortions; and (v) identical homothetic preferences (ration of goods demanded depends only on the ration of their prices). However Schiff, 2006 argues that this complementarity within these conditions does not hold if the trade tariffs increase to a certain level. (i.e. including Non-tariffs barriers and protection) (Schiff, 2006).

These are not the only theories that addressed the migration-trade relation and there are a lot of debates on the nature of this relation. The World Systems theory of migration that was previous addressed and which is based on the former colonies and their relation to sending countries show that there is a large tendency of trade relations between those countries and so does migration flows. The complementarity between migration and trade is also implicitly argued in

other migration theory such as 'network theory' where migration is encouraged by the already existent network in the receiving countries and also migrations tend to engage in trade relation with their home countries from one hand and they tend to import their home products from the other. The same idea applies in the institutional theory.

Moreover, empirical evidence investigating this relation using different combinations of migration and trade indicators and injecting them in different econometric models, showed tendency to accept the rather complimentary nature of these two flows[39].

However, this relation could be more complicated when the home countries' markets are distorted and the trade agreements are not fully implemented and hence the mechanism could fail. Such is the case of some MENA countries, which was addressed in a small number of empirical studies, and where no correlations was found between trade flows and migration (either south to north or south to south) (Nassar and Ghoneim, 2002). This ambiguity was argued to be the result of the unsatisfactory performance of trade reforms and trade agreements in the region. The trade agreements that were put in place to enhance trade liberalization among either countries of the MENA (such as the Great Arab Free Trade agreement (GAFTA) pr the Arab Maghreb Union (AMU)) or countries outside the region (such as the EU-Med partnerships) were clearly either not fully implemented or the terms of agreement were not bring the potentials of these relations. In another study addressing trade and migration in the same region, de Silva and Silva-Fauregui, 2004 found that migration from the MENA countries have played an important role in solving these countries unemployment and public services pressures, however, the authors argue that, either migration towards the Gulf (mainly from Mashrek countries) or towards Europe (mainly from the Maghreb countries) cannot represent a long term solution to the region's labour markets problems. On the other hand, this region's trade performance is far from reaching its potentials (many countries in this region such as Egypt, Algeria and Morocco are 'under-achievers') and there is a lot of room in improving on the trade agreements with the region's trading partners in order to benefit the most from these exchanges (de Silva and Silva-Fauregui, 2004).

There are serious policy implications on which orientation is taken and how countries (either sending or receiving) are shaping their policies to control migration flows. In fact, policies that were adopted to control migration have reflected the belief of the policy makers in the 'substitution effect' between migration and trade. In Europe, trade liberalization and bilateral trade agreements were signed between Europe and the South Mediterranean countries and in the US, trade liberalization agreements (i.e. NAFTA) was signed between Mexico and the US from the belief that this trade facilitation will cease migration from these countries. Despite the overall success of these policies to boost the development of these countries and support them in integrating in the global economies, they have been quite unsuccessful in ceasing or controlling migration. Several reasons could be put to clarify such as failure (see Box 1.1 for more details).

[39] For an elaborate review of some of these studies, refer to Hoffman and Konig, 2006.

Box 1.1. Development instead of Migration: is it the solution?

Migration was seen by most of the receiving countries (and their governments) as a phenomenon that affected negatively their economies and which should be restricted (de Haas, 2006). However restrictive policies on migration have not been successful, on the contrary, it had the counter effect of increasing illegal migration, which had serious real negative implications on either the individuals or the receiving countries. Illegal migrants are often put in danger during their travel and when they reach their destinations, they go through difficult times to settle, find a place to stay and a descent job. For the receiving countries it meant the settlements of individuals that are mostly unskilled with low education that would probably engage in informal or low-paid jobs, benefiting form the public subsidies but without paying taxes (Katseli, Straubhaar and Zimmermann, 1999).

Therefore, these countries adopted a strategy that is based on boosting development of these potential sending countries as a way to cease unwanted migration. This idea found its roots in the neoclassical theory, which was highly accepted at this time, based on the principles that migration is caused by development differentials and that closing this gap would cease migration. This explains the flows of funds and aids towards the developing countries in the 70s and 80s. These flows were believed to solve problems of under-development, by creating jobs, alleviate poverty and boost the levels of education and hence boost development. This was done in two ways: 1. Development assistance or aid and 2. Trade liberalization

Development assistance or Aid towards the potentially migration sending countries were introduced as a mean to curb migration. This strategy was based on studies that suggested that migration and aid flows are substitutes. However, there was no empirical proof on the substitutability between aid and migration flows. This lies mainly in the difference between policies that are designed to target development and those that could target migration. Aid transfers are meant to support the country's development and alleviating its poverty and hence funds should be normally directed towards poorest areas/countries. However, according to our analysis on the causes of migration, these areas are not the areas/countries that have the most potential migrants. For example, EU signed the Association Agreement with Morocco establishing a free trade area with the context of supporting the country's development, fight against poverty, unemployment and migration. Consequently most of the fund was targeting the northern areas of the country where most migration is coming from, neglecting the south areas that are most needing these aid funds. Moreover, aid does not seem to be sustainable enough to impact the migration decisions in the origin countries[40]. Consequently, aid flows towards these countries did not achieve either its direct objective to alleviate poverty or its indirect role to boost development and hence cease migration (de Haas 2006).

The second strategy that was adopted was ***boosting trade relation and trade liberalization***. Again it was believed that migration and trade could act as substitutes, based on trade theories that found only little supporting evidence in practice. Consequently, trade treaties and bilateral trade agreement were signed ensuring trade liberalization and free flows of goods. Theoretically, when the developed country (potential migration host) open its markets to goods exported

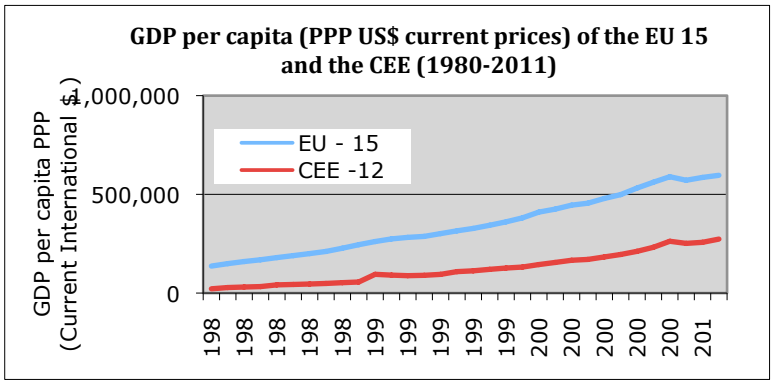
[40] In several studies, it was proved that aid has to be continued, for a long duration and quite high in order to have an impact on migration. In a study on Central America, it was shown that the US Aid has to be as high as $100 per person for a duration of 20 to 30 years to eliminate at least the possible economic incentives of emigration (Weintraub and Diaz-Briquets, 1994).

from the developing country (potential source of migration), this will increase production, employment, wages and better opportunities in the source country. Moreover as labour could be exported directly (through migration) or indirectly (through labour intensive industries), one could reduce the direct exporting of the labour through increase the indirect one (Schiff, 2006). The two most famous 'developmental programs' that were intended to cease migration were those adopted by the NAFTA (between USA and Mexico) and the Partnership agreements (between the EU and the South Mediterranean countries).

However, empirical evidence and actual observations have shown that these policies, despite their contributions in integrating the developing countries in world market had failed to cease migration. In fact, migration flows have grown in the past few decades according to recent figure from the UN. There are several reasons that could have led to his failures:
First, the idea that development would lead to decreasing migration was based on the neoclassical theories which had been highly criticized for being too optimistic and not reflecting the complexity of the relation between migration and development. This was addressed in details earlier in this chapter. In fact, migration – development theories argue that development leads to more migration as part of the development process (see details at the beginning of the chapter). Second, the way the policies and strategies were executed had contributed enormously to their failure. In case of aid transfers and as explained they were not targeting the right groups or the right regions and their consistency and duration was not good enough to ensure any positive impacts. EU for instance calls for open market access for developing countries exports while maintaining protective policies restricting access of these countries to their markets (this includes the agriculture sector which holds a lot of debates). Without going into much details into policies and politics, we would refer to a report by Oxfam that estimated the cost that the developing countries bear from trade restrictions imposed by the developed countries on their trade to be $100 billion a year (which is twice as much as these countries receive from aid) (Castles, 2004).

Overall, regardless of the development achieved (or not) from these policies, the fundamental idea of this approach seems to fail. If we take the West and Eastern Europe example (an example that will be addressed again in details in the following chapter, and despite the free mobility granted to the Central and East European countries after joining the EU in 2004, there seem to be no convergence yet for these countries with those of West Europe (Fig below).

Fig Box GDP per capita (PPP US$ current prices) of the EU-15 and the CEE (1980-2011)



Source: World Bank data, 2013

3.1.2. The Migration Hump

This links to our analysis related to the migration transition theories and how more development can increase migration, because of the increasing aspirations and capabilities of the population. Martin, 1993 and Martin and Taylor, 1996 address this increase in migration flows following trade liberalization as a '***migration hump***' whereby migration increases at the initial level of development. They argue that trade and migration are hence complements in the short run (increase migration with increase trade, the hump), but they become substitutes in the long run (increase in trade will lead to decreasing migration), where this hump would normally last for a short period of time (Martin and Taylor, 1996). This sudden increase in migration outflows is argued by the authors to be the result of economic reforms pressure that, for a short time, could lead to some distortion of markets and unemployment that could lead to migration outflows. On a more positive note, this migration hump could be due to the returns of migrants to their original home countries due to increasing potentials of development reflected in trade and capital flows, this is what Faini and Venturini (1994 and 2008) suggested while analysing migration patterns from East to Western Europe (Faini and Venturini, 1994 and 2008).

However in some cases migration flows could continue to increase (due to reforms taking longer than expected) and in this case it would be called 'migration plateau'. (see Box 1.2 for more details on migration hump). This could be the case mentioned by Krugman, 1995 where the developing or poor countries would remain developing or poor for a long time relative to the increasing and fast growth of the developed countries. In any case, migration hump is seen as temporary and short surge in the migration flows in response to a change in policies towards more liberalization, this should not be confused with the migration-development transition approach, which is fundamentally different in all aspect. The latter is a structural long-term change in the pattern of migration during the development phase of this country this involves social and economic structural changes (de Haas, 2006 and 2010).

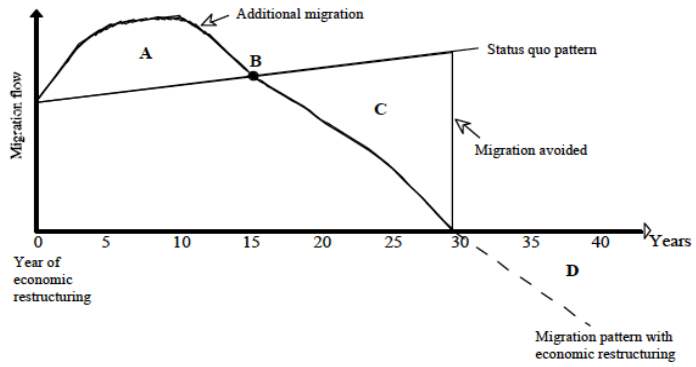
Moreover, hand in hand with trade flows are capital flows (another factor of production) that could have the same effect of trade in boosting the development in the migration sending countries. This is achieved through boosting the market with foreign currencies, better technologies and with the existing of enabling environment can generate spillovers effects in the developing countries would could create jobs and increase the opportunities in the home countries. However, many complication related to these flows does not make it beneficiary on this front.

Box 1.2: The Migration Hump

The increase in migration flows following the boost in trade, aid and capital flows is seen as temporary reaction due to the disruptions that accompany development. This feature is called "the migration hump". The migration hump theory was addressed by several scholars such as Martin, 1993 and also Martin and Taylor, 1996 and more recently Hatton and Williamson, 2002, de Haas, 2006 and 2010. According to this theory, as trade is boosted between the migration sending and the migration receiving country for the main purpose of reducing migration, an inverse reaction immediately takes place. Boosting free trade and economic reforms in the sending countries leading to privatization, technology transfers, etc. which could lead to distortions in the market that lead to more, rather than less, migration in the short run. During this migration hump, migration and trade were seen as complements in the short run. However, as this period of distortions phase out, migration starts to decrease when trade flows

increase, hence migration and trade become substitutes in the long run. This theory followed the analysis of the case study of the NAFTA agreement between Mexico and the United states that was basically put in place to reduce Mexican migration to the US and where it was accepted that trade agreement could increase migration in the short run, but it will eventually lead to migration decreasing in the long run. The paradox that characterised this theory is that the same policies that are put in place to reduce migration in the long terms lead to increase it in the short run.

The Figure below shows the migration hump, where the straight line of migration flows through time indicates the migration in a Status quo pattern (i.e. without any trade reforms of integration) and which indicates an increasing trend of migration flows.
The curve A represents the migration flows in case of economic reforms and integration, where migration flows would temporarily increase as trade flows also increase (complements). As economic reforms and integration continue over time the economy starts to pick up due to increasing production which lead to more job creations and opportunities, better wages and better quality of life, which leads to decreasing the migration flows until reaching point 'B' . Further to point 'B' trade and migration become substitutes, denoting area C in the figure , with decreasing flows, as development increases until reaching the area D. This area represents the migration transformation of a country from net sending countries to a net receiving country. If trade and migration are substitutes in both short and long term, then migration hump becomes a 'migration through ', where migration is immediately reduced with the increase in trade due to trade liberalization. At the other extreme in case migration and trade and complements, in both the short and long terms then it is called a 'migration plateau' where any trade liberalization would increase migration. Taylor and martin, 2006 call for more empirical evidence to analyse which of those three options is correct.



Source: Martin, 2004

An answer would depend on the conditions and the types of trade policies or reform policies adopted and how they are implemented. For instance, Martin, 2004, puts in question five assumptions that, if satisfied could lead to this substitutability. These assumptions are: 1) technological differences and hence even labour intensive goods (such as agriculture products) can lose its comparative advantage; 2) factor productivity difference due to the better infrastructure and facilities that make the same worker in the sending country produce better and more in the receiving country; 3), economies of scale in receiving countries attract workers from sending countries; 4), adjustments to the wages and prices take a long time and it is not done without a cost; and 5) market failures, given the imperfections of the market and the assumption of the full information and rationality of individuals.
The size of this migration hump depends on the advantage that the migration receiving country has compared to the sending country. It also depends on the cost and the necessary time for the sending country to adjust to the new reforms and providing necessary public service and infrastructure to accommodate these

reforms. It will finally depend on the measures that agreed between the two countries to ease protection and trade barriers (Martin and Taylor, 1996).

Consequently, trade as a way to develop potential migrant's sending countries has not been effective in reducing migration flows for the different reasons given above. It is important to note that the migration hump that is considered as a temporary short term increase in migration due to some reforms is not to be confused with the increasing migration due to the development transitions. Migration transition is rather a long term process reflecting structural changes in the migration patterns following social and economic transformation process.

3.2. Migration and Growth: A Theoretical Review

Finding a unique theory that addresses the impact of migration on economic growth is the 'impossible-to-do task'. Every growth achieved must have included direct and indirect effects of migration and remittances. However, not all growth theories have addressed this subject in an explicit way, which made our task difficult.

There is a an enormous literature on growth models, however, to serve the objective of this study we will focus first on those basic neoclassical growth theories and attempt to look into the impact of migration on growth in these theories. Then, we will address the most recent endogenous growth theories which have clearly explicated the role of human capital in sustained the growth and hence very interesting insights could be drawn from these theories on how they see migration affecting this long-term growth.

In order to address some of this literature we refer to one of the books on economic growth theories, which is the one by Barro and Sala-i-Martin, 2004 where they highlight some of the important features of what could be found in the economic growth literature that has in a way included migration.

3.2.1. Migration in Neoclassical Growth Theories

The neoclassical growth models consider migration as the mobility of human capital that is added (in case of emigration) or subtracted (in case of immigration) from the countries. This mobility takes place from one area with low returns to another area with higher returns and better general conditions (Barro and Sala-i-Martin, 2004).

Starting from one of the basic growth models the one by **Solow-Swan**, which is normally assumed to be a closed economy, the authors make an extension of a partial opening up of the model by allowing mobility of labour (to incorporate migration) but not goods or assets, in order to capture the real effect of migration.

The model starts by identifying the growth of the population and labour force equation as composed of the rate of natural growth (fertility net of mortality) and the net migration rate as follows:

$$\dot{L}/L = n + M/L = n + m \qquad (1)$$

Where L is the domestic population and labour force; n is the natural growth rate of this population; M is the flow of migrants into the domestic economic which could be either positive (emigrants) or negative (immigrants); and m is the net migration rate.

The model assumes that the migrant carries his own capital with his move (for simplicity), this includes his own human capital of education and skills but also other possible physical capital (machines, etc.)[41]. Hence, the equation of capital is represented as follows:

$$\dot{K} = s.F(K,\hat{L}) - \delta K + \kappa M \qquad (2)$$

Where $\dot{K}$ is the differentiation with respect to time of the capital; s is the gross saving rate multiplied by the function in labour and capital (which is the production function or wages) and δK is the Capital depreciation rate to which are added the additional capital brought in by immigrants or taken out by emigrants.

From equations (1) and (2) the growth rate of capital per effective worker $\hat{k}$, will be represented as follows:

$$\dot{\hat{k}}/\hat{k} = s.f(\hat{k})/\hat{k} - (x + n + \delta) - m.[1 - \hat{\kappa}/\hat{k}] \qquad (3)$$

where $\hat{k}$ is the capital per effective worker and $\hat{\kappa}$ is the capital per effective immigrant; $(x + n + \delta)$ is the effective depreciation rate for capital (without migration), i.e. the rate of decline of capital due to growth in effective labour by the rte of x + n with a depreciation rate of δ; this is now augmented with the migration term $m.[1 - \hat{\kappa}/\hat{k}]$. If $\hat{\kappa} < \hat{k}$ (i.e. the capital that the migrant brings is less than the capital per worker) then the migration term would either subtract or add to the effective depreciate depending whether m<0 (net emigration) or m > 0 (net immigration).

If m>0 than the $\hat{\kappa}$ represents the quantity of capital brought by each immigrant, which is determined in his home country, while if m<0 than the $\hat{\kappa}$ represents the quantity of capital taken away by each emigrant. As an overall a higher capital per effective worker ($\hat{k}$) raises the domestic wage rate and tends to increase migration.

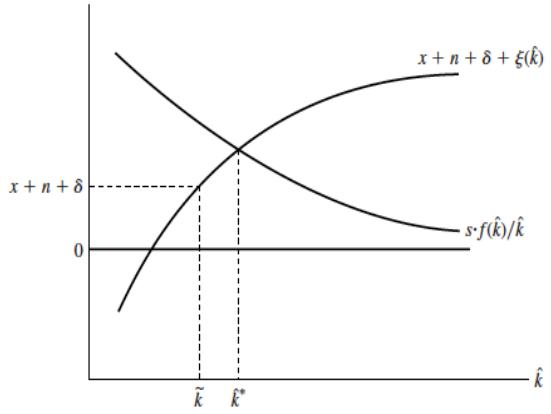
In order for the authors to construct the migration function, they denote $\zeta(\hat{k})$ as the migration term in equation (3) as follows:

$$\zeta(\hat{k}) = m(\hat{k}).[1 - \hat{\kappa}/\hat{k}] \qquad (4)$$

Without going into further details in the growth model, the overall conclusion of the work of Barro and Sala-i-Martin, 2004 could be summarised in the figure 1.6 below. The figure represents the economy's steady state position, where the curve of the effective depreciation rate which is taking an increasing trend due to the effect of the $\zeta(\hat{k})$ intersects with the saving curve which is taking the decreasing trend. The positive relation between migration and effective worker (due to wages) means that rate of population is positive function of this effective rate per worker and hence the depreciation terms become upward sloping.

[41] It is important to note here that this model does not consider the impact of remittances, which is a major drawback to the model.

Fig 1.6 the Solow-Swan model of steady state with migration



Shifts in these curves are due to external shocks or changes. If depreciation curve shifts upwards (due to worsening of other economies conditions then net migration would rise), this would decrease the steady state point k* while m* rises. This means that an expansion of immigrants would lower the steady state capital intensity in the domestic economy (this is under the overall idea that immigrant come with little capital or a capital that is lower than the domestic capital per effective worker).

Finally, in terms of convergence, the growth model of Solow-Swan shows that the speed of convergence of the economy will depend on the capital intensity in other economies $\hat{k}_{world}$ and the position of the economy towards this capital intensity level. This capital intensity differential represents the motive to migrate and hence if this difference is zero than migration will not occur. The model shows that in fact, migration raises the convergence coefficient above the standard normal level of Solow-Swan and based on a parameter (b) that is calculated in the empirical studies. The parameter represents what the authors call the 'sensitivity of international migration' which in fact is the coefficient of regression for the net migration. This was estimated to be 0.012 per year for regions within the same countries and 0.008 per year across the countries according to different studies (Barro and Sala-i- Martin, 1991 and Hatton and Williamson, 1994 respectively). The potential to migrate hence raises the speed of convergence, assuming that b>0[42].

[42] For migration destinations countries (m>0) it is assumes that $\hat{\kappa}/\hat{k} \leq 1$ since the capital (normally only human capital) that the immigrant brings would normally be less than the capital (this includes human and physical) that exist in the destination country. For the source economies (m<0) the condition $\hat{\kappa}/\hat{k} \geq 1$ is possible but still unlikely. This is argued by the authors as follows that despite that migrants are more likely to be more educated this excess of human capital is offset by the impossibility to transport physical capital during their migration.

The second growth model considered here is the **Ramsey model**. This model is considered an extension to the Solow-Swan model to include household optimization, through making the choice between saving and consumption in a way to optimize its benefits. The authors use the modified version of this basic model and start of from the household where it is assumed that the family grows at the constant rate of n and that migration rate is m(t). Similarly to the previous model, each migrant is assumed to have a quantity of capital κ(t) which represents his human capital. So if L(t) is the total domestic population at time t (t=0). The model is based on household maximization utility function which includes the consumption per person and the standard exponential factor that takes this form:

$$U(j,t) = \int \{\log[c(j,v)]\, e^{-(\rho - n),(v-t)}\} dv \qquad (5)$$

where c(j,v) is the consumption per person in household j at time v

At the same time the assets per person w(t) are considered as the wage rate and the per capita present value of future wages. The model then aggregates consumption and assets and evaluates the change over time. If m(t)>0 and κ (t)<k(t), the inflow of migrants reduces per capita consumption.

In the steady state level, k* is the steady-state value of the model without migration. If migration is included and the economy is attractive to immigrants (i.e. $k^* > k_{world}$) the locus of the consumption curve will be upward sloping which means that the consumption is decreasing relative to the steady state level, whereas if $k^* < k_{world}$, the locus of the consumption curve will be downward sloping meaning that consumption is increasing. Similarly to the Solow-Swan model, the greater the propensity to migrate the greater is the speed of convergence.

The final theoretical model addressed is the one developed by **Braun, 1993**. Addressing the two main shortcoming of the migration and growth theories which are: (i) the fact that the flows of migrants is determined by a function and not by the individual's decision to move and; (ii) that there was no capital mobility involved in these models (other than the human capital that is carried by the migrant). The model however assumes the perfect credit markets, where the decision to migrate is only based on maximising wages.

The model starts off from a Cobb-Douglas production function:

$$Y = AK^{\alpha} L^{1-\alpha.} (R/L)^{\lambda} \qquad (6)$$

Where Y is the production: K is capital; $L^{\wedge} = L\, e^{xt}$ is the effective labour input and x≥0 is the rate of exogenous labour augmenting progress in all economies. R is the input that represents the natural resources of an economy but that is subject to congestion and is accessible by both natives and migrants. K and L are diminishing returns for fixed R, but social marginal product of L is positive.

The capital intensity of the economy k^ includes the ratio R/L and the domestic wage rates (which is the capital intensity and the private marginal product of labour) also includes this ratio R/L in a way that: if the economy has a relatively large per capita quantity of natural resources R/L and a relatively high level of technology, the domestic wage rate is high relative to elsewhere.

According to this model, a person would decide to migrate once the benefit from this migration is higher than that from his domestic economy. This includes taking into consideration the cost of migration (including cost of finding a job and house and the l, etc). If $w > w_{world}$ migration takes place. This migration leads to a decrease in the ratio R/L, which leads to declining of average wages w. Until reaching the point where $w = w_{world}$ where migration would stop. Also in this model, the speed of convergence depends on the sensitivity of migration rate to the relative benefits of moving (taking into consideration also the cost of migration). The model showed that the rapidly increase cost of migration with the volume of migration, the smaller the responsiveness of migration to the benefits hence the slower the speed of convergence. This result was tested empirically by Braun, 2003 and showed support to this theory.

In order to generalise these theoretical findings on a more dynamic world, where each economy's mechanisms work to reach its capital intensity steady state k*, but that the world as a whole also works to reach its capital intensity steady state of k^*_{world}. To achieve this, Braun, 1993 assumes a world consisting of two regions 1 and 2, where migration is possible at the cost specified earlier. People migrate towards the region that has higher wage rates, which would reduce the per capita output in the high wage region and raise the per capita output in the low wage region. The speed of convergence will depend on the sensitivity of migration. The growth rate of the output per effective work in each of these regions is determined by:

$$\hat{y}_i/\hat{y}_i = -\beta.\log(\hat{y}_i/\hat{y}_{world}) - \mu.\log[\hat{y}_{world}/(\hat{y}_{world})^*] \qquad (7)$$

where β and μ are convergence coefficients. This final equation (7) is combination of cross-sectional effect for eliminating the differences across economies (first component) and a time series effect adjusting of the world economy to a steady state position.

These three growth models have shown that migration of workers from low human capital in poor to rich countries tends to accelerate the process of convergence of per capita income and the economy's product level. The coefficient of convergence is found in empirical evidence, which is the coefficient of net migration when introduced as an explanatory variable in growth regressions. These growth models are based on the neoclassical approach of equilibrium mechanisms and hence remittance flows were not included in the analysis. Despite this limitation, they have made contributions in understanding the mechanisms by which migration can affect the country's growth.

3.2.2. Migration in Endogenous Growth Theories

More recent endogenous growth models have put more emphasis on the relation between education, migration and growth. Endogenous growth theories differ from neoclassical ones in the way they consider innovation, human capital and knowledge as main contributors to long term growth, these variables cause positive externalities and spillover effects that sustain growth in the long term.

The initial basic work on endogenous growth started by Arrow, 1962, Uzawa, 1965 and Sidrauski, 1967[43]. It was Romer,1986, Lucas, 1988 and Rebelo, 1991 who then articulated the model and emphasized the crucial role of investment in human capital in achieving long term growth and reducing the diminishing returns

[43] For more details about these basic theories on endogenous growth, check Aghion and Howitt, 1998

to capital accumulation (which was called the AK model). These theories were further developed by Grossman and Helpman, 1991 and Aghion and Howitt, 1992 introducing new concepts Aghion and Howitt, 1992.

In the model by **Romer, 1986**, the most important engine of growth is the capital accumulation (this includes human and physical capital). Despite the fact that Romer did not include the impact of labour mobility in his model where positive externalities exist in the production function, a number of studies undertook this task. **Reichlin, and Rustichini, 1993** show that the equilibrium that exist between the poor sending and the rich receiving countries could be generally characterized by a continuous flows of migration. The presence of externalities with the free capital and labour mobility makes the rich country the one with high capital to labour ratio and hence the one that receive continuous labour mobility. However this scale effect which is the positive effect of an increasing labour force on per capital income (with a positive correlation with the skill of this labour) is offset by the 'composition effect' introduced by the authors which is the ratio of skilled to unskilled in the two countries. The labour is captured by a technology affecting the aggregate stock of capital. In a heterogeneous labour market, outflows of migrants reduce the population and could have a negative effect on this sending country. However, if emigration of unskilled is proportionally larger than that of skilled, this could create a positive effect. According to the authors, this explains that emigrant countries could change to be destination countries at some point of time (Reichlin, and Rustichini, 1993 and Drinkwater, et. al, 2003).

Lucas, 1988 however put more emphasis on human capital investment as the main engine of growth. His model did not address the impact of migration per se, but there are some indications that migration could be found harmful for the poor countries' growth. This depends on what type of externalities the motivations to migration can induce: the education of the human capital at home and the size of those that will be able to migrate against those that will be staying home. As reported in Drinkwater, et al. 2003, a study by Walz, 1995 gives some conditions on how the brain drain in the endogenous growth model of Lucas, 1988 can be beneficiary to the sending economy. His model assumes two types of agents with different advantages to education and that the cost of migration is the same for all. It is clear that the migration opportunities are higher for the agents with greater ability for education. The basic idea is that migration affects the growth rate of the economies by shifting the composition of the labour force in each country.

Romer, 1990) and Grossman and Helpman, 1991 emphasized the role of innovation and R&D activities as the main engines of economic growth. Following up on their model Lundborg and Segerstrom, 2000 introduced the role of migration. Their model consists of a world that is divided into two regions: north with high quality products and south with low quality products. Consumers spent on each of the commodities of each region and hence the welfare of the South is a constant fraction of that of the North. If the south labour migrates to the north, where workers will be more productive, then the world economic growth increases. However, the South expenditure will decline and hence growth, but it is compensated by the increase in the relative wage. In the North, the additional worker puts pressures on wages. Both north and south increase R & D expenditure. However, Northern workers are more affected (due to reduction of wage) while southern workers have benefits from migration. The net welfare final effect depends on the parameters of the marginal losses and gains between north and south.

Despite the important effect of migration on growth as explained, either this impact is direct (positive or negative) or indirect through speeding up the convergence process, it is surprising that migration is still not considered a part of the growth equations. One reason that could be behind this is that most growth models consider labour as fixed (Drinkwater, et. al, 2003). Endogenous growth models have put emphasis on the role of human capital in achieving long term growth, which brought large debates on the impact of migration on the human capital of the source country, a debatable issue that is summarised in the following section.

3.3. Migration and Human Capital: Brain Drain vs Brain Gain Theories

One of the most debatable issues related to migration is its relation with human capital. This relates to the complexity of the relation and its causal nature. Before we look into this relation, it is important to clarify that we define Human capital as the economic value of what a person posses of skills, knowledge, experience and creativity that enables him/her to perform an activity (or a labour) that would produce an economic value[44]. Human capital is hence a major contributor to development and hence represents one of the major channels that links migration to development.

The relation between migration and human capital is multifaceted. Migration leads to the loss of human capital, which could have a negative effect on development of the sending country. If this human capital is skilled, this phenomenon is called 'Brain Drain', however, some recent work has showed that migration of the skilled could be not that harmful to the sending countries, in fact there could be some positive benefits 'Brain Gain'. One possible benefit is the motivation that non-migrants could have from the benefits of migration, and hence they seek better education and accumulation of skills in order to potentially being able to migrate. A second important benefit is the flow of remittances from migrants to their households at the sending countries. These transfers, though mainly used for consumptions, they can release credit constraints of the households and encourage them to spend on the education. Third, migration could increase the transfer of knowledge and information through connections with their home countries. This is especially true in the case of migration returnees and circular migration.

One of the most known early attempts to investigate the impact of human capital migration is the work by **Bhagwati and Hamada, 1974.** The authors investigated the impact of human capital migration on the welfare of the sending countries. They constructed a large model that reflects this relation, which was later simplified by Commander et al. 2002, which will be presented here. The two main problems for the authors with migration of the human capital were the loss of human capital of skilled labour which created negative externalities and the loss of public funds that were used to finance education of those that have left.

Using a standard neoclassical production function of two outputs M1 and M2 and will L representing the amount of labour needed for each product L1 which is skilled labour and L2 is an unskilled labour as follows: M 1= F(L1) and M2 = F(L2). The commodity price ratio is p1/p2 . Also the wages for workers in the skilled production in w1 are fixed by unions and are quite comparable to the international levels, whereas minimum wage levels of the unskilled labour is w2 and is set in relative to skilled wage or 'leapfrogging', hence an increase in w1 would lead to an increase in w2.

[44] The OECD defines it as the 'productive wealth embodied in labour, skills and knowledge'

Moreover, there are incentives of education when the expected wage for those educated and skilled exceeds that of the uneducated and unskilled. Let k be a fixed education cost. Other than the existent labour force there are Z1 educated and skilled emigrants and unemployment U1 and U2 in each skill category.

According to the model the labour market balance equations are:

N1= L1+U1+Z1; and N2= L2+ U2 ; and where N = N1 + N2

Emigration of the skilled leads to decrease in unemployment in this category, however it has two other effects: (i) It may raise the expected wage (due to emigration, supply could decrease). This will be due to the elasticity of demand for skilled labour which will determine if the skilled wages would increase or not. If the expected wage increases, then the supply of skilled will tend to increase as a result. This means that more people would seek education to respond to the increase in expected wages, and since education is normally subsidised, it will increase the cost on the sending country; (ii) Increasing skilled wages due to emigration will have a spillovers effect on the other sectors: wages of the unskilled will increasing (since it is anchored to that of the skilled) and hence increase unemployment. These two effects will amplify the negative effect on the welfare since a raise in the skilled wages will reduce national income due to the decline in employment in the skilled sector without being offset by the unskilled sector. At the same time the cost of education will also increase.

One could argue that the assumption of leapfrogging is not realistic and also if emigration from the skilled sector would raise the wages in this sector, this could imply that wages were not up to their marginal product. This means that the loss is in fact related to how possible it is to replace those emigrants (Commander et. al., 2002).

Other early attempts were made following this model, including modifications by the authors themselves to include other assumption. Some of the most important modifications included the Harris-Todaro variant for unskilled unemployment. In this case if emigration leads to a better skill match of the remaining skilled labour, this could lead to reducing unskilled unemployment and hence could have a positive effect. Another modification introduced by **Bhagwati and Rodriguez, 1975** which also included the Harris –Todaro labour markets composition with unemployment and sticky wages. In this model, and contrarily to the earlier model with flexible wages, in the long run unemployment would still be independent from the foreign wage or migration cost, whereas at the short run, any increase in migration will lead to unemployment.

These models have mainly seen migration of human capital migration as a brain drain due to the negative externalities that this migration has generated, due to reasons related to the markets themselves such as the imperfect substitution between skilled and unskilled (Beine, Docquier and Rapoport, 2001). Moreover these models were established in an era when data was not available and hence the empirical evidence could not accurately support theses results. Moreover, grouping the labour into skilled and unskilled was considered too aggregate as there are lots of discrepancies within these sectors. It is also to note that these models have suggested some explicit policy implications, such as the "Bhagwati taxes" that was proposed by Bhagwati on migrants as a return to their education.

Despite their shortcomings and non-tested results, these models constituted the basis of most recent models that have addressed in a more comprehensive and global way the migration and human capital relation.

One of the recent models is the one by **Beine, Docquier and Rapoport, 2001**. The model assumes a small open economy with overlapping generation of two periods. The first period is used to allocate time for education and the second period is used to supply a quantity of labour. Their productivity would depend on the investment they received in the human capital in the first period. Individuals have different abilities to learn and hence there are heterogeneities at their level of skills. There is inter-generational transmission of human capital from one generation to the other.

The model specifies the production sector where firm produce a composite good Yt using capital Kt and Labour Ht exhibiting constant returns to scale. Output per efficient worker is denoted by yt= Yt/ Ht and the function of capital per efficient hour worked can be defined as kt= Kt/ Ht. Factor prices are given by their marginal productivity.

The model then specified the individual behaviour: each young agent I from generation t has an inherited identical human capital of ht. This agent can choose to invest a fraction of his time for the education (e) or nothing. The human capital level of the individual is an increasing function of the time spent on education in the first period and also on his ability to learn:

$$h_{t+1}^{i} = [1 + a^{i} e_{t}^{i\beta}] h_{t} \qquad (1)$$

Where, (a) is the parameter of the individual's ability to learn. An individual decides to migrate when the returns to his human capital is higher abroad than at home w>1 is the relative net return to education.

Potential migrants' productivity during the second period in a foreign country will be then:

$$h_{t+1}^{i} = [1 + w a^{i} e_{t}^{i\beta}] h_{t} \qquad (2)$$

The model then introduces a new component to reflect the decision or the probability to migrate (p) or no (1-p) which is due to internal (such as migration policies in the home countries or just a change in the decision to migrate) or external factors (such as immigration controls, un-matching of skills). In order to simplify, the model assumes that migration is randomly selected among educated and that all agents are neutral to risk and are aiming at maximizing their lifetime income. Hence a part of the population will chose to invest in their education and other won't.

In order to estimate the effect of migration opportunities on growth in the source country, the model considers the growth of income per capita in the long term. The long term effect is given by the externality linked to the transmission of human capital (the average level of human capital of the adults is integrally transmitted to the young agents and constitutes their inherited human capital). The equilibrium growth is hence composed of:

$$g_{t+1} = \frac{h_{t+1} - h_{t}}{h_{t}} \qquad (3)$$

This growth formula includes the brain drain effect: from one hand it includes the loss of growth due to migration of human capital 'drain effect' and it includes the gain of growth due to increasing human capital staying at home 'the brain effect'.

If the gain effect dominates the loss effect then there is gain from the brain drain, which the models call 'Benefits of Brain Drain (BBD)'.

The value added of Beine, Docquier and Rapoport, 2001 model is twofold. First they have proved theoretically (and empirically also) that there is positive correlation between migration opportunities and the proportion of the young who pursue their education. Second, the growth of the sending economy is positively affected by the share of the educated people and negatively affected by those educated who migrate and that the net effect depends on which of these two shares dominate. Using data from OECD countries that report details about their migration inflows to their countries, using a cross section data (due to lack of time series analysis). The results confirmed the two propositions put forward by the model.

Confirming the same result, the model by **Stark, 2004** sets-up a model to establish the causal positive relation between probability of migration by skilled workers and the human capital formation within these developing countries. His model showed that the positive probability of migration to a more developed or rich country and what in entails from raising the human capital level of individuals in the home country and the average level of human capital of non-migrants also, leads to welfare gains and pushes the economy towards a social optimum (Stark, 2004). This model was later extended by including the time dimension in changes in the level of human capital which was assumed instant by Stark. Even after relaxing this assumption, the model still confirmed that there are welfare gains to be observed in case there are migration prospects then when there are no prospects (Byra, 2013).

Moreover the impact of migration of unskilled depends on the production scheme of the home country. Stark and Byra, 2012 showed that contrarily to the common belief, migration of the unskilled worker could indeed have a negative effect on the home country. The argument put forward by the model is as follows: if a country produced one good using skilled and unskilled labour and where there are prospect of migration for the unskilled only. This has been looked upon as a non-threatening migration, however this model proves otherwise. When the unskilled migrate, the average level of human capital increases at the equilibrium level and the accumulation of human capital is not sufficient to compensate the decreasing levels of the skilled (individuals entering the labour force prefers to join the unskilled category since it has the migration prospects). This leads to the decrease of the country's welfare (Stark and Byra, 2012).

Hence, the relation between migration and human capital is complicated and has given mixed results. However it is clear that some benefits could be achieved in certain conditions that relates to the market flexibility and elasticity of the responses.

4. Conclusion

This chapter has looked at a large number of theories that explored the issue of migration, starting from the historical Economic theory to the most recent theories that addressed this issue.

The first part addressed most of what the literature called 'migration theories' and we classified them into two main groups: 'causes of migration theories' and 'persistence of migration theories. Within this classification we made the distinction between macro and micro theories that addressed the cause of migration. This was a rather hard task since the two levels are mixed being that

migration starts at the individual level, affected by a number of developmental indicators (income, labour market, etc.). This micro decision becomes a macro phenomenon, which can be addressed at the aggregate level to attempt to deduct some common features of the causes of this migration.

This is what the theories of migration tried to do. However, the relation between migration and development was not explicitly addressed in these theories, which what we tried to do in the second part of this chapter by bringing up some orientations on how these theories were perceiving the relation between migration and development. In the second part we have also introduced the transition migration theories which were considered as a context or an overall picture of how migration relates to development as being part of the development process. Finally, we identified some channels by which the impact of migration is transmitted to the development, such as trade, growth and human capital.

It is clear that migration has an enormous impact on development; this was proven by the theory. We can go, a bit further by saying that migration has an overall positive impact on development, given that some conditions and some pre-initial levels of development are fulfilled. Migration can't create development but it can surely help in this process.

A crucial variable was not explicitly involved in this theoretical review, that is: remittance flows. However, despite this, migration flows have shown to be able to achieve overall positive impacts on development. This is not to say that there are no drawbacks on these flows on the sending countries, this will be addressed in details in the next chapters, the drawbacks could be considered rather negligible compared to their benefits. Moreover, remittances can have important role in impacting directly development.

Therefore, after going through this theoretical literature bringing to light some of the important theories and concepts regarding migration, in general, and its relation with development in particular, we take a step deeper in our analysis by looking into the empirical evidence regarding this complex relation. The following three chapters will be devoted to address the empirical literature on migration and development. Chapter 2 focuses on the empirical literature that addressed the causes of migration, and where the migration transition theory is highlighted, then an empirical evidence is estimated to test the validity of this theory. Chapter 3 undertakes the empirical review of the impact of migration on development at the macro level, while developing an empirical estimation on some of these impacts. Finally, chapter four will address the issue at the level of the individual and will provide an overview of the micro empirical evidence that addressed the relation between migration and development, the chapter closes by presenting our own empirical evidence on these impacts.

Annexes

Annex 1.1. Migration: its different types and dimensions

A universal definition of migration is difficult to find, however, it could be generally referred to as "The process by which a person (or a group of persons) moves from one place in the world to another for the purpose of taking a permanent or a semi-permanent residence"[45]. The definition contains many aspects and dimensions. A migrant can be the person that moves to another city or town within the country, or a jobseeker that seeks employment in another country or a refugee escaping from religious or political persecution in his country or from a war or a natural disaster. Migration could also be a temporary one or a permanent one.

Based on this general concept, the types of migration could be classified in different categories according to their characteristics.

(1) The spatial dimension considers the barrier/the distance that one has to travel in order to perform this movement. This includes two categories: (i) **Internal migration**: which is the movement of persons from one place to another within the border of the same country; this type of migration does not affect the size of the population of the country; and (ii) **International migration**: which is the movement of persons from one place to another in a different country and where the individual has crossed the origin country's borders. This includes intra-continental (within the same continent) and intercontinental (between different continents). Two items have to be satisfied in order to be classified as 'international migration': 1. that the movement involves the disruption of the person's normal life style in one place and resuming it (in a different way) in another place; and 2. that the person is no longer counted in the census of the population of his own town, city or country, but will be counted in the other place's census. *Our research question is only concerned with International migration.*

(2) The time dimension which considers the duration of this mobility and here we can differentiate between three categories: **(i) Short term or temporary**: this includes the persons that move for a short period of time. It is clear that travellers or commuters are not considered migrants as their stay outside their 'home' boundaries is extremely short and does not satisfy the two aspects mentioned above. Temporary movements is called migration if they satisfy the 2 conditions mentioned above; **(ii) Medium term migration** is migration that is rather long but is still considered temporary: a person that moves across boundaries for 10 or 20 years can be considered a migrant, as he tends to adapt to a new social life, even on a temporary basis and of course affects the population as he is not counted in his 'home' census; **(iii) Long term or permanent migration** is clearly the movement of persons from one country to another with the intention of spending a long duration (could be a lifetime). *In our research we are concerned with the medium (including temporary) and long term migration.*

(3) The dimension related to the objectives or the reasons behind migration. There is a large number of objectives that we could classify very broadly in three categories: **(i) Economic reasons**: this includes migration that has for objective seeking a better economic returns: better income, better opportunities, better employment, etc.; **(ii) Social reasons** are closely related to the economic ones.

[45] Definition by the "National Geographic Institute" but also the same for the International Organization for Migration (IOM)

These includes migration for a better quality of life, social services, etc.); and **(iii) environmental and political reasons**: these are generally related to migration due to natural disaster or due to war or political unrests, this type of migration includes refugees (persons who seek refuge in another country escaping from disasters or threatening conditions). Other types of migration could be mentioned such as Circular migration and return migration (where the migrant returns back to his country). There are also step migration or transit migration where the person stays in a different country for a duration of time (could be short or medium) before reaching their his destination (sometimes this takes longer than expected and migrants end-up living in the transit country where they are (e.g. migrants from Sudan and Ethiopia who seek migration to the West and consider Egypt as a step migration).

If one's objective of this movement is tourism, attending meetings, medical treatment, acquiring a degree of education, etc., he is not a migrant. However, a person seeking better health care and better education systems can be considered a migrant since this could be a life-time objective.
In general, there are four main reasons or objectives to migration: social, economical, political and environmental.

In our current research, the type of migration that we are considering has the following dimensions:
(1) International migration;
(2) Medium-term, temporary and long term permanent migration; and
(3) Social and economic migration.

Hence, migration is a complex process that incorporates many dimensions. A process that starts at the level of the person or a household (i.e. at the micro level) and is taken to the aggregate level (i.e. at the macro level) and hence addressing it from two angles is crucial to understand how it works and its various impacts.

It is important to add that migration is a human right as stated in the UN Human Rights Decree known as the "Freedom of movement, mobility rights or the right to travel"[46] stating that all individuals have the right to move within their own country's borders or outside these borders and the right to return. Laws and regulations are implemented to organise the movements of the persons within and outside the country's borders.

[46] As declared in the UN Human Rights General Assembly of 1948 in Article 13. "(1) everyone has the right to freedom of movement and residence within the borders of each state. (2) Everyone has the right to leave any country, including his own, and to return to his country".

Annex 1.2. Migration and remittances: an overall positive impact?

The most obvious and explicit link between migration and development is in the direct effects of the remittances that migrants (regardless of their type of migration) send to their home countries. Remittances are defined as 'the transfers of value by emigrants or their descendants to their country of origin' (Carling, 2005). A broader definition of remittances includes, not only transfers that are accounted for the Balance of payments but also 'social remittances'. This includes transfers of ideas, behaviours, knowledge, identities and social capital by the migrant to their home countries (Levitt and Nyberg-Sorensen, 2004).

Remittances can be in the form of family transfers, personal deposits or savings, investments, charity or donations, or in the form of goods or gifts (e.g. consumable, electronics, gold and jewelleries). Moreover, depending on the cost of these transfers remittances can either take the formal channels (through banks, official transferring institutes) or informally (through cash money).

Factors impacting the amount of remittances

There are several factors that could impact the amount and continuity of remittances. These include the ability and the decision of migrants to remit, which depends on their income (based on their occupation, level of education and skill), consumption and possible savings and also on their motivation to remit. Other factors can affect this decision such as the duration of migration, its nature (temporary or permanent), family situation, and network effects. Surprisingly, some studies found that the more skilled and educated the migrants are, the less remittances they send (Faini, 2007 and Niimi, et al. 2008).

Some studies have reached the conclusion that there are no general theories of remittances (Stark, 1991), however there are several studies that found some important evidence regarding the determinants of sending remittances. This could be summarised as follows:

1. Pure Altruism, which is the most common reasons behind sending migration and where the migrants is connected to this family at home and is concerned about them and hence sends them transfers to ease their liquidity constraint and help them.
2. Pure self-interest, which means that the migrants is concerned about his own asset and hence he sends remittances either to purchase assets or as a compensation for some members in his home county for keeping and maintaining his assets. This is especially true of the migrant is intending to return home.
3. Implicit family agreement: this type of remittances is sent due to a pre-agreed deal or implicit agreement between family members, where one member of the family would migrate to send remittances while the rest of the household stay home and work to diversify their resources and minimize the risks.
4. Migrants saving, this means that the migrant sends back remittances for the purpose of saving them for his return.

These examples of motivation for remittances are not exclusive, it is often the case that remittances are sent for more than one of these above reasons. Given the reason behind sending the remittances, these flows could be either *countercyclical* (i.e. they increase in case of a downturn of the economy), *procyclical* (i.e. they are rather complementing the economic growth of the economy), or *acyclcial* (i.e. they are neutral to the growth or development of the economy) (Giuliano, et. al 2009).

Remittances are mainly sent to the households to reduce their liquidity constraints and hence re mostly used for purchase of consumable goods. Here it is important to differentiate between the usages of remittances in 'productive' or 'non-productive' expenditures, referring to whether the remittances are used in purchasing assets or purchase of an item that could increase the production of the household. There is a lot of debate in the literature about what could be considered as productive or non-productive. Some researchers strongly confirm that spending remittances on education of family member is a sort of investment in human capital (Levitt and Nyberg-Sorensen, 2004). Moreover, it is also suggested that even if using the remittances to purchase consumption goods at a certain level could be contributing to alleviating poverty. This will be addressed in details in the empirical evidence chapters.

Overall, remittances whatever forms, it takes are beneficiary revenues at the national and household levels. Consequently, studying the impact of remittances on development is not straightforward. There have been several attempts in the literature to explain the impact of remittances on development. Most of the studies agree that remittances have a positive effect in alleviating poverty however, the long-term effects on structural poverty are not that clear.

Chapter 2

A Developmental Perspective on the Causes of Migration: an Empirical Approach

Introduction

Migration has evolved in the past few decades as a persistent and widespread phenomenon across different regions of the World. Poor or rich, developing or developed, all societies have experienced and are experiencing an increasing mobility of their own and of foreign individuals, which made them more and more multiethnic and diverse. These flows take place for a reason, or rather for a large complexity of reasons that are related to the individual, the community, the home country and the host country. At the same time they have great implications on these individuals, their communities, their home countries and their host countries[1].

As we are focusing in this study on the socio-economic type of migration, we can argue that migration in its reasons and its implications is closely related to the development level of the home countries[2]. There are developmental causes of migration and also there are developmental consequences of migration. This migration-development relation is a complex and inconclusive one and holds a great deal of inter-relations and causality and which is the focus of our study.

The theoretical review addressed in the previous chapter showed that there was no consensus among those theories about either the causes or the impacts of migration and its relation with development. In fact, theories were divided between optimistic views and pessimistic views in relation to the possible implications of migration on the development of the sending countries. However, we argued that despite the differences in these theories, one could summarise the different causes of migration under the title of: ***level of development***. Theories that addressed the causes or initiation of migration and those that addressed the reason behind the persistence of migration have revealed that most of these causes are related to aspects of development of the home countries. Moreover, we argued that the migration transition theories, which see migration as part of the development process rather than just an outcome caused by lack of development, present a sort of overall context to these theories.

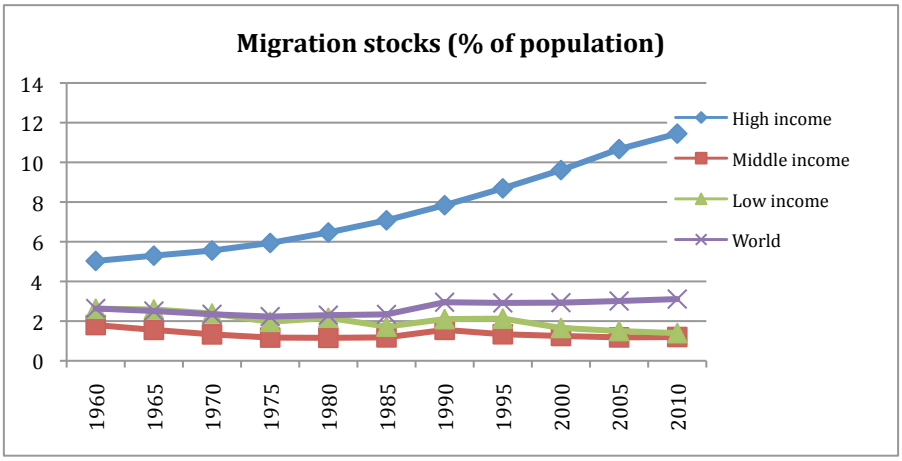
Empirical evidence on this '***migration and development nexus***' has gained a lot of interest in the past two decades. Looking at the recent size of migrants' flows and the remittances that they have produced seem to completely justify the growing interest of scholars, researchers and policy makers in better understanding the reasons behind these flows and their growing potentials on either the receiving or the sending countries. The impact of migration on the host receiving countries have been addressed in a large number of studies for long periods of time[3], but only recently has the literature shifted towards the possible impacts of this migration on the sending economies. In particular, research has recently looked into the developmental causes of migration and the impact of this migration on the development of the sending (or home) countries.

[1] We would like to remind that the focus of our study here is on the sending countries.
[2] Migration sending countries are also referred to as 'home countries' or 'countries of origin'.
[3] this is understandable since receiving countries are mostly developed countries who are concerned about the mass migration flowing into their countries and its implications on their labour markets and public services, adding to this the availability of data about these countries.

The conviction that migration flows have increased dramatically in the last few decades, was due to the noticeable increase in the number of 'foreign-born'[4], which have reached 214 million persons in 2010, up from 75 million in 1965[5]. This means that in less than 50 years the number of migrants has almost tripled. However this impressive figure does not seem to be massively large when we look at the relative number of those migrants to the World population. Migrants represented only 3.1% of total population in 2010 up from a share of 2.2% of the population in 1965. This means that even though much more people are migrating, their growth rate seems to coincide with that of natural population growth.

Nevertheless, what seem to be increasing rapidly are the shares of immigrants hosted in the developed countries, and in the OECD in particular. The share of the foreign-born in host countries' population has more than doubled between the 1960s and 2010 reaching almost 11% of these countries' populations (UNDP, 2009) (Fig 2.1).

Fig 2.1. Trends in Migration stocks (as % of population)



Source: World Development Indicators, World Bank, 2013

Moreover, there was a remarkable shift in the destinations of these migrants from African and Latin American countries towards Europe and America and a massive increase in the Gulf Cooperation Council (GCC) stock of migrants due to the rapidly growing oil-based economies. At the same time migration share from America and Europe has increased dramatically (Fig 2.2a and 2.2 b).

Moreover, and contradicting a common belief, most of the migration is occurring among countries with the same level of development: 63% of migration flows are either between developed or between developing countries. This defies the general idea that most migrants are from developing countries and that most of the destinations are developed countries since only 37% of migrants move in this direction. In fact, figures show that migrants from low-income countries are the lowest, while migrants from lower middle and upper middle-income countries are the highest with an accelerating trend (Fig 2.3).

[4] Foreign-born are people who are living in a different country from which they were born.

[5] United Nations, Department of Economic and Social Affairs, Population Division. 2009. Trends in International Migrant Stock, the 2008 Revision (United Nations database: POP/DB/MIG/Stock/Rev. 2008).

Fig 2.2.a. Stock of Migrants as Share in Populations by Region

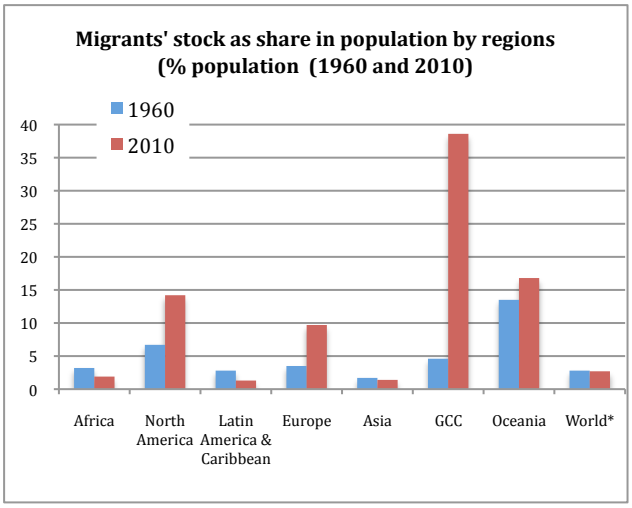
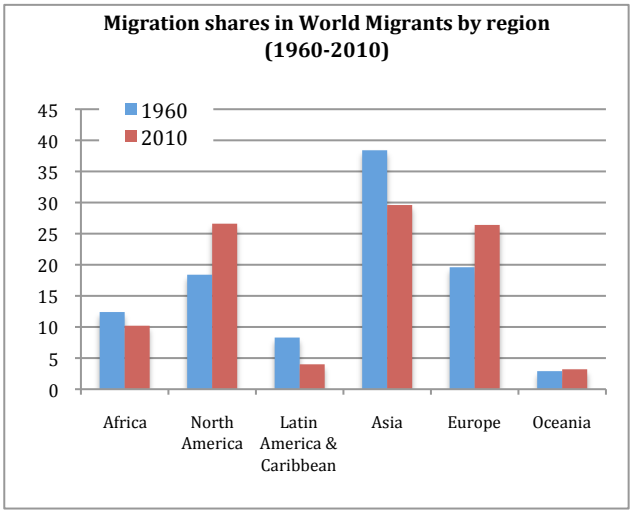


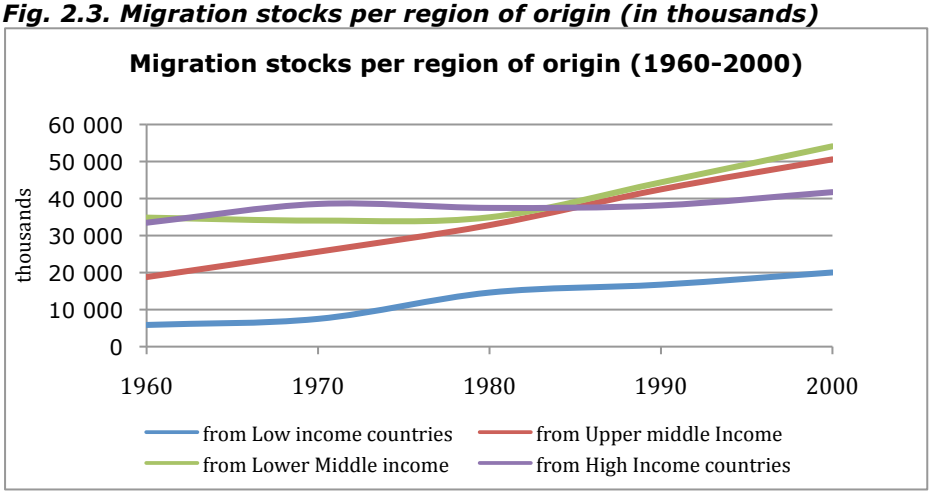
Fig 2.2.b. Migration share in World Migrants by Region



Source: UNDP, the Human Development Report, 2009
*Notes: * World excludes USSR and Czechoslovakia*

Furthermore, we notice that migrants from the same countries have an overall preference of their destinations. If we take the example of some of the South Med countries, we find that the main destination of the Maghreb and Turkish migrants is Europe, whereas for most of the Mashrek countries such as Egypt and Jordan the main destinations are towards the Gulf countries. This brings to the picture the importance of the migration network and their impact on reducing the cost of migration (financially, psychologically and practically) and supporting the new migrants to settle (Fig 2.4).

Fig. 2.3. Migration stocks per region of origin (in thousands)

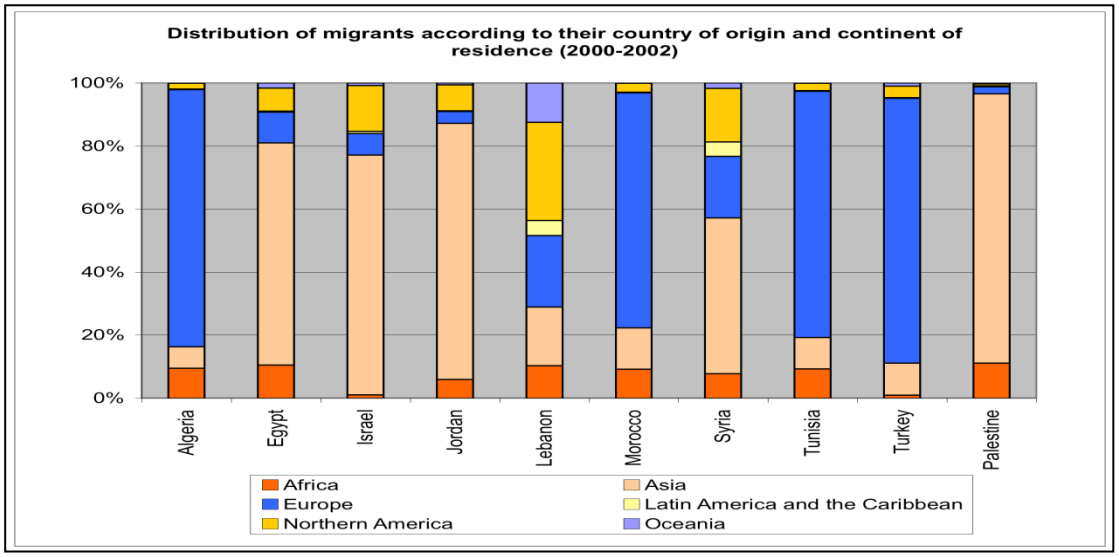


Source: Calculated from World Bank Data on Global Bilateral Migration, 2013

These migration flows generate large flows of remittances that are injected back into the sending countries. According to recent figures released by the World Bank, remittances have marked a new record of US $401 billion in 2012 that were transferred towards developing countries, with a growth of 5.3% compared to 2011 (300% increase from the past 2 decades) and about US $114 billion went to developed countries. Moreover, this increasing trend is expected to continue at an average increase of 8.8% by 2015, reaching the global unprecedented figure of $515 billion (World Bank, 2013). As a result to the fact that migration is highest within the middle-income countries (lower and upper middle income, as per the World Bank definition),

the remittances' flows towards these regions are also the highest[6] (Fig. 2.5a and 2.5 b)).

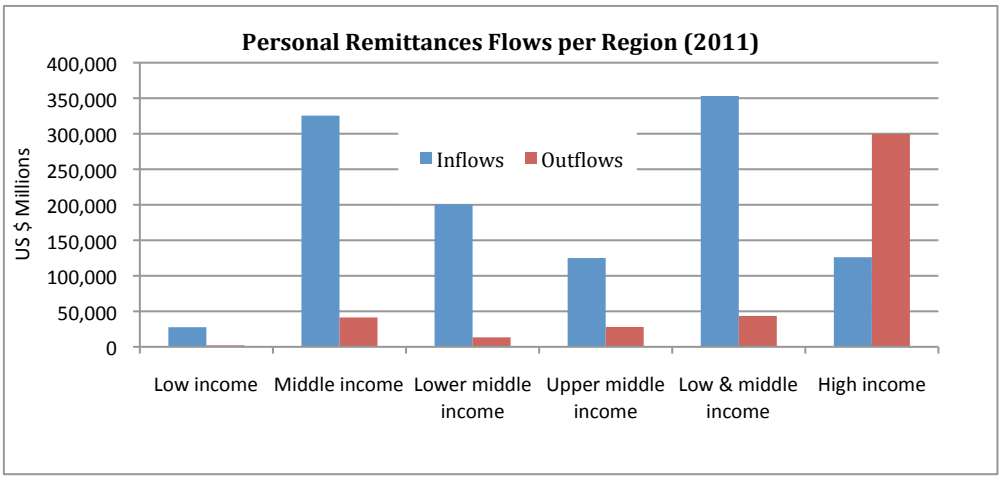
Fig 2.4. Distribution of South Mediterranean migrants according to their country of origin and continent of destinations (2009)



Source: UNDP, HR 2009

These remittances are considered for many countries a main and reliable source of foreign currency. Despite the global economic crisis at the OECD countries and following the slowdown of the Middle East and North African (MENA) economies due to political tensions and instabilities, these flows have witnessed dramatic increase in the past few years.

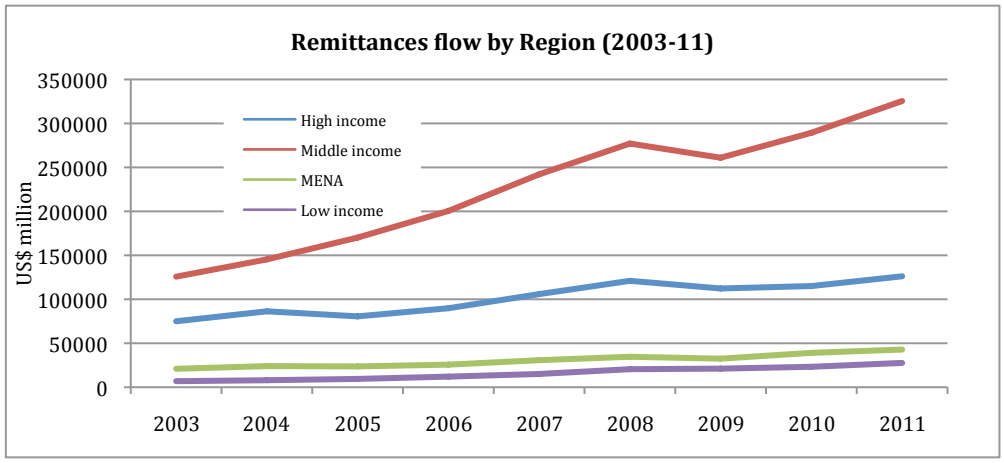
Fig. 2.5a. Inflows and outflows of Remittances per region (2011)



Source: World Development Indicators, World Bank, 2013

[6] South Asia and Middle East and North Africa (MENA) are the highest recipients regions with India, China, Philippines, Mexico, Egypt and Lebanon among the highest recipients.

Fig. 2.5b. Inflows of Remittances per region (2003-11)



Source: World Development Indicators, World Bank, 2013

These flows of migration and remittances have important implications on their home countries (receiving country in case of remittances) and given their acceleration in the past and their expectations in the future; these implications are expected to multiply. These include potential benefits but also potential losses. In order to keep the former at a maximum and the latter at a minimum, there is a need to understand the complex relation between migration and development.

Moreover, even though migration starts from a decision made by individuals at the micro level, it represents a phenomenon at the macro level when it is made by a large number of individuals. Similarly, the impact of migration is immediately felt at the level of the individuals and the households but when this impact is spread across all other migrants' families and their households it becomes a macro impact that involves externalities that goes beyond the simple aggregation of the individuals' impacts. Micro and macro analysis of migration are complementary and represent two different perspective of the phenomenon.

Given this, we will address the macro economic aspects of migration in terms of its causes in this chapter 2 and its implications in following chapter 3. Then we will address the phenomenon at the micro level in the fourth chapter.

In the previous chapter on the migration theoretical review, we saw the theories continuously challenged by a constantly changing world and evolving overall conditions and environments. Consequently, a lot of the understanding of the migration–development relation is done through empirical evidence, which gained a lot of significance due to the better access to data and the availability of advanced techniques and methodologies, in addition to the increasing flows of migration and remittances, which have encouraged more empirical evidence to investigate these flows. There is no way that empirical evidence would replace the theories, since it is the theories that last for generations, but it is a practical and tangible way to test and improve these theories, after all, this data is often directly collected from the individuals who perform migration or a closely related to a migrant.

The main objective of this chapter is to address the macroeconomic developmental causes of migration from an empirical point of view. This is achieved in two ways: first by reviewing the empirical literature on this issue and looking into these studies' assumptions, methodologies and results; second, based on this analysis, we estimate an empirical evidence on the developmental cause of migration.

This chapter consists of two parts: The first part conducts the empirical analysis and review of a large number of studies that addressed the causes of migration and the second part estimates an empirical evidence to test the underlining idea that migration is caused by a number of developmental drivers that represent part of the development process.

I. An Empirical Literature Review on the Causes of Migration

Despite the fact that migration is an individual decision, it is considered also an important macroeconomic phenomenon that is receiving increasing interests from scholars, researchers and policy-makers, especially in the past three decades due to the increasing migration stocks, increasing remittance flows and the unfolding of its potential contributions to development.

The reasons behind migration can be looked at, as a complex combination of social, economic and political motives. Existent empirical evidence on the causes of migration have adopted different orientations but were somewhat dominated by either the neoclassical income-differential causes of migration or by the push-pull factors' principles. These are considered studies that are looking into the determinants of migration and are seen to attempt to explain the annual variations of migration flows in response to changes in external factors in the short term. Most of these studies focus on cross-country analysis (especially recently when more data about migration was created), whereas others looked at specific country cases. Despite their mixed results and outcomes, most of these studies found reasons to believe that wages or income differentials matter in the migration decision, other more complicated aspects were later added to this overall result. At the same time, another group of studies, however much less and more recent, look into the long-term impact of development on migration and the fact that migration is part of the development transition process. Despite their still- emerging results, these studies have made some good steps in explaining how migration is endogenous to the development process. The following will give an analytically review of these two types of empirical evidence on the causes of migration.

In assessing the macroeconomic empirical literature of the studies that addressed the causes and reasons behind migration and looking into the broad and inter-related variations of these studies, we have classified them into two major groups. These two groups are:

1. The first group contains studies with the most common approach in identifying the causes of migration. These are identified as "**determinants of migration**" studies. These studies are looking into the macroeconomic variables that can explain the annual variability of migration flows. Most of these studies adopted either the neoclassical or the 'push and pull' approaches. The empirical evidence is dominated by this group of studies, which have made contributions in understanding the fluctuations in the migration flows, but are not considered to explain the root causes of migration[7].
2. The second group of studies contains those studies that have adopted the recent concept of the migration transition and how it relates to the development phases. These are identified as "**migration transition**" studies. These studies reflect some or all of the principals of the migration transitional approach, which sees migration as strongly liked to the development transition of the sending countries, which give these studies a long-term aspect. This approach is rather new and innovative and very few studies addressed it and hence it will be the main focus of our empirical evidence.

[7] The theoretical basis of these approaches is addressed in details in the previous chapter.

Such as the case in most issues related to migration, a clear distinction between the two groups is not possible and the classification here is made according to either an explicit mention of the objective of the study, or the dominant framework, orientation or spirit of the study. Given the vast number of studies on this issue, especially in the first group, we will address a selected number of these studies to highlight their main stream and orientations as a detailed comprehensive review in this case will be impossible.

However, before we engage in this review of studies, we present first the most commonly addressed variables as causes of migration in the empirical evidence and discuss their potential contributions to migration.

1. Migration Flows: A Brief Overview of the Causes

This first group of empirical evidence contains a diversified number of studies that addressed the causes of migration at the macro level. Despite the overall impression that this subject is addressed by a large number of studies, the 'real' contribution of the empirical evidence is in fact limited. Moreover, this type of studies seem to explain migration pressures and the variability of the migration flows ex-post, while not addressing the causes of migration per se (Hatton and Williamson, 2002 and de Haas, 2010)

Looking into the findings of the empirical evidence on the determinants of migration, we could divide these factors into three main categories: Economic and social incentives; distance and network effects; and demographic explanations (Belot and Ederveen, 2011)[8].

1.1. Economic and Social Incentives of Migration

As an overall, most of the empirical literature found evidence of the role of income differentials (the concepts of 'expected' and 'relative' incomes were also added) between country (or community) of origin and that hosting the migration (Harris and Todaro, 1970). This follows closely the neoclassical approach (as detailed in the previous chapter).

Based on this principle, **the GDP per capita** (or per worker) is believed to be one of the most important factors that lead to migration. This was the basic believe by most theoretical views on the causes of migration. Starting off from the neoclassical theory (Harris and Todaro, 1970) to the most recent migration theory of the New Labour Economies of Migration (Stark and Bloom, 1985).

It is clear that, being a push factor, it would be expected that the GDP per worker in the home countries would have an inverse relation with emigration rate (i.e. when GDP per worker is decreasing, migration will be increasing in search for better opportunities elsewhere; also when GDP per worker is increasing, less migration will be taking place, since the individuals are hence satisfied at home). However, practical observation showed that, despite the persistent economic differentials, across OECD countries for instance, intra-migration flows remain relatively small. It could be argued hence, that income differentials, though an important factor, is not sufficient to explain the migration, as the level of income also matters (Belot and Ederveen, 2011). Moreover, the relation between migration and GDP levels (or growth) is causal: migration could be due to large GDP per capita differentials, but at the same time this level of GDP per

[8] These categories could coincide in a way with the classification made in the theoretical review chapter on: i. the Causes of migration theories; ii. the persistence of migration theories; and iii. the transition theories.

capita could be impacted by migration outflows. This relation is far from being linear (as will be fully detailed in the empirical evidence) due to several reasons, including the selectivity of migration, the binding nature of migration caused by extreme poverty constraints and important migration policies. Given these aspects, integrating the GDP per capita as a determinant of migration must be coupled with the GDP of the destination country, as what matters here are the differentials and not the level of GDP per capita as such. Moreover, GDP per capita of the destination countries is an important pull factor that has a positive relation with emigration rates to these destinations (Mayda, 2010).

Moreover, the neoclassical approach saw that after periods of migration, the income differentials will decrease and hence migration flows would cease. However, as we have discussed in the theoretical chapter and is also revealed in the empirical evidence, this mechanism does not really work this way.

Very much related to the GDP per capita income is the issue of poverty. Migration was often seen as a way to escape from **poverty**, however recent empirical evidence found that poverty is not a dominant push factor for migration, only weak evidence was found to show the role of poverty in migration. Moreover, it is important to differentiate between the poverty in its absolute terms and its relative term. People living in absolute poverty are not able to migrate as they cannot pay the costs of migration[9]. However, in case of relative poverty, i.e. when people are in poverty relative to their community, neighbours, etc. they have more incentives to migrate. This follows to some extent the "relative deprivation theory" introduced by the New Economics of Migration (NELM) (Stark, Taylor and Yitzhaki, 1986). In this case, migration could be considered as a way to improve a person's or a household's income in relation to others (Stark and Taylor, 1989 and 1991). In fact, one could argue that in this case (of getting out of relative poverty), there could be a positive relation between GDP per capita and emigration rates (i.e. the more the GDP per capita increase and out of the absolute poverty zone, the more individuals would be able to afford the cost of migration).

Addressing the issue of poverty brings to the analysis its counterpart: **inequality**. The relation between inequality and migration is addressed by Borjas, 1987 in his selectivity models and which were further broadened with a number of empirical studies[10]. Basically what these models suggest, is that migration increase from countries that have large differences between their levels of national skills and earnings (i.e. countries that have large distribution of skills and wages inequalities) to countries with small differences among skills and earnings levels (i.e. countries that have low skills and wages inequalities), this is called 'negative' selectivity (Borjas, 1987 and 1991). Contrarily to this, other studies found that migration is more likely to increase from groups of workers that are in the middle or upper half of the wage distribution, rather than the lower group, this type is called positive selection (Chiquiar and Handson, 2005). Other than the inequality related to skills, the empirical evidence at the macro level has included the income distribution (measured as Gini-coefficient) as a determinant of migration, mixed results were found related to the impact of inequality on migration (Hatton and Williamson, 2002 and Agbola and Acupan, 2010).

Unemployment is another socio-economic factor that has been frequently addressed in models on the determinants of migration. It is clear that increasing unemployment rates in the origin countries would increase the potential of migration in search for employment and opportunities elsewhere. Unemployment is clearly a push factor that could lead to migration. At the same time, unemployment in destination countries

[9] Some of those living in absolute poverty migrate under forced migration or migration to escape disaster, which is not the focus of our study.
[10] Addressed in details in the micro chapter.

could also be considered a push factor that could decrease migration. This was practically found in the case of migration related to East-West European where the presence of unemployment in destination countries have neutralised the effect of GDP differentials. Migration from East Europe, after the EU enlargement in 2004, was much less than expected despite the GDP differentials (to the extent that it was anecdotally called "a tsunami"), because of increasing unemployment rates in the Western Europe[11]. Moreover, expectations of new migration waves after Romania and Bulgaria gain free mobility access in 2014 are more towards the low levels. However another important and valid explanation is the unemployment benefits that these East European countries receive as compensation that would make them stay home despite their unemployment (Belot and Ederveen, 2011 and King, Fielding and Black, 1997). However, this contradicts fundamentally the Harris-Todaro model where migration was seen to occur anyway despite the increase unemployment in the destination countries (this was called the 'bright lights migration') (Harris and Todaro, 1970), which attributed the migration in this case to the expected incomes differentials rather than the actual incomes.

1.2. Network Effects and the Cost of Migration

Some of the important variables that have been addressed in the empirical literature of the determinants of migration include the **cost of migration.** There were several attempts in the literature to measure this cost, at least the financial one. Measuring the cost of migration is however impossible even the financial one. Most of empirical evidence used the distance between the sending and receiving countries to reflect the cost of travelling in migration. The distance variable works in a negative relation with migration since the longer the distance, the higher the cost, the less likely migration will occur. Distance has also a role to play in the availability of information about the country of destination. For example, sharing a border with the origin and destination countries does reduce the cost of migration but also increase the knowledge about job opportunities, the culture and other aspects necessary for better integration (Sprenger, 2013). Distance factor can also be a factor of control of the size. There is much more in the cost of migration than just the financial cost , Evidence of social and psychological costs have been found as well, which is much more difficult to address (Zaiceva and Zimmermann, 2008).

Network effects are one of the major causes of migration, or causes of persistence of migration (as per the Network systems theory). The presence of large established network of migrants, have an important effect on encouraging more persons to migrate because of the benefits and facilitations that these network provide, this includes reducing the cost of migration through connections, increasing knowledge and sharing experiences, facilitating settlements, etc. Every migrant to a certain country contributes in reducing the cost for further migration to this country, creating a self-perpetuating process. This was also addressed in the "cumulative causation" of migration (Massey 1988). This creates a new type of migration called the transnational migration, where the migrants continue to have strong ties and links to their countries of origin. Migration networks establish a self-generating effect for migration, the development of migrant supporting institutions and a "cumulative causation' that lead to a "perpetuation of migration" (Massey et al. 1993).

Other than the evidenced fact that network has an important impact on reducing the cost of migration, both financially and psychologically, they imply a positive correlation with bilateral migration. This factor could be considered a pull factor, as the presence

[11] In the UK, for instance, estimates reached 15,000 persons per year crossing the borders from East European members states which was raised to a total of 170,000 between 2004 and 2010. In fact, only half of those predicted migration took place from East Europe (Migration Observatory, University of Oxford, 2013).

of network encourages more migration from the source country but at the same time it could work out as a push factor in case of family reunifications or opportunities offer from network abroad. More recently, cultural variables were found to have a non-negligible impact on migration flows. It is clear that sharing the same culture and language could encourage migration flows (Greenwood and mc Dowell, 1982 and Sprenger, 2013).

1.3. Demographic Explanations

The issue of demographic factors have been included in most of the studies looking at the determinants of migration. Demographic explanations include several factors that relate to the composition of the population that migrates in terms of their age structure, gender, educational and skills, urban and rural, etc.

Micro and macro empirical evidence shows that **age structure** plays an important role in increasing the possibility of migration, most migrants are rather young age as they have more incentives and aspirations to find better opportunities and have better abilities to adapt to new communities (Belot and Ederveen, 2011, Mayda, 2010). This is especially true within migration pattern from developing to developed countries, where age pyramids of each of those regions show opposite trends: while developed countries (especially the EU) are aging (with decreased fertility and increased life expectancy), developing ones are still dominated by a youth bulge.

Moreover, the demographic pressure in general is found in some studies to play a major role as a push factor: where the higher the population growth, the more migration would be expected. However, we argue that this is more of a mathematic implication of a country's population growth. Migration out of the USA, for instance, can be larger than that of Morocco who is considered an immigration country. Hence, what impacts migration here is not the population growth as such but what this growth could represent as a pressure on the economic and social conditions that could lead to migration (such as less employment opportunities, inequality in the distribution of incomes, poverty). This means that population growth plays rather an indirect impact on migration. Lagged fertility values are normally used to test this hypothesis (most of studies found this variable insignificant, others found it to have a negative effect on migration flows indicating a reverse causality, de Haas, 2010)).

Education has a complex relation with migration. It could be a catalyst that induces migration but at the same time, the relation is not straightforward. This was confirmed at the macro level by the increasing shares of highly skilled migrants (known as brain drain) and where there is a positive selectivity for highly educated individuals for migration. However, this is not an evidenced factor as some empirical evidence found ambiguous results related to the level of education (and sometimes even negative relation with migration). This could be justified by two things: First, there is a considerable share of unskilled migration among developing countries, which are low skilled seeking work opportunities in sectors such as agriculture or construction. Second, it is important to highlight that looking at this issue at the macro level, could mean that migration increases when the overall level of education in the home country is not found satisfactory by some of the population who prefer to seek better education and better training elsewhere. This could explain why some types of migration also occur among the unskilled and less educated. Microeconomic evidence has showed that education plays a major role in increasing the probability of migration. The more the individual is educated, the higher propensity for him /her to migrate (Grogger and Handon 2008)[12].

[12] this will be addressed in details in the micro chapter

Addressing the impact of the demographic transition brings us to the work by (Zelinsky, 1971) (addressed in details in the theoretical chapter) and where migration is following the path of demographic transition. This was later developed by (Skeldon, 1997 and de Haas, 2010) to include the migration transition theory, which will be addressed in details in the following section.

These three categories of variables impacting migration are far from being exclusive. The empirical literature is rich with different variables that could be added and other categories also could be created. However, this overall assessment aims at setting the tone on what we will be addressing in the coming section on empirical review.

2. Determinants of Migration Flows: An Empirical Assessment

This section will highlight some of the important findings of the empirical evidence that addressed the causes or determinants of migration. First, we will explore a number of studies that addressed the issue using cross-countries analysis. Then we review examples of studies that analysed the issue using time series or case studies. It is to mention that this review is not exhaustive as this subject was addressed by a large number of studies from different angles and according to different types of disciplines. Hence our focus will be on the most recent studies and the most referred to in the literature. As mentioned in the introduction, these types of studies are globally based on the neoclassical school concept and the push-pull factors.

2.1. A Cross-section Regional Empirical Review

This category includes studies that adopted the push-pull analysis. One of the most recent studies is the one by **Mayda, 2010** who developed a theoretical model that includes both the supply and demand side of migration flows and where the push and pull factors were addressed. The author introduced bindings or constraints to these factors such as policies. These bindings can make the factors either more effective or less effective. Based on this theoretical model, the author estimated a model using immigration data from the International Migration Statistics (IMS) data set on fourteen OECD countries by countries of origin in the period between 1980 and 1995, where emigration rates is the dependant variable and where the explanatory variables include the mean wage at both the origin country and at the destination countries, the distance between the sending and destination countries, the existence of a common border, cultural and language similarity, historical colonial relation. In order to control for unobserved country specific effects, a dummy variable was introduced for destination and origin countries, also the ratio of the young population (between 15 and 29 years old) at the origin countries was included to reflect the demographic dimension, as well as a variable representing immigration policies. To overcome the possible causality between the variable and the endogeneity, the author use instrument variables and the GMM method. Final results confirmed the existence of a positive relation between the destination countries' mean income and emigration rates (a pull factor). However the impact of the origin countries' income was found insignificant, in most of the models, or with a very weak impact. The author concludes that the push effects are more binding than the pull effects and that migration policies could have an important role in this relation. Moreover, among the cost of migration variables, distance was found to have an important negative effect on migration rates, also demographics play an important positive role in increasing migration.

Looking more closely at migration towards Western Europe, **Jenissen, 2003** looks into the economic determinants of the net migration within the period 1960 to 1998. The author splits the region into two groups: former labour importing countries[13] and

[13] Austria, Belgium, Denmark, France, Germany, the Netherlands, Norway, Sweden, Switzerland and the UK

former labour exporting countries[14]. The usage of net migration data makes it hard to test the neoclassical theory about wage differentials. To go around this, he tests the hypothesis that the GDP per capita of a country has positive effect on net migration in this country (since an increase in GDP will increase the net immigration towards labour importing countries and decrease the net emigration from labour exporting countries). He also tested the hypothesis that unemployment has a negative effect on net migration while education level and historical migration have positive effects. Data were generated from population growth minus natural increases from Eurostat datasets. Regression of former labour importing countries time series analysis showed: a positive and significant effect from GDP per capita for 4 out of the 7 countries, unemployment was found to have a negative effect for all 7 countries, however some effects are larger than others. Some control variables such as external shocks and important events have been introduced. For the time series analysis of the former labour exporting countries, results showed: a positive and significant relation with GDP per capita for Greece and Spain. The difference in GDP with most important receiving country has a positive and significant relation with net migration in Finland and Ireland. Unemployment was found to have a negative and significant effect on net migration in Greece and Ireland, while it was found positive and significant for Italy and Portugal. A pooled cross section time series analysis was performed on all West European countries and overall results show: a positive but insignificant impact of GDP per capita and a negative effect of unemployment on net migration. These results indicate the extent at which differences could be found on the causes of migration. It also highlights the non-straightforward relation that migration has with most of the macroeconomic and social variables, such as GDP per capita and unemployment.

Also, **Hatton and Williamson, 2002** develop a theoretical framework of migration decision in its standard form: where the difference between wages in the source and wages in the destination are calculated and the cost migration is considered. They added the constraints related to migration policies and another cost of migration related to migration network and whether the migrant has family or friends in the destination (to capture the network effect). Moreover, previous work of the authors showed that fertility lagged at 20 years, could have an impact on migration, which was considered not related to a labour boom but to an actual demographic spillovers (Hatton and Williamson 1998 and 2001). Based on these previous studies by the authors on different regions of the world, they look into migration from 80 countries of the world using UN panel data from 1970 to 2000 for five –year periods to test the reason behind this migration. Results showed that there is a negative impact of age on migration, the younger the person is the higher the possibility migration. This confirms previous findings by the authors for US and African migration. It was also found that the presence of a migration network (stocks of migrants in the destination) had an important positive effect on net immigration. This result was found to be an important one especially for Sub-Saharan African countries. GDP per capita income gap, adjusted by the level of education, was found positive in relation to net immigration, which means that a rise in the differences between domestic income relative to that of the world would increase the country's net immigration. Regarding the poverty indicator (measured by the Gini index), one would expect a positive relation with net immigration (lower levels of poverty will reduce emigration). However, results showed different effects depending on the level of income: in poor African countries, it was found that increasing the levels of income would increase net emigration. This effect was much weaker in Western Europe.

This is an interesting and important result, as **poverty** is often considered a main determinant of migration, however it is important to clarify that empirical evidence at the micro level has often showed that poor households (absolute poverty) are not able to migrate, as they don't have the means to cover the cost of migration. However,

[14] Finland, Greece, Ireland, Italy, Portugal, Spain and Yugoslavia.

relative poverty (i.e. how a person or individual compare themselves to others) could have a role to play in increasing migration.

Based on the analysis and the results obtained by Hatton and Williamson, 2002, **Stark et al. 2009** calculate a variable expressing the aggregate relative **poverty**. This variable is equal to the Gini coefficient weighted by the total income of the communities. This new variable is expected to have a positive impact on migration (the more the individual would feel relatively poor the more likely he /she will migrate). They used regional data from Poland to test this hypothesis and explanatory variables were lagged one year to avoid endogeneity. Explanatory variables that were used included income per capita, Gini coefficient, unemployed rate, poverty rate, population between 20 and 29 years and population density. Regression on outflows migration from Poland confirmed the assumption that relative poverty (proxy by the weighted Gini coefficient) has a positive impact on migration outflows.

Migration from the East European New Members' States to West Europe is an important case study of migration, since due to the enlargement towards East Europe, the barriers to migration have been dropped. This is why many empirical studies addressed this migration flows (e.g. Zaiceva and Zimmermann, 2008 and Sprenger, 2013) focusing on the economic determinants of migration and found reasons to confirm the economic motives. However some others (e.g. van Wissen and Visser, 1998) found no significant influence of unemployment and income differentials within the region, where these motives did not seem to explain the pattern of migration (why some migrants prefer to migrate to certain destinations in Europe and not the other). For this reason, empirical studies addressing this issue introduced other factors that could have an effect on these flows, such as cultural and network variables. Even though we will not address these studies in details we will highlight a few that are believed to have a value added in the literature.

Based on the approach by Van Wissen and Visser, 1998, it was found that economic factors might not be the only key determinants of migration in this region **Sprenger, 2013** introduce non-economic determinants such as **cultural, geographical and demographic factor**s. The author noticed the small amount of EU members' states in other EU-members states compared to those non-EU members despite the free mobility between those EU countries and their common currency in most of them. Analysing the impact of income and unemployment differentials on migration flows with the EU member states (this would implicitly remove the binding issues related to migration policy at destination countries) by investigating migration within EU and OECD countries between 2000 and 2009. Following Belot and Ederveen, 2011, she looked into the role of cultural barriers in migration flows within the OECD countries. Interestingly, she found that cultural distance between countries have an important role in migration flows between these countries[15], whereas economic variables such as income and unemployment differentials had smaller role. Sprenger use data for 21 EU member states for the period 1998 to 2010. Using OLS, the author regresses the total inflows of people from the sending to the receiving country on a large scale of variables that cover economic variables (income and unemployment), demographic variables (Education, female participation and share of young migrants), geographical variables include distances and border sharing; cultural variables following the ones developed by Belot and Everdeen, 2011; and political variables to reflect if free movement is granted. Results of the analysis showed that for economic variables, income per capita and unemployment have an important role in migration flows (a 1000 Euros increase in GDP per capita in the destination country increase the migration flow by a factor of 1.1%). Demographic variables were rather insignificant or

[15] As a measure of culture, the authors go beyond dummy variables (about sharing borders of common languages), they construct variables based on linguistic, religious, cultural and 2 measures of cultural distances.

didn't show the expected sign while geographic variable were quite high and significant. The cultural variables seem to explain, why migration within those EU countries have been weak. Migration flows between countries with related languages is much stronger than flows between those that have unrelated language. However cultural proximity didn't seem to have an impact. The network effect (proxy by the stock of foreigner) showed strong and positive results as well as open borders reflected in migration policies.

Migration policies at the destination are the formal doorway towards increasing or decreasing formal migration flows. **Ortega and Peri, 2009** looked into migration policies of 14 OECD countries and provide quantitative measures on the level of tightness of these policies and classify them according to their 'entry and stay' controls. Developing also a database of migration flows and stocks for 14 OECD and 74 developing countries from 1980 to 2000, the authors construct their own migration model to investigate the determinants of migration. Migration stock is hence regressed on a number of variables including a linear difference in income between destination and origin country, distance, land border, colonial history and common language. Results showed significant and positive relation with the income differences indicating that an increase in the difference in income between origin and destination countries have a positive effect on migration flows. In fact it was found that a difference of US$7,000 in PPP would increase the stock of migrants by 42% in the destination countries. It was also found that being a historical colonial country would double the average stock of migrants from this origin country to this destination. However, sharing the border and the language was found not to have an impact on this study, contrary to other studies. Some other tests were performed and other variables related to the destination countries such as population, income distribution and share of young population (15-24). These variables are believed to reflect the orientation of the country's policies towards migration. There was weak effect on migration flows with the population at the destination and a negative effect on their inequality. The impact of young population was insignificant. Furthermore, in order to test the impact of policy tightness on migration flows the authors use the same previous model but to which they used migration flows as the dependent variable and included policy tightness. Results of this model showed that the differences in income continue to be significant and positively related to flows of migration. As expected, the model showed that that the tightness of entry laws has a significant and negative relation on migration flows. Every reform to loosen these entry regulations could increase immigration by 10%.

One of the few studies that focused on migration from the South Mediterranean countries is the one by the **European University Institute (EUI), 2010** that looked into the determinants of migration from eight south Mediterranean countries[16]. It is clear that lack of continuous and reliable data on these migration source countries have contributed to the lack of understanding of migration flows from this region, despite the fact that this region includes two important emigration countries: Egypt and Morocco. This study however tried to draw some evidence that could be considered: The region seems to confirm the traditional approach that wages and per capita income differentials have an important impact on migration (based on a survey on the push factor undergone by the study). Due to the increasing growth of young population in these countries, unemployment seems to have an important role in encouraging migration. Also a non-linear relation between income differential and migration rates was found in these countries: emigration decreases at higher level of income per capita.

[16] Algeria, Egypt, Jordan, Lebanon, Morocco, Syria, Tunisia and the Occupied Palestinian Territories.

The demographic opportunities within this EU-Med region is confirmed by the study of **de Arce and Mahia, 2008** on the determinants of migration from five selected Mediterranean Partners countries towards Europe (Algeria, Morocco, Tunisia, Turkey and Egypt). Using data from 1995 to 2005 on migration flows for these variables that are explained by a set of dependent variables: (1) Pull factors such as employment indicators, inequality, relative GDP per capita, labour demographic, etc. and (2) Push factors such as national employment, growth of active population, etc. Using OLS and Random effect estimations to estimate the determinants of migration but also to simulate over a 40 years horizon of these migration flows. The results of these estimations showed that Morocco and Turkey will continue to be net emigration suppliers, where Algeria will have a decade of a small gap between labour supply and demand, and finally Egypt and Tunisia will show a deficit in their labour supply.

The idea of the aging population and the role of demographic characters in impacting migration flows were addressed by **Chen and Fang, 2013** in a recent paper. Based on the idea that migration can solve the problem of **aging population** in destinations countries and especially to reduce the pressure on social security, the authors developed an overlapping generation theoretical model for social security where adults make the decision (of consumption, fertility and investment in education). Results showed that the increase in the survival probability of the young would increase the tax rate for social security burden and reduce the tax income. The former will lead to decreasing the fertility but the latter will motivate adults to have more children. The net effect will be dominated by the first effect of reduction of children, which will make the population growth slower. The authors introduce the effect of migration flows, with different levels of human capital. Low skill migration could have a reducing effect on social security tax rate because they would have higher fertility. Moreover, they could prove that if the survival probability of the young to old age is high enough, the rate of GDP per worker with migration will be higher than that without migration. In order to reach this result, the difference in the human capital level between migrants and natives has to be not large and hence the flows of migration would be rather small. Applying this theoretical model on the US data showed that if migrants with a 94% level of the human capital of the natives, represent up to 2% of the population, this could lower the social security tax rate by 1.83% in the long run. Moreover, authors found that there is an U shape relation between economic growth rate of the destination country and the flow of immigrants.

In a different approach to tackle the determinants of migration flows while focusing on the demographic indicators rather than the economic ones, **Kim, 2005**, followed the principle established by Sen, 1993[17] that a country's **demographic characteristics** are a better reflection of its economic and social aspects combined. In order to solve the data problem he attempted to combine the available data from different sources such as the UN, Eurostat and OECD on 41 countries from 1970 to 2008[18]. Using a gravity approach and generalized estimating equations (GEE), the author estimates a model where the dependent variable is the log of the number of migrants from an origin (i) to a destination (j) in a year (t), on this was regressed a number of demographic and social variables (no economic variables). The results of the regression found supporting evidence that are consistent with the gravity model that migration is largely affected by the size of population at both the origin and destination countries. Results also confirmed the importance of the distance between the two countries, the shorter the distance the higher the possibility of migration. Also, infant mortality rates were found negatively correlated with either inflows or outflows. Confirming previous studies, social culture, common language and geographical proximity were also significantly associated with migration outflows and inflows. One

[17] Sen, A. 1993. "The Economics of Life and Death." *Scientific American* May:40-47.

[18] This exercise has made available 77,477 observations for the inflows of migration and 50,667 observations on outflows. These were categories into middle and high-income countries.

important remark on these results is that the magnitude of these variables is different for the outflows from the inflows and hence their nature on whether they are considered push or pull variables is also different. Previously, **Razin and Sadka, 1999** showed that even if those migrants are of low skill level (i.e. often benefiting from welfare supports) they can still help reduce the social security burden on the whole economy at least in the medium run (these migrants will create a new burden in the future).

2.2. Country Cases in Empirical Evidence

Studies focusing on a specific country or a case study are numerous, however they are mostly dominated by analysis from the developed countries point of view, either as the source or destination countries, rather than the developing countries due to a serious issue of unavailability of data about these flows form the source countries. Developed Countries that topped the empirical evidence are USA, Canada and particular EU countries (namely, Germany and the UK). Some studies looked at the historical migration flows to attempt to establish links with development phases, such Hatton, 2003 who looked into emigration out of the UK in a comparative study for the period 1870-1913 and 1950-1998. This section will address some of these studies in order to give some general overview on the issue of the causes of migration.

Looking at one of the important exporter of migrants from Asia, **Agbola and Acupan, 2010** investigates the drivers of migration outflows from **Philippines**. Using the migration model developed by Adams and Page, 2003 for data between 1975 and 2005 the share of migrants was considered the dependent variable and the model included a number of variables reflecting the country's characteristics and political instability. Results of the models showed a negative but insignificant relation with per capita income. Also adult literacy was found negative and significant. This is an interesting result but was justified by the fact that most of migrants from Philippines are of low and middle level of skill and hence education would not have the same role in encouraging migration. Unemployment was found positive and significant confirming that this could be a main driver of migration outflows, as well as inflation rates. Surprisingly, the political instability variable was found negatively correlated with migration, this was justified by the fact that in often cases the increase of instability is accompanied by an increase in the restrictions, which could restrain the mobility.

Another study on the Philippines by **Carlos, 2002** considered migration data between 1987 and 1995 and used a different approach but reached more or less similar results. The author followed the theoretical model by Harris and Todaro, 1970 and considered the levels of earnings, **unemployment** and population for both the Philippines and non-Middle-Eastern receiving countries. Results showed that migration increase with the increase in the population growth and decreased with the increase in average earnings. These relations give inverse results on the destination countries. Also, even though the validity of the Harris-Todaro expected wages theory could not be confirmed, this study found evidence that unemployment plays a more important role on the decision to migrate than level of earnings.

Another study addressed the case of **Pakistan** and looked into the causes of migration of more than half a million labour towards Middle Eastern countries, (**Ahmad, et.al., 2008**). The authors use time series data of migrants data from 1973 to 2005 in an OLS model with a Vector Error Correction Model (VECM) to estimate the determinants of migration flows, they introduced variables such as unemployment rates, real wage rates, inflation rates and the remittance flows. Results of this analysis revealed that migration was negatively affected by the real wage rate causing, according to the authors, a massive brain drain issue for the countries' highly skilled and professional workers. Also, unemployment rates and inflation rates were found to contribute

positively to increase migration from Pakistan. Interestingly, remittance flows have been found to contribute positively to migration flows (i.e. considered as a push factor).

As an overall, it seems that empirical evidence has reached the conclusion that migration flows, analysed either across time for the same country or across a group of countries or regions, are very much affected by economic variables such as income or earnings and unemployment. Most of these determinants of migration (or what we rather call the factors that impact the variation of migration flow) are based on the theoretical basis of the neoclassical theories and the push and pull drivers of migration. Some studies have found more evidence from this impact than others, but the majority did not find a reason to reject the hypothesis that economic and social factors do have an important role in increasing migration. Other factors, equally important, were found to have leading roles in affecting these flows such as the level of poverty and the relative inequality. More evidence was given to the cultural and language factors that might have a role in choosing one destination over the other (even in Europe). The cost of migration also matters in the decision as well as the positive role of network effect in decreasing these costs. Demographic variables (such as age, gender and education) were also found to explain some of these variations in migration flows.

One could draw some general remarks and insights about this empirical review:

1. Despite their major contribution to the knowledge and to the understanding of some of the factors that affect migration decisions, these studies mainly aim at explaining the variations in migration flows for a temporary or short-terms. Based on the neoclassical approach, they argue that the gaps (either income or other factors) between the sending and receiving countries motivate migration, however and as noted in the neoclassical theories criticism, these gaps have not closed between destinations and receiving countries despite long term migration flows. Some studies suggest that this is due to the fact that wages in developing countries are not adjusting as fast as they should, due to the existing costs and different local amenities that are preventing the mechanisms from taking its right course. This approach was proved to be not empirically sound (Hunt, 1993). Also despite the fact that most of these factors are features of development, only rarely development, as such, was addressed in these empirical studies (Skeldon, 2008).
2. This review showed that differences in the methodological approaches, the different data sources and estimations methods could be leading to different parameter estimations on the weights and importance of factors to the migration flows. Also, some studies take into account the heterogeneity between countries (in cross-countries analysis) while others ignore these effects. This could lead to misleading effects in trying to forecast the future of migration flows (for example over-estimation of the migration flows from East and Central Europe was often criticized). In this direction, Brucker and Siliverstovs, 2005 used data on migration to Germany from a panel of 18 European source countries between 1967 and 2001 to look into how different methods of estimations could lead to different results. The author starts by using standard model of migration as described by Sjaastad (1962) and Harris and Todaro (1970) where migration is a function of wage levels (as a ratio of the origin country wage to the destination wage and as the country of origin wage to capture the effect of liquidity constraints), employment rate and institutional variables (such as free movement) and vector of country specific time invariant variables (including the distance between the two countries, geographical proximity and a variables for common language). The authors adopted the commonly used panel data estimators to compare their results and robustness: (1) pooled OLS (with and without time effects) since they ignore the country specific effects and parameters will be biased because of correlation with the omitted country specific effects; (2) a 'within' estimation treat the country specific effects as fixed and this contains three different types; (3) estimated the random effect of

country specific effects which is identified as Feasible GLS (FGLS); (4) addressing the problem of estimation bias this method is a dynamic estimation using instruments, these could be: 2SLS, FE-2SLS and GMM; (5) heterogeneous estimators: Individual OLS, individual 2SLS and Mean group (MG); finally (6) shrinkage estimation such as Bayes estimators. Interestingly, results of the exercise showed that in fact the simple fixed effects estimators are the most robust and accurate method for estimating the determinant of migration in panel data in a short time span. Whereas the heterogeneous estimators were the least performer.

3. Moreover, it is to note that despite the existence of evidence on the causes of migration, it is believed that the contribution of this empirical evidence is rather limited compared to the size and importance of the migration flows. It was also found that very few case studies covered the cases of migration outflows from developing countries (despite the fact that they represent the majority of migration flows) and this is due to the lack of reliable data either cross-country or for long time series that would allow proper methodological approaches.
4. Many empirical studies that addressed the causes or the determinants of migration were based on the neoclassical belief, despite its many shortcomings as explained in several parts of this study. Consequently, major policy implications that have been adopted following this concept, have not achieved their targets. One important example or consequence of these implications, are the European Commission position towards controlling migration from the South Mediterranean countries. Bilateral trade agreement and trade liberalization were considered as substitutes to migration. This liberalization was meant to give incentives to more development and hence decrease migration outflows. (See Box 1.1 in chapter one for details on this issue). However these policies failed as their fundamental principles and the way they were put in action were problematic.
5. Moreover, migration determinants' studies have looked upon migrants after their migration, and hence attempting to look for the reasons in retrospect would require looking at lagged values of when these individuals have decided to migrate and the conditions that lead to such a decision. Also, these studies have looked equally upon all individuals without taking into account whether he/she is motivated to migrate or not.

Following these overall criticisms and in order to better understand the migration and development relation, a new wave of empirical studies emerged on the causes of migration. This group of studies look into the rather global picture of migration phenomenon and the reasons why nations move from being a non-mobile to being an increasingly emigrating nations for long periods of time before they start to attract other nations' migrants while their own emigration slows down, and eventually become an immigrating nation, in what is known to be called "migration transition".

This new wave of empirical evidence following the emerging theoretical review about the spatio-temporal migration and the phase of development are not meant to replace or substitute for the empirical evidence reviewed above, however we argue that they provide a sort of a broader framework under which these different factors could explain long term causes of migration.

3. Migration Transition and its Relation to Development: An Empirical Review

As detailed in the previous chapter on the theoretical review, the transitional approach in migration theory is based on the idea that migration is an integral part of the development process and not an outcome of lack of development19. It is argued in this

[19] The concept itself is not new as it has been addressed in the early writings of Ravenstein on migration theories (1885) and where migration (labour mobility) was found to be increasing with the rise of industrial and commercial activities (denotes the development process of a nation).

approach that development generates spatial inequalities in the process, which could lead to mobility (individuals moving from the less fortunate, poor, low paid, i.e. less developed, areas to more advanced, richer and better paid, i.e. more developed, areas) (Skeldon, 2008a). As the countries move in their development phases, migration follows this pattern as part of this development.

The importance of this issue was initiated by a basic question that existent push-pull, neoclassical and other theories could not answer: if (relative) income differentials are the main causes of migration, why migration, especially from developing countries to the industrialised countries have been small? While international migrants represent only 3% of the world population, only 37% of those are migrants from developing to developed countries, whereas more than 63% of the migrants are moving within their category of development (developing or developed) (HDR, 2010). Even more, migration among south nations accounts for less than half of all migration (about 74 Million presenting 47% of total migration), according to recent estimates by Ratha and Shaw (2007).

An important value added of the migration transition concept is its capacity to give some answers to these questions while looking at the long term and global context that shapes the development and migration relation. As detailed in the previous chapter, this concept is based on the following principal: In low development levels, migration flows are limited contrarily to common historical believes that migration is undertaken by poor-income countries. As development in these countries pick-up, people's 'aspirations' for better opportunities increase with the increase in education and knowledge (backed by progress in technology and communication linked to better development). If these opportunities are not satisfied at home, individuals tend to seek better opportunities elsewhere through migration. However, this depends on the capabilities that these people have to be able to migrate (both financial, social, human capital and available policies). When development reaches higher levels, opportunities at home are more likely to satisfy the increasing aspirations, and less migration will occur (de Haas, 2006).

It is important to differentiate between the so called 'migration hump' and migration transition. Though both indicate an increase in migration flows following development, they are fundamentally different in the causes of this increase and the fundamental process behind each of them. While migration hump is the result of a new trade agreement that made a sudden and short-term increase in trade relations and exchange, which would trigger migration, migration transition is a long term process that is linked to fundamental or structural development changes. For more details on the migration Hump see Box 1.2. in chapter one (Martin, 2002, and Martin and Taylor, 1996). In fact, migration will never cease, as with the existence of transport and communication technologies, individuals in high-developed countries still seek challenging and diversified opportunities and hence would seek to migrate elsewhere Hatton and Williamson, 2002; Docquier and Rapoport, 2007 and de Haas, 2010). This seems to suggest that the relation between migration and development is an inverted U shape.

This concept found a number of evidence, in particularly, the South European Countries during their development from being sources to being destinations countries. This was also the case for the Asian Tigers (or what used to be called "Newly Industrialised Countries" NICs) (Volger and Rotte, 2000, Massey 1988 and Faini and Venturini, 2008).

In this section, we provide a literature review of the second group of studies that addressed the causes of migration in the context of a migration transition theory and in which migration is related to the different stages of development. Despite being a

rather old concept, the empirical interest to investigate it has evolved only recently, which means that the literature evolving around this is still under-researched. A number of studies that addressed the causes of migration have investigated the relation between migration and development in the context of a non-linear relation, but have not looked into the theory of transition as such. Also, a fewer number of studies have looked into this relation with the aim to check the validly of the transition theory.

Given this, we will divide this literature review into two groups: (1) the first group looks into those studies that referred to the migration-development relation, however without explicitly referring to the transition theory; (2) and the second group of studies will address those that investigates the migration transition theory.

3.1. Migration and Development: a Non-linear Relation in Empirical Evidence

One of those studies that looked into the relation between migration and development, even though not fully taking into account the transitional theoretical analysis, is the one by **Volger and Rotte, 1998 and 2000**. The authors' starting point was to investigate the economic, social and political determinants of migration towards **Germany**. Using panel data from migration of 49 African and 37 Asian countries in the period from 1981-1995 (and asylum migration 1984-1995) towards Germany they estimated two regression models using Random Effect estimation (which was proved better than the OLS according to the Hausman test they conducted). These two models aimed to explain the flows of migrants both as inflows and as asylum seekers. Explanatory variables used included wages, unemployment, taxes and social security systems, Freedom House index to reflect political freedom, sending countries' characteristics including population, and the share of urban and rural population. Results of this analysis, was proved to be more or less what other previous empirical evidence has found: positive impact of wage differential on magnitude of migration, positive impact from networks, positive impact with increasing freedom, and positive impact from trade volume, together with other sending countries' characteristics variables such as population which was found insignificant and an unexpected negative relation with sending countries labour force growth). However, the most important contribution of this analysis is the relation showing that there was an inverted U shape relation between development (measured by GNP per capita) and migration flows. Even though the authors do not refer to the transition theory in their analysis but these results, in a way, could be considered evidence to this theory. If migration flows increases with the increase of GNP per capita until reaching a point where migration starts to decrease again, this is a transitional phenomenon where migration follows the phases of development.

The same finding was illustrated by **Faini and Venturini, 1994** for Greece, Portugal, Spain and Turkey, where they examined these countries' migration data between 1962 and 1988. They found a positive correlation between GDP per capita at low levels of income and a negative one at higher income levels indicating a non-linear curve (Faini and Venturini, 1994).

In fact, the case of those **South European Countries** (Greece, Italy, Spain and Portugal) could represent a good example of how development phases can impact migration flows and turn a country from being a net exporter towards a net importer. **King, Fielding and Black, 1997** examine the migration pattern of these countries and look into what they call "the turnaround" point where they turned from emigrating to immigrating countries. The authors specified three stages for this migration-development relation, even though they didn't express directly this link. The first stage from 1950 to the 1970s where modernised industries flourished in the Americas and North Europe while in South Europe population was growing as well as urbanization.

This leads to abundance of labour while wages were kept low (this was also due to political suppression of trade unions in these countries at this time). Hence, capital accumulates rapidly and the Gross National Product (GNP) marks increasing growth rates for northern Europe. At the same time southern European countries could not compete with this high productivity and large numbers of south Europeans migrated towards Americas and North Europe. The second stage from the end of the 1970s to the 1980s, when internal migration ceased, while GNP growth rates continued to grow, labour shifted from low productivity to higher productivity industries which raised wages. This leads to a decrease in emigration since workers preferred to stay home and benefit from high wages and since welfare starts to pickup, even the unemployed were receiving benefits. However accumulation of capital started to slowdown and rising wages decreased the benefits of investment. The third stage, from the late 1980s to the 1990s, where due to reduced investment, unemployment increased but also benefits were still attractive and lowering wages was not an option that nationals would opt to anymore. The economies were segmented and the labour markets became dual as employers recruited migrants who were ready to work at lower wages and in much relaxed working environment and standards. "Third World' migrants were then used to fill in the vacant places left unoccupied by the nationals. This of course contradicts a belief that migration in south Europe was only based on a push factor from the third world point of view, it is clear that there was also an pull factor from these south European countries point of view.

This brings us to how migrants at the macro level make the decision between migration or staying home and the conditions and factors that can affect this decision, within the migration–development context under our investigation. This is what **Faini and Venturini, 2008** attempt to investigate by developing a theoretical model about making a choice between migrating (bearing the costs of migration) and staying home. Migration inflows were presented to depend on wage differential, the level of amenities in the home and host countries, levels of unemployment in both sending and receiving countries. To these are added some supply side factors such as migration tightness. The authors applied the model on a sample of South European countries including Greece, Portugal, Spain and Turkey. Results of the pooled sample show that increases in wage differentials lead to migration growth. Also labour conditions in the receiving countries were found to have an affect in attracting migrants. Other than the wage differentials, the level of income in the country of origin was found to be significantly related to migration flows: as the income of the poorest group increase reaching US$950, migration starts to pickup, until this income reach US$3500 then migration starts to slowdown again. Interestingly, the results also showed that the number of young adults do not have an affect on migration. The authors concluded that the demographic transition, at least for this sample, is not really valid. It is clear from these authors rationale and from trends of rural-urban migration and labour markets development that the migration patterns followed those expressed by Skeldon, 1997. Those Southern European countries have moved from 'Labour Frontier' to 'new Core countries' (Skeldon, 1997).

Catching up with South European Countries, but still not there yet, are the countries of Central and East European Countries (CEE). Empirical evidence that addressed these countries is relatively limited despite the potentials they give in monitoring how development of these countries can have an important effect on their migration flows.

Following the path of King, Fileding and Black, 1997, but this time focusing on an emerging economy from Central and Eastern Europe (CEE), **Incaltaradu, 2012**, looks into the migration and development patterns of **Romania**. Observing migration schemes can give an important input on the role of development and demographic phases in affecting flows of migration from these countries. After the collapse of the communist regime, the author defines two stages for Romania. The first stage from 1990 to 2002 was characterised by economic instability and many reforms have taken

place on the economic, political and social aspects. Development was picking up but private sector could not benefit from the economic environment and labour surplus was not absorbed generating unemployment. International migration started to pick up seeking employment elsewhere. The Second stage started after 2002 after the accession and was characterised by a stable economic environment and an increase in private and foreign direct investment, taking the economy to a higher development level. At this stage, borders were opened with neighbouring Europe and large flows of migrants left the country. This created a shortage in labour and unemployment fell down, while real wages increased. This made Romania an attractive place to other less developed countries to migrate to, hence it turned into an immigration country. This corresponded more to a migration hump (Martin and Taylor, 1996) where migration increase suddenly following joining a trade union or agreement (here joining the EU). These flows will ease up as the development of the economy will pick-up in the longer term. This analysis of long term relation between migration and development reflect **an inverted U shape relation**.

A very similar transition patterns was observed in **Poland**, which was assessed in the study by **Kaczmarczyk and Okólski, 2008,** on the impact of migration and labour markets. Though the study does not focus on the role of development phase as such (but rather on the impact of this migration on the labour markets, (as detailed in chapter 3 on the impacts), the way migration flows was addressed, gave some evidence on the role of the development phase. Poland, almost 10 years after joining the EU (in 2004), is still considered an emigration country. The expectation of the flows of migration after the accession was very high. According to national figures about 20% of increase in migration was recorded in 2004 compared to the year before. The authors attribute this long-term view to the pattern of migration to what most European countries have witnessed during their development. These are characterised by increasing mobility in general, shift from circular mobility of homogenous and close areas towards diversified forms of mobility to more distant areas and finally, international mobility would shift from net emigration to net immigration. Other factors to these shifts could be related to modernization of financial and capital factors. Overall, it seems that these characteristics describe an economy in the process of developing, and whose demography is still in transition where population are still growing rapidly and people move seeking places to settle (inside or outside their country). The authors refer to the theory of the structuralist tradition in social sciences by Braudel, 1979[20].

Comparing the labour markets' behaviour within the context of a development progress, between the East Asian countries and those in South of Europe during the migration transition reveals an important fact: There is an important role played by the populations in these countries and their **aspirations** to have better jobs and better incomes. The well-integrated labour markets in East Asia have pushed growth that was generated from export sectors to other sectors. This has improved the working conditions, and hence, has not only kept the national labour from migrating but attracted other migrants. In South Europe the story was different. Their labour markets were segmented and national workers' aspiration for better-paid jobs in the capital-intensive sectors created a duality. Migrants from third world started to accumulate and they presented their willingness to work in labour intensive sector with low wages (Incaltarau, 2012), which national were reluctant to take.

This empirical evidence though did not refer explicitly to the transition theory of migration, has given proofs to the principals of this theory that migration is a non-linear function in development. To this evidence, we add that migration is part of the

[20] Braudel, F. (1979), Civilisation Materielle, Economie et Capitalisme, XV–XVIII Siecle. Le Temps du Monde, Paris, Librairie Armand Colin.

development process. This is what the second group of studies investigate by assessing the transition theory of migration.

3.2. Migration Transition Theory: Empirical Evidence

The emerging empirical evidence on the transitional migration found its roots in the theoretical work introduced by **Zelinksy, 1971** when addressing the 'mobility transition in parallel to the demographic transition'. This is considered a spatio-temporal theoretical perspective that basically says that all countries go through different development phases and each of these phases is characterized by economic, social and cultural features. Migration is part of this process and is embedded into the development phase.

These phases developed by **Skeldon, 1997** were described in details in the previous chapter and where he made a fusion between the ideas of Zelinksy on demographic phases with a spatial dimension and the economic optimization developed by Lee (1966). He hence introduced different types of development tiers: (1) old and (2) new core countries (e.g. OECD countries and Japan) with high immigration and internal decentralization: (3) expanding core (e.g. East Europe and China) with a mix of immigration and emigration and internal centralization (rural to urban migration still exist); (4) the Labour frontier (e.g. Morocco, Egypt, Turkey, Mexico, the Philippines) which are dominated by emigration and internal centralization; and (5) resource niche (e.g. some sub Saharan and Latin American countries) which represent variable and weaker forms of migration (Skeldon, 1997)[21]. It is clear that each tier has a certain mobility characteristics, but that the middle tier countries (which he called the "Labour frontier") are those who generate most of migration. This idea, that migration is an endogenous feature of the development process and not only caused by lack of development, was initiated when researchers looked into the relation between development and migration, and most of them could trace an inverse U-shape (e.g. Hatton and Williamson, 2002) and which was found to be different from what other scholars described as 'migration Hump' as previously noted (Martin, 1993, Martin and Taylor, 1996; and de Haas, 2010).

Within this context, one could understand the low levels of migration from poor or low-income countries (migrants from those low income countries represent only 15% of total migrants in the OECD) representing only 0.5% of their population. As described in the first part of this chapter (figure 2.3 (above)), most current migration originates from lower-middle (3.3% of their population) and upper-middle incomes (4.2% of their population). Moreover, migration also occurs from high-income countries (2.8% of their population) (Docquier and Marfouk, 2005). Hence migration does not occur in countries that in need of development (Skeldon, 2008). Despite the fact that a number of 'determinants of migration' have been found in the neoclassical empirical evidence, they were rarely identified as characteristics of a development phase. Push and pull factors did not seem to be able to explain the increasing migration outflows, as they were rather explaining the variations of these flows.

In order to check the validity of the link between the migration transition and the demographic transition following Zelinsky's theory, 1971, and focusing on the North African countries **Salinari and Santis, 2011,**investigate the migration patterns of those countries and their relation to mortality and fertility rates as presented by Zelinsky's theory. Looking at the demographic patterns and those of migration flows, the authors found that this theory does not conform well to migration from West Africa. In order to test this, an analysis was conducted on the effects of population growth on rural-urban and international migration. The analysis included 4 European

[21] More details about these phases are described in the previous chapter on theoretical review.

countries[22], 5 North African[23] countries and 7 Western African[24], which are in different phases of their demographic transitions for a period of 30 years (1975 – 2005). Adopting the nested models strategy, the first model was that of urbanization which was estimated as the growth rate in proportion of the population living in urban areas, whereas the second model estimated the value of net migration rate towards the country. These two dependant variables are explained by: the natural increase during the period with a 25 years lagged and potential inhibitors which are 4 potential responses of the population to growth: increase food supply per hectare per year, extending the total amount of cultivated land, increase capital in agriculture or out-migration (this last explanatory variable was replaced in the second equation by urbanization); the catalysts to the two process of urbanization and international migration are GDP growth, exports growth, education growth. Results of the model showed that the process of urbanization is affected by current population growth, whereas international migration is rather affected by past population growth. In fact, past population was found negatively correlated to the migration flows: higher past population growth can have a push effect on migration especially in the absence of employment opportunities in urban areas for the youth and no possibility of land extension.

Moving to the more advanced theory of Skeldon, 1997 and how migration transition links rather to the phases of development (and not only demographic transition), **de Haas, 2005a** looked into the special case of **Morocco**, being one of the leading emigration countries (with more than two million's Moroccan's descent living in Europe). The country's emigration flows have been on the rise and the author have analysed these patterns and causes using the spatiotemporal theoretical models developed by Zelinksy (1971) and Skeldon (1997). According to the Moroccan's development characteristics, it is considered a 'labour frontier' country, which is characterised by rapid declining of mortally rates and still high fertility rates leading to major population growth. It is an 'Early transitional Society' in the definition of Zelinksy's phases of development, which denotes this category of upper lower and lower middle income countries with modest social, economic and infrastructural development that are neither too low enabling people to migrate, nor too sufficiently high that would stop them from migrating. Their mobility then includes international migration, internal urbanization and circular and colonisation migration. Moreover, the author argues that migration from the sub-Saharan to Morocco further confirms the transitional migration theory: where poorer less fortunate population migrate to Morocco as a relatively better place than their own. Given these patterns, the author predicts that migration outflows from Morocco will continue in the coming 2-3 decades due to its still ongoing development process on the economic and social front but also due to its institutional framework.

In an attempt to look on the global picture of the North African countries, **de Haas, 2008,** has traced the history of migration of those countries back to the pre and post-colonial era. Following Skeldon, 1997, the author links the migration transition to world systems theory in looking at the migration in this region. He emphasized that this region is quite particular, since at these historical eras and despite low levels of domestic development, there was a dominance of colonial activities and net immigration was noticed especially in Algeria. Migration was much affected by colonial, civil and inter-state and not only by phases of development. Another interesting case is that of Libya, which attracted large flows of migrants during the oil boom in the 1980s despite its low development phase. The author argued, that this migration was much related to the segmentation of the labour markets in this country where the nationals are not able (or not wanting) to take certain jobs that only migrants could be willing to

[22] Greece, Italy, France and Spain.
[23] Algeria, Egypt, Libya, Morocco and Tunisia.
[24] Burkina Faso, Cameroon, Mau, Senegal, Ghana, Nigeria and Togo.

take (due to their difficult nature, low wage and poor conditions). This has increased immigration to Libya from neighbouring countries such as Egypt and Jordan. The author concludes that it seems that North African countries, still have a long way to go before they reach the development phase where migration (and remittances) can have an important contribution to the development process.

Perhaps one of the most noticeable transition experiences is the one that took place with the mass migration of Europeans towards North American in the 19th century. **Hatton and Williamson, 1998** address this issue in their famous book on 'The Age of Mass migration' by looking into migration and economic data between 1850 and 1931. The authors construct the wage ratios between source and destination countries among other variables (share of labour force in agriculture, rate of natural increases, etc.) during this time. Their analysis gave strong support to the importance of relative wages in influencing emigration, where a rise in the relative wage will lead to an increase in emigration rate by 1.27 per thousand. However, the wage differentials converged due to the declining of these differentials following the 'mass' arrival of migrants that joined the labour market. This was coupled also with a shift of labour from the agriculture to the industrial sectors.

Also, looking at the Asian continent, and more precisely towards the recent Asian dragon economies (**Hong Kong, South Korea, Singapore and Taiwan**), **Findlay et al. 1998** highlighted the dramatic economic progress achieved by these countries in the late 1990s and which was coupled with increasing immigration to these countries, which were in earlier times emigration countries. Looking at migration flows data from these countries, the authors reached the following conclusions: (1) Rising levels of migration towards those countries was coupled with high economic growth and economic restructuring (2) The pattern of the source of those migrants from within the Pacific Asia is very much related to political and cultural considerations which play major roles in choosing destination countries and not only the differences in development levels; (3) Migration and development do not have a single linear path and they have a causal relation that affect each other differently.

In fact, **Fields, 1994,** looked into the turning point for these countries from being labour exporters to labour importers, and emphasized that the migration transition that took place for these countries, is very much attributed to their export-led-growth which had a huge effect on their labour markets. Labour demand has shifted to a new level due to the growth of key industries such as metal and textiles. Employment grew tremendously (up to 17 and 18 % in S. Korea and Singapore). This has eventually increased real wages reaching the full employment level (i.e. the supply of labour were no longer abundant). According to the author this was the turning point that was highlighted by "Lewis-Fei and Ranis"[25]; yet because these economies are so well integrated, the increase in wages was spread across the different sectors (not only the tradable ones). This has resulted in reduced emigration, and workers preferring to work and benefit from high wages at home. However, in order to stop the increase of wages, many firms started to import cheaper labour from outside and hence immigration towards those countries was encouraged.

One of the prominent studies that were conducted on the migration transition theory is the one developed by **de Haas, 2010**[26]. The author starts off from the basic principals of Zelinsky, 1971 and Skeldon, 1997 in explaining migration flows to which he added

[25] Fei, John C.H. and Gustav Ranis 1975 "A Model of Growth and Employment in the Open Dualistic Economy: The Cases of Korea and Taiwan," The Journal of Development Studies, January. And Lewis, W. Arthur 1958"Unlimited Supplies of Labor: Further Notes," Manchester School, January.

[26] This study will be addressed in some details, as it will represent the basis of our empirical evidence in the second part of this chapter.

the possible roles of '***structure***' referring to structural constraints that could impede migration, even if the individuals wanted to migration together with what he called '***agency***' which reflects the people's independent choices. These two are incorporated into the model which links the migration to the development phases through the capabilities and aspirations of the individuals[27]. The author defines capabilities as *the ability of human beings to lead lives they have reason to value and to enhance the substantive choices they have."* This concept was addressed in details in the previous theoretical chapter. Based on this definition the author put the hypothesis that development generally lead to increasing capabilities to migrate. He also argued that the more the person is educated the more he/she has aspirations; this also translates into having access to knowledge and information that boost aspirations.

The hypothesis put by this model is that from one hand, human development has a positive relation with migration and from the other hand, the mix of increasing aspirations and capabilities, loosening constraints and network effects accelerate migration at an initial phase of human development, but in the long term this effect decreases due to the diffusion and decreasing differentials with destination countries.

In the following section, we address this model developed by de Haas, 2010 with some details given its importance in our study. The author adopted a cross sectional analysis of the links between levels of human development and migration levels, using data published by the World Bank and University of Sussex which consists of a matrix of 162 bilateral country to country stocks of migration for the year 2000[28]. Three models were developed for emigration stocks, immigration stocks and total mobility. In our study, we will focus on the model related to the emigration stock since it is more relevant to our focus. The model related to the emigration stocks is set as follows:

1. The dependant variable in the model is the stocks of migration as percent of the population. The idea of using the stocks of migrants was to reflect the accumulation and historical migration flows to capture the causes and not only the variability. As mentioned earlier, the whole transition theory that is put in the test is a long-term theory that is looking into the relation between migration and development at long terms.
2. The author used a broad definition of development that includes both social and economic (income) aspects. Two models were developed: first model includes the log of GDP per capita (in US$ in PPP) as the main independent variable. The second model replaces GDP by the Human development index (HDI) calculated by the UNDP programmes for 2005.
3. The average GDP per capita growth for 1987-2006 was included to reflect the fast growing economies. Literacy was also used as a proxy to the educational levels (average value of 1987-2006).
4. Past (lagged) fertility rates were used as proxy to the demographic factors. Though De Haas has argued that the demographic factors do not have direct effects on migration, he used it in the model to test this hypothesis.
5. The two models included other control variables: such as political rights using the Freedom House index, the population size and the surface areas. Though most of the empirical evidence has proved the strong significant effect of the absolute population size, and often the surface area of countries, on migration flows, de Haas argued that this was 'stating the obvious' as the link with those variables are clear.

In order to test the data and performing bivariate exploration of the levels of economic and human development, countries were classified according to their GDP and HDI in

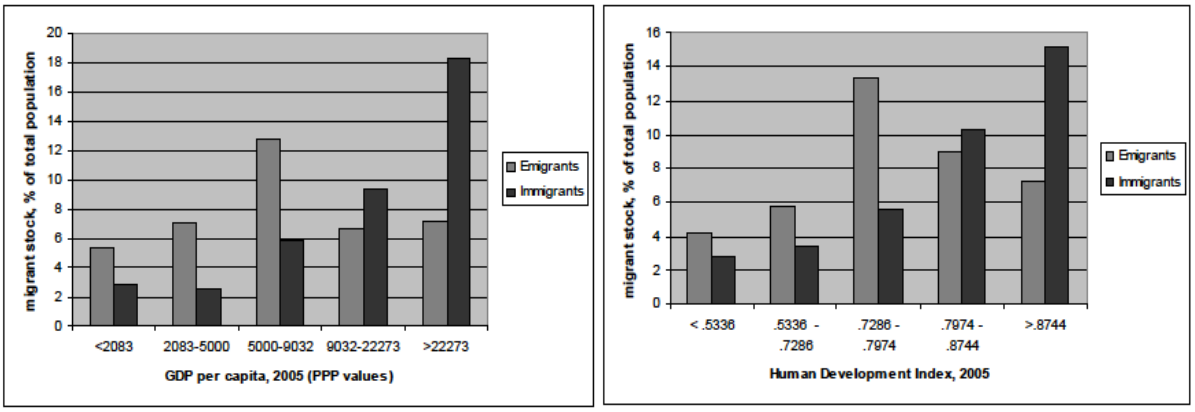
[27] These additions are fully detailed in the previous chapter on the theoretical review.
[28] The database uses national censuses, national statistical bureaus and some other sources (ILO, OECD, DFID, MPI)

equally divided quintiles. Observations from this bivariate analysis showed that the countries in the low GDP quintile have low levels of emigration stocks as percentage of population, while countries with middle development have the highest levels. Highly developed countries have low levels of emigration stocks but still higher than those of the underdeveloped countries. The same result was found for the HDI. Moreover, contrary to the expected, the second poorest groups of countries had lower level of migrants' stocks than the poorest group (Fig 2.6). This indicates a non-linear relation between development and migration stocks.

In order to estimate the migration model, the author using nonparametric regression analysis, where **emigrant stocks are the dependent variable.** The results of the regression analysis are summarised as follows:

1. GDP per capita: The first model included the GDP per capita, control variables of surface, population and political rights showed no significant relation between GDP and emigrants' stocks. In the second model, where the squared value of GDP was used, the relation with emigrants stocks became positive, confirming that the relation between those variables is **an inverted U shape**.
2. The association between **GDP and emigration fits an inverted U-shape**, reaching a peak at GDP per capital of US$12,000 and HDI levels of 0.8. While the association between emigration stocks and HDI is almost non-existent at lower levels of HDI but seems to take a 'hump' shape at a value of 0.6 of the index.

Fig 2.6 Illustration: GDP per capita and HDI to migration stocks (percent of total population)



Source: de Haas, 2010

3. These analysis confirmed **the non-linear relation** between emigrants stocks and
4. More variables were included in the model such as: literacy and fertility. Literacy had no significant effect, but with its squared value the relation became significant, denoting a non-linear relationship with emigration.
5. Models using HDI as the explanatory variable showed more significant coefficients for both HDI and its quadratic values, indicating a non-linear relation between emigration stocks and HDI.
6. In all models, population showed a negative and highly significant relation with emigration stocks. This was justified by the fact that the more the size of the population, the much easier it would be to absorb the population internally rather than moving elsewhere. Also, the land variable was used as a proxy to travel cost and this also had the predicted negative effect. Political rights had negative and non-significant relation with emigration stocks and this confirmed the results of the bivariate analysis.

Similar models were developed for the dependent variables of **immigration stocks**. Given that this is not the main focus of our study, we will only highlight some of the interesting and relevant results: there was a significant and positive relation between immigrants stocks and GDP per capita indicating a possible linear relationship. However including the squared values of GDP gave better results to the model, indicating the existence of a rather curvilinear relationship between those variables. Moreover, a curvilinear convex relation was found between immigrants stock and HDI. Literacy has little or no effect on immigration stocks as expected by the author. However there was a significant positive effect with fertility. The author explained this by the effect of Gulf countries, which are characterised by high emigration and high fertility. Therefore, when a dummy variable was introduced for these countries, the effect of fertility disappeared, confirming that there is no direct effect between migration and demographic as denoted earlier. Finally, regression models on **net migration** showed that higher both the GDP and the HDI the lower will be net migration, indicating that this means that outmigration is decreasing and in-migration is increasing.

There are important value added that could be attributed to the model by de Haas, 2010: First, the model put in evidence that migration is part of the development and it does have a non-linear relation with development variables (i.e. GDP and HDI alternatively) and where GDP had a better-fit relation than HDI. These findings put in question the general assumption, that development will reduce migration as believed by neo-classical theories including push-pull factors and also functionalist. Migration is part of the development process where it increases with increasing of human development. Second, the author included new concepts to the migration analysis, which are the capabilities and aspirations denoting the choices of the person and the potential opportunities offered. He introduced the structure and agency by conceptualizing migration as a function of those capabilities, aspirations and opportunities rather than on income differentials. His findings that human development generally leads to higher levels of migration through increasing capabilities due to facility of mobility, increasing aspiration and increasing occupational specialization, had made a new turn in the understating of the determinants of migration.

This is the case of low skilled workers that seek temporary employment by migration. Low HDI levels could lead to migration with the objective of seeking better development elsewhere. Also, more robustness checks and model specification tests could be made on those models to ensure their stability. Also there were some issues with the consistency of the data: the reference year using the stock of migrants was that of 2000; however the author used HDI value for 2005 hence 5 years later which could affect the final results.

To conclude, de Haas models confirmed the main hypotheses of the transition theory where increasing levels of human development (with proxies using HDI and GDP) are associated with increasing levels of migration and they form an inverted **U curve effect** on emigration and net migration.

These findings represent an initial idea that could be further developed and refined. For example, the idea that aspirations increase with the level of development could be further investigated; in fact, one could argue that even with low levels of development, people could still have aspirations that could lead them to migrate, provided that they have the right capabilities. These sorts of additions, as well as other additional control variables will be included in our own estimation in the second part of this chapter.

4. Conclusion

Migration is a complicated and dynamic phenomenon that takes place at the level of the individual(s), which combines different factors at the economic, social and personnel levels. Hence, addressing this phenomenon at the aggregate level can be quite challenging as it holds a large number of discrepancies in choices and behaviour. Other than differences in the behaviour of the individuals there are differences in the overall attitude among countries. We have witnessed countries having similar economics and social conditions but that their migration behaviour was quite different. This is one of the shortcomings of the neoclassical theories in explaining migration that it could not explain why some countries have higher migration patterns than others within the same level of income. Therefore, a one-fit-for-all theory explaining migration is difficult to identify as it holds a great deal of choices and different behaviours.

Despite this, in this chapter we showed that the existent empirical evidence has made a step closer in understanding the causes of migration and in tracing some broad lines on not only the determinants (including the push/pull factors), but also the conceptual causes of migration. Empirical evidence on the determinants of migration has highlighted the important role of economic factors in increasing migration: Income differentials between home and destination countries played an important role in the decision to migrate; unemployment was also highlighted confirming the idea that if opportunities are not found at home, people seek them elsewhere. Social factors also play a role: education was a controversial issue in these models, which was quite understandable since migration is not only restricted to highly educated or highly skilled individuals (even if there is a growing number of this type of migrants recently). Recent studies on determinants of migration have also found a non-trivial role for the cultural and languages differences. These are contributing to the choice of the destination and not the decision to migrate itself.

Despite their value added in the empirical literature of migration, these models were missing an important link towards development. Having discussed and analysed the different causes of migration, these studies have not addressed in what way migration is related to development. Hence, "Migration transition" came to complete this picture on the causes of migration. Though the concept existed 2 or 3 decades ago, the empirical evidence investigating its validity is quite recent. However, even if very small, the existent literature made some contributions that would take a step closer to finding out the complicated reality about the relation between those variables. These studies showed that ***"migration does not stem from a lack of economic development but from development itself"*** (Massey, 2006).

Therefore, there has been some increasingly accepted principal that migration is not a way to flee lack of development or poverty, but it is rather an endogenous part of the development phases (de Haas, 2010) and is an outcome of the expansion and consolidation of global markets (Massey and Taylor, 2004). During the development phases, nations progress in their structural transformation and their integration into the global markets, this opens the door for individuals to seek mobility out of the traditional communities and livelihoods towards other places (world systems theory approach). This concept also helps explain the low shares of migrants towards richest destinations, as the objective is not only to seek better life, but also to find destinations that can ensure ties with their home countries socially and economically.

It is important to highlight here that the transitional theories are not intended to replace the neoclassical push/pull factors of economic differentials. They are here to complement and put these variables (economic, social, demographic, cultural etc.) into a larger context of development with which some patterns or overall trends could be identified.

Despite the very few empirical evidence that addressed this issue, one can already draw some important orientations or even conclusions: first, migration is part of the development process; second, at low and middle levels of development: the higher the level of development the higher would be migration flows; and third, at very high levels of development: migration will substantially decrease relatively but would still continue to take place.

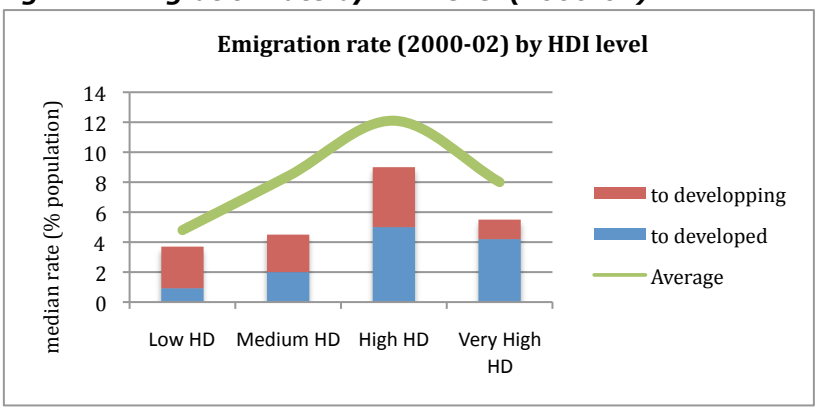
Given this complexity, it is clear that any contribution towards better understanding this relationship between migration and development would make a value added to the knowledge and a lot of research needs to be put in this subject.

II. Migration Transition in a Development Perspective: New Empirical Evidence

The existent evidence have made large contributions in explaining the variations in migration flows due to exogenous factors: migration flows would increase with the increase of the income differential gap between the origin and receiving countries and with increasing unemployment at the origin countries in order to maximise benefits (opportunities, skills, incomes, quality of life, etc) (Harris and Todaro, 1979, Bauer and Zimmermann, 1995). However, the expectations of closing the gap between the sending and receiving countries, following the neoclassical theory, have proved to be not accurate by existing empirical evidence.

We have noticed the following facts that is summarized in three points (Fig. 2.7): (i) The average emigration rate from low human development (HD) countries is the lowest among all regions; (ii) the highest emigration is from the high human capital development in their early stages of development; and (iii) migration continues even in the very high human development.

Fig. 2.7: Emigration rate by HDI level (2000-02)



Source: Human Development report, 2009

Inspired by theories of transition, we will develop an empirical analysis to investigate the developmental features that lead to migration in a long-term context. This second part of the chapter includes macroeconomic empirical evidence where a model of migration is estimated while including features of the development phases. Hence, this part is organised in three main sections. In the first section, we will present the conceptual background of our empirical evidence, the second section, will present the variables under consideration and the third section will present the results of the estimations. The section will conclude with some remarks.

1. Conceptual Background and Motivation

Our empirical evidence is based on the migration transition concept, where migration is linked to the development phases in an endogenous relation and where it is considered a part of development process and not only an outcome.

Basically, this transition explains how countries, in their very early and low level of development, seldom migrate. At this low level of development, they are lacking the means that would allow them to migrate. This could be either financially (given the high cost of migration), socially (their education and skills levels are not suitable for labour demands in other countries). This is what could be described more broadly as the ***'capabilities'*** to migrate. As development level increases, people start to have '***aspirations'*** to look for better opportunities. If the opportunities offered at their home countries are not adequate or insufficient, they hold a higher potential to migrate. Once the phase of development is high enough to absorb these aspirations, individuals do not seek opportunities elsewhere and migration start to decrease. (For more details on the aspirations and capabilities please refer to Box 2.1).

This principal of the combined effect of aspiration and capabilities being closely linked to the development stages could explain why at early stages of development and while development is growing, migration also increases. This is a fundamental difference from the neoclassical theories about migration and development.

Box 2.1. Aspirations and Capabilities and their relation to migration and development

There are several definitions to "aspirations", it overall represents the hope or ambition or the desire of achieving something. We adopt the definition referred to in Gutmann and Akerman (2008)[29]; "*aspirations can be defined as an individual's ability to identify and set goals for the future, while being inspired in the present to work toward those goals (Quaglia and Cobb, 1996)*[30]**"**.

Increasing levels of development boost aspirations of the people as they start benefiting from better incomes, better education, better connections with the global world and better knowledge. If these aspirations cannot be matched by opportunities offered at home (even with internal migration), individuals seek opportunities elsewhere through migration.

At the same time, individuals need to have the capability to migrate. Capabilities are basically the assets and the conditions that individual possess or live in. In order to migrate, the individuals have to have the capabilities to do so. This includes material, social and human capital, but can also include surrounding environment and conditions. Hence, capabilities are not only financial but it also includes a certain level of human capital (a skill, a knowledge and/or education) and a basic level of health and/or knowledge (even if the person has low skills or is illiterate). Capabilities could include social support and supporting national policies that could allow such mobility.

Aspiration and Capabilities: what measures?

Measuring 'aspirations' could be challenging as the variable represents a hypothetical or a hope of the individual and not a real action. A very few national surveys collected primary data about people's aspirations in general and their aspiration to migrate in particular (e.g. Philippines, Turkey and Egypt). A handful number of studies looked into the relation between migration and aspirations and have identified some interesting results. Most important ones are that 70% of the aspirations' differences between future migrants and non-migrants are related to the following factors: young age,

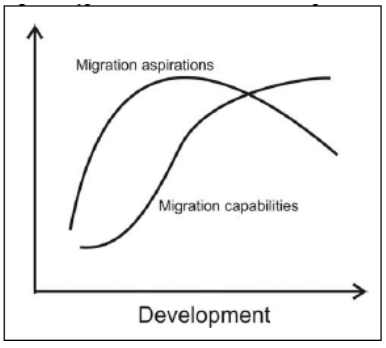
[29] Gutmann and Akerman. 2008. "Determinants of Aspirations" Centre for Research on the Wider Benefits for Learning. Institute of Education, University of London.

[30] Quaglia, R. J., and Casey, C. D. 1996. Toward a theory of student aspirations. Journal of Research in Rural Education, 12, 127-132.

education and socio-economic background (Czaika and Vothknecht, 2012). Some of the most common features about those persons are summarised as follows: (1) they are young of age (as young as 15 years old). This was confirmed by most studies on the subject[31]. (2) They are overall well educated. In general the more educated the person, the more likely he/she would be aspired to migrate[32]. However, education is not a pre-condition to have aspiration to migrate. Data on the level of education of migrants showed that the levels of education are very much depending on the destination and the nature of migration. High educated tend to seek migration in OECD countries whereas those with medium or lower skills search for nearby destinations (i.e. the Gulf countries for Egyptian migrants). This relation however is not a straightforward one. As mentioned earlier, education increases aspiration, but this does not necessarily translate into migration, if opportunities are found in the home countries. Also, having low skill or a low level of education does not mean that the person is less likely to be aspired. (3) Gender is also an important feature of aspiration but it also depends on the countries of origin. For instance in Turkey, both females and males have the same aspiration potentials to migrate (about 30-35% of the surveyed), whereas in Egypt, which is dominated by male migrants, 30% of the youth males surveyed had intentions to migrate (as opposed to 7% of females). Other variables are included in the surveys such as marital status, urban/rural areas. etc. Adding to this is the effect of having a network of migrants elsewhere that would encourage and increase the aspirations. This is also connected to a large extend to the development in communication and media. ***Practically,*** in the model and in order to reflect the concept of aspirations, we will attempt to test a number of these variables in the migration model: youth population (percentage of youth in the population), growth in mean years of schooling, etc[33].

However, as aspiration itself is not enough to migrate, there should exist also the capabilities of the individual to perform such an act. Capabilities defined as the human, social and materialistic assets that would permit a person to achieve his/her aspiration to migrate. This could be related to their: level of education (the more highly educated the more capable and aspired), the cost of migration (this could be measured by the distance from the sending to the receiving countries) and socially could represent the political environment whether it is encouraging freedom or suppressing. ***Practically,*** in order to reflect the capabilities aspect of migration, we will attempt to inject variables such as the distance to reflect the cost of migration (as commonly used in empirical evidence), level of education and level of freedom. These capabilities are very closely linked to the development of the nation. As the more the country is developed, the more their populations are capable to migrate, if they wish to do so.

Fig. Box 2.1 Migration aspiration and capabilities[34]



While migration capabilities are likely to increase with the increasing of development, however with a declining pace at early level of development, aspirations to migrate tends to form an inverted U shape relation with development. People have more and more aspirations to migrate at the early stage of development, as they feel that opportunities given in their own countries do not match their growing demands. This relation is increasingly steep at the

[31] In Egypt (The Population Council. 2011. Survey of Yong People in Egypt (SYPE); in Turkey (EUMAGINE (Imagine Europe from Outside). 2012. Country analysis: Turkey). Also in (Mayda, 2010 Stark et al, 2009, Ortega and Perri, 2009)

[32] This was confirmed by several surveys including the same one for Egypt and Turkey.

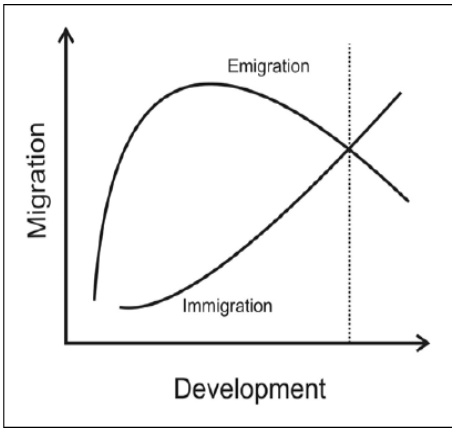
[33] Other variables could be interesting to include such as the usage of Internet and media but these will be biased towards developed countries.

[34] Source: de Haas, 2010

early stages of development, until it reaches a certain peak when the country's development stage had reached a certain level where the opportunities (better education, better jobs, better quality of life) offers are able of fulfilling the demands. At a certain phase of development, aspiration to migrate slows down (decreasing slope of curve). This happens when at a certain level of development the opportunities offered start to match the needs and hence the aspirations are satisfied at home and hence no need to migrate.

Therefore if we map those aspirations and capabilities of migration and their relation to development, the linear negative relationship between migration and development assumed by the neoclassical approach becomes irrelevant (Harris and Todaro, 1970) and will be replaced by an inverted U shaped curve. Where we see emigration increases with the increase of the level of development of a country. Very low income or Least Developed Countries (LDC) have low levels of emigration (these emigration could be due to severe conditions in home countries where migrations seek to find seasonal migration in neighbouring countries). As development improves, people's capabilities improve and they develop an aspiration to migrate and to maximise their potential benefits. This would be also reflected in their level of human development. This is showed by the steep increase in the relation between migration and development (Fig. 2.8).

Fig. 2.8. Illustrative curve for migration and development



Source: De Haas, 2010

At a certain level of development, where, although, more people are still capable of migration their aspiration to migrate diminishes, since opportunities offered at home meet their requirement. This is when emigration start to decrease slowly, but it will never reach the lowest level of migration during the early phase of development. This is because in developed countries, a number of persons are still aspired to migrate looking for different experiences and different opportunities than what is already offered at home. For instance, a person from UK migrates to the USA in search for larger multi-scale, multinational opportunities (both countries at high levels of development).

One more interesting point on this relation is that it is not a unidirectional one. In other words, if a country's level of development decreases, it could transform this country from a net immigrant to a net emigrant country (such as the case of Argentina). A different story for the immigrant to tell, which is quite simple and non-controversial, the more a country is developed the more it attracts migrants. This is denoting by the increasing curve of immigrants traced on the different levels of development.

From this analysis we could say that development is affecting migration through its effect on the aspiration and the capabilities of the individuals. This will be shown below using empirical methods.

2. Estimating the Impact of the Phases of Development on Migration

The empirical model that will be undertaken has for objective to identify how the level of development impacts migration flows. Differentiating our model from the 'determinants of migration' or 'push-pull' factors, we will attempt to grasp the development features and observe how they are linked to migration. Based on the theoretical concept described by Zelinsky, 1971 and further developed by Skeldon,

1990, this model will have the same spirit of the model developed by de Haas, 2010 reflecting migration transition model.

Moreover, our model will attempt to make some modifications to bring up some of the interesting features that were addressed in the conceptual framework, notably the capabilities and aspirations aspects of the relation between migration and development. In his model, de Haas 2010 traced hypothetical relation of these variables with the development: assuming that they were implicitly represented in the Human Development Indicator. Our model will attempt to represent these two variables aspirations' and 'capabilities' by some indicators.

An important feature is added to these concepts, which is: If people's aspirations are greater than the available opportunities at home, people seek to move towards other places. First they move internally and then at later stages they move internationally. This of course provided that they have the capabilities of making such moves. The capabilities increase with the increase in the means and incomes among others (de Haas, 2005b).

2.1. Methodological approach

Our methodological approach in addressing this empirical evidence will consist of estimating several models explaining migration. This will be done in three main rounds, as follows:

1. In the first round, we will make an adaptation of the model presented by de Haas, 2010 with some slight modifications at the year of reference: 2000. This will be called "the Basic Model"
2. The second round will present some amendments to the Basic model by introducing new variables to better represent the aspirations and the capabilities and their role in migration. This will be called the "amended model"; and
3. The third round will present the "final models" that are found to best fit the data, and where both social and economic development levels are presented

In all our three rounds, the dependent variable is the **Emigration stock** (as percentage of population). This variable is particularly interesting since it reflects both the historical flows of migration and the magnitude of this migration compared to the population. In order to estimate those models, we use a simple Ordinary Least Square methodology, to test the relation between migration and development.

Furthermore, a variety of estimation tests are used in order to ensure the good specifications of the models. Three tests are systematically applied: (i) the RESET Ramsey test for the specification of the model in order to determine the right functional form of some explanatory variables the existence of non-linearity[35]; (ii) the Chi2 test of normality of residuals; and (iii) the White test for heteroskedasticity. These tests are important in the model specifications to ensure the accuracy and the non-biasness of the results.

2.2. Discussion of the Variables and Data Sources

Our basic hypothesis is that the relation between migration and development is non-linear where migration is impacted by the level of development of the sending countries. It is important to note that we are not considering the destinations of this

[35] The RESET test (Regression Equation Specification Error Test by Ramsey, 1969) correspond to a specification test to determine if non-linear combinations of the fitted values explain the variable. If it is the case, the model is mis-specified and non linear intervention of explanatory could be suspected.

migration. In order to test our hypothesis, it would be ideal to use a long time series of a 100 years for instance to follow the development of one country and the related flows of migration related to it. However, unfortunately, these kinds of historic data do not exist, hence we will use cross-country data for about 165 countries for one year of reference: 2000.

It is important to mention that while estimating our models, explanatory variables with high degrees of collinearity will be avoided to minimize the degrees of endogeneity among variables. Most of the variables used are those of the same year of 2000 and hence any causal impact of migration could be minimal. Some variables are used in a time lag.

The following table indicates the basic list of the variables that are used in the different rounds of the empirical evidence, their abbreviations in the empirical model and their sources:

Name of variables	**Abbreviations**	**Sources**
Stock of Emigrants of a given country	Emig_Stock	Global Migration Origin Database version 4, Development Research Center (DRC) on Migration, Globalization and Poverty, Sussex University and World Bank
Population of the country	Population	United Nations, UNDP HDR database
Ratio of Emigrants stock on sending country population	Emig_St_P	own calculations, (the ratio of the two previous variables)
Gross National Income per Capita in PPP, 2005 $	GNI_PPP_P	World Bank, WDI database
Human Development Index value	HDI_value	United Nations, UNDP HDR database
Surface of the country in KM2	Land_surface	Mayer and Zigango , 2011
Political Right index	Polit_Right	Freedom House database
Fertility (number of births per woman), average for (1970-1990)	Fertility	United Nations, UNDP HDR database
Literacy (adult literacy rate % of 15 years and above)	Literacy	United Nations, UNDP HDR database

Note: More variables are added in other rounds.

a. The Dependent Variable

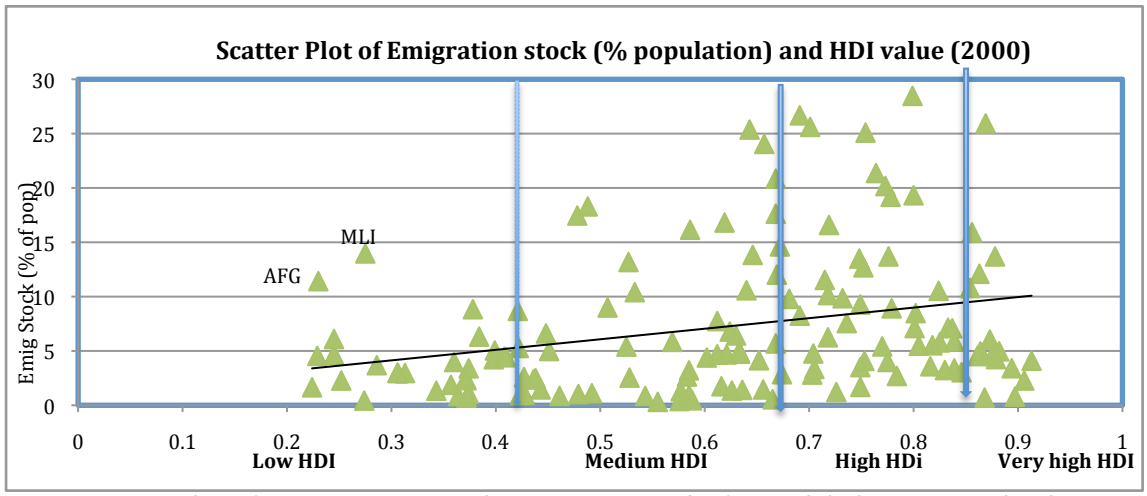
In our model estimations we use the migration stock data (% of the population) for a sample of 165 countries for one base year: 2000. Using a large number will reflect the different phases of development by addressing all countries. The data of this variable was calculated from the bivariate matrix database published by the Development Research Center (DRC), Sussex University, UK in collaboration with the World Bank. This is a unique database that is made available for the first time about bilateral migration between countries for more than 200 countries of the world. This data is considered an extension to the data published originally by the United Nations on migrants in 2003. The most recent available version of this base (version 4) combines the data reported according to the place of birth and that related to the citizenship.

b. Explanatory variables (representing the level of development)

1. We represent the economic development level of the home country by the level of its **Gross National Income (GNI) per capita**. This is the first modification from the model of de Haas, 2010, as well as most empirical studies, where they used the GDP per capita to measure economic growth. We argue that while GDP per capita reflects the outputs of the county per person, it does not take into account other non-productive sources of incomes. The usage of incomes is hence used in this sense and it represents the revenues of the country (regardless of its productivity). According to our concept of migration transition, it is expected that GNI per capita would have a non-linear relation with emigration rates.

2. We represent the socio-economic development level of the home country by the level of its **Human Development index** (**HDI**). HDI is an index developed by the United Nations and is published in the annual Human Development reports. The index includes a number of variables reflecting in a comprehensive way both the economic and social level of development achieved by any economies, these are: GDP per capita, gross school enrolment, adult literacy and life expectancy. Other than reflecting the level of development of a country, this variable was presented by de Haas as also reflecting the level of aspirations and capabilities of the population (given the relation discussed above). This index takes the values between 0 and 1 depending on the level of development. This variable was rarely used in empirical evidence on migration. Its relation with migration is presented in the following scatter (Fig. 2.9). The relation seem to have more like an increasing overall trend, however due to some observations (e.g. Afghanistan and Mali were spotted in the graph) in the 'low HDI' zone, it could reflect a skewed U shape. As an overall, the higher the HDI value the higher the emigration stock. Also, very high HDI values have rather low emigration stock.

Fig 2.9. Relation between emigration stock and HDI values



Source: HDI values from HDR,2000 and Emigration stocks from Global migration database.
Notes: Classification of the HDI zones according to the HDR, 2000

3. To reflect the social aspect of development, two variables are introduced: **fertility rates and literacy rate.** In our model estimations we include fertility rates in lagged averages between 1970 and 1990 with the idea to reflect any impact of the demographic pressures on the economies especially on the labour markets during the emigration year under consideration. Other than reflecting the actual demographic pressure given past fertility (and testing the demographic transition theories), it can give an indication of the social development of the countries: There is a strong link between low levels of development and high fertility rates (HDR data, 2009). This variable has been used by other empirical studies investigating the determinants of

migration, which have generally found that high fertility rates could have a positive relation on emigration (e.g. Hatton and Williamson, 2002).

4. Literacy rates were used to capture the effect of education of the population as an important factor to initiate migration. This factor has been widely used by empirical studies and mixed results were found. We argue that the impact of literacy is related to the type of migration (either high or low skill). This was the case for instance in countries such as the Philippines, where migration was dominated by unskilled labour (Agbola and Acupan, 2010).

c. Control Variables (controlling for the magnitude of migration)

1. Population is often integrated in push-pull models as a push factor. Neoclassical empirical evidence argued for a direct relation with population: the larger the population, the higher the migration. This is often referred to as the 'demographic pressure' (Kim, 2005). However, we could argue here that the population growth should not be considered as a variable that contributes to the causes of migration, as done by several studies, but it should be considered as a control variable to reflect the size of the population. Looking at studies that used the population growth, as a cause of migration, most of them found positive results (e.g. Carols, 2002 and Salinari and Santis, 2011). People do not migrate because their countries' populations are growing but because this growth produces other economic and social pressures such as: economic slowdown, inequality, limited resources and unemployment that can be observed. Hence in our model, population is introduced as a control variable rather than an explanatory one only to reflect (together with the surface variable) the magnitude of the migration flows compared to a certain benchmark or a reference point. So introducing the population as a control variable depends on how this variable works in connection with other variables.

Some empirical studies put more emphasis on the proportion of the youth population. There is some evidence to suggest that migration potentials increase with younger age (Mayda, 2010 and Stark et al, 2009).

2. Land surface is used to reflect the size of a country in order to capture the relative magnitude of its migration. Surface is often used to proxy for migration costs since the larger a country is the higher the cost of travel might be. We argue that this proxy could be inaccurate, as the cost of travel from small islands, for example, might be high despite the small surface of the country. However, in our models, we use the surface as a control variable to give relevance to the size of migration. Moreover the size is often used for differentiation between internal and international migration (de Haas, 2010).

Both population growth and land surfaces could give important indications on the potential opportunities that might be available in the home countries. In fact, one could think, that in large countries that are still in development progress, the size of the country allows the development of large projects, enlarging the cultivated land, or even developing new housing. This means that in large countries and with some demographic pressure, there are large chances that opportunities could be offered at home and hence migration would be less. Of course this is not a straightforward relation as some other factors could play opposite roles.

3. Political rights (lack of) are other control variables that are used in the analysis. Published by Freedom House, the index is scaled from 1 to 7, with lower the index the higher is the political right in the country. This variable is important in the brining some of the important potential constraints to migration. The way this index could impact migration is not clear: From one hand, one could expect that the more the country has political rights, the more mobility will be granted, however on the other

hand, low levels of political rights could encourage migration, but at the same time, migration cannot be guaranteed, as often times, these type of countries don't allow migration.

2.3. Migration and Development: Models Estimations

2.3.1. The First Round of Empirical Evidence: the Basic Model

Before we estimate the model we check the correlation that exists between the variables using the correlation matrix (presented in Annex 2.1). Not surprisingly, the HDI is correlated with GNI per capita, mean years of schooling and literacy, as these variables are closely related to the components of HDI. Moreover, emigration stock does not seem to be correlated with either the GNI per capita or the HDI, denoting that this relation might not be direct, which brings us to look more in depth with other method of analysis.

The objective of this empirical evidence is to determine the relationship between development levels and emigration stocks. This will be done by estimating an Ordinary Least square regression (OLS) that would take the following general form:

$$M_{it} = A + \alpha Y_{it} + \beta X_{it} + \varepsilon_{it} \qquad (1)$$

Where M_{it} is the Emigration stock of a country 'i' as percent of the population of this origin country 'i' at a fixed time 't'; Y is a vector of variables including those denoting the level of development in the origin country 'i'; X_i is a vector of control variables related to the country 'i'; and ε is the error term. We would like to stress here, that this estimation is undertaken regardless of the country of destination and at fixed point of time 't'.

In this first round of the estimations, we start by including the GNI per capita to represent the economic level of development together with the control variables and introduce different combinations of the social and economic variables that were listed in the table above. The results of these OLS estimates are presented in table 2.1 models (1) to (4). Following this we replace the GNI per capita and a number of social indicators by the HDI value, with which we include a number of variables that are not included in the index (such as fertility). The same control variables are included in these estimations. Results of these estimations are presented in the same table 2.1 models from (5) to (7).

First, concerning the set of models that used the **GNI per capita as the main** explanatory variable (i.e. models 1 to 4), we note the following results:

1. The GNI per capita was found insignificant in model (1) indicating that this relation might not be a direct one;
2. The square of GNI per capita was injected in the model (2), which showed that GNI per capita had a positive and significant relation with emigration stocks (% of population), while its squared value was negative and significant. This basic result confirms our hypothesis that there is a non-linear relation between emigration stock and GNI per capita and this relation is in the form of an inverted U shape. RESET test confirms that such a specification can be accepted.
3. Further improvements on the model were introduced with adding other social variables such as fertility (1970-1990), literacy, as well as the average GDP per capita growth (1990-2000) to capture the fast growing economies (model (3) and (4)). The coefficient of GNI per capita continues to be positive but becomes insignificant while its squared value continues to be negative and significant.

4. Other interesting results show that fertility was found negative and significant in relation to migration stocks. It is important to remind here, that fertility here is used to reflect the demographic pressure on the economies[36] (used here is the average fertility between 1970 and 1990). This result contradicts the common idea that increased lagged fertility has a positive impact on immigration due to demographic pressure. One possible explanation is that high fertility lead to increase of economic activities at home (this could be in the form of enlarging the land or in case of scarce resources the transition towards a modern sector or urbanization in case of rural areas (Salinari and De Santis, 2011). Some studies that found the same result argued that this could be due to reverse causality between fertility and migration (the more migrants the less fertility). However, this causality is argued to be minimal considering the small share of migrants in the world population (3%)[37].
5. Also literacy rate was also found negative and significant, this is not common but could reflect the importance of non-skilled migrants. It could also indicate a non-linear relation with the emigration stocks, which was investigated in model (4) but results have not changed. Further attempts were made to introduce additional social indicators, such as the average years of schooling, but these variables were not significant (models not shown).
6. Looking at the control variables for all four models, we found the same robust results across: (i) emigration was negatively correlated with population, which reflects the idea, that demographic pressure does not actually have a direct impact on migration. Moreover, the negative relation could mean that the more the population is large the more migration is absorbed internally (de Haas, 2010); (ii) Land surface was found negatively and significantly correlated with migration. This result confirms the previous result related to the population: the bigger the land, the higher the possibility that the populations' needs are internally satisfied, as there are potentials of enlarging the activities. It could also give an indication to the cost of migration: the bigger the land, the higher the cost of migration and hence the less would be the migration, however a new indicator will be introduced to capture the cost of migration; (iii) Finally, political rights indicator was found insignificant across the 4 models indicating the complexity of this relation with emigration: countries with low index (i.e. political rights are granted) are countries that have a high level of freedom of mobility as well and hence could have high rates of emigration. However, if this index's value is high (i.e. political rights are restricted), this could reflect a restricted and non-democratic country which would normally encourage people to migrate; however in such restricted states, there could be restrictions also on the freedom of mobility and hence migration in fact could be less.

In the second part of this round we replace the GNI per capita and literacy by the **Human Development index,** as defined above. Results of these estimations are presented in models from (5) to (7) (table 2.1). These results could be summarised as follows:

1. HDI was first introduced (model (5)) with fertility rate and the GDP average growth in the past 10 years. The variable was found insignificant which means that this relation might be not linear;
2. HDI was then introduced its the square value of the HDI. Results show that both the HDI and its squared values were significant, indicating potentially an inverted U shape relation. However the RESET test rejected the null hypothesis that the model (with HDI squares) is linear, indicating that this functional form may not accurate;

[36] Which is different reason from that of the neoclassical (push/pull) approach that is a determinant of migration

[37] The causality between migration and fertility is more pronounced at the micro level, i.e. at the level of a migrant- household as the effect could be direct.

3. Running further tests and attempts, we found that the best fit that would bring the RESET to linearity is by using a cubic form of the HDI values (model (7)). This result is very interesting and reflects that the relation between emigration stocks and HDI is variant and has three distinct phases (rather than 2 in the quadratic form). This means that in some countries with very low HDI, people would migrate due the insufficiency of opportunities in their home countries but their share seems to decline rapidly with the increase of HDI level. This migration reflects probably the low skilled individuals that are seeking opportunities elsewhere, mostly in neighbouring countries (hence the cost of migration would be at a minimum) and to fulfil low-skilled seasonal jobs such as in agriculture and construction sectors. Once the HDI levels start to improve, migration falls sharply. Migration starts to increase again with the improvement of levels of development until reaching a certain limit after which migration declines as the levels of development start to be satisfying for the population.

These results are different from those obtained by the model of de Haas, 2010 who find inverted U shaped relation for both GDP per capita and HDI with emigration stocks. The model seems incomplete, as the variables reflecting the aspirations and the capabilities are not explicitly introduced. This is what the second round of estimations will attempt to do.

Table 2.1 First Round of OLS estimation of Migration – Development Relation: Basic Model

Equation (1) Basic Model	(1) Linear GNI		(2) quadratic GNI		(3) quadratic GNI + social		(4) quadratic GNI + eco & social		(5) linear HDI + eco & social		(6) quadratic HDI + eco & social		(7) cubic HDI + eco & Social	
Equ(1) :	**Dependent Emigration Rate (Log)**										**Emig. Rate**			
Const	6.827	***	0.354		*9.315*	***	*9.617*	***	7.616	***	257.556	**	11.197	***
	8.768		0.118		7.250		7.370		13.512		2.615		4.592	
Development variables														
l_GNI_PPP	0.040		1.610	**	0.076		0.094		-	-	-	-	-	-
	0.589		2.283		0.552		0.680		-	-	-	-	-	-
Sq. l_GNI_PPP	-		-0.093	**	-5.67E-10	**	-6.05E-10	**	-	-	-	-	-	-
	-		-2.236		-2.090		-2.222		-	-	-	-	-	-
l_HDI	-		-		-		-		0.139		714.051	***	−24.1171	*
	-		-		-		-		0.322		2.833	no log	−1.695	no log
Squar. l_HDI	-		-		-		-				−648.108	***	47.743	*
	-		-		-		-				−2.80	no log	1.853	no log
Cub. l_HDI	-		-		-		-						−29.0443	**
	-		-		-		-						−1.991	no log
GDP_gowth10y.	-		-		-0.023		-0.019		-0.077	***	−4.10433	*	−0.067441	**
	-		-		-1.064		-0.831		-2.634		−1.74		−2.330	
Fertility (70-90)	-		-		-0.326	***	-0.274	***	-0.103		−9.31561		−0.115462	
	-		-		-4.281		-3.169		-1.173		−1.14		−1.140	
Literacy	-		-		-0.011	*	-0.042	*						
	-		-		-1.852		-1.660							
Squar. Literacy	-		-		-		0.000							
	-		-		-		1.248							
Control Variables														
l_population	-0.177	***	-0.160	**	-0.252	***	-0.238	***	-0.158	**	−15.8275	**	−0.164748	
	-2.755		-2.512		-3.647		-3.420		-2.019		−2.45		−2.093	**
l_Landsurface	-0.127	**	-0.138	**	-0.113	**	-0.119	**	-0.129	**	−12.1027	**	−0.114882	*
	-2.369		-2.604		-2.007		-2.117		-2.145		−2.48		−1.928	
l_Polit_Right	-0.124		-0.124		0.195		0.196		0.001		−6.35441		−0.019026	
	-1.040		-1.048		1.441		1.449		0.003		−0.49		−0.3783	
No. o f obs.	*169*		*169*	*148*	*148*		*148*		*139*		*139*		*139*	
R2 aj.	*0.300*		*0.317*		*0.377*		*0.379*		*0.304*		*0.341*		*0.326*	
F Statistics	19.03673 P=7.07e-13	*OK*	16.60095 P=3.10e-13	*OK*	12.11755 P=4.81e-13									
Homosc. (White)	35,31 p.=0,0013	Rej.	39,55 p.=0,0037	Rej.	87,179 p.=0,000	Rej.	97,611 p.=0,000	Rej.	53.411740 p.=0.001794	Rej	70.367795- p.=0,000244	Rej.	p.=0.004403	Rej
Normality (Chi2)	9,692 p.=0,008	Rej.	14,756 p.=0,0006	Rej.	7,050 p.=0,0295	Rej.	10,757 p.=0,0046	Rej.	11.855 P=0.0027	Rej	25.434 p.=0,0001	Rej.	12.929 p.=0.00156	Rej
Linearity (Reset-All)	1,044824 p.=0,369	OK	0,8895 p.=0,413	OK	0,594 p.=0,554	OK	0,747 p.=0,476	OK	0.411347 p.=0.664	OK	13.525871 p.=6.24e-06	Rej.	0.602178 p.=0.55	OK

*Notes: t-ratios in second line; p value: * significant at 10%; ** significant at 5% and *** significant at 1%*

2.3.2.The Second Round of Empirical Evidence: the Amended Model

In this second round additional variables are included that are believed to enrich the model in better integrating the concept of development and in reflecting the impact of the aspirations and capabilities on the migration decision. The model could be presented in the following general form:

$$M_{it} = A + \alpha Y_{it} + \beta X_{it} + + \mu Z_{it} + \varepsilon_{it} \qquad (2)$$

Where all variables are defined as equation (1) to which is added a vector of variables Z indicating measurements of aspirations and capabilities.

a. Aspiration and Capabilities variables:

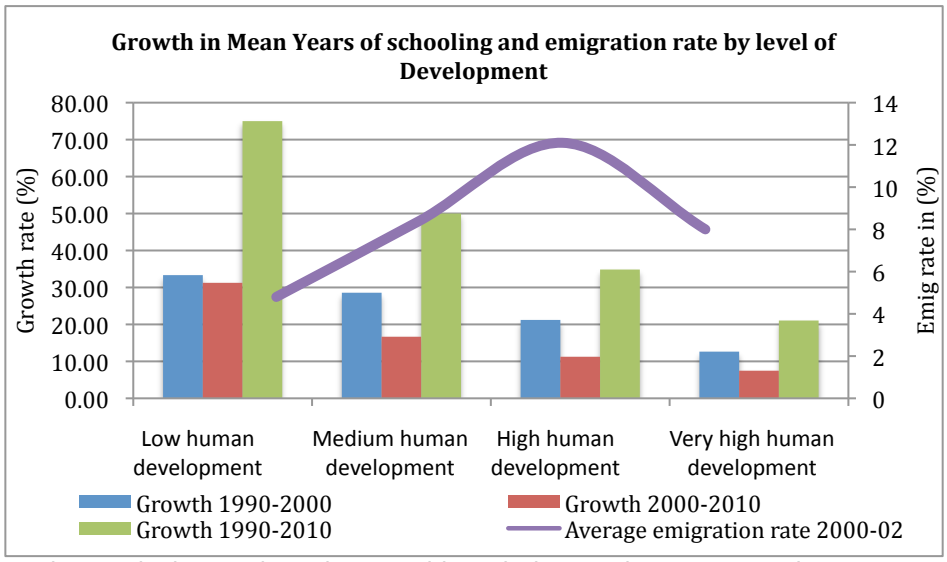
Following the definition of aspirations and capabilities, as previously mentioned, we will be using the variables below to reflect these individuals' aspects in their decision to migrate. Just to remind here, these aspirations and capabilities are closely linked to the level of development as mentioned earlier.

1. Youth population age 15 and 24 (in 1995). According to reviewed surveys (box 2.1), the younger the person is, the more likely he/she would have aspirations and hence a higher potential to migrate. In our models, this variable was included with 5 years lag (i.e. figures for 1995). This is justified by the fact that the migrants of the year 2000 (that are counted in the stock) must have had aspirations to migrate at an earlier stage when they were younger. In other words, the persons with aspirations in the 1995 include those who have migrated actually in the year 2000. This explains why many studies found migration to be positively related to the young age (e.g. Faini and Venturini, 2008). This also relates to the fertility rates, which is closely related to the development level, where declining rates are linked to development progress. It is important to note that even though the youth are more likely to have aspirations to migrate, they might still be lacking the right capabilities (financial, educational, etc.). Hence, the impact on migration could be more complex and not an automatic one.

2. Measurements of education: literacy and mean years of schooling. These variables were previously introduced in round 1 of the empirical analysis as explanatory variables, however in this round they will represent part of the aspirations and capabilities factors. As discussed and in general, the more educated the person is, the more likely he/she will have higher aspirations and hence higher potentials to migrate, if these aspirations are not satisfied at home. One could argue here that (i) high literacy rates or mean years of schooling does not necessarily mean that the person is 'selected' for migration (this is the idea behind the selectivity theories addressed in chapter 1). Moreover, it also depends on the opportunities offered in their home countries. Developed countries have high levels of education but the aspirations of their populations are often satisfied in their own countries with the available opportunities. Hence, migration out of these countries is limited (this could reflect an insignificant or even negative relation between education and literacy); and (ii) having low levels of literacy or mean years of schooling doesn't necessarily mean that the individual do not have aspirations. However, their aspirations might be easier to satisfy at home, but if they are not, these individuals can only seek migration. Given these two extremes, it is important to reflect the progress achieved in education and not necessarily the level. Hence we calculate the growth rates of means year of schooling from 1990 to 2000, which is expected to be higher in countries in the

process of development and much lower for countries that already achieved high development levels (Fig 2.10).

Fig 2.10. Growth in mean years of schooling and emigration rate by level of development



Source: Authors calculations based on World Bank data and Human Development reports.

3. Complimentarily to the education variable, we consider the **labour participation** rates (the ratio of the labour force to the working age population)[38]. We argue that this variable could represent the opportunities offered at home. High labour participation rates indicates that the labour force are offered good opportunities at home, while low labour participation could reflect that the home country is not providing enough opportunities to its labour force which could encourage them to migrate. Moreover, having a job does not necessarily mean that whoever is offered opportunities at home and is part of the labour force employed is satisfied: cases of underemployment, low paid jobs, poor working conditions, etc can give more incentives to migration. Hence the relation could in fact be not a straightforward one. Labour participation presented is calculated for all the population, but also for a sub-group of this population, which are the youth (15-24 years old). This latter variable captures the opportunities offered to the youth in particular which have an important effect on their aspiration. Also another measure that was included is the unemployment of youth which the other side of the coin of the labour participation.

4. Measuring capabilities is more challenging, as this variable represents many social and economic aspects as well. These aspects are already represented in the model with the variables related to income and education variables. What is still missing from the model is a measurement of the cost of migration. In many empirical studies assessing the determinants of migration, **the distance** is included as a measure of the cost of migration (e.g. Brucker and Siliverstovs, 2005, Mayda, 2010 and Rotte and Volger, 1988). However, in our models, we use the distance to reflect whether individuals have the capabilities to migrate or no and hence the way the results will be interpreted will be different. Moreover, the

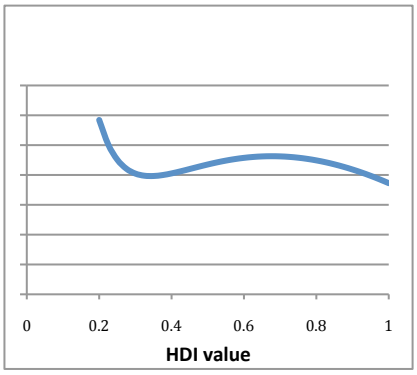
[38] Labour participation rate is defined as the proportion of the population ages 15 and above that is economically active (either employed or seeking employment) compared to the i.e. people who supply labour for the production of goods and services during a specified period

distance in our model is introduced as the **weighted average of all the distances** travelled by all the stocks of migrants from a particular origin country (i) to another particular country of destinations (j). These distances are then weighted by the size of the bilateral migration between this origin (i) and destination (j). This variable is calculated using the CEPII distance matrix between capitals of countries[39]. The weighted average is calculated using the bilateral migration matrix provided by the DRC, Sussex University[40], where we matched the distances between the two countries with the migration between these two countries. We argue that this variable better reflects the distances travelled by migration. Contrarily to the land surface variable, this variable could reflect the real relative cost of migration from actual origins to actual destination countries.

Similarly to the first round, **in the second round** we will start by using the vector of explanatory variables that includes the GNI per capita with other social variables. After this we will replace this vector with the HDI variable. This second round includes a mix of the variables related to aspirations and capabilities. The results obtained in this second round is summarised below (Table 2.2):

1. With these new explanatory variables reflecting the capabilities and aspirations of the populations, models (1)-(5) shows the results of introducing the variable **GNI per capita** in the estimation, together with a mix of dependent variables reflecting the aspirations and capabilities and the control variables. Introducing these new variables gave more robust results for the GNI per capita: the variable was found significantly and positively correlated with emigration stocks. Also its squared value was found significant and negative. This means that the relation is in the shape of an inverted U curve. This result is robust across the 5 estimations, regardless of the mix of the dependent variables uses and the linearity of the models was ensured with the Reset test.

2. Replacing the GNI per capita by the **HDI variable** in models (6) to (8) gives interesting results. The HDI was found positive and significantly correlated with emigration stock when introduced in model (6) and in model (7) that also included its quadratic form; however the squared value of the variable was insignificant. This leads us to do the same as in round one, where the HDI was introduced in its cubic form in model (8). Interestingly, the coefficients of the three forms of the HDI values were found significant indicating that that the relation between HDI and emigration stock could be in fact cubic with two main turning points[41]. The illustrative figure here shows how the cubic function of the HDI could look like. Analysing this curvilinear relation, the second part of the curve, reflects the expected inverted U shape relation between migration and HDI: At low HDI level, migration is relatively small and starts to pick with increasing level of HDI. Reaching a certain level, migration start to decline again.



[39] Mayer T. and S. Zignago. 2006. "Notes on CEPII's distances measure". GeoDist made available the exhaustive set of gravity variables used in Mayer and Zignago (2005) - See more at: http://www.cepii.fr/anglaisgraph/bdd/distances.htm#sthash.aI125Td1.dpuf

[40] Global Migration Origin Database version 4, Development research Center (DRC) on Migration, Globalization and Poverty, Sussex University and World Bank

[41] In fact, introducing the three HDI variables in a regression with Emigration stock has given the following regression equation:
Emig Stock= 1.51331-2.999 log HDI value-7.382 (Log HDI value)^2-3.676 (log HDI value)^3

Now going back to the first part of the curve, we notice a rather high level of emigration related to very low level of development. Reading this curve indicate that at very low levels of HDI, emigration could still occur, despite the extremely low level of education, income and overall environment. This migration represents the type of migration that is often called "survival migration" especially if we have a closer look at the countries that are subject to this low level of HDI and high level of migration (e.g. Afghanistan and Mali in fig 2.9 above). This is an interesting result that has not been found before, which could be further investigated.

3. Looking at the performance of the aspiration and capabilities variables across the 8 estimations we found: the **weighted distance** reflecting the capabilities to migrate indicated a strong negative and significant relation which was robust across the different estimations. This reflects the commonly accepted idea that the longer the destination between the country or origin (i) and that of destination (j), the higher the cost of migration and hence the less capabilities for the individual to migrate.

4. In terms of **measurement of education** (only in the GNI models), different attempts showed that the relation between literacy and emigration is not linear[42]. This is quite logic as the developed countries have highest literacy rates of 99% and relatively lower levels of emigration. At the same time, emigration occurs as well among the less educated and unskilled but mostly commonly, migration occurs among the middle to highly educated (Docquier and Rapport, 2007). Hence, introducing the quadratic form of literacy showed literacy to have a significant and negative coefficient while its quadratic form was significant and positive, indicating a U curve relation. The relation between migration is complex and it is also very much related to the type of migrants (skilled and unskilled) and their destinations. Empirical evidence has reached mixed results regarding this relation. A number of empirical evidence showed that low-skilled workers would still migrate with the aim to accumulate savings that would make them better off upon their return (e.g. Woodruff and Zenteno, 2007 for Mexico[43] and McCormick and Wahba, 2001 for Egypt[44]. Adding to this, the causality between education and migration (as will be addressed in the second part of this chapter). Given the above, it seems that relation between migration and literacy is far from being a straightforward one. Other attempts were made to include other measures of education were found insignificant (not shown)[45]. In fact this could reflect again the complicated relation between migration and education including the non-linearity and causality. In a recent study by Wahba et al, 2013, authors found that not only education can lead to aspirations but also aspirations to migrate could lead to increase education. At the same time, migration could increase education through direct (such as the remittances) and indirect channels (e.g. increase in communication with networks, etc). This will be addressed in details in the following chapter on the impacts of migration.

5. **Youth population** (age between 15 and 24 years as % of population) in a lag of 5 years. As explained, this group of youth in 1995 are assumed to be among

[42] Testing the correlation between Emigration stock and Literacy rate showed a positive and significant relation, however the linearity test failed indicating a rather non-linear form.

[43] A number of studies from Latin America and specially Mexico, showed that education had no significant impact on migration, since the type of work undertaken in the US does not require a high level of education or skill

[44] the number of Egyptian low skilled migrants to neighbouring Arab countries seeking low-skilled jobs such as in agriculture and construction sector migration represent more than 35% of migration from Egypt to the Arab countries (CAPMAS, 2012).

[45] Attempts were made to include the growth mean years of schooling between 1990 and 2000 as explained earlier to reflect the development phases but was insignificant.

those who migrated in 2000. Even though the coefficient of the youth variable was positive as expected in most of the estimations (the larger the proportion of youth in a population, the higher the migration), the relation was insignificant. This could indicate that this variable cannot alone explain the migration, as discussed earlier. Youth could have higher aspirations but two important factors come to play if these aspirations would turn into migration: first aspirations have to be coupled with capabilities and second these aspirations could be met with opportunities at home and hence no need to migrate. It is hence rather the combination between the age of the individual and other factors that could impact migration.

6. **Labour participation rate** was included to reflect the opportunities offered in the home countries. We argue that the relation between aspiration to migrate and labour participation is twofold and that these relations are going in opposite directions. From one hand, one would expect that the higher the labour participation rate, the more it means that opportunities are available at home and hence the less might be the aspiration to migrate. However, from the other hand, if the labour force is not properly paid or the working conditions are poor, this could increase the aspiration to migrate to find better or more convenient opportunities elsewhere. These two opposite forces have resulted that when introducing this variable in the model it was found insignificant (results not shown). Following this, the youth labour participation rate (15-24 years) lagged to 1995 was introduced to reflect the youth opportunities as discussed above, the variable was positive however insignificant. This could reflect a more complicated relation with migration[46].

It is also to note, that these three models have successfully passed the Ramsey REST test as well as the normality of residuals test.

To conclude this second round our empirical analysis, we could say that, so far, we have established an important result related to the relation between migration stocks and the GNI per capita. Robust results showed these two variables to have an inverted U curve. Moreover, the relation between HDI and migration stocks was found more complicated. While most of the data reflected a general inverted U curve, some odd values with very low HDI values reflect a U curve relation with migration. Attempts to introduce some indicators reflecting aspirations and capabilities gave mixed results. Finally, the control variables' relation with emigration stock remained robust.

These findings lead us to think that the social and economic components of the development could be behaving differently in relation with emigration stock. This is what we will be investigating in the third and last round of estimations.

[46] Several attempts were also made to include youth unemployment (15-24 years old) but the variable was insignificant.

Table 2.2 Second Round of OLS estimation of Migration – Development Relation: Amended Model

Equation (2): amended model	(1) Linear GNI +dist.		(2) quadratic GNI +dist		(3) quadratic GNI+youth		(4) quadratic GNI+youth+ education		(5) quadric GNI+Youth +edu+labor particip		(6) Linear HDI+dist		(7) quadratic HDI +dist		(8) cubic HDI+ dist + fertility and youth	
Equ(2) : Dependent **Emigration Rate(ln)**																
Const	9.222	***	3.126		4.155		16.824	**	16.536	**	10.541	***	5.146	***	3.725	**
	7.828		1.097		1.454		2.202		2.133		9.414		11.030		2.445	
Development Indicators																
l_GNI_PPP	0.128	**	1.683	**	1.455	***	1.663	*	1.616	*						
	2.085		2.524		2.118		1.805		1.780							
Sq. l_GNI_PPP	-		−0.092	**	−0.086	**	−0.097	*	−0.091	*						
	-		−2.342		−2.125		−1.808		−1.725							
l_HDI	-		-								0.825	***	1.800	**	-5.263	**
	-		-								3.273		1.987		-2.119	
Squar. l_HDI	-		-										0.711		-9.191	***
	-		-										1.213		-2.679	
Cub. l_HDI	-		-										-		-4.187	***
	-		-										-		-2.850	
Fertility (70-90)	-		-		−0.789	***							-		-0.610	*
	-		-		−3.219								-		-1.818	
Aspirations and Capabilities var.																
l_dist_pondspl	-0.786	***	-0.820	***	-0.824	***	-0.000	***	-0.918	***	-0.765	***	-0.000	***	-0.000	***
	-6.311		-6.632		-6.484		-4.732		-5.929		-5.810		-4.773		-4.590	
l_Polit_Right	-0.066		-0.070		0.056		-0.039		-0.071		-0.042		0.008		0.048	
	-0.619		-0.661		0.488		-0.328		-0.598		-0.377		0.068		0.359	
l_age_1524_95_pop	-		-		0.568		-0.468		0.013						0.296	
					0.910		-0.595		0.017						0.472	
l_Literacy	-		-				-9.289	**	-7.025	**			-			
	-		-				-2.573		−2.005				-			
Squar. Literacy	-		-				1.190	**	0.922	**			-			
	-		-				2.560		2.050				-			
Y- labor particip. (95)									0.227							
									0.760							
Control Variables																
l_population	−0.054		−0.046								−0.103	*	−0.111	*	−0.141	**
	−0.9068		−0.778								−1.703		−1.783		−2.187	
l_Landsurface	−0.150	***	−0.162	***	−0.203	***	−0.201	***	−0.196	***	−0.113	**	−0.112	**	−0.088	*
	−3.084		−3.343		−6.315		−5.521		−5.604		−2.311		−2.219		−1.758	
No. o f obs.	158		158		154		143		143		139		139		137	
R2 aj.	0.353		0.371		0.407		0.342		0.388		0.386		0.347		0.374	
Heteroske. (White)	44.347174 p.0.001352		57.621359 p.=0,000347		p=0.000493		70.847639 p=0.003533		75.934232 p=0.016845		40.881701 p=0.003858		66.881091- p.0.000019		93.898155 p=0.000239	
Normality of error (Chi2)	3.059; p= 0.217		5.772 p.=0.0558		4.026 p= 0.1335		11.245 p= 0.0036		9.400 p= 0.00910		4.888 p= 0.08681		4.482 p= 0.10635		5.359 p= 0.06861	
Linearity (Reset-All)	2.304027 p.=0.10		1.211852 p.=0,301		1.59066 p=0.207		2.522206 p=0.0841		0.516293 p=0.598		1.161463 p=0.316		0.728059 p.=0.485		1.414157, p: 0.247	

*Notes: t-ratios in second line; p value: * significant at 10%; ** significant at 5% and *** significant at 1%*

2.3.3. The Third Round of Empirical Evidence: the Final Model

Given the results achieved so far, we have reasons to believe that including the social and economic aspects of development in one variable, which is the HDI, could be the reason why results of the HDI models are not quite satisfactory.

Therefore, in the third and final round of empirical estimations, we estimate the same equation (2) as before, however we separate in the Human Development Index (HDI) between those variables that relate to the social development from those that relate to economic development.

$$M_{it} = A + \alpha Y_{it} + \beta X_{it} + + \mu Z_{it} + \varepsilon_{it} \qquad (3)$$

Where all variables are as specified in model (2), however within the vector of explanatory variables Y_{it} include: what we will call the "Social HDI" this variable represents the non-income HDI variable as it only combines: school enrolment, literacy rate and life expectancy (published by the HDR, 2009); and the GNI per capita variable included in the estimation separately to reflect the economic development level.

With this setup, we introduce the capabilities and aspirations variables as well as the control variables as before. Results of the regression analysis are summarises in Table 2.3. below. These are highlighted as follows:

1. Introduced in their linear formats, the GNI per capita's coefficient is negative and significant, and the social HDI's coefficient is positive and significant (Model (1)). However, as we know from our previous estimations that these variables have non-linear relation with migration, hence we include the squared forms of each of those variables in model (3). The estimations reveal interesting results: (i) the GNI per capita and its quadratic form continue to have a robust and significant non-linear relation with emigration stock confirming the inverted U shape relation; (ii) the social HDI and its quadratic form also have significant relation with migration stocks and this relation is also non-linear. The signs of the coefficients indicate the presence of a U curve. This result was robust when other variables are added or removed from the model. Also the specification tests of Ramsey testing the linearity of the model in its new form showed that this model (3) is a good fit of linearity. We also notice the increase of the F Statistics and the significance of the whole model to 44.5%. In other words, this model seems to be representing quite well the data that were under analysis
2. Moreover, the variable of the lagged fertility continues to have a negative and significant relation with migration, confirming the fact that increased fertility leads to increasing the home countries' activities and efforts towards increasing the opportunities and hence more individuals are absorbed within their home countries[47].
3. Two of the variables indicating the capabilities were found significant. These are the distance variable reflecting the cost of migration, the more the weighted distance the less migration there will be due to the reduced capabilities of the individuals. Also the political rights index showed a positive and significant result. This index indicated the lack of political rights, which means that the higher the index the lower the rights. Having a positive relation with migration indicates that the higher the lack of rights the higher will be migration.

[47] This means that the more average fertility the less migration will be. This result violates one important aspect of the neoclassical (or push/pull) theories on the reasons behind migration and the demographic pressure belief.

Table 2.3 Third Round of OLS estimations for Migration-Development: Final Model

Equation (3): Final model	(1) Linear Social HDI+ Linear GNI		(2) Linear Social HDI+ Linear & quadric GNI		(3) Linear & quadric Social HDI + Linear & quadric GNI		(4) Linear & quadric Social HDI + Linear & quadric GNI		(5) Aspirations & Capabilities (Illustrative)	
Equ(3) : Dependent var **Emigration Rate (Log)**										
Const	6.795	***	9.254	**	0.202		−0.180672		4.203	***
	6.228		2.120		0.054		−0.04587		7.004	
Development Indicators										
l_GNI_PPP	−0.163	*	0.977		1.769	**	1.784	**	-	
	−1.713		1.040		2.078		2.008		-	
Squar. l_GNI_PPP			−0.067		−0.117	**	−0.117	**	-	
			−1.267		−2.422		−2.322		-	
l_HDI Non income	1.328	***	1.729	**	4.123	***	4.013	***	-	
	3.664		2.512		3.251		3.065		-	
Squar. l_HDI Non inc.					2.399	***	2.341	***	-	
					3.166		3.015		-	
Fertility (70-90)			−0.229	***	−0.137	*	−0.144	*		
			−2.772		−1.931		−1.948			
Aspirations and Capabilities var										
dist_pondspl	−0.000173423	***	−0.000139552	***	−0.000149385	***	−0.000156484	***	−0.000153651	***
	−5.793		−4.101		−5.273		−5.258		−4.489	log
l_Polit_Right	−0.023		0.110		0.198	*	0.218	*	−0.040	
	−0.210		0.747		1.773		1.882		−0.983	
GDP_gowth10y.			0.079							
			0.874							
l_Literacy			−1.381	***						
			−3.226							
Gr in Mean years of school (90-00)									−0.306	***
									−2.868	
Labor particip. rate (15-24) in 1995							0.002	Youth	−0.015	**
							0.433		−2.004	
Control Variables										
l_population	−0.0951117		−0.179691	***	−0.129311	**	−0.124159	**		
	−1.573		−2.642		−2.172		−2.062			
l_Landsurface	−0.133861	***	−0.100714	*	−0.135662	***	−0.128784	***	−8.77373e-08	**
	−2.716		−1.787		−2.818		−2.624		−2.580	
No. o f obs.	155		120		155		153		132	
R2 aj.	0.409		0.412		0.445		0.430		0.228	
F Statistcs	18.78192 p:0.0		9.328840 P= 0.0		14.7020 p=0.0		12.45361 P= 0.0		8.744548 p= 0.0	
	46.694813		91.965631		86.322854		99.480126 p=		32.532192 p=	
Heteroske. (White)	p=0.010698		p=0.012557		p=0.001957		0.002313		0.037947	
Normality (Chi2)	7.530 p= 0.02316		3.062 p= 0.21630		10.65 p= 0.005		7.824 p= 0.02		1.660 p= 0.4360	
					0.22494					
Linearity (Reset-All)	0.616051 p:0.541		1.184071 p=0.31		p=0.799		0.1944 p= 0.824		0.52386 p=0.594	

*Notes: t-ratios in second line; p value: * significant at 10%; ** significant at 5% and *** significant at 1%*

4. In Model (3) we introduce variables of aspirations and capabilities to existent model. Results related to the GNI per capita and social HDI remained robust. The variable on youth labour market participation (age between 15 and 24 years) with a lag of 5 years was found positive but insignificant. As explained earlier, this variable captures both the aspirations of the youth and the available opportunities at home. The variable was found insignificant in its relation with emigration stocks. This same result was found by other studies such as (Ortega and Peri, 2009). Other attempts were made (models not shown) to introduce the growth in means years of schooling (between 1990 and 2000) to capture the progress in social development, but this variable was found insignificant.

The results reached regarding the relation between migration and the GNI per capita and the social HDI are considered innovative. First, **the inverted U shaped relation with the variable that represents the economic development and the capabilities** of the individuals (i.e. GNI per capita) was robust. This gives evidence that, up to a certain level, migration increases with the increase of the economic development of the home countries, which also translates into an increasing in the financial capabilities of the individuals. This was also confirmed by the robust negative and significant coefficient of the weighted average of the migration distance. This result could not be taken in the absolute since another important force plays a major role in this relation with emigration and GNI Per capita[48].

Second, **the social HDI was found to have a U curve relation with migratio**n. Analysing this relation on its own gives the following explanation:

1. On the decreasing part of the curve, migration rates increases with decreasing levels of social human development this could reflect the migration **of low skilled[49]**. Low levels of the social index reflects low literacy rates and mean years of schooling, these low-skilled individuals also have aspirations to find better opportunities. When it comes to education, even though we agree to the idea that the more individuals are educated they have more aspirations to migrate, this relation is conditional on the existent opportunities at home: if satisfied individuals will not migrate (this is the case of most of the OECD countries). Also as explained earlier, this relation is not vice versa: decreasing education does not mean decreasing migration rates (Docquier and Rapoport, 2007);
2. The increasing part of the HDI-migration curve represents the **medium and high skill migration**, where the more individuals are educated and benefit from high social development the more they have aspirations and could migrate if they can't find the opportunities at their home countries.

Mixing the two main results of our models to complete the picture, we could argue that: *economic development and capabilities of individuals dominate the decision to migrate but at the same time social development can play an opposite role of either increasing or decreasing this migration depending on the opportunities found at home. If opportunities are found at home (high economic development) migration is low and individuals are satisfied at home, however, if*

[48] It is to mention that most of the empirical evidence stopped at this conclusion about the inverted U shape relation between GNI (or GDP) per capita, assuming that measuring development is only made by this variable (give ref).

[49] Another explanation is that at this very low social development, individuals are not receiving the expected levels of basic social services (i.e. education and health status) which could create an incentive to migrate to seek better quality of life (this could also include a type of 'survival migration')

opportunities are not found (low economic development), migration rates starts to increase, even at low levels of Social development.
Just to prove the domination of the economic development factor (GNI per capita) on the migration decision, we added an ***illustrative*** model (5), where the dependent variable of migration stock is explained by only the capabilities and aspiration variables (GNI and HDP variables are excluded). This model hence includes the weighted average distance reflecting the cost of migration and the capabilities, which was found again negative and significant. The political right reflecting the capabilities of the individuals to have some free movement, this variable was found insignificant. The growth of mean years of schooling was found negatively correlated with the stock of migration. This relation reflects the ambiguous and difficult to generalise relation between migration and education. However this could reflect the unskilled migration or the idea that the more the education and social development is decreasing the more individuals are seeking better social development elsewhere. Finally the variable reflecting the labour participation was found negative and significant. This result is very important in showing the idea of available opportunities in home countries. The more the youth are participating in the labour markets (and hence their aspirations are met with opportunities at home), the less they want to migrate.

3. Conclusion

In concluding our empirical evidence on the developmental causes of migration, we showed that migration follows the patterns of development of the sending countries.

The value added of our empirical evidence is in the way the causes of migration was addressed, rather than focusing on a number of variables (as determinants), this empirical evidence have looked at the level of development in a global way. At the same time, the empirical evidence took into consideration the individual's choices, their aspirations and their capabilities (hence the model has defied the limitations of the macroeconomic model of focusing only on the aggregate levels).

The way the level of development was introduced in the model is innovative:

1. We introduce the commonly used economic development indicator which is an indicator to the level of GDP as the GNI per capita in our models[50];
2. Second the social aspect of development was introduced in the models using the social HDI which is a combination of social variables: literacy, mean years of schooling and life expectancy. Other social indicators were introduced such as fertility;
3. Third, introduce the individuals' aspects and choices in making the decision to migrate with variables that catch their aspirations and capabilities. These two aspects are also closely linked to the level of development of the home countries and their capacity to absorb the aspiration of its population. This could be a sort of individual's development level.

The results reached with these estimations could be also considered a value added as they reflect a new dimension in the understanding of migration: 1. Income or economic development is a dominant factor in the link between migration and development and they have an inverted U shape relation (this was also found by other empirical evidence). This could be taken as part of the financial capabilities of the individuals; 2. Social development plays an important role in this relation, which was found to have a rather skewed U curve. In general, the more the individuals have high social development (i.e. education

[50] many empirical evidence only introduced this variable to reflect development

and health) the more they have aspiration for better opportunities. These individuals represent the medium and high skill levels. If these opportunities are not found at home (due to a still low level of development), individuals could seek migration. At the same time, individuals at very low level of social development could also seek migration to fill in low skilled jobs if they cannot find opportunities at home. Being in a country of very low social development could give incentives to migrate seeking better education and health services elsewhere. This all provided that these individuals have the financial capabilities.

This empirical evidence has limitations and can be further improved in different ways, including adding more variables and undergoing further tests. However the basic concept behind and some of the initial results achieved could be considered a value added to subject about the relation between migration and development that could open the door for further research.

Taking this complex relation further, the following chapter will provide an empirical evidence on how migration, in its turn, impact development.

ANNEXES

Annex 2.1. Correlation Coefficients Matrix of Migration Model

Emig_St_P	GNI_PPP_P	HDI_value	Non_inc_HDI_val	Land_surface	Polit_Right	Population	Fertility_rate_	Literacy87_06	GDP_pc_gr_90_00	
1	0.0717	0.277	0.2815	-0.1811	-0.0956	-0.1919	-0.2713	0.2399	0.0241	Emig_St_P
	1	**0.7661**	0.6652	0.0519	-0.368	-0.0586	-0.5862	0.4893	0.1908	GNI_PPP_P
		1	**0.9827**	0.0804	-0.5572	-0.036	**-0.8477**	**0.8535**	0.2024	HDI_value
			1	0.0844	-0.4998	-0.018	**-0.84**	**0.8911**	0.1244	Non_inc_HDI_val
				1	0.0301	0.457	-0.1251	0.0894	-0.0258	Land_surface
					1	0.0467	0.5855	-0.3514	-0.0809	Polit_Right
						1	-0.0627	-0.0223	0.1848	Population
							1	-0.7381	-0.1274	Fertility_rate_
								1	0.0738	Literacy87_06
									1	GDP_pc_gr_90_00
			Dist_Pondspl	age1524_95_pop	M_YrSc_gr90_00	LabPart1524_95	Youth_unemp95	LabPart_00	Gr__labPar_9500	
			-0.2048	-0.1961	-0.1688	-0.1607	0.142	-0.088	-0.0253	Emig_St_P
			0.1127	-0.5779	-0.2595	-0.0718	-0.2333	-0.1481	0.0997	GNI_PPP_P
			0.1947	-0.5193	-0.4092	-0.1886	-0.0597	-0.3792	0.0435	HDI_value
			0.2043	-0.4995	-0.4432	-0.2135	-0.0431	-0.3596	-0.0048	Non_inc_HDI_val
			0.1268	-0.0859	0.0149	0.1132	-0.0712	-0.0044	0.0154	Land_surface
			-0.1009	0.407	0.3175	-0.0502	-0.0231	0.029	-0.0892	Polit_Right
			0.1034	0.0201	0.0329	0.112	-0.1242	0.0271	-0.068	Population
			-0.133	0.6241	0.4591	0.0553	0.0501	0.2496	0.0512	Fertility_rate_
			0.251	-0.5356	-0.456	-0.2239	0.0879	-0.3153	-0.0474	Literacy87_06
			0.1508	0.0151	-0.0773	0.1203	-0.1234	-0.0977	0.0826	GDP_pc_gr_90_00
			1	0.0581	-0.2043	0.1789	-0.2343	-0.0049	0.0657	Dist_Pondspl
				1	0.2315	0.0789	0.0725	0.0965	0.1041	age1524_95_pop
					1	-0.1831	0.0369	-0.138	0.0164	M_YrSc_gr90_00
						1	-0.408	0.7305	-0.0607	LabPart1524_95
							1	-0.2549	-0.1433	Youth_unemp95
								1	0.0106	LabPart_00
									1	Gr__labPar_9500

Notes : No. of observations is 167 ; 5% critical value (two-tailed) = 0.1519 for n = 167

Chapter 3

Macroeconomic Impact of Migration and Remittances on Development: an Empirical Approach

Introduction

The impact of migration on the development of the sending countries constitutes the other side of the coin in the migration and development relation. This impact has gained a lot of interest recently due to the growing flows of both migration and remittances creating larger potential gains for those sending economies but also larger potential losses. This mixed effect makes measuring the overall impact of migration on development a challenging task.

Adding to this, this relation is far from being a straightforward one as it holds interrelated links with other variables or transmission channels (the diagram in Annex 3.1. can give an idea on how these two variables are interrelated).

The theoretical review, addressed in chapter 1, showed that theories on migration and its relation with development have encountered waves of optimism (following the neoclassical theories) and pessimism (following the structuralist theories). However these theories were criticized by defining two extremes where the theoretical mechanisms have rarely taken place in practice (Taylor, 1999). This is mainly due to the distortions and imperfections in the economic and social environment of these sending countries, such as distorted labour markets, limited wages flexibility, etc.

Basically, we assume that in normal circumstances, migration is beneficiary for the person who encounters it, since it is made based on his choice and decision (or that of his/her household)[1]. However, the impact of this migration on his/her sending country could be ambiguous. This could be quite understandable, as it is clear that there is a mix of potential benefits but also potential losses and the net impact is not easily predicted as it depends on several factors (Lucas, 2005).

The previous chapter addressed the causes of migration and showed in the empirical estimation how development (social and economic) of the home countries can lead to the decision to migrate through boosting the aspirations and capabilities of the individuals in seeking better opportunities. If these aspirations cannot be satisfied at home, individuals tend to migrate.

Addressing the other side of the causality, this chapter aims at assessing the impact of migration on the development of the home countries through empirical evidence. This is achieved in two ways: first we will present an empirical review of the studies that addressed this impact and second, and based on the work that has been reviewed, we will develop our own empirical evidence on the impact of migration on development.

This chapter is divided into two main parts. The first part gives an empirical literature review of the studies that addressed the impact of migration and remittances on development. Given the wide range of the empirical evidence on this general topic, we focus our analysis on those studies that are more relevant to our empirical model. We argue that, other than the direct impacts of migration on the development of the home countries, there are large indirect impacts through different channels that link remittances to development. Given this, we review the empirical evidence that addressed two major aspects of the development: economic and social.

[1] We would like to remind here that we are only addressing the socio-economic type of migration

The second part of this chapter will present our empirical estimation on the impact of migration and remittances on the developing countries. In this analysis, two major channels will be emphasised and empirically investigated: the investment channel and the human capital channel. This part will include a conceptual background for the empirical evidence, details of the methodological approach and presentation of the models results and analysis on these results.

I. An Empirical Review on the Impact of Migration on Development

Assessing the impact of migration on development is a complex issue due to the causal and interrelated relation between those two variables. Complementing the theoretical literature, the empirical literature aimed, as an overall, to find an orientation on how these flows are affecting the sending economies. Empirical evidence on the impact of migration is rather rich, with the majority of studies focusing on the macroeconomic impacts, while much less studies were devoted to look into the social impact. Moreover, within the same group, empirical evidence found mixed results.

This following section will give an overview on the different interactions expected between migration, remittances and development and where we classify the empirical literature according to the developmental variable under consideration. Within this classification we highlight and summarise the different ways by which migration and remittances can impact development.

1. Migration, Remittances and Development: What Interactions?

The interaction between migration, remittances and development has been one of the most debatable and controversial issues among researchers and policy makers. These variables impact each other in a causal and interrelated way. Despite their interrelated nature, the majority of empirical evidence has been addressing these three issues on a two-by-two-basis (Taylor, 1999). The focus of this empirical evidence review will be on the impact of migration on development with a focus on the role of remittance flows.

1.1. Direct vs. Indirect Transmission Channels

There are two ways by which these variables interact. They can interact directly or indirectly, through channels. This classification is rather arbitrary due to overlapping and interactions that exist between the different impacts.

1.1.1. ***On the direct front,*** migration can directly impact the development in the sending countries in at least two ways:

1. The loss of human capital due to migration, which is identified in the literature as the "brain drain" if this human capital is highly skilled. The departure of this human capital translates into a loss in the output that could have been made if migration did not occur and hence this would be impacting negatively the growth of these countries. This is related to the pessimistic view on the impact of migration. However, it is important to note that not all migration translates into a loss of human capital, as it depends on the status of both this human capital and labour markets: if this human capital was unemployed or underemployment, this will not affect negatively the development, on the contrary it could turn into a benefit of easing unemployment pressure;
2. At the same time, another major result of migration is the remittance flows that these migrants send to their families at home countries. These flows have a direct positive impact on the households that receive them, as they represent an additional source of income that can alleviate households poverty and positively impact the households' level of expenditure on consumption, investment, saving and investment

in human capital. Even in the majority of cases where these remittances are spent on consumption goods, they are boosting the economies by creating demand on the domestic production (e.g. Durand and Massey (1992)). These remittances, tend to also impact the communities at the Meso level (this will be addressed in details in the following chapter), which can be translated into an overall positive impact on the nation, especially when remittance flows reach high levels and are used in a way that would boost the economy's development (e.g. used in investment or spent on human capital) which could be identified as the "brain gain".

1.1.2. On the indirect front*,* migration and remittances have large impacts on most aspects the economy. These impacts are manifested in different ways and in different intensities, depending on how these flows are functioning in these economies and how policies are formulated to ensure benefits rather than losses of these impacts.

More specifically, if remittance flows are well functioning and rightly directed by policies, they can have large positive impacts on the development of the home countries. As these indirect impacts are too many to address, we will highlight some of the important ones which will be addressed in some details through the empirical review:

1. Remittances can impact economic growth indirectly, through their impact on increasing households' expenditures of consumption, investment, saving and other expenditures. The way remittances can benefit development depends very much on the way the households are spending these remittances. Most of the received remittances are used towards purchasing consumption goods, this was found to have positive impact on the economy (as will be seen in details the following chapter) through the impact of a multiplier effect, that generates domestic production, through increasing demand, this in return, leads to turnover of the economy, creating jobs, etc. (Appleyard, 1989). However, some views saw this type of expenditure as a 'waste' for remittances that could have been better used instead to finance investment.
2. There is also evidence that some of these remittances are used towards investment. Even if this share is relatively small, it is argued to have positive implications and externalities on development. Investment includes capital investment such as establishment of business, purchase of lands, or bank savings.
3. Investment in human capital is a major channel by which remittances can impact long term development. This is part of the brain gain process, where remittances that the migrants send are used to increase the investment of the human capital left behind, through expenditure on education and health. This could have long-term implications on the development of the sending countries. At the same time, if migration could be viewed as a potential loss of human capital as explained above, some empirical evidence found that this migration could in fact induce non-migrants to invest in their human capital to potentially migrate in the future.
4. Return migration could represent important gains for the origin countries, if returned migrants are properly re-integrated in the societies where their knowledge, acquired skills and invested capital could have extended spill-over effects on their local communities' development. One of the famous examples that could be given here is the contributions of the Indian returnees from the US towards the establishment of the Silicon Valley in India, which is becoming one the pillars of the software industries in the world (Kale, 2007).
5. Moreover, in many cases, migrants abroad keep ties with their families, friends and communities, creating migration network or 'bridges'. On these bridges, they could circulate goods and services (trade network), knowledge and openness to the world (through transfers of ideas and communication technologies), etc. This could have potential benefits in increasing the country's development, awareness and integration. There are large impacts of knowledge and technological transfers from the migration network abroad that can have positive impact on increasing the knowledge and aspirations of the home countries' population specially the youth.

6. On the external sector, remittance flows surpass those of FDI and Aid for some developing countries and are considered an important and stable source of foreign currency that cover the deficit of the economies' trade balance increasing the creditworthiness of these economies in the global markets. This would have positive effects on attracting more FDI and decreasing the borrowing interest rates (IMF, 2007). However, exaggerated flows of remittances can cause appreciation of the real exchange rate (creating a sort of a Dutch disease) (Chami et al, 2003). At the same time, if local production cannot keep up with the increasing demand, this could have harmful effects on domestic markets and on the competitiveness of the country in the international market due to the increased inflation;
7. An opposing view argues that remittances could have a negative impact on the economy by increasing the dependency of the households on external sources of income without taking part in the production mechanism. Several micro studies found a negative relation between receipts of remittances and labour participation rate of members of the households left behind (e.g. Azam and Gubert (2004);
8. Finally, it is important to mention that given the large possibilities of potential benefits or losses from migration and development, the net effect depends on the size and weight of these impacts (Carling, 2005). Moreover, there are important roles played by the policies that package these impacts. These policies relate to the management of migration, incentives to encourage remittances, and creating channels for remittances that could achieve maximum benefits for both households and the home countries (Buch et al, 2002).

Hence, looking at the many indirect impacts of migration on development (the above are just few examples), one could detect that there are two major channels by which remittances are transmitted towards development. These are mainly: (i) Investment; and (ii) human capital. We understand that these channels are not exclusive, as there exists many different indirect ways by which migration can impact development (as detailed above). However, in our empirical evidence in the second part of this chapter, we will focus on these two channels, given their long-term contributions towards development and given the scarcity of the empirical evidence that addressed them.

The empirical review, in this chapter will address more globally the impact of migration on development. For this, we found the best way to present this large number of studies is to group them in two main general categories:

1. The first category includes empirical studies that address the macroeconomic impact (this includes studies related to impact on growth, investment, saving, trade, etc.); and
2. The second category includes the empirical literature that addressed the impact on the social aspects (this includes studies related to human capital, poverty, inequality and labour markets, etc.).

Before addressing the empirical review, it is important to highlight some of the main challenges that this empirical evidence is facing while addressing this relation.

1.2. Challenges to the Empirical Evidence

Despite the major contributions of the empirical evidence in explaining many aspects of this complicate relation, they are often considered dispersed and not cumulative. We also, often find studies reaching contradicting results while addressing the same topic, and sometimes the same country. This is not surprising, as we can see across this study, starting from the theoretical review, that there are no consensus among theorists or researchers on the relation between migration and development. There are many difficulties and challenges that exist in this analysis, and some researchers concluded that one should not expect to have one theory or one mechanism that would be a 'fit-for-all' to explain the different aspects of migration and development (de Haas, 2010).

We will address some of these challenges and insights about the existent empirical evidence on the impact of migration in the following points:

1. Most studies in the empirical literature has concentrated on the impact of remittance flows (and not migration flows), this is mainly due to the availability of the data related to remittances while not much data is available for migration. This dominance of remittances' empirical evidence is found to compensate, in a way, the shortage of theories related to remittances. As seen in the first chapter, most of the theories have focused on migration flows, their causes and impacts and not much attention has been given to the remittances.
2. Even those studies that addressed the flows of migration have focused on the impact of the brain drain/brain gain issue. This type of analysis requires detailed data on the skills/education of the migrants, which are not readily available especially for developing countries. These studies are more of assessments to the current situation and investigate whether the countries/regions are suffering from brain drain or on the contrary are gaining from some brain gains. However, studies addressing the impact of migration and remittances on the human capital that are left behind were found to be extremely scarce. This latter will be the focus of our empirical analysis in the second part of this chapter.
3. One major concern while looking into the migration and development relation is to define the framework of development, being a very wide and general term. In general, measuring development constitutes one of the main challenges facing economic research and continues to be the subject of many studies and theories. Therefore, the definition of development depends on the objective it is used for and the expected results. In a recent study by three of the pillars of economic development (Stiglitz, Sen and Fitoussi, 2008). Measuring development could constitute another challenge, often presented by the GD, this measurement does not take into account the social aspects;
4. Empirical evidence is faced with a major channel related to the availability of data in general, and consistent and reliable time series data on migration and remittances in particular. There has been some recent good improvement in the availability of data on this issue, which we suspect could encourage more research on the topics;
5. Many challenges exist in the empirical evidence methodologies. The problem of endogeneity is one of the major ones which requires the use of complicated econometric techniques to overcome it;
6. There is no cutting line between micro and macro data when it comes to migration and remittances. These are micro phenomena that take place due to decisions made by individuals (to migrate and to remit). Hence, addressing them at the macro level could be quite challenging as the aggregate aspect dilutes the individual traces and relate more to the behaviour of the majority[2].
7. Understanding the reasons behind these flows is important to understand and to evaluate their impacts. Similarly to migration, sending remittances is a self-selected process as not all migrants adopt the same remitting behaviour, in terms of intensity and in terms of objectives or reasons behind such transfers (altruism, investment, saving, …etc). In fact, two countries that have similar conditions and same number of migrants, would receive different amounts of remittances. This was found by Funkhouser (1995) for El Salvador and Nicaragua.
8. The implication of migration on the development of the home country could represent the complete opposite to those related to remittances. For instance, as remittances could be used to increase the education of the children in the household, migration could lead to children having to drop-out from schools to

[2] There is a number of theories that address the causes or reasons behind sending remittances, however these are outside the scope of this study (however a summary of these theories can be found in chapter one in Annex 1.2).

join the labour market to compensate the loss due to migration. These contradictory implications imply clear distinctions between the two aspects in the analysis. Very few studies have integrated both migration and remittances in their analysis due to the complexity of the relation and the difficulty in analysing the results. (e.g. McCormick and Wahba (2000) and Bayangos and Jansen (2011)).

Even more, the empirical literature addressed in the following section is not pretending to be exhaustive, as it does only focus on the major studies that were believed to have an important link with the empirical model estimation that we will be conducting in the second part of this chapter.

The following section will present the two groups of studies as explained earlier. **The first group** will address the impacts on the **macroeconomic development** of the home economies, including the migration impact on growth, investment, external sector, etc. **The second group** will focus more on the human development and **social aspects** of the home economies. It will address issues related to brain drain, education, health, poverty and inequality and other social aspects of the economy.

2. Can Migration Boost Growth through Remittances?

The relation between migration and macroeconomic outputs holds a great deal of interrelations. Different aspects of the economies are impacted by these flows as well as by the remittance flows. At the domestic level, remittances could impact savings, investments, financial sectors as well as the trade and competitiveness of the economy in the international market. This section will attempt to highlight some of the important literature that addressed these impacts.

Most of the early literature that addressed the relation between migration and development has looked into how remittances were divided between investments and consumptions. Hence, there was an ongoing negative trend about the impact of remittances, since most of remittances were directed towards consumption. More recent studies changed the way they looked into the definition of investment by adopting a broader picture considering, for example, the expenditures on education and health as human capital investment, and expenses towards agriculture lands as also an investment. This had brought positive insights about the impacts of remittances in the literature.

There is an important aspect of remittances that relate to its countercyclical nature towards the home countries economic downturn. As remittance flows are mostly sent by altruism (Agrawal and Horowitz, 2002), they tend to increase during times of downturn or slow down of the home economies in order to help in easing the liquidity constraints. These remittances can boost the stagnant economy as an external source of finance that will increase expenditure and hence turn the wheels of production through increasing demands on consumption goods, but also on durable goods and different types of investment. In fact, the way remittances respond to the downturns or upturns of the home countries depends on the reason behind sending these remittances. These flows could be *countercyclical, procyclical or acyclical* (more details about this can be find in Annex 1.2 in Chapter 1) and hence their correlation with variables of development, could either be positive, negative or insignificant (Giuliano and Ruiz-Arranz, et. al, 2009).

Therefore, if remittances are sent by altruism to compensate stranded economies, they could be represented in the empirical analysis as having an inverse relation with GDP growth (remittances increase when GDP growth is decreasing). If migrants are keeping some attachments to their home countries, then long run elasticity between remittances and acquisition of nonfinancial assets, such as real estate or land, is hence positive (remittances increases when the economy is on an upward trend). However, if the reason behind sending remittances is investment into capital markets (portfolio investment)

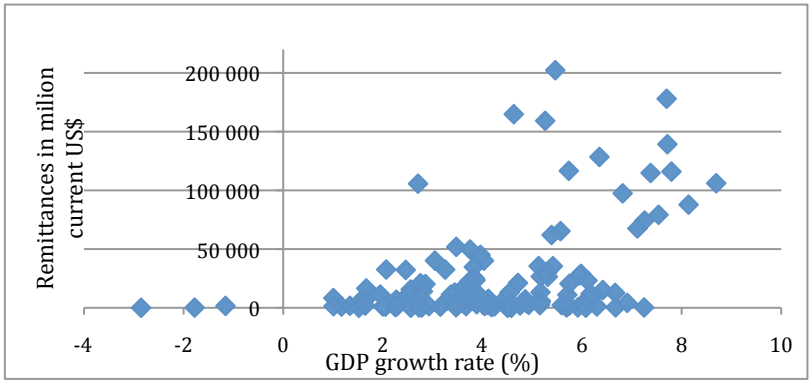
then there will be a sort of semi-elasticity between interest rates in the home country and that of residence (known as asset substitution) (**Buhga-Hagbe, 2004**)[3].

Frankel, 2009 looked into this particular nature of remittances using bilateral remittances data of 64 countries, which he argued are the best way to investigate the countercyclical nature of remittances. He investigated the role of remittances in 'smoothing' short-term income disturbances since the capital flows have failed to do so, due to their *procyclical* nature. In order to reflect the nature of remittances with regards to GDP, he calculated the differences in the GDP between home and host countries and found the estimated coefficient positive and significant indicating that remittance flows increase when the GDP in the host country increase above the expected level or when the GDP at the home country goes below potentials confirming the countercyclical nature of remittances.

This complicated relation between GDP and remittances is presented in the Fig 3.1. below. The scatter plot shows the GDP growth rates of middle and low incomes regions paired with the flows of remittances (in the US$) directed towards those regions between 1970 and 2011. There seem to be an increasing trend, however not a straightforward one due to the causality between the variables and the impact of other variables.

A large number of studies looked into the impact of remittances on economic growth of the home countries. As mentioned, some of these studies looked into the direct impact of remittances on GDP growth, however these have not provided with accurate or satisfactory results. Consequently, other empirical studies investigated the indirect link between remittances and growth through other factors such as financial development and investment. These factors are called 'channels'. This section will address these two groups of studies in two sections. The first section will address studies that looked into the impact of remittances on economic growth either directly or through the financial development sector. The second section will address studies that looked into the impact of remittances on growth through saving and capital investment.

Fig. 3.1 Scatter plot of GDP growth and remittances in middle and low income regions (1970-2011)



Source: World DataBank, 2013.

2.1. Remittances, Economic Growth and Financial Development

This section looks into the studies that addressed the impact of migration and remittances on economic growth of the home countries. One of the main challenges facing researchers in this type of studies is the causality between remittances and those macro economic variables as previously underlined. Moreover, empirical evidence confirmed the indirect relation between remittances and growth, which required the use

[3] A summary of the motives of sending remittances can be found in chapter 1 (Annex 1.2)

of channels such as financial development indicators. The following review will tackle the different methods and instruments that the authors have used to overcome the difficulties.

Barajas et al., 2009 found that remittances can have an insignificant or even negative impact on growth of the remittances-recipient country. Using data of remittances from 84 countries over the period of 1970 to 2004, the authors use the growth accounting framework (i.e. measuring the impact of remittances through capital accumulation, labour force and Total factory productivity (TFP)). They estimated OLS and fixed effects instrumental variables to overcome the endogeneity of remittances in regressions explaining per capita GDP growth. The instrument they use for remittances relates to the microeconomic determinants of remittances, which is unlikely to have a direct impact on the growth of the remittances-recipient countries. They use the ratio of remittances to GDP for all other recipient countries, which captures the effect of global reduction in transition costs and other systematic changes in the micro determinants of remittances. The authors use control variables such as the initial level of GDP per capita, average trade to GDP ratio, the M2 to GDP ratio and the inflation rate, to which they added the trade-weighted average growth rate of real per capita GDP of the remittances-receiving country's top 20 trading partners. Results of the study showed that remittances over this period has contributed little to economic growth in most of the countries included and even in some cases has reduced this growth. The authors explain this result by saying that remittances are not meant to be an investment tool its main objective is rather to help households getting out of poverty.

It is true that a lot of the remittances that are sent towards the developing countries target the poor households and make contributions towards alleviating their poverty, however, we argue that even this basic objective should eventually, in the medium or long term, lead to an overall positive spill-over effect that could go beyond this basic objective. In fact these negative findings contradicted the expectations of many development economists, considering remittances similar to flows of capital and foreign investment and hence should be able to positively impact growth. This created a new wave of researches that have tried to adopt different approaches, different methodologies and introduce new variables in an attempt to reach better results.

One of those studies is the one by **Buch et al, 2002**, who used remittances data for 145 countries for the period between 1970 and 1999 to estimate the relation between remittances and growth. In fact, this study was mainly addressing how growth impacts remittances and how does this relate to capital flows. The study used remittances and private capital flows as the dependant variables (separately in logs and as percent of GDP), while explanatory variables included GDP per capita as a measurement for the state of development of a country as well as the human development index. The latter was found to create problems of multi-collinearity. Other variables were added such as the economic freedom index, published by Heritage Foundation, female labour force participation, GDP growth as well as dummy variables to identify small islands. Results **showed a positive effect of growth rates on remittances.** This was justified by the fact that remittances increase, when the expected returns that can be obtained, are high in the home country. Interestingly, there was a negative significant impact with the female labour participate rate, and this was justified by the fact: if females have good work opportunities, then expected remittances would become less. Results also showed that the volatility of remittances is much less than that of capital flows, which is quite expected due to the different nature and incentives of both flows. Interestingly, the **study found a positive correlation between remittances and capital flows** which put in question the idea that remittances are normally sent to protect their home families from slowing down of the economy or capital constraints. The authors interpret their results, that in general, there is a positive link between remittances and economic growth, suggesting that remittances are not only sent to ease liquidity constraints but are also considered an additional source of capital. These results contradict totally the

result by Barajas, et. al., 2009 regarding the nature of remittances and confirm the idea that there are both direct and indirect impacts of remittances on economic growth, but that the indirect impact depends on the role of government policies in creating and supporting incentives to invest using the remittances.

Same positive results were found in a study by **Fajnzylber and Lopez, 2007** which used panel data of 67 countries (21 from Latin American and the Caribbean) for two periods of time (1991-05 and 2001-05) to estimate the impact of remittances on GDP per capita growth, which was **found positive and significant**. The study used both lagged values of remittances as well as other instrumental variables (such migration and distances[4]) to overcome the endogeneity of remittances and growth. The growth equations contained several other explanatory variables. The study concluded that the GDP per capita growth was found to be higher in countries with the following characteristics: lower levels of income, higher levels of education, deeper financial markets, openness to trade and better institutions. Whereas growth was found negatively affected by excessive government burden, high inflation and exchange rate overvaluation. Despite the positive relation between remittances and growth it was relatively small: an increase of 1.6% of remittances (between 1991-95 and 2001-05) has increased the GDP per capita by only 0.27% in the average Latin American countries. Interestingly, including investment as an explanatory variable, affected the significance of the impact of remittances on GDP per capital growth. The authors argue that this confirms that investment is an endogenous variable in the relation between remittances and growth, in fact, they estimated that a 2% increase in the share of investment to GDP in Latin American countries was due to the increase in remittances between the two periods (about half of the total impact of remittances on growth).

A study by the **IMF (IMF, 2005**) on the impact of remittances on development used data of 101 countries averaged over the period 1970 to 2003 to look at how remittances, can impact several variables: **growth, poverty and volatility**. In order to overcome the problem of endogeneity the study uses two instruments: (1) geographical which is the distance between the country receiving remittances and the country that host the migrants that are sending those remittances; and (2) cultural which is the presence of a common language in home and host countries. A cross country growth regression showed no significance of the direct link between real per capita output growth and remittances either on the whole sample or on the sub-sample of 50 countries that have high dependence on remittances (remittances-GDP ratio exceeds 1%). On poverty, a strong link was found between remittances and poverty (either measured as headcount or poverty gap). In fact, it was found that 2.5 percentage point increase in remittances to GDP ratio can lead to less than a half percentage point decrease in the share of people living in poverty. On volatility, the macro evidence confirmed what the micro studies found on the role of remittances to reduce vulnerability of households. In fact a 2.5 percentage point increase in the remittances GDP ratio can be associated with a one-sixth decrease in output volatility.

As these findings of direct impact of remittances on growth was not satisfactory, many studies looked into this relation through the usage of channels. One of the most commonly addressed channels in the literature on this subject, as previously mentioned, is the role of the **financial development**. There are two ways by which this interaction could go: From one hand, receiving remittances in financially developed markets can lower the cost of transactions and encourage access to financial institutions and hence enhance investment and increase returns, this would positively affect growth rates, on

[4] The distance instrument is the average output per capita of the top country destinations for migrants across the world weighted by the (inverse of the) distance between the remittance-sender and the remittances-recipient country. The Migration instrument is the average output per capita of the top five country destinations for migrants in the OECD weighted by the share of migrants of the recipient country in each of these five destinations.

the other hand, remittances can be helpful in easing financial and liquidity constraints in the presence of less efficient credit markets and high lending costs. In fact, one of the remittances' main objectives towards the developing countries is to **ease the liquidity constraint** (this has been evidently proven in micro studies, as will be seen in the following chapter) as discussed on the countercyclical nature of remittances sent by altruism. In this case, remittance flows come to replace what the households could not access from their own financial institutions. This is a major issue when investigating the role of remittances in development.

This financial channel is not the only one, other than easing liquidity constraints, there is an important role that remittances could play in **capital investments** of the remittances receiving country, especially looking at the informal or micro enterprises. This was reflected in many of the empirical evidence that addressed the impact of migration or remittances on the communities or micro enterprises at the micro level. For example, Woodruff and Zenteno, 2007 found in a survey on small enterprises in Mexico that a third of the capital invested in micro-enterprises is associated with migration to the US.

Chami el al, 2003 looked at how this interaction between financial markets and remittances can affect growth and how (or if) remittance flows can be a source of capital for economic development. Using a panel data of 113 countries with remittances data from 1970 to 1998, the authors link the main causes of remittance to their impacts: they argued that remittances are countercyclical and more like a compensatory tool, and hence they increase with the level of altruism and decrease with the increase of incomes. The authors also argue that the remittances are sent in asymmetric information where neither the receiver nor the sender has full information and hence are subject to agency and moral hazards problems. The authors construct a series of equations denoting the different steps of sending and receiving remittances and their potential impacts reflecting the choice of the immigrant to send remittances and (1) how the recipient will organise his/her "efforts" given the remittances (implicitly assuming that receiving remittances reduce efforts); and (2) if remittances go through a firm (i.e. directed towards investment). The model showed that remittances may imply less effort, but this will be compensated by the received transfers hence income might not be affected, but the welfare will be due to increased income risks, as the transfer will tend to crowd-out wages. The data is applied on a simple panel data to test the correlation between changes in the GDP per capita as a function of initial value of the GDP per capita, investment as percent of GDP, (changes in) workers' remittances as percent of GDP. This equation was also estimated in a dynamic effect taking into account the year and introducing regional dummy variables. Results showed a **robust negative correlation between the growth rates of remittances and GDP per capita growth rates.** The authors then highlight the problem of endogeneity that exist among the variables and use instrumental variables to overcome this problem. They used the ratio of the GDP per capita of the country receiving remittances to US per capita GDP as the income gap and interest gap. Remittances are then estimated using this instrument then re-injected in the original equation. Same results were obtained and were interpreted as an indication of the countercyclical relation between the two variables. These results implied, for the authors, that remittances do not act like a source of capital that could contribute to economic development but are rather compensatory of the low incomes of the recipient countries. It is important to note that this model or study does not imply that remittances impact negatively the economic growth, but rather that remittances increases when income in the home country decreases, i.e. that they have a compensatory nature. The authors argue that in order for the remittances to contribute in economic development, their nature has changed to be more investment oriented.

This study by Chami et. al., 2003 was criticized for using this type of instrument which has not being able to eliminate the biasness of the results, and hence might have contributed to the negative or insignificance coefficient (Lucas, 2005).

In an attempt to come closer to a more positive and significant relation between remittances and growth, **Catrinescu et al (2006**) used Chami et al (2003) model and introduced some modifications: first, the use of instrumental variables which were basically the income gap between US and remittances receiving country. Second, believing in the important role of institutions, the authors added institutional indicators such as the governance indicators, developed by Kaufmann et al as well as risk rating from the International Country Risk Guide (ICRG) and indicators of corruptions. They also included the Human Development Index (HDI) to capture the overall development especially on the social front. The authors used data for remittances[5] from the WDI for 162 countries First from 1970 to 2003 and then from 1991 to 2003 (to overcome the unavailability of some data). They use OLS estimation as cross section and in panel and finally they introduced IV to overcome endogeneity and also used the GMM methods. The best results were obtained using the dynamic panel estimation where **remittances appears to be positively, though mildly, correlated with growth in cases of control for biasness in remittances and when institutional variables were introduced.** The results of this study also confirmed the important role that could be played by good institutions in directing remittances towards growth.

The use of financial development as a link between migration and development was used by several other studies. For instance, **Giuliano and Ruiz-Arranz, 2009** found that the direct impact of remittances on growth is not significant in general, but linking this relation to the financial sector, they found a possible positive impact in countries with shallower financial markets. The authors use a sample of 73 developing countries for the period 1975-2002 to measure the impact of this financial interaction in the relation between remittances and growth. The data is a panel of five years average for all variables. The authors start by estimating an OLS model for the GDP that includes the initial level of GDP, remittances and other control variables[6]. The same model is re-estimated with the interaction between remittances and the financial markets. The authors use four variables to proxy for the financial development this include: liquidity liabilities of banks and nonfinancial intermediaries as a percentage of GDP; sum of demand, time, saving and foreign currency deposits to GDP; claims on the private sector divided by GDP; and finally, credit provided by the banking sector to GDP. The regression model used growth of real GDP per capita in constant US dollars as the dependent variable. Bivariate correlation showed positive correlation between growth and remittances and between remittances and investment and openness, while negative correlation was found with inflation. To overcome the problems of endogeneity, since it is clear that growth rates also impact both remittances and financial development the authors used lagged variables. The methodology used is the system Generalized Method of Moments (sGMM) and the main results of this study showed that the interaction variable of remittances and financial development is negative indicating that the two variables are substitutes (i.e. remittances act as substitute to credit in less developed financial markets). Moreover, when financial development variables were introduced, **a positive and significant impact of remittance was found on growth**. The authors make a step further in attempting to estimate how remittances are transmitted through investment. For this, they estimate another model[7] where investment (% of GDP) is the dependent variable and they use a range of explanatory variables, including remittances,

[5] This study data from the WDI which represents current transfers by migrant and wage and salaries earnings by non-residents' workers, as reported in the BoP. This is different from Chami et al 2003, who only used migrants' transfer data.

[6] such as Inflation, Openness to international trade, defined as the ratio of the sum of exports plus imports of goods to total output, Human capital, measured as the average number of years of secondary schooling, obtained from Barro and Lee series, Government fiscal balance and investment ratio, defined as the ratio of central government fiscal balance to GDP and gross fixed capital formation to GDP, respectively, and population growth.

[7] This investment model by Giuliano and Ruiz-Arranz, 2009 will represent the basis of our own empirical estimation in the second part of this chapter

and control variables including GDP growth, the interest rate, openness, inflation and the four financial indicators described above. The results show a positive and significant correlation between remittances. This was robust across the different specifications. Moreover, the interaction variables were all found negative and significant across the different financial indicators. This brought the conclusion that **remittances do boost investment, especially in countries with less developed financial sector**.

On the basis of this model by Giuliano and Ruiz-Arranz, 2009, **Yaseen, 2012** used panel data from 7 top receiving remittances' countries in the MENA region[8] for ten years (2000-2010) to investigate the role of remittances in growth through the financial development interaction. This is one of the very few studies that addressed the impact of remittances on GDP in these countries. The author estimates a GDP per capita growth model that includes remittances and financial development variables together with other variables such as institutional quality and initial level of GDP. OLS methods are used as well as the sGMM using lags of the independent variables as instruments for the repressors. **Results showed that remittances are positively and significantly correlated with growth** and the sign of the interaction variables was found to be negative indicating the same results as that of the Giuliano and Ruiz-Arranz, 2009 study that remittances and financial development act more like substitutes.

Also, on the MENA countries and using interaction with financial and institutional variables, **Eltayeb and Sidiropoulos, 2010** found a positive relation between remittances and growth. A standard growth model was estimated using both fixed and random effects models on a set of 7 MENA[9] labour exporting countries during the period 1975 and 2006. Based on the model developed by Giuliano and Ruiz-Arranz, 2009, they found a positive impact of remittances on growth and negative impact of the interaction between remittances and financial development (indicator of credit) indicating the substitution nature between remittances and access to credit, while a positive sign was found with the interaction with liquidity liability (M3/GDP) indicating that remittances can complement total liquidity. Institutional indicators showed a positive and significant sign with GDP growth. The interaction with remittances showed a positive and significant relation with GDP growth indicating that institutional indicator is complementary to remittances in achieved growth. The best-fit results rejected the random effect method and the fixed effect method supported the idea that remittances can have a direct and an indirect effect on growth through their interaction with both financial and institutional channels.

Following the ideas developed by both Chami et al., 2003 and Giuliano and Ruiz-Arranz, 2009, **Bettin and Zazzaro, 2009** introduced a new indicator measuring the efficiency of the domestic banking sector, which was believed to add a new channel between remittances and growth. The authors use, along the quantity based indicators (M2 to GDP and the ratio of domestic credit to GDP), a measurement of 'bank inefficiency'. This is based on calculating the ratios of individual banks' operating expenses to the sum of net interest revenues and other income for all banks in the sample selected. They used the growth regression model developed by Giuliano and Ruiz-Arranz, 2009) where growth rate of real per capita GDP is regressed on the ratio of remittances to GDP, level of financial development and the interaction between these two variables, as well as control variables to which they added variables of institutional quality (measured by the Kaufman corruption and quality of regulation, respect of law, political stability and policy implementation) and its interaction with remittances. Using data for the period between 1970 and 2005, for 66 developing countries, the results showed that an efficient banking system complements the positive effect of remittances on growth. Remittances, if rightly channelled through an efficient banking system can have growth enhancing effects.

[8] Algeria, Egypt, Jordan, Libya, Morocco, Oman, Syria, Lebanon and Tunisia
[9] Algeria, Egypt, Morocco, Tunisia, Sudan, Jordan and Syria

Similar results were found, however, focused on the Latin American region, were found by **Mundaca, 2009** where a positive effect of remittances on growth was identified in presence of financial intermediation channels that are able to channel savings from remittances towards investment in productive long run technologies. Using the three period lived overlapping generation model, where Banks have access to a liquid investment that is not directly productive and an 'illiquid' investment that produce productive capital, and where capital is provided by the old generation and labour by the young generation, the author constructed a production function. Adding some assumptions, the author developed the core model of the analysis, where growth rate of output per capita for country in year (t) is regressed over a matrix of demographic variables (human capital, population growth, etc), gross fixed capital formation per capita (investment), remittances as percentage of GDP per country, degree of financial development for the country which is measured by the domestic private credit provided by the banking sector as share of GDP. This model was applied to countries of Latin American and some countries of the Caribbean over 1970 and 2002. **Results of this model show that financial development has positive impact on growth in the presence of remittances.** In addition the interaction between financial development and remittances variables has more significant results on growth. The author concludes that if remittances are properly channelled it could have a positive effect on growth.

Several other studies that used the link between remittances and the financial sector, found positive results on growth. For instance **Aggarwal et al.**, 2011 use remittance flows data of 109 countries for the period of 1975-2007 to investigate the link between remittances and financial development (using the ratios of bank deposits and credit to GDP). The authors found a positive and significant association between remittances and financial sector development these results was robust using different estimation techniques and accounting for the endogeneity and reverse causation between the variables.

Also, the study by **Fajnzylber and Lopez, 2007** looks into the impact of remittances on financial sector development through two financial measurements: bank deposits and bank credits in the private sector as percentage of GDP using macro data of 16 developing countries. In a simple correlation model between those two indicators and remittances, positive impacts where found for most of the Latin American countries includes in the study with the exception of 6 countries where this correlations was either found negative (e.g. Belize) or insignificant (Argentina and Panama) or both (Dominica and Mexico). A one percent increase in the share of remittances to GDP can create a five-percentage point increase in bank deposits and credits to GDP. This result was controlled for the differences across the sample countries allowing remittances to have different impacts; the results persisted for some countries. This means, that the impact of remittances on financial development is not evident or is very small.

On a different note, most of the studies that addressed the impact of remittances on economic growth used GDP per capita as a measurement of growth. This measurement, which represents in fact the output of the nation of its goods and services divided by the number of population, have several shortcomings: (i) they do not count for the production of individuals unless it was sold; for instance, food produced by farmers and used for self-sufficiency will not be included; (ii) they do not reflect the quality of the social aspect of development (Stiglitz, et. al. 2008); and (iii) they do not reflect the long term growth impacts (Rao and Hassan, 2011).

This latter shortcoming was what **Rao and Hassan, 2011** attempted to overcome in their study on the direct effects of remittances on long run growth. To catch the long-term effect, or what they called the 'Steady State Growth rate SSGR', they use the production function rather than the commonly used annual growth rate of output of the countries (in a time series of 5 or 10 years of average). The authors argue that the production function can be used to capture the effect of remittances through their effects

on total factor productivity (TFP), and hence their starting point is the simple Solow growth model (1956) of constant returns to scale where the long term growth rate equals the rate of growth of the TFP in the Cobb-Douglas production function. The authors assumes that the TFP is a vector of 'growth improving variables' and here they included remittances and other control variables namely: average ratio of remittances to GDP, ratio of investment to GDP, FDI to GDP, ratio of M2 to GDP, ratio of credit to GDP, openness measured as the ratio of exports and imports to GDP, ratio of government expenditures to GDP, years of schooling and population growth. To prove their point, they used data from 40 countries with remittances to GDP ratio equal or above 1% for the period 1960 to 2007, and applied the panel data methods. They divided the data into nine panels of five years for each country, while the tenth consisted of 3 years and used a standard model based on other empirical evidence such as Giuliano and Ruiz-Arranz, 2009 and Barjas et al., 2009, where the dependant variable is the five year average rate of growth of output per worker and the control variables are as above, to which is added a country specific variable. Results of this model were unsatisfactory due to the causality and endogeneity between variables. The authors then applied the model they developed based on the production function where all those control variables are included in the model in interaction with time T as follows:

$$y_t = A_0 e^{(g1+\Sigma giZit)} T\, k^{\alpha}_t$$

Where Y is the output, A is the TFP, g_1 is the growth of ignored variables while g_i is the growth of the variables in the vector Z, the vector z consists of all the variables above, T is the time and K is the capital per worker. They used the Generalized Method of Moment (GMM) to estimate this model in a dynamic panel with non-linearity in the variables. After several attempts including adding the interchange variables between remittances and financial development, the results of the model were still unsatisfactory: either insignificant or showing a negative sign on its effects of long-term growth. **The authors concluded that remittances might not have a direct long term effect on growth,** but rather a short run transitory effect, however they have identified two channels through which remittances could have some indirect effects: investment and the development of the financial sector in addition to other possible channels.

This concept of measuring long term impact of remittances on long term growth was also assessed by **Glytsos 2005** who used a different approach and seem to reach a better result. He adopted a Keynesian approach with a dynamic perspective. He constructed a simple linear macroeconomic system of equations where he assesses the contribution of remittances in: consumption, investment, imports and finally the output. The objective of his model was to measure the short run effects of an exogenous shock to remittances on these four variables, then to use these multipliers on a series of data to estimate the magnitude in the long-term impacts and finally to estimate the impact on output growth over time. Based on previous theoretical evidences, the authors constructs the dynamic models as follows: (1) Private consumption in time (t) is a function of previous consumptions in (t-1), as well as a combined GDP and remittances in time (t); (2) Investment in time (t) is a positive function of income Y and a negative function of a lagged capital stock K in previous time (t-1); (3) the imports equation is function of income Y in time t and lagged income in time (t-1) as well as lagged imports in time (t-1); and (4) the output Y is in fact a summary of consumption C, Investment I, Government expenditure G, Exports X, Imports M and finally migrant remittances deflated by the CPI R, this is summarised as follows:

$$Ct = \alpha 0 + \alpha 1 Yt + \alpha 2 Ct\text{-}1 \quad (1)$$
$$It = \beta 0 + \beta 1 Yt + \beta 2\, Kt\text{-}1 \quad (2)$$
$$Mt = \gamma 0 + \gamma 1 Yt + \gamma 2\, Yt\text{-}1 + \gamma 3\, Mt\text{-}1 \quad (3)$$
$$Yt = Ct + It + Gt + Xt - Mt + Rt \quad (4)$$

The model is estimated using the 2SLS method on the data of 5 individual Euro-Med countries: Egypt, Greece, Jordan, Morocco and Portugal. Results showed that the model was fitting in general with the theoretical expectations for these countries (few exceptions were recorded). The multipliers' coefficients were all found positive except for one, this means that both the increase and decrease of **remittances have positive long term effects** and that this effect comes with a lag. The author applies the estimated interim multipliers to the actual annual changes of remittances for those countries. He found that, except for Jordan and some periods in Greece, remittances are generally a contributing factor to development of these countries. The author concludes that there are some uniformity that could be traced but for different times in the selected countries. According to the author, the model has confirmed the growth generating capacity of remittance flows for each country over time demonstrated by the elasticity of long-term induced growth rates output with respect to growth rates of remittances.

Another problem that has contributed to mixed results in the remittances-growth relation is related to the nature of this relationship. Other than being causal and have many direct and indirect channels, as explained previously, this relation could be non-linear. If remittances are beneficiary for the growth of the receiving country, this does not mean that these benefits would be the same across time; there might be some diminishing return and a threshold after which this impact of remittances is diminishing and fading. This is the argument placed by **Ruiz et al 2008** and by which they explained the non-consistent results obtained by different studies that looked into the direct nature of this relationship. Their paper addressed this issue and suggested a treatment to these potential nonlinearities by using semi-parametric model since plotting the relation was neither linear nor quadratic. Estimating a model where the dependant variable is the per capita growth rate of GDP regressed on a vector of control variables (including initial level of GDP per capita, inflation, and a range of institutional and safety variables such as ethnic fractionalization and institutional quality…), and where remittances affect GDP with an unknown function. The authors estimated the model using different approached to compare the results and with interacting the remittances with some institutional variables. The model is estimated over the period 1978 to 2001 over a certain number of countries. Results showed that remittances were still not significant when semi-parametric approaches are used in either pooled or fixed effects estimations, while positive and significant results were obtained for the parametric estimations for both (pooled and fixed effects). However the interaction between lagged values of remittances with quality of institutions was found significant.

These mixed results pushed recent studies to be more focused on a set of defined group of countries rather than large samples where a lot of disparities in the macroeconomic conditions of the countries would affect the results. This seems to bring better (and more positive) results.

Focusing on certain regions, **Fayissa and Nsiah 2008 and 2010**, focused their two studies on economies of African and Latin America respectively, adopting almost the same approach for the analysis for the two studies. The model used is a double log – linear Cobb Douglas production function where (Ln) GDP is regressed on a number of variables in the Ln format, including remittances, Gross fixed capital formation, percentage of real GDP, secondary school enrolment, aid, FDI, terms of trade, political right index and initial level of GDP. The equation is estimated in a dynamic variant of the fixed and random effects Arellano-Bond estimation (1991). Using data for 37 African countries (1980 to 2004) in the first paper and data for 18 Latin American countries (1980 to 2005) in the second paper, the authors found positive significant results of the impact of remittances on growth. In fact, the paper found that for African countries, a 10% increase in the remittances in a typical African country would result an increase of about 0.4% of GDP per capita income, similarly for an increase in investment in human capital. Similarly, for a typical Latin American country, an increase of 10% in remittances

would result in about 0.15 percent increase in average per capital income. While 10% increase in human capital would increase the GDP per capita by 1.04 percent.

The idea of focusing the analysis on a special region or a special group of countries with the same characteristics was adopted by one of the most recent studies on this subject. **Ziesemer, 2012** focused his analysis of the impact of migration and remittances on growth on the poor countries (defined as those with income below $1,200 in 2000) that also had low growth rates. The methodology is based on constructing a system of 10 equations to emphasize the direct and indirect effects of migration and remittances on the different macroeconomic variables. These regressions are either based on previous empirical literature or have been created by the authors. The 10 regressions constructed where to explain: (1) GDP per capita (with Lagged GDP per capita, investment, literacy, labour force, remittances, aid, etc); (2) remittances (where dependent variables are differences of income and interest rates between sending and receiving countries, income per capita, etc); (3) Saving as a ratio of GDP (with remittances, aid, etc.); (4) Gross fixed capital formation as share of GDP; (5) Public Expenditure on education; (6) Literacy explained by public expenditures, aid, savings; (7) Central government tax revenues as ratio to GDP explained by lagged values, remittances and saving to GDP ratio; (8) Aid is a function of GDP and GDP per capita of poor country and GDP of the OECD; (9) endogenous labour force growth is dependent on literacy, aid, GDP per capital income and net migration; and (10) Net migration as a function of lagged net migration, GDP per capita, difference in GDP per capita between sending countries and OECD, remittances, and lagged remittances for 5 years and 10 years and saving as a ratio of GDP. To these main 10 equations, the author adds three auxiliary equations on US interest rates, world income and OECD income to complete some missing information in those 10 equations. The 13 equations form a dynamic system of endogenous variables. Results showed that remittances not only have a direct effect on growth, but also direct effects on saving, migration, public expenditure on education and tax revenues. While the indirect effects appear on public expenditure on education and literacy through savings as well as from migration to labour force growth. The author performs a simulation exercise, which allows taking all these relations into account. An innovative step was also undertaken by the author, where he sets first, remittances to half their baseline value and second put net migration to zero then compared the counterfactual effect with the baseline scenario. Setting remittances to half has shown the following interesting results: (1) there is large impact of remittances in increasing saving, this enhances emigration and then reduce labour force growth which increases GDP per capital growth; (2) a second effect was found, that remittances have positive direct and indirect impacts on education variables visa savings. Literacy leads to increase labour force growth and enhances investment which increase GDP per capita growth; (3) Remittances have positive direct effects on growth but also indirect ones that are argued to be double the direct ones: savings increase more than investment, leading to lowering debt GDP ratio and interest burden in the long run. Setting net migration to zero has given the following results: (1) the major impact of emigration is to reduce labour force growth, this enhances growth of GDP per capita; (2) this mechanism enables a sort of catching up when remittances are lower. With these results the author concludes: *'In short, migration and remittances are good for growth and catching up of poor developing countries'*.

In conclusion, despite the discrepancies of the results of the empirical evidence on the impact of remittances on growth, there is some evidence of an overall positive contribution from remittances to growth. However, empirical evidence showed that this relation is not automatic or direct, since a direct link between remittances and growth, for instance, could not be easily established. Moreover, there is an important role for the financial development sector and the institutional performance in this relation which give evidence of a substituting role of remittances with access to credit, in case of less developed financial sector. Also studies showed that efficiency of the financial institutions could have a complementary role to the positive effects of remittances to growth. In terms of institutions, almost all studies that addressed these variables found that the

interaction between the quality of the institutions and remittances is important and is mostly complementary.

From this review, we can already point out the indirect relation between remittances and development: that there are a number of existent 'channels' that links the two variables. A first channel that we could identify from this analysis is the investment channel through the financial development sector: a closely related macroeconomic indicator to economic growth whose impact is investigated in the following section.

2.2. Investment: Transmission Channel to Development

Although the majority of remittance flows are directed towards consumption, there is some evidence that a non-trivial amount of these remittances are still directed towards investment. Investment is an important channel through which remittances can impact not only growth but also the overall development of the countries of origin. In fact, micro-evidence showed that households that receive remittances invest more and save more on average than those not receiving remittances (Adams, 2007) (this will be addressed in full details in the following chapter).

Investments from remittances' transfers could be anything from a simple replacement of agricultural machinery in the household's lands, to establishing medium size enterprises that could benefit not only the household but also the whole community around. For example, it was found that one fifth of the capital investment in microenterprises in Mexico was originating from remittances of their migrants in the US (Woodruff and Zenteno, 2001). At a minimum, even if shares of remittances are saved in the financial sector, these could contribute to investment in capital markets. Moreover, there is a considerable impact on growth through the remittances invested by the returned migration to their home countries. For example in Egypt, a large number of the enterprises that are currently set were established in the 1980s following the mass of returned migrants (McCormick and Wahba, 2002).

There is an important benefit for the financial market in using the remittances as a source of investment, since these flows are relatively stable compared to the capital or portfolio flows that is very much depending on the investment environment and legal institutions (Ratha, 2003). However, the relation between this trio (remittances, growth and investment) is very much causal and finding a way to identify how remittances can affect growth though investment could be challenging. Perhaps this explains why empirical evidence on the role of investment in this relation is scarce. Most of the work that focused on the financial development and investment has used those variables as explanatory variables along with the variable on remittances, all integrated in growth equations, as addressed in the previous section. Very few have considered the investment to be the dependent variables that could be explained by remittances or other financial indicators as will be addressed in this section.

Looking at just the impact of remittances on domestic investment (as a channel that leads to long-term growth and development), it is clear that there is an important role played by the financial sector and the level of its development. As seen in previous analysis, when looking into the impact of remittances on the different measurements of growth, the role of the financial sector was central.

Measuring the impact of remittances on domestic investment was addressed by very few empirical studies. **Gheeraert et al. 2010** identify two opposite effects that the financial sector development could play in the relation between remittances and domestic investment, namely a 'positive transaction cost' effect and a 'negative openness effect'. The transaction costs are summarized in three components: physical access, affordability and eligibly that could prevent the remittances receivers from being able to access the banking sector to open an account in which to receive remittances. This is why there is a

large share of the population receiving remittances that do not use the bank as a financial intermediate. These barriers reflect the poorly developed financial sectors and impede the full benefits of depositing remittances in the banking sector and consequently impact negatively the availability of funds for loans to finance investment. On the other hand, 'openness' means that the domestic banks are able to borrow foreign funds in the international capital market (risk premium for international loans). Remittances have a lower impact in investment when these premiums are low which is reflected in high-developed financial sectors. A two-periods-model was developed by the authors where a share of remittances is assumed to be saved, and there will be a choice between saving or not saving in the financial institutions. Maximizing the utility function between saving and consumptions and including different financial and macro economic variables, the authors developed an investment equation where Investment is regressed on GDP in PPP, a measurement of the economic cycle, remittances, Financial sector development, Openness and the interactions between those. Using a panel-data methodology with country fixed effects, on a sample of 114 developing countries over the period 1970 to 2004, on the equations, the authors found evidence for a stimulating effect of remittances on investment, with a varying size depending on the level of accessibility of the banking system (the cost of opening a bank account) and the level of international openness of the banking system. The authors then confirmed their idea that remittances seem to have a maximum impact on investment when international capital flows are restricted and the cost of accessing the local banking system is low.

The quality of the financial sector is not enough to ensure the transmission of the benefits of the remittances to the investment, there is an important role played by the quality of the non-financial institutions as well. This was what the study by **Bjuggren et al, 2010** tried to assess. Such as done in studies that looked into the impact of remittances on growth and which introduced the quality of institutions (e.g. Battin and Zazzaro, 2008), this empirical evidence developed a model where investment (measure as the investment to GDP ratio) is regressed on remittances to GDP, institutional quality (an index of the ICRG), financial development indicators and a set of control variables (including GFP growth, terms of trade to GDP, etc). Using data for 79 developing countries for the period 1995 to 2005 and applying first the OLS fixed and random effect approach, then correcting for the correlation the authors using the 'system Generalised Method of Moments (sGMM)' regressions, where instruments are included using lagged values. Results of these methods showed: there is a positive and significant impact of remittances on investment; the interaction between remittances and financial development was found negative in all methods, as well as the interaction between remittances and quality of institutions. This means that remittances could induce investment in the economies with weak institutions and underdeveloped financial sectors. This is what the study by **Guiliano and Ruiz-Arranz al, 2009** has also showed, when investigating the relation between remittances and investment as previously noted and where interactions between remittances and financial indicators variables were used.

Moreover, some countries' case studies have shown a positive contribution of remittances directly towards investment. Morocco, Mexico, Egypt and some East European countries showed evidence of a positive effect of remittances on their investments (Lucas, 2005). Similarly, the Diaspora of migrants from Barbados has contributed, through remittances to real investment through specific projects (e.g. improving the housing, contributing to the savings bonds) (Griffith, 2008). Also, Ratha, 2003 reports positive effects of remittances on investment in receiving countries, such as Mexico, Egypt and Sub-Saharan Africa. Remittance flows have been used to build schools, hospitals and other infrastructure. This is considered another type of investment that constitute an important addition to the impacts of migration and which will be addressed in the second group of studies on the social impact.

This means that, as an overall, there are positive impacts of remittance flows on investment, but that this impact is not necessarily direct. There is an important role

played by the financial sector indicators to whether these remittances are used to compensate the weak performance of these financial indicators or that they are rather complements to the strong existent financial sectors. The mixed results obtained by different regional and country cases are due to the external factors such as the attractiveness of investment, the role of institutions, etc. **Hence, investment is considered an important channel between remittances and development, and will be used in our empirical model.**

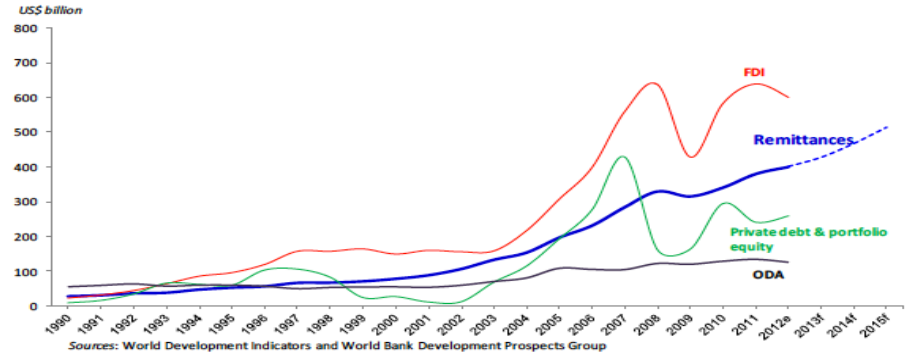
One of the external factors that have an important role on the impact of remittances on development is the countries' external sector. Countries overall competitiveness, trade and exchange rates are important factors to the development but have also an important connection with remittance flows. This will be highlighted in the following section.

2.3. Dutch Disease and Competitiveness: Impact on Trade and Development

The relation between migration flows and trade have been the subject of many debates and analysis in the past two decades. The well-known Heckscher-Ohlin international trade model argued that the comparative advantage of any country is based on the relative abundance of one of its factors of production. Applying this concept on migration and trade, one could argue that trade liberalization leads to a fall in international migration since differences in international factors prices will be reduced. From this basic idea a large literature has been induced on relation between migration and trade as substitutes or complementary. This theory has been challenged in practice and in recent empirical literature confirming that migration and trade are in fact complements rather than substitutes[10]. Despite the importance of this subject, it is not going to be addressed as it is outside the scope of this study. However, the impact of remittances on the competitiveness of the trade sector and the risk of over-flow could have some relevance for our empirical evidence; hence we shed some light on some of the important findings on this issue.

Remittance flows are considered a major source of private external finance and foreign currency that surpass, in many countries, those of the foreign direct investment (FDI) and aid flows (Fig 3.2). They represent about third of total financial flows in the developing countries.

Fig.3.2. Workers' remittances and other inflows towards developing countries



Source: World Bank estimates, 2013

High shares of remittances to GDP are argued to have an important role in the Balance of Payments of developing countries, especially in covering the trade deficit and can even lead to a surplus in the current account. Countries, such as Morocco and Egypt, have witnessed increasing trends of remittances that have contributed positively to their balance of payments in times where trade deficit were problematic. Having the Balance

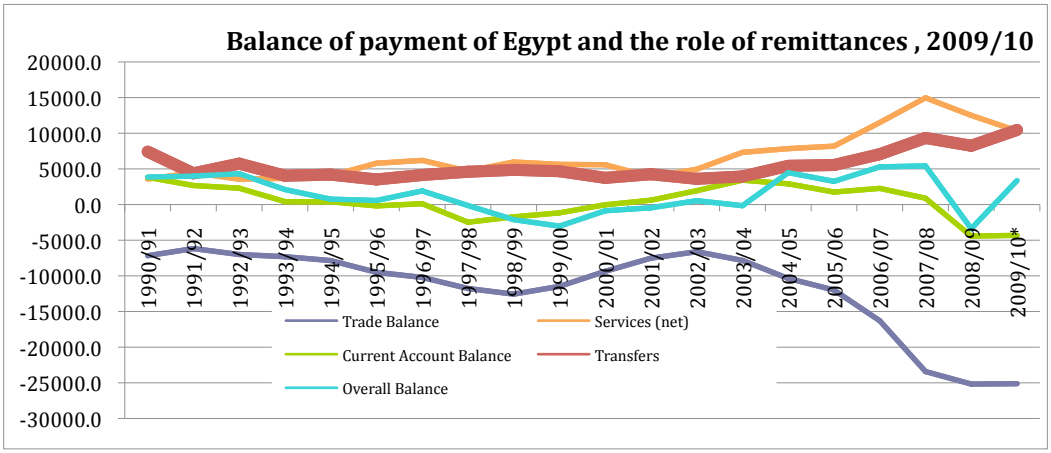
[10] A theoretical background was addressed in chapter 1

of Payments (BoP) in surpluses can contribute to an improvement of the country's external position and hence the accumulation of foreign exchange reserves that could ease pressure on public debts (such as the case of Morocco as explained in Bouhga-Hagbe, 2004).

Also, most of the empirical evidence had confirmed the non-volatile nature of remittances, especially compared to other sources of flows. In fact, some studies have shown that remittances are often responding to economies' slowdown and stagnant growth (as mentioned). In Egypt, for instance and despite (or rather due to) the current situation of economic slowdown following the revolution in 2011, there were unprecedented flows of remittances towards the country (Fig 3.3).

However, remittances could come with a cost on the economy's tradable sector. Large flows of remittances could impact negatively the **international competiveness**[11] of the remittances receiving country if these flows are directed towards a certain sector which would translate into the concentration of the resources towards this sector (usually the non-tradable) on the expense of the other sector (usually the tradable sector) (Acosta et al, 2009). Also, remittances could have a negative effect if they lead to appreciation of the local currency (due to the supply surge in foreign currency) and hence lead to an increase in the prices of non-tradable goods due to an increase in the demand (while tradable goods prices might remain stable due to international competitiveness). This would result a real exchange rate appreciation and loss of competitiveness for this country receiving the transfers. If large spending from remittances is directed towards consumption, this could lead to a **Dutch disease** phenomenon. The loss of competiveness leads to imbalances in the country's trade balance due to reduction of exports of traded goods.

Fig. 3.3. The Balance of Payment and the impact of remittances (Egypt)



Source: Central Bank of Egypt, 2012.

Moreover, shifting the labour supply towards the non-tradable sector could affect wages and accentuates the problem in the tradable sector that is becoming much more expensive to produce and whose price becomes non-competitive in the international market. This of course leads to decrease of exports on the expense of imports and a trade deficit.

[11] Competitiveness of a country is a complex issue and measuring it includes more than a dozen aspects of an economy. The World competitiveness report by the World economic reform includes 12 aspects of a country to measure their competitiveness. Some of these aspects are short or medium term that could be impacted by remittances some other are longer term. These include: Institutions, Infrastructure, Macroeconomic Stability, Health and Primary Education, Higher Education and Training, Goods Market Efficiency, Labor Market Efficiency, Financial Market Sophistication, Technological Readiness, Market Size, Business Sophistication and Innovation. World Economic Forum (annually). Global Competitiveness Report, WEF, Geneva

Consequently, remittances could reduce the export sector's international competitiveness by increasing the price of its exports through real appreciation of the exchange rate. This is the finding of **Amuedo-Dorantes and Pozo, 2004** when examining the impact of remittance flows on 13 Latin American and Caribbean countries for the period of 1979 to 1998. The authors estimate a model based on the literature of the real exchange rate where it is function of remittances (expected a positive relation), a proxy for the differences in the technological progress (which was found to affect exchange rate by Balassa (1964)[12] and Samuelsson[13] (1964), government spending, terms of trade, world real interest rates and controlling for foreign aid. Results showed that indeed, increase in remittance flows would appreciate the real exchange rates due to the positive and significant coefficient found with remittances. Doubling the remittances would raise the real exchange rate by 23%. Aid had no impact on the real exchange rates. Using instruments to avoid the endogeneity of variables, results remained robust with an effect of 22% rather than 23%.

Similar results but much lower impact were obtained by **Lopez et al. 2007** when looking into the remittances inflows to the same region of Latin American countries where they found that a doubling of the remittances to GDP ration could lead to a real exchange rate appreciation of 5 percent. Also, a decline in the international competitiveness due to appreciation of the exchange rate following increasing flows of remittances towards Cape-Verde has been found by **Bourdet and Falck, 2006** using co-integration analysis. The results of their long terms model shows that a 10% increase in remittances leads to a 1.2% appreciation of the real exchange rate.

However, if remittances or grants are used to ease supply constraints and increase productivity in non-tradable sector, rather than increase the demand on the non-tradable sector, this could in fact lead to depreciation (rather than the appreciation) of the equilibrium real exchange rate. This is what **Mongardini and Rayner, 2009** found while looking at the effect of remittances on the exchange rates in a 36 sub-Saharan African countries (SSA). Though remittance flows had doubled since 2001, it did not have an appreciation impact on the exchange rates and hence did not lead to a Dutch Disease. Following a methodology developed by Chudik and Mongardini (2007), using the pooled mean group (PMG) approach, the real exchange rate was estimated as a function of a vector of fundamental determinants of the equilibrium real exchange rate. Results showed a negative coefficient between remittances and equilibrium real exchange rate indicating that real exchange rate does not appreciate with the increase of remittances. Moreover, results showed that countries with higher levels of net external liabilities tend to have more depreciated real exchange rates.

Similarly, **Lee et al., 2008** found in a panel study of 36 SSA countries that the real exchange rate and remittances are negatively correlated, suggesting that there is no Dutch disease effect from private transfers. Also **Bouhga-Hagbe, 2004** argued that in the case of Morocco, inflows of remittances have had positive impact on covering the trade deficit by achieving surpluses in the external current account. Theses surpluses have enhanced the country's competiveness and strengthened its external position.

Confirming the view that remittances cannot have a Dutch effect, **Rajan and Subramanian, 2008** found no significant effect of remittances on the competitiveness of the tradable sector. Adopting the methodology of Difference-in-Difference (DiD) to denote any differences in the growth activities of tradable sectors, the growth of the economy denoted by the annual average rate of growth of the value added is regressed

[12] Balassa, B. (1964). The purchasing power parity doctrine: a reappraisal. Journal of Political Economy, 72, 584–596.

[13] Samuelson, P. A. (1964). Theoretical notes on trade problems. Review of Economics and Statistics, 46, 145–164.

over a vector of county's characteristics, industry indicators and the specific industry's share in the manufacturing together with an interaction of the remittances with labour intensity of the industry, an interaction of remittances with financial dependence and finally an interaction with exportability index. Data on industrial performance from the UNIDO was used for 33 developing countries for the 1980s and 15 countries for the 1990s, where data at the 3-digit level of the ISIC was considered. It is worth noting that this same exercise was applied on aid flows and results showed a slow down in the growth of the tradable sector and labour intensive industries.

Remittances impact on the exchange rate then depends very much on how those remittances are used and in which sector they are spent. Previous empirical studies showed that remittances are often used to ease liquidity constraints in the weak financial institutions. Theoretically, if financial institutions are sufficiently well developed they can channel the overflow of remittances towards investment which, in turn, can offset the possible appreciation of the exchange rate. This is what **Acosta et al., 2009** have tried to investigate when looking into the interaction between remittances inflows, exchange rates and the financial sector development in a panel of 109 developing and transition countries in the period 1990-2003. Using the Generalized Method of Moments (GMM) to avoid endogeneity problems, the authors estimate the real effective exchange rate (REER)[14] index with a set of explanatory variables including a vector of characteristics, remittance flows (share of GDP), financial development indicator (bank credits or deposits as a share of GDP), country specific effect time and error term. Results with and without the financial development index, showed a positive relation between remittances and REER denoting an appreciation of the REER with an increase in the remittances. However, this effect was smaller in the presence of a well developed financial sector. In fact, they found that a 1% increase in remittances as a ratio of GDP leads to an appreciation between 20 and 40% of the REER (based on the methodology used). Also, looking into how remittances affect the outputs of the tradable and non-tradable sectors, they found that 1% increase of remittances leads to a 1% decrease in the ratio traded over non tradable outputs.

Looking at interactions and channels between remittances and the exchange rate, **Vargas-Silva, 2007** looks at the impact through money demand in Mexico between 1996 and 2006. The starting point of this study is the estimation of the determinants of money demand in Mexico where both remittances and exchange rates are included, as well as other variables. To avoid endogeneity problems, the author uses the structural vector autoregression (VAR). The empirical evidence showed that shocks to remittances have a positive impact on domestic money demand, since households receiving remittances tend to exchange the foreign currency with the local one. This relation is bi-directional: a positive shock leads to a negative impact on the country real exchange rate and hence could have a negative impact on the country's competitiveness.

Looking into how remittances can affect the trade balance, **Okodua and Olayiwola, 2013** use a linear dynamic panel model on 30 Sub-Sahara African countries (SSA) for the period between 2002 and 2011 witnessing dramatic increase in remittance flows. The external trade balance is put as a function of initial level of external trade balance, remittances, the real effective exchange rate (REER), GDP growth, inflation and openness. Using the sGMM approach to overcome endogeneity, results showed an insignificant and negative coefficient for the variable of remittances. This means that although remittances could have potential depressing effect on the trade balance, this effect is marginal.

Given this overall analysis, we can generally conclude that remittances, as private flows, are less likely to have a negative effect on the receiving economy's international

[14] The REER is in fact the nominal effective exchange rate index adjusted for relative change in consumer prices.

competitiveness; however this option should not be totally ruled out as confirmed by the empirical evidence. If flows are directed towards investment this would lead to a positive impact on growth of the economy, however this depends on the efficiency of the both the financial and non-financial institutions. Moreover, if these flows are spent on goods, the effect might be insignificant (or even positive) on competitiveness, if the spending increases the supply of non-tradable goods (rather than the demand). A negative impact of exchange rate appreciation could take place if remittance flows are spent on non-tradable goods which increase the demand; hence prices and the prices of tradable become higher and then non-competitive.

Moreover, large flows of remittances could have an adverse effect on reducing labour supply in two ways: (1) they could increase dependence on this external source and leads to loss of labour force; and (2) the concentration of the labour force on the non-tradable sector at the expense of the tradable labour supply. More details on the impact of the labour sector will be given in the section below on social impacts.

It is important to remind here, that the social impact of migration and remittances have not been sufficiently addressed in the literature, other than the studies on the brain drain and brain gain, there exists a rather small literature on the impacts of these flows on the human capital left behind, in terms of their education, health, poverty and the status of inequality. This will be addressed in details in the following section.

3. Can Migration and Remittances Induce Human Capital Development?

One of the most important channels by which migration and remittances can impact the development of the countries of origin is through their effects on the human capital of those countries[15]. As discussed in chapter 1, human capital is an endogenous variable that could achieve the long-term economic growth and hence its contribution to the development is unquestionable.

There are many direct and indirect ways by which migration and remittances can impact development through the channel of human capital. The following points will highlight some of these interrelated relations, before we address the review of the empirical evidence on this issue:

1. Addressing the migration of the human capital brings directly to mind the issue of the "**brain drain**", which is the skilled labour migration. Migration of the skilled labour is considered a loss of the contribution of this labour towards the development of the economy. Much empirical evidence addressed the impact of migration on development by highlighting the loss of this human capital and concluded to the negative effects that could occur due to this migration. We argue that this is considered one side of the relation and that there are other sides that are equally important and that are worth considering;
2. Migration impacts directly the human capital that remains in the home country by boosting their aspirations and incentives to improve their human capital (through education, skills training and also health) with the hope to be able to migrate in the future. These aspirations leading to improving the education level is part of what is called in the literature "**brain gain**";
3. Moreover, remittance flows give motivations to more migration from the home countries and consequently, this could translate into possible increase in the share

[15] Human capital is a commonly used term to define the stock of education and knowledge, competencies and abilities of individuals to perform labour and to produce economic value. This has been practically translated into the individual's level of education and health. Other dimensions could be added like innovation, creativity and aspirations. For the purpose of our research we adopt the precise definition of human capital which is the degree of education of a person and his physical ability to work (i.e. health) which adds to the country's development.

of remittances used for investment in education and health. The micro analysis is rich with studies that found an important role of remittances on boosting the education and health of households, especially those in poor areas. Despite its importance and long-term implication, this relation, is hardly addressed in the macro literature. As discussed earlier this is one of the channels that will be adopted in the empirical evidence;

4. In relation to the human capital, remittances have positive effects on alleviating poverty and improving the social and welfare status of the households; this could have a spillover effect on the communities and the overall countries. However, impacts on inequality could be somewhat ambiguous as will be discussed in the empirical evidence.
5. Also, there is some speculation that remittances could lead to the dependence on these flows from the human capital, which could lead to a decrease the labour force. However this impact is debatable, especially that there are some evidence of increased productivity of the labour due to migration.
6. Another impact that could be highlighted is what we call "social remittances", which denotes the knowledge and awareness that the individuals at home acquire from their communication with the migration network. This includes transfers of knowledge, know-how, technology and information between the migrants and members of his/her households, communities and even on the national level. This could be either through communication or through what is called 'brain circulation', where migrants circulate between their home and sending countries circulating their experience and ideas. This is also induced by the 'Transnationals' which are migrants that keep strong ties with their home countries. This is an important but very under-investigated topic that could have important impacts.

Measuring the impact of migration and remittances is complex, but there is some growing interest on this impact due to the increasing number of highly skilled migrants but also to the increasing flows of remittances and the potentials that those remittances could achieve in compensating the loss and, even, multiply the gains.

In this section of empirical review, we look into the empirical studies that addressed the impact of migration and remittances on human capital. This will be divided into four groups. The first group will include studies that addressed the impact of migration flows on development through the human capital (i.e. remittances are not considered here). This group mostly focus on brain drain studies; The second group of studies complete the picture by adopting a broader view on this impact that includes the remittances and other externalities (these are mostly the 'brain gain' view); the third group of studies will look at the impact of these remittances on the social aspects of the individuals in terms of their poverty, welfare and inequality; finally, the fourth group will address the impact of this human capital migration and remittances on the labour market.

3.1. Migration and Human Capital: Brain Drain vs. Brain Gain

In addressing this issue, we start by giving an overall overview of the size of skilled migration, which is a great challenge, as this data is not reported automatically in all countries and especially in the developing ones. It is surprising to see huge differences (sometimes more than 200% difference) between the figures reported by the sending countries (one source is the United nations) and those reported by the host countries (such as those provided by the OECD reports). It is argued that it is 'safer' to rely on immigration data (where reporting is compulsory in the host country) rather than emigration data (where reporting is not required)[16].

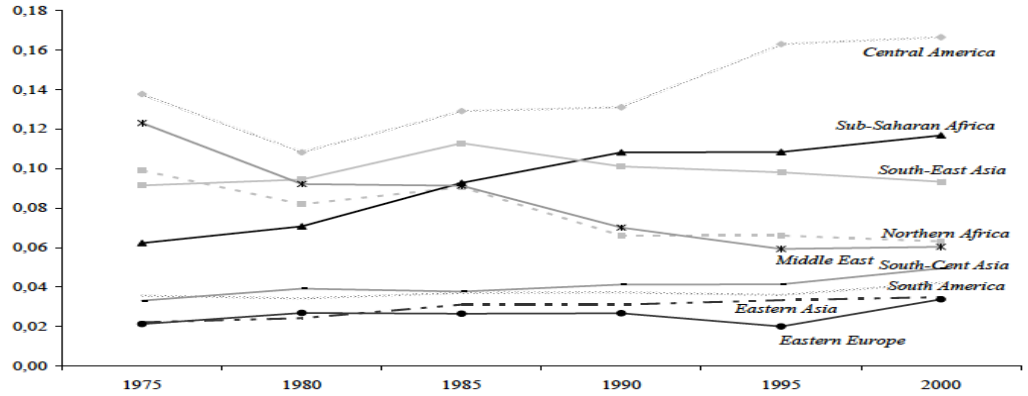
[16] OECD. 2012. International Migration Statistics Database

Furthermore, there is no exact figure on the size of the highly skilled migrants[17] as not all sending countries register their migrants with their education and skills. However, some estimations from OECD countries regarding their stock migrants had confirmed that the highly skilled migrants from developing to developed countries is rising at a faster pace than that of the migration flows in general. In the OECD countries, highly educated immigrants have increased by 70% in the 1990s (and doubled for those living in developing countries), while low skilled migrant increased by only 30% (Beine, et. al, 2006).

Only recently, some estimations and datasets were made available regarding skilled migration[18]. One of those attempts was made by Defoort, 2008 where he gathered data about skilled migration from six OECD countries (hosting about 75% of the total migration to the OECD). The data showed some increasing trends from regions such as Sub-Saharan Africa and Eastern Europe, and deceasing trends from Northern Africa and the Middle East (MENA). This could reflect the type of skills that are offered by these countries and how they are matched by the skilled needed in the OECD countries.

Looking more closely to some of the countries of the South Med region, we found mixed trends in terms of their highly skilled migration. Countries such as Egypt, Jordan, and Algeria, are found not to be suffering from brain drain. In Egypt, for instance and despite the high proportion of highly skilled among its migrants (59% in 2000), this constitutes only 4.6% of its highly skilled population. Given this rather small share and considering the high unemployment rates among the highly educated in Egypt, it is not likely that the migration of those highly skilled would affect negatively the overall economy. In contrast, Lebanon's skilled migrants represent about 38.6% of its highly skilled population. This is a high proportion that could present a brain drain issue. Almost same situations are observed in Morocco and, to some extent Tunisia,[19](EUI, 2010). The following figure 3.4. gives the general trend of the highly skilled migrants by region in 6 main OECD countries.

Fig 3.4. Trend of high skilled emigration towards 6 main OECD countries (1975-2000).



Note: the y axis represents the emigration rate of college graduates
Source: Defoort, 2008

The most recent attempt to estimate the size of the brain drain is made by Docquier and Rapoport, 2011. Their estimation looks into the recent figures of skilled migration to the

[17] Defined as foreign-born individual aged 25 years and more with an academic or professional degree beyond high –school.

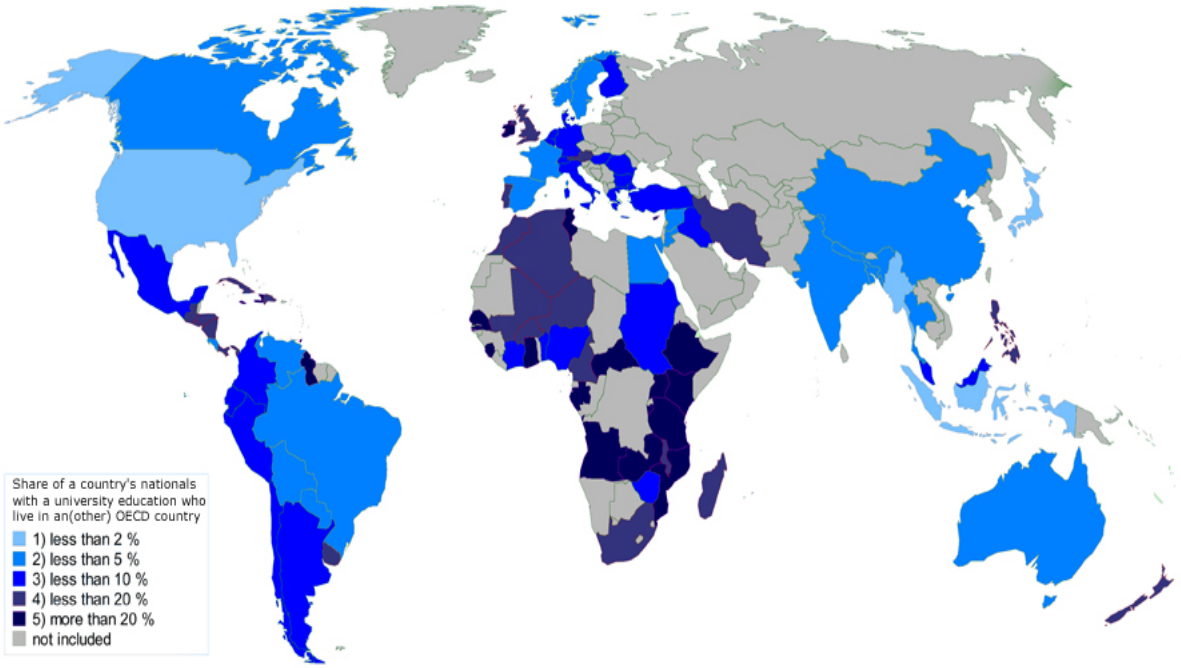
[18] In Beine, et.al. 2006: "*Carrington and Detragiache, 1998, Adams, 2003, Docquier and Marfouk, 2004, 2006, Dumont and Lemaitre, 2004*" and Defoort, 2008.

[19] These figures are based on migrants residing in OECD countries only and are based on Docquier and Marfouk (2005).

OECD countries, which represent about 85% of skilled migration. Surprisingly, and contrarily to some beliefs regarding the motivation of migration to escape poverty, some OECD countries are themselves found to be large exporters of highly skills migrants, such as the United Kingdom, Canada and the USA (Fig. 3.5).

The idea that the migration has negative effects on the sending countries due to losses of potential outputs was the ongoing trend of early literature and empirical work on the impact of migration. Authors such as Grubel and Scott, 1966 and 1977, Johnson 1967, Bhagwati and Hamda 1974 believed that these losses due to migration could be serious in same cases. Only the former found that migration does not necessarily have negative effects as the 'drained person' would have taken away the value of his/her marginal product that is earned anyway. According to this author, the negative effects occur in two cases: (1) when the migrants are highly skilled and hence are capable of creating 'strong externalities' and (2) when the government has been spending on their education through taxes and hence the returns on the investment would be lost. The latter however, developed a series of model to explore the welfare consequences of the brain drain and added a precision that brain drain can occur in the case of imperfect substitution between skilled and unskilled and in informational imperfections which could have a cost on the economy. He then propose a 'migration tax' (called in the literature the Bhagwati tax) to compensate the possible loss to migration[20].

Fig.3.5. Emigration rates of highly educated persons as per category.



Note: The emigration rate of highly educated persons from country i is calculated by dividing the highly educated expatriate population from country of origin i by the total highly educated native-born population of the same country (Highly educated native-born (i) = Expatriates (i) + Resident native born(i)). Highly educated persons correspond to those with a tertiary level of education.

Source: OECD Database on Foreign Born and Expatriates; Employment, Labour and Social Affairs, 2006 and Cohen D. and M. Soto, 2001, Growth and Human Capital: Good Data, Good Results, OECD Development Centre WP n°179.

This classical trend has been developed further in literature on new endogenous growth models, emphasizing the increasing role of human capital in the long term. In fact this

[20] This was addressed with some details in chapter 1 on the theoretical review.

view suggested that the welfare of those who stay could decrease if the loss of the person's contribution due to migration is greater than their marginal production (this is especially true when social return to education is higher than private return). This literature has been reflected in the work of Haque and Kim, 1995 and Wong and Yip 1999[21].

However, this view has been considerably challenged in recent literature in a range of theoretical and empirical evidence analysis. It was argued that, other than the detrimental effect of the migration of the skilled, there are important beneficiary effects as well and that the net effect on the development and welfare depends on the conditions brain drain takes place. The idea can be summarised as follows: even though there is a loss of human capital due to migration, there is a potential positive impact of migration on the human capital formation of those remaining. This is due to the fact that in poor and also in some developing countries, returns to human capital is low (due to high unemployment, imbalances of labour markets that leads to low wages, etc.). This limits the incentives to acquire more education and human capital formation by individuals, which in return slows even further the growth and development of these economies. However, the potentials and opportunities that can be offered with migration towards the more competitive world can compensate the lack of incentives that are offered domestically with those offered internationally. This would increase the education of the people that are left behind with the potential of migrating. At the same time, not all those that have been motivated towards education for this reason, would eventually migrate. This phenomenon is often called '**brain gain'** and where it could be argued that the average level of education could increase due to prospects of migration (which would have not normally be the case if the potential of migration didn't exist). This idea was initially developed by Mountford, 1997, Vidal, 1998, Docquier and Rapoport, 1999, Beine, Docquier and Rapoport, 2001, and Stark and Wang, 2002.

There is a large literature that developed addressing the opposite views on brain drain and brain gain. Despite the fact that this is beyond the focus of our study we will give some insights and details about some of the most recent and important ones due to their implications on our study.

In order to measure the impact of migration on development through human capital, **Beine, Docquier and Rapoport, 2001** develop a theoretical model of overlapping generations of two periods. In the first period, the individual receives the education and in the second period he/she supply a fixed quantity of labour whose productivity would depend on the investment they made in their human capital when young. The theoretical model takes into consideration the heterogeneity in the capacity of education and the contribution of the human capital in the process of growth. Also the idea of the inter-generational transmission is introduced, where by, the average level of human capital of the adults (now in the second period), is transmitted to the young and is considered an inherited human capital. The theoretical model found that there is a positive link between migration opportunities and the proportion of young individuals who decide to invest in education. Also that there is a positive relationship between growth rate and the share of educated people but a negative one with migration flows[22]. Overcoming, the lack of data on migrants, the authors use gross migration rates, published by the host countries, as proxy for data on the brain drain. They test the impact of migration (and the brain drain) on the economy. To ensure bringing out the effect of migration only, the authors control for the remittances in the growth equation. Using a sample of 37 developing countries, the author investigates the validity of their theoretical model. Given the problem of endogeneity of migration, they estimate a separate model for migration. Hence, they estimate three models: (1) migration is a dependant on GDP per head differential with OECD countries (which was proved in the theoretical model to be

[21] This was addressed in details in the first chapter in the theoretical review.

[22] This theoretical model is addressed in more details in the previous chapter.

an important incentive to migrate), on population size (which is proxy to restricting immigration quotas), and public expenditure on education. (2) the second model is to overcome the endogeneity of migration estimate the investment in human capital as a function of migration rates, public expenditure on education and a variable denoting the non-linear relation between migration and accumulation in human capital (it is the interaction between migration and whether the country's GDP per capita is more or less than 15% of the average GDP per capita in the G7 countries- this variables gives an indication on the underdevelopment trap of the country). Finally, (3) is the model of growth where the growth rate of GDP per capita is dependent on migration, human capital investment and remittances (to control the effect). Results of these equations showed that there is positive and significant relation between wage differentials and migration and a negative one with migration and the population size. Also, **results showed that the incentive effect of migration couldn't be dismissed** (the variable of interaction was found positive and highly significant with human capital). In the growth equation, migration (which captured the brain drain), however the human capital variables was positive and significant. The authors conclude that the empirical model does not allow rejecting the theoretical analysis of the impact of migration on the human capital.

Same results were obtained when looking into a sample of 50 developing countries' migrants to the US to test the hypothesis of the brain drain **Beine, Docquier and Rapoport, 2003 and revised in 2008**. Using available data on the education level of migrants (by Carrington and Detragiache, 1998 in 2003 and Docquier and Marfouk, 2006 in 2008, results showed a positive effect of migration prospects on the human capital formation in those countries. Moreover, this study estimated the growth effects of the brain drain on migration sending countries, in a way that would allow identifying whether a country is gaining or losing from the brain drain. It was found that a brain drain can have a negative effect on growth when migration rates of the highly educated is more than 20% and/or the proportion of highly educated in the total population is more than 5%. This exercise has identified that nearly 80% of the total population are in a winner country, despite the fact that there are more loser countries than there are winners. This result give reasons to believe that the brain drain is not an immediate negative effect to migration and that there are positive impacts on the human capital.

Testing the robustness and improving the results of these papers were adopted in a more recent paper by **Beine, Docquier and Rapoport, 2011** where alternative measures of the Brian drain are used, as well as the definition of human capital and some changes in the function forms and addressing the problem of endogeneity. The results showed that the positive impact of migration was robust. More positive results on the Beneficiary Brain Drain (BBD) or Brain gain and their impact on human capital formation of those that stay can be found in papers by Dustmann, Fadlon, & Weiss, 2011; Stark & Wang, 2002; Chau and Stark, 1999; Mountford, 1997; and Vidal, 1998.

However, it is important to note that if migration has a positive impact on increasing the level of human capital in the home country, it can also impact the composition of this human capital. If the human capital development increases for the prospects of migration in the future, then the choice of the type of education or the acquired skill that would be required in international markets might be different from that needed in the domestic market in case this human capital stays home. This has been highlighted in some studies, where migration of a certain skill has generated more education on that skill in the home country with the potential of migration. This has been the case of health sector for example in South African and Asian countries (Lorenzo et al, 2007) and the ICT specialities in India (Commander et al, 2008)[23].

[23] For a full reference on the brain drain/gain issues, a survey on the "new economics of the brain drain" can be found in Commander, Kangasniemi, and Winters (2004) or Docquier and Rapoport (2004).

Along those lines, **Di Maria and Stryszowski, 2009** argued that education which is driven by the potentials to migrate might be creating the wrong type of skill composition and hence could slow down the economy. Using data from 130 developing countries between 1990 and 2000, results confirmed that the prospect of migrating does have a positive impact on the human capital formation and also the type of skills acquired, which was found to be impacting the growth rather the level of human capital. However they found that these effects depend on the level of 'technological sophistication' of the sending countries. In a more recent publication, **Di Maria and Lazarova, 2011** simulate their earlier results on the data set of the countries and found that almost 70% of the total population suffer from an increase in skilled migration. Results showed that the losers are those countries that are relatively less developed and where the welfare cost of skilled migration would be large.

Some evidence of a brain drain was reported in **Carrington and Detragiache, 1998**, who developed data on stocks of migration to OECD by education level and country of origin for 61 developing countries based on Barro and Lee, 1993 and US census data and OECD migration information. Despite recognizing the inaccuracy of data, it was considered a major contribution to the knowledge. Data showed that migration tends to be more from the educated categories of the population, with the highest among those with tertiary education. This was particularly noticed in Caribbean, Central America and some African countries.

It is clear from this brief review of recent literature, that there is evidence of an overall positive feeling regarding the migration of the skilled and that in many cases, this will not turn into a brain drain that would negatively impact the economy, on the contrary, there are positive externalities that these migration flows have created that could, in many cases, compensate the losses from the brain drain itself. However, what this group of studies did not address is the role of remittances in this relation between migration and human capital, which will be addressed in review of studies the following section.

3.2. Human Capital: Transmission Channel to Development

Perhaps the effect of migration on the human capital formation is not as clear or as direct as it could be, since it encounters obvious constraints and results should be taken with cautious due to data problems and difficulty in assessing all the possible sides of the story. These previous results are based on migration outflows only, and have not taken into account (or rather controlled for) the flows of remittances towards those migration-sending countries. Adding remittance flows brings in substantial changes to the picture. In fact, we argue that studying the impact of migration on human capital formation cannot be done without looking into the essential effect of remittance flows to this human capital.

There are confirmed benefits from remittances on human capital formation from both micro analysis (which will be addressed in details in the next chapter) and macroeconomic evidence on the role of financial institutions, remittances ease liquidity constraints (in imperfect capital markets) for recipients' households and hence allow them to spend money on the education of the children in the households or on keeping a good status of health. This possibility given to them to educate their children through remittances might not have been offered otherwise. In fact, the micro evidence is very rich in providing evidence on how remittances, in general, have had positive impacts on the education and health of children in the receiving households (this will be addressed in details in the next chapter). Not to mention the role of remittances in developing the human capital of their original communities and villages while building schools and hospitals (some good examples can be found in Latin America, East Asia and some African countries).

Hence, the combined impact of both migration outflows and remittances inflows on human capital formation could give interesting results but is not easy to grasp given the externalities that could be generated from such a dynamic exchange. Despite the fact that these two effects go along together, very few studies have integrated both of them in the analysis. It is clear, that the literature on the impacts on human capital is overwhelmed by addressing the impact of migration on the human capital formation (the brain drain and brain gain effects) of the sending countries, without giving much attention to the important role of remittance flows in this setting. In fact, the studies that addressed the impact of remittances on the countries' overall human capital formation (education and health status) are scarce (Cinar and Docquier, 2004). While studies that addressed the impact of migration on the brain drain/brain gain looked at the impacts of education of previous generation, not many studies looked at how these remittances can impact educational level in future generations (Zhunio, et al, 2012). Most of the studies that addressed the impact of remittance flows on the human capital are addressed at the micro or households levels using survey data. This could be due to the difficulty in obtaining accurate data at the macro level.

One of the few papers that addressed the two concepts is the one by **Cinar and Docquier, 2004** where they developed a theoretical model to examine the combined effects of remittances and brain drain on human capital accumulation in the developing migration sending country. The authors argue that the brain drain can turn into a gain when received remittances are high enough to boost the stock of human capital per capita. They develop a model of overlapping generations of households, where a person lives 2 periods (youth and adult) and makes the decision regarding his/her education based on the returns to education and whether they are higher or lower than its cost. Moreover, there is liquidly constraint and not all persons can afford the costs and hence they borrow or receive remittances. In fact there are three groups of people identified by the authors: those who cannot pay for education; those that can pay for education but not migration costs; and finally those that can pay for both education and emigration. The authors compare the loss due to migration and the gains from the remittances and their impact on human capital formation. Moreover, the most educated are those who can afford paying for education and migration and their migration lead to reduction in human capital (this was called the 'traditional effect'). At the same time, remittances ease liquidity constraint to pay for education (this was called 'better access to schooling effect'). Comparing the level of human capital formation in case of a closed economy to that of an open economy where migration is possible had showed the following theoretical results: there is a beneficiary brain drain (or a brain gain) when the better access to schooling effect dominates the traditional effect, which translated into human capital accumulation. This can only happen when: the level of remittances per capita is large enough to benefit to the education of the maximum proportion of the population, which is not typically the case in the developing countries. The authors argue that despite the increasing remittances towards the developing countries, they are still not large enough to create positive spillovers effects on the average level of education. Hence, negative spillovers can turn the results ambiguous.

Investigating the impact of remittance flows towards the Asian and Pacific region on these countries' poverty and economic growth, **Jongwanich, 2007** used the **human capital** variable as a channel of transmission. He used panel data of 17 countries from this region and applied the neoclassical growth model of economic growth, which included the initial level of GDP, the human capital (using the HDI of the UNDP), investment and remittances. Using the sGMM methodology, the first results of this model showed that remittances had an insignificant impact on growth. This was translated by the existence of the causal relationship between remittances and growth and the possible indirect channels through capital investment and human capital. The author separated the two equations reflecting those channels. Results showed a positive and significant impact of remittances on both human capital and investment. An increase in remittances by 1 percent is associated with an increase in human capital by 0.08% and investment

by 0.03%. On the other hand, the author found that poverty was substantially reduced by flows of these remittances. Regression of the poverty variable on economic growth, inequality, remittances, and a set of control variables, gave positive results on the impact of remittances on poverty. An increase in remittances by 10% leads to a 2.8% reduction in the incidence of poverty. This analysis has confirmed that remittances can have positive effect on economic growth through its impact on human capital and investment channels. Moreover, there is a direct impact of remittances on reducing poverty.

Within the same context of the impact of remittances on growth through the channel of **human capital**, **Garcia-Fuentes et al (2009),** looked into an endogenous growth model where the growth rate of total factor productivity (TFP) is dependent on human capital and its interaction with remittances. The authors estimate the effect of remittances on growth using cross country accounting method on a group of 14 countries from Latin American and the Caribbean for the period between 1975 and 2000. Starting from a Cobb Douglas production function, where output per worker depends on physical capital, human capital and labour, the authors estimated regression models of pooled OLS, random effects and random effects 2 SLS (to avoid problems of endogeneity and causality) where the dependent variable is the growth rate of real GDP per worker. The instruments that were used include the first lag of investment as a share of GDP, the second lag of real per capita GDP, the first lag of the human capital index and two indices based on economic conditions in the US, and an instrument based on GDP per capita of top 8 migrant receiving countries. Results showed the coefficient of remittances is negative and significant, however the coefficient of the interaction between remittances and human capital was positive and significant. According to the authors, this suggests that remittances have a positive impact on growth, but only through a certain level of human capital stock. This implies that a minimum level of human capital stock is needed to allow remittances to have a positive impact on growth (which is basically the level that differentiates between country' brain drain and brain gain from migration, Rapoport and Docquier, 2005).

However, not all migration-sending countries have the minimum level of human capital stock required to allow the benefits from remittances on growth. In fact, poor human capital could be one of the characteristics of these countries. This is the principle that **Bertoli, 2006** attempts to address when he developed a theoretical model of overlapping generations in analysing how remittances can influence the intergenerational evolution of **human capital** of the countries receiving those remittances. Based on the analysis of Rapoport and Docquier, 2005, the model is characterised by having multiple equilibrium of human capital levels. This is due to the fact that not all parents behave the same way towards their children's education and because parents have to pay education costs from their current income due to failure in the financial market and liquidity constraints. Remittances certainly boost the educational expenditures. Investment in education can have long term inter generational dynamics which can take the household out of the 'poverty trap'.

Looking at the direct impact of remittances on the human capital left behind, **Zhunio et al, 2012**, used panel data of a number of 69 developing countries for the period form 1987 to 2006, to test the impact of remittances on both the **education and the health status of the countries** that receive those remittances. They developed a model where the outcome (in this case education or health) is presented as a function of remittance flows as well as other control variables. The model on education used three dependent variables: Gross primary enrolment ratio, gross secondary enrolment ratio and primary completion rate. Other than the remittances per capita, the explanatory variables included control variables such as GDP per capita, unemployment, outward migration rate, rural population distance to nearest high income country and public expenditures on education and health. Dummy variables were also used to denote the regions. In order to overcome the problem of endogeneity between education and remittances, they used three different methodological approaches: (1) random effect Generalised Least Square

(GLS), which suffer from endogeneity; (2) Hausman–Taylor random effect, error component model which assumes that some of the explanatory variables are correlated with the country level of error and hence addressing the problem of endogeneity; and (3) 2 SLS using instrumental variables for remittances which were: net outward migration, age dependency ratio and dummies for colonial histories. **Results of the model on education showed that the variable of secondary school enrolment was found to be the most influenced by remittances,** where there is a larger tendency to leave school and education is mostly non-compulsory. The same approach was applied on the model on health indicators, where the dependent variables were: life expectancy, infant mortality and fertility rates. **Results showed that remittances had a strong positive impact on life expectancy and negative impact on infant mortality rates.** These results confirm the positive impacts of remittances on human capital.

In fact, remittances can be considered as a sort of repayment of the investment in education that has took place for the migrant at home. In this case the migrant is considered a borrower who is repaying his/her loan (**Rapoport and Docquier, 2006 and Kugler, 2006**). Migrant could be also considered as a lender where remittances are sent to the households at home to finance the education of the children in the households. There is some evidence in the micro studies, that remittances have a positive impact on the school enrolment and on decreasing child labour in the households receiving those remittances. However the absence of the parent, as mentioned earlier, could have a negative impact on the education in two ways: first it leads to negligence, especially that normally the absent parent is the one with most education and second the children might need to work to compensate the efforts of the absent parent (Hanson and Woodruff, 2003).

Using a different methodological approach in addressing the impact of remittances on **human capital formation**, **Kugler, 2006** used calibration of parameters and simulation models to show that remittances can have offsetting effects on human capital and labour market outcomes on the countries receiving these remittances for Columbia. The author developed a theoretical model with the basic assumption that remittances can have two opposing effects on human capital and employment for both recipient and non-recipient households. First, for the recipient households, remittances generate funds that increase education opportunities and induce brain gain, while these educated could eventually migrate, causing brain drain. Second the non-recipient households benefit from the job creation offered by the spillovers effects from the higher human capital due to the brain gain, which also induce the overall rate of education. However, the flows of remittances to other households could increase desired consumption and leisure expenditures and hence reducing human capital development. The net effect of these relations is not clear. Moreover the model introduces the idea that increasing human capital supply can reduce unemployment in home labour markets. Using the parameters from the households' surveys from AMCO (Latin American survey of migration and remittances) and applying simulation to the theoretical model, the author found that human capital would increase about 17% with an increase in remittance devoted to education. If this increase is accompanied by better accessibility to education, this would increase the human capital by 56%.

In one of the very few studies on the impact of remittances on health, **Chauvet et al. 2008**, looked at how remittances can impact poverty and inequality through their effects on the **health status** of the receiving countries, while comparing these impacts to those achieved by health aid flows[24] which has increased in the past decades. Using panel data of 98 countries from 1987 to 2004 where health is represented by both under five and infant mortality rates from the World Bank, WDI. The model introduces the health outcomes as function of remittance, health aid and controls with a number of

[24] Health aid is measured by using aid commitments to the health sector as defined in the Country reporting System (CRS) of the OECD.

characteristics of the country (this includes, female years of schooling, poverty rates, inequality indicators). Public spending on health was not introduced in the model due to its direct relation with health aid and since half the countries did not have this data available. To overcome the endogeneity problems, the authors use instruments that capture historical and cultural relationships between developing countries and donor/destination countries, hence aid budgets are weighted by cultural distance between receiving and donor/destination (religion and language). OLS (fixed and Instrumental Variables) are calculated and the regression results showed significant results and with the right signs for most of the explanatory variables for both child mortality and infant mortality as dependant variables. **Remittances were found to have negative significant correlation with the mortality variables, indicating a positive contribution towards health status**. In fact it was found that one percent increase in remittances decreases child mortality by 0.18 percent and infant mortality by 0.16 percent. Aid however was found non-significant in this equation.

This same study looks also at the impact of migration of doctors (what is called Medical brain drain) on the overall health status of the home countries. The authors compare the benefits on health created by remittances to the shortcomings that could be created due to the medical brain drain. Health indicators (children and infant mortality rates) are regressed on remittances, health aid to which were added the medical brain drain (the number of medical doctors that migrated) and a measurement of income. Using the same approach as before of using OLS and instruments, the regression of this model showed that a positive and significant relation between medical brain drain and mortality rates. In fact it found that an increase by 1% of migration of physician could increase child and infant mortality rates by around 0.29%.

Hence, there is an overall agreement among empirical evidence on the positive role of remittances in boosting the human capital. Mostly, through the impact on education, the existent evidence has highlighted this important role***. This brings us to the principal idea that was introduced at the beginning of this chapter that the human capital is an important channel between migration and development.*** This will be further investigated in our empirical evidence in the second part of this chapter.

Closely related to the issue of the human capital and its contribution to the development, is the social status of this human capital that would allow it to contribute positively to the development. This social status including poverty, inequality and other social aspects will be addressed in the following section.

3.3. Impact of Remittances on Poverty, Inequality and Child Labour

The impact of remittances on poverty alleviation seems to offer less controversy: remittances as an additional source of funding will make the households that receive them automatically better off than without these flows. Interestingly, these convictions at the micro level, does not seem to take place at the aggregate macro level. In fact, overall poverty indicators seem to be deteriorating despite the noticeable increase in remittance flows to the poor and developing countries. This had raised questions about the real impact of remittances and if they had failed to impact the very poor. Also related to the poverty issues is inequality which seems to be even more complicated, especially that, similar to the poverty indicators, inequality indicators seem to be on the rise.

On a positive note and using households' surveys data from 71 low and middle development countries[25], **Adams and Page, 2005** analyse the impact of migration and remittances on **poverty**. The paper used various instruments and proxies to overcome the problem of endogeneity of remittances and migration with poverty outcomes. This

[25] This includes countries from Latin America and the Caribbean, Middle East and North Africa, Europe and Central Asia, East Asia, South Asia, and Sub-Saharan Africa.

includes using the distance between remittances out flowing from the migrant's country towards his home country to calculate the cost of migration. This was also coupled with controlling for the level of income, income inequality and geographic region. The results of this analysis showed that a 10% increase in share of international migration will lead to a 1.9% decline in share of people living on less than 1$ a day. Moreover, remittances reduce the effect of poverty (measured by three different indicators), in fact a 10% increase in share of remittances in GDP, reduces the share of people living on less than 1% by 1.6%. In addition, the study found an inverted U curve relationship between country per capita income and international migration (this was confirmed by De Haas, 2010 addressed in the previous chapter 2). Hence, this study found positive evidence on regional effect of remittances on poverty reduction at the country level.

These equations developed by Adams and Page were adopted by **Acosta et. al. 2007** to estimate the impact on Latin American countries. However OLS initial results indicated there was no impact of remittances on poverty. Introducing instrumental variables improved the results but they were still not robust. To further improve the results, authors used remittances as percent of GDP. This leads to the result that 10% point increase in remittances as percentage of GDP would lead to a 0.8% decline in poverty at the global level but still no significant result for Latin American countries.

Different conclusion was reached by **Gupta et al., 2007** when investigating the impact of remittances on 76 countries from Sub-Saharan African countries (SSA) on Poverty. Different measures of poverty were included such as headcount of poverty, poverty gap, squared poverty gap and the income distribution (measured by the Gini index). Poverty was modelled as a function of a number of explanatory and control variables such as income, income distribution and remittances. To overcome the endogeneity problem of the remittances and poverty variables, the authors used 3SLS. Results of this model gave a positive sign for the coefficient of remittances in the poverty index. The author justified this unexpected result by the existence causality between poverty and remittances. To prove his point, the author estimated another model where remittances are explained by poverty and found evidence that for the SSA countries the impact of poverty on inducing remittances might be greater than the impact of remittances on poverty.

Contrarily to this finding, **Adenutsi, 2012** found positive results on the impact of remittances on **alleviating poverty** for 34 SSA countries using data from 1980 to 2009 and testing the impact of remittances through a dynamic panel models using the Generalised Method of Moments (sGMM) to overcome endogeneity, self-selectivity and omitted bias problems. The author used standard endogenous growth type economic development models inspired those used by Adams and Page, 2005 and Gupta et al., 2007 and where remittances were incorporated. A matrix of controls variables was introduced including human capital accumulation, FDI, Official Development Assistance (ODA), inflation, government expenditures, exchange rate, real lending rate, literacy rate and institutional quality. Poverty indicators included poverty headcount ratio, poverty gap index and its squared to measure the poverty severity. Results showed that remittances had a positive impact on all indicators of poverty. In fact, it was found that a 1% increase in per capita remittances inflows to SSA reduced the number of poor (living on less than $1.25 a day) by 0.022% and would reduce the poverty gap by 0.029% and the severity of poverty by 0.058%. Moreover, looking closer at the country level analysis, remittances inflows to countries with incidence of poverty above the median level aggravated poverty. The same model was used to test the impact of remittances on **inequality**. The author used data for 36 SSA countries, where data was available. The Gini index was used as a measure of inequality. Results of this latter model showed that remittances had an income equalisation effects only in the countries where there is a narrow income gap. In fact it was found that when the level of income inequality is above the median, remittances could aggravate income inequality. The author concluded that even though remittances could have an important potential positive effect on alleviating

poverty and equilibrate incomes in SSA, they might have some detrimental effects on relatively poorer countries and those that have high income gaps.

Similar positive results were obtained in the IMF, 2005 study when addressing the impact of remittances on development through their impact on growth, poverty and volatility (as previously detailed). Also, results given in a model developed for 77 developing countries by the **UNCTAD, 2011** on the impact of remittances on poverty were positive. The data covered the period from 1980 to 2008 for those countries. The study used Ravaillion (1997) and Ravaillion and Chen (1997) definition of poverty that is a function of per capita income, income distribution and remittances to GDP ratio. Poverty measurement includes poverty headcount ratio ($1.25 a day), poverty gap at $1.25 (in percent) and poverty gap at $2 a day (in percent). Following Gupta et al., 2007 the study takes into account the causal relation between migration and remittances from one hand and poverty from the other, and use the 3 stage least square method to avoid endogeneity and causality of the variables. This poverty equation is followed by a second one that defines the determinants of remittances including poverty, trade openness, literacy levels and lagged remittances. The model was run for the 77 countries and results showed a significant negative impact of remittances on poverty headcount ratio, however impacts on poverty gap and its square was found insignificant. Also no significant impact of poverty on remittances was found. These results improved when the analysis focused on 29 countries where remittances' shares in GDP were higher than 5%, and the three measurements of poverty were found to be significantly decreased by remittances. In fact it was found that at a given level of GDP, a 10% increase in remittances reduced poverty headcount ration by about 3.1% and the poverty gap by about 3-5%. Furthermore, these results were even stronger when the analysis focused on 21 Asian countries out of those 29 with high remittances rates, where the headcount of poverty would decrease by 3.9% and poverty gap would decrease from 3-3.5 % point. The study looks then to the case of India and the results of the same models showed that remittance flows to India had an inverse impact on poverty ratio where a 10% increase in remittances as a share of GDP would lead to a decrease of 1.7 percent in poverty ratio.

Positive results were also found in Pakistan, where remittance flows were found to have a positive effect in **alleviating poverty** in the country's districts. This was found by **Qayyum et al. 2010**, while addressing the effect of remittances on economic growth and poverty alleviation in two models. Results of the first model on growth showed that on the long run there is positive impact of remittances on economic growth. However, in the short run this effect was found negative but very small. Results of the second model on poverty showed that an increase in remittances could lead to a reduction in poverty in the long run. However, the short run impact was found negative and might be due to the transaction cost associated with migration.

Confirming the results previously obtained on the positive impact of remittances on alleviating poverty in Asia, **Vargas-Silva et. al. 2009** focuses on 20 Asian countries between 1988 and 2007. The authors found positive impact of remittances on growth, despite the endogeneity problem among the variables as indicated by the authors. Estimating the equation on poverty using different measures showed that remittances had an impact on the poverty gap index. In fact results showed that an increase of 10% of remittances as a percentage of GDP could reduce the poverty gap in Asian countries by 0.7 to 1.4% point

A large number of studies addressed the impact of remittance flows on poverty, and the above was just to give few examples on the issue. The impact of remittances on poverty might seem clearer than that on inequality. The latter depends on who migrates and to whom these remittances are sent to. It seems logical to think that if migrants came from the poor income groups and that they send remittances to their families in this group then remittances could have a positive effect on reducing inequality. On the other hand, if migrants originate from high-income groups and the remittances they send go to their

families this will accentuate the inequalities. This could explain the conflicting results obtained by empirical evidence on the impacts of remittances on inequality and income distribution.

In an interesting paper by **Chauvet and Mesple-Somps, 2007**, the authors investigated the distributional impact of trade flows, FDI, Official Aid and remittances on receiving developing countries. Despite the increase in those capital flows, there seem to be an increase in inequality measure by the Gini index per continent. Using data on 148 developing countries in two points of time to compare 1988 and 1998, the authors attempt to evaluate if these differences are related to the impact of these international flows on income distribution. This expected impact could be through the impact on factors of production and how they are allocated and distributed across the population. Inequality is measured with different variables including the Gini coefficients per country and aggregated per continent. This variable is presented as a function in the GDP per capita, openness, FDI, aid and remittances. To avoid problems of endogeneity and causality, the authors used instruments of the GMM methodology. Results of the analysis suggest that while FDI increases inequality, remittances tend to decrease it. Also it was found that both trade and aid flows had non-linear relation with income distribution.

The study by **Koechlin and Leon, 2007** addressed these specific issues using data from 78 countries between 1970 and 2001 in a cross country analysis. The authors used several methodologies for this analysis: OLS, IV and panel data methods. They used the Gini coefficient to measure inequality and regressed it over remittances and a number of standard control variables that are commonly used to explain inequality (these include: GDP per capita, liquid liabilities, democracy measure, years of secondary schooling). The instrumental variables used are the cost of obtaining a passport in each country. To capture the non-linearity of the relation, remittances variable was also introduced in its quadratic form. Results showed a strong positive correlation between remittances and the Gini index and a strong negative one with the square of remittances. This indicates that remittances could have an increasing inequality effect in the early stage however this would be inversed to a negative at a certain level of the inflows, hence an inverted U shaped relation.

The study by **Ebeke and Gof, 2009** looks into the impact of remittances on **inequality** while including the level of development and the level of the brain drain of the remittances receiving country. They used the theoretical model of Gonzalez-Konig and Wodon (2005),[26] where two periods are considered for a household that has two sources of income: wage from one son and wage from one adult, where the son can migrate. Either the two persons work and hence receive wages, or the son could migrate and hence receive no wage. In this case, the adult pays for the migration cost and loses the wage of the son. The son migrates if the remittances that he will send can compensate these losses. This means that poor households cannot migrate. This model was developed for a specific country (where costs of migration are equal) but the authors expanded it to adopt a cross section analysis by adding the possibility of variation in the costs of migration, and taking into consideration the different level of development of the countries involved. They use a standard inequality equation to address their hypothesis, where the depended variable is the Gini coefficient and they use different interactions in the model between remittances and the conditional variable: development level (measured as the log of GDP per capita), migration costs (the cost to obtain a passport in percentage of GDP and the distance between a country, the main destination of its migrants) and brain drain level (measured as the proportion of highly skilled migration to population with the same skill). This also included control variables, matrix of condition variables and the log of remittances per capita. Given the availability of data they perform the analysis on a number varying from 52 to 80 developing countries in the

[26] Details about this theoretical model can be found at: Gonzalez-Konig, G. & Wodon, Q., 2005, "Remittances and Inequality", Washington, DC, United States: World Bank.

period between 1970 and 2000. Due to problems of endogeneity, the author use instruments (IV), and they use the instrument suggested by Chami et al (2008), which is the value of the remittances received, by all countries, except for the country considered. The authors also use the GMM with country fixed effects. Results showed on the different conditions as follows: (1) on the level of development: there is a positive and significant relation between remittances and the Gini index and a negative significant impact of remittances in the interaction with the level of income per capita. This means that the more the average income of the remittances receiving county is high, the better remittances can reduce income inequality. The turning point is at a per capita income of US$1763 where an inequality decreasing impact starts to take place (this corresponds to countries such as Botswana and Tunisia); (2) on the brain drain: the interaction was significant and positive while the remittances are negative. This means that with the brain drain, remittances will increase inequality. The turning point of brain drain that would lead to decreasing impact on inequality is at 27% of the population (hence countries like Mali or Senegal can still benefit from reduction in inequality with remittances); (3) Costs of migration: the coefficient is negative and significant which means that the more the cost of migration (indication of how relative poverty) the more remittances can increase inequality. The turning point at a cost of 2.6% of GDP per capita lower than these remittances can still reduce inequality (this is the case of countries such as Ghana and Morocco). (4) Looking at the special case of the Mediterranean Basin, it was found that remittances reduce significantly the inter-households inequality, since all the conditions applied in this study were found in their favour.

There is an overall positive impact of remittances on the poverty at the macro level, this is achieved in certain conditions and circumstances. The impact on inequality depends on the type of migration and the status of this inequality at the initial level.

Human capital development, alleviating poverty and reducing inequalities are social aspects that remittance flows can impact. Another important social impact is the one related to **child labour**. There are opposing impacts that remittances have on the prevalence of child labour. From one hand, remittances ease the financial constraint for the household and hence reduce the probability that the child would require to work. On the other hand, migration of one member of the household could lead to child labour to compensate the hours worked by this person either domestically (in case of a farm, agricultural activities or entrepreneurial acclivities) or in the absence of remittances to contribute to the income of the households by joining the labour market. The net effects of these two impacts depend on other factors. It is to mention that most of empirical evidence at the micro level had found rather positive impact of remittances in reducing child labour (this will be discussed in details in the following chapter).

Ebeke, 2012 looks into a sample of 82 developing countries to investigate in what way remittances can impact **child labour,** in the presence of a low level of financial development and high-income volatility. The author overcomes the problem of endogeneity of the remittances and migration variables using instrumental variables. The instrument of remittances is the cost of sending back US$200 and a dummy indicating the presence of dual exchange rate system. Migration was instrumented by the coastal area of a country, the distance between the country and the OECD and a dummy variable to indicating the presence of common language. The rate of prevalence of child labour is regressed on remittances share of GDP, emigration rates, private credit ratios and country and time dummies. The model also includes standard variables characterising child labour such as GDP per capita, trade openness, rural population, government spending. Moreover a measurement of economic volatility was introduced. The results showed that remittances reduce the prevalence of child Labour especially in case of low level of financial development and high level of macroeconomic instability. It was found that a one standard deviation increase in remittances could be associated with 11% decrease in child labour.

The impact of 'social remittances' and their impact on demographics aspects at the home countries has not been properly addressed in the literature despite its important role in the development of these countries. It is believed more migrants can send remittances to their home countries that can benefit their families in terms of easing liquidity pressures and promoting human capital, the better they can transfer social ideas and behaviour. In an interesting study by **Fargues, 2007** he found that migration could affect demographics of these countries through social remittances. Other than the fact that migration per se reduces fertility in general, migration can have an impact on both marriage and fertility through the education and knowledge. The study looked into a selected number of countries from the Middle East and their fertility behaviour. It found that migrants from Maghreb countries and Turkey who mostly migrate to Europe have, in general, smaller family sizes compared to those families from Mashrek, who mostly travel to the Gulf countries. This latter is said to be an exceptional case as most migration follow the demographic gaps where migrants move from high fertility countries to lower fertility countries. This could lead globally to the reduction of the world fertility in the long term.

This brings us to the final social aspect addressed in this review related to the labour markets. If the main concern of the brain drain theory is the loss of skilled labour to migration, it is important to understand how migration and remittances affect labour markets and the mechanisms by which they adjust to balance the competitiveness, factor prices and increase productivity. This will be addressed in the section below.

3.4. Impact of Migration and Remittances on Labour Markets

The way migration and remittances impact the labour markets of the home countries relate to how much the market is flexible to changes that could occur due to these flows. Most of the empirical evidence addressing the impact on the labour markets focused on the receiving countries and very little attention has been given to those of the sending countries.

To evaluate the impact on labour markets, **Lucas, 2005** differentiates between two types or categories of the labour market: (1) migrants from the labour force are easily replaced with no losses in output or increases in wages. This happens in few cases: when migrants are small compared to the labour force, or when those migrated were unemployed or that workers can be replaced or existing workers are trained to take over the empty jobs. These countries are such as India, Indonesia and Sri Lanka. Or (2) migrants cause a pressure on the labour market and lead to increase in wages (this happened to some extent in Pakistan and the Philippines). Lucas argues that in the two cases, workers at home seem to be gaining. Migration of the skilled could impact negatively the development of the sending country, but it can put pressure also wages for the remaining labour. Despite the importance of the impact of migration and remittances on the labour markets, empirical evidence addressing this issue is limited.

However, this labour mobility and elasticity do not exist in real terms, this is why migration could lead to an increase in the level of wages. This was what **Yabuuchi and Chauduri, 2007,** found when they developed a theoretical model looking into the impact of migration on labour markets and wages. They used an analytical model with three sectors including skilled and unskilled workers to test the impact of the mobility of this labour among sectors. The model showed that the migration of either skilled or unskilled labour produces a favourable effect on wage inequality.

The impact of remittances on the labour markets takes a different approach than that of the direct impact of migration. Remittances can impact the labour market through the impact on the production of tradable and non-tradable sectors as previously addressed earlier. In fact it is the combination that relate to the wages and productivity that could

lead to the loss of competitiveness in the tradable sector following the surge of remittance flows and the fact that this additional source of income may lead some labour force to withdraw from the market due to its dependence on these flows.

This is what **Acosta et al. 2007** found while looking into the impact of remittances on labour markets in El Salvador. They found that remittance flows decreased labour supply since many of the labour force become dependant on the remittances. This is accompanied by an increase in demand especially on the non-tradable goods. These two effects increase the relative price of non-tradable and lead to the appreciation of the real exchange rate. More resources are reallocated towards the high priced non-tradable sector which leads to a contraction of the tradable sector and loss of competitiveness. This was all found using a dynamic stochastic general equilibrium model to analyse the effect of remittances on resource reallocation and real exchange rate with a Bayesian macroeconomic approach. It was concluded that the inability of the economy to absorb remittances would lead to Dutch disease phenomena regardless of the motivation behind send the remittances (altruism or other reasons) since it leads anyway to an increase in the households incomes and hence consumption that is biased towards non-tradable goods.

Other than the exchange rate appreciation and the impact on the labour supply, remittances could have important potential benefits on wages and productivity. The increase in aggregate demand and output following the rise in remittances together with the decline in the employment (due to migration) lead to increase in productivity. However, shifts of the labour from tradable to non-tradable sector due to the appreciation and the raise of demand, leads to lower productivity (since non tradable sector are less productive).

Bayangos and Jansen, 2011 look more in depth in the impact of remittances on the labour markets through three channels: exchange rates, wages and labour productivity while looking at the case of Philippines. Based on the new Keynesian model designed to analyse monetary policy under inflation targeting, the author makes few addition to this model by explicitly introducing labour supply and remittances as endogenous variables. The model starts with the output function and each function was represented with its variables. This has created 67 equations that were grouped in 7 blocks: monetary, public, prices, expenditures including BoP, production and labour sector. The country witnessed doubling of migration and remittances since the mid 1990s this was followed by a decline in export starting 2000. The authors looked into the relation between migration, remittances and exports. Solving the equations and the dynamic relations then a simulation of the endogenous remittances have resulted the following results: (1) there are positive impacts of remittances on increasing consumption, investment, labour productivity and economics growth; (2) there are changes in the economic structure which are highlighted by the decline in tradable goods production and exports. This means that dependence on remittances increase; (3) Remittances and migration also have impacts on the appreciation of normal and real effective exchange rate (REER) and on the labour markets.; (4) Labour supply decreased due to migration but also due to the impact on remittances on wages leading to decrease in competiveness. In fact in this simulation the unit labour cost increase by 1.4% and about 40% of this increase was found due to the labour markets effect. The paper concludes that despite the positive impact of remittances on the Philippines economy, the loss of competitiveness of the country's export sector could have long terms negative effect, as was noted in the poor performance of the country in the exports.

The impact of remittances on labour and wages would translate into an impact on economic growth. This is the focus of the study by **Orrenius et al, 2010** on Mexico investigating the impact of remittances on economic growth through impact on wages and employment in the formal sector, unemployment rates, wage inequality and human capital (namely education). Using national quarterly data of Mexico from 2003 to 2007,

the authors build a two stage least square (2SLS) regressions where these economic development variables were regressed on remittances received by the state, FDI, migration as well as the labour force. Each of the regression had also a time and fixed effects to control for the states. To overcome the endogeneity of remittances the authors use an instrument (for the 2SLS) which is the US wages for Mexicans which is weighted by the share of migrants from this Mexican state to the US. Also to overcome the endogeneity of migration with macroeconomic indicators, the authors use the relative sizes of male births by state from 1973-1977 as a share of country's male births in the same age group. The regressions where applied once on all states and once on the high migration states and results where compared. Results showed that remittances had a positive and significant effect on both employment and wage effects (this latter was not significant), also unemployment was found negative. It was found that an additional US$100 million in remittances will increase formal employment by 15% and reduce unemployment by 2.78 % points. In terms of wage distribution, results of the analysis showed that remittances shifts the wages to the right, hence, remittances reduce those that are earning the minimum wage and increase those who earn three to five times the minimum wage. On school enrolment, the OLS and IV models show a positive and significant correction of remittances with higher primary secondary and university enrolment either through the state or on the subset of states. However once the time variant is introduced this effect becomes insignificant.

The way migration works on the labour market is a complex mechanism, but the essence of the potential losses or gains relies on whether or not the loss of the human capital to migration can be compensated, which is very much related to the social and economic conditions (Lucas, 2005 and Appleyard, 1989).

To summarise this section on the impact of migration and remittances, the empirical evidence seems to suggest that there is a sort of trade off between gains and losses from migration on the human capital and the net effect depends on the type of migration (whether skilled or unskilled), on the remittances that are sent and on how these remittances could be used to boost human capital. There are confirmed losses due to the migration of the skilled labour (this still depends on the status of employment in the home country). These losses are compensated by the gains due to the human capital development that occurs in response to: (1) the incentives that these migration flows give to those left behind, enhancing them to be better educated in the hope of migrating in the future; (2) the remittances sent by these migrants gave evidence to impact positively the overall education and health status of the home countries; (3) remittances have alleviated the poverty in most of the cases, leaving individuals better-off and hence being able to better contribute to the development; (4) inequality have given unconfirmed results.

4. Conclusion

The empirical evidence on the impact of migration on the different aspects of development of the sending countries has confirmed the crucial role that migration can play in these countries' economy. Together with remittances, they impact both the economic and social indicators. Their impacts also are widespread across the different layers of the society from individuals to the whole nation. Migration and remittances basically are present in all economic and social aspects of an economy. This 'presence' could vary from being trivial or negligible to being an important and vital to this particular aspect. This explains the difficulties we have encountered while attempting to review the diversified empirical literature that exist on this issue.

Given the overall empirical evidence, and analysing some of the direct and indirect effects of migration, one could argue that migration could have positive potentials for the sending countries due to the effects they can produce on the different sectors:

1. The direct impact of remittances on growth rates is ambiguous due to countercyclical /pro-cyclical nature of the relation between remittances and growth; the positive impact of remittances on growth can be obtained through the use of indirect channels. The main channel is the financial development sector which can boost the impact of remittances on growth;
2. Moreover, the impact of remittances on investment is assessed through the use of the financial indicators. There are mixed results regarding the relation of remittances to these indicators, either playing the role of substitutes to compensate for the distorted financial markets or the complements to the well functioning market. This depends on the reason behind sending remittances whether it is countercyclical or pro-cyclical to economic growth;
3. Remittances hence are in general an overall positive input to the economies, however there is evidence on a negative impact in case these flows become over-flows: too much remittance can lead to the appreciation of the local currency and the loss of international competitiveness. While in the domestic markets this would increase spending, raise inflation and lead to Dutch Disease. However, some empirical evidence argued that, unlike capital flows, remittances do not hold the risk of Dutch diseases;
4. On the social front, there is evidence in the empirical literature on the loss of human capital to migration, which could have a negative impact on the economy (Bain Drain); However this impact was argued to be of a short and immediate term, whereas the potential gains (Brain Gain) could have a longer-term impact provided that the right policies and right mechanisms are adopted by these countries.
5. The potential gains related to migration (without considering remittances) relies on the way this migration gives incentives to the human capital left at home to invest in its education and skills to increase its potential to migrate (this is also confirmed on the micro level).
6. Adding to this direct impact, the role of remittances in boosting economic development through investment (either direct expenditures on investment or in an indirect way through easing liquidity constraints and allowing more savings and even more consumption that would boost the economy's turnover).
7. Remittance flows have an important role in keeping a stable position of the country's balance of payment which in return can ensure the country's international competitiveness.
8. These internal domestic aspects when coupled with an international competitive position for the economy can achieve the potential benefits from migration and compensates the short term loss of the human capital with longer term gains.

As an overall, even though remittances seem to be able to compensate the loss of human capital, it would be erroneous to say that encouraging migration can have guaranteed success, as this depends on many aspects and conditions. For instance in countries where the labour markets are suffering from unemployment or excess of labour, encouraging this excess labour to migrate while adopting national policies that keep ties with the migrants and channel their remittances towards investment, is a case of a maximum benefits. Whereas, countries that suffer from low levels of development (including low educational and health levels) and see their human capital seeking opportunities elsewhere, while not encouraging building channels or ties with them, or encourage them to send remittances or their return, will encounter the maximum loss. Between these two extremes lie most of the developing countries.

The mixed results obtained in the empirical evidence are due to the complexity of these interactions. Borjas (2009) attributed these differences regarding the impact of remittances to several factors, just to name a few: (1) the way remittances are attributed (i.e. the definition of remittances and which components is included); (2) differences related to the spam in each of the study and whether the analysis is annually or on average of 5 years; (3) the groups of countries included and their circumstances,

level of development and majority of types of their migrants; and (4) the methodologies' and the variations in ways to overcome the endogeneity problems including the use of instruments. We add to this, that while undertaking this empirical review, we found these studies rather sporadic and not linked together within a specific context. This was one of the challenges that we have faced in putting together this empirical literature which was to gather them under main topics and package them under the context of 'impact on development'.

In brief, based on the empirical literature addressed above, table 3.1 presents an attempt to summarise these impacts and identify their mixed nature of being gains or losses to the different aspects of the development process. This matrix does not include all the potentials gains and losses and we suspect that a considerable number of issues could still be added, however it represents a way to digest the most important impacts of these flows.

Based on the analysis of the empirical literature on the impact of migration, we have come to the conclusion that a lot of the impact of migration on development is indirect and through the remittance flows. Given this we have identified two channels by which we argue that migration have large long-term positive potentials on the development.
These two channels are (i) investment and (2) human capital. Of course these channels are not exclusive, but we can argue that if we can give evidence of a positive impact of remittances through these two channels, this would translate into a positive impact on the development.

This will be the objective of the following second part of the chapter where, based on this conclusion, we develop an empirical analysis where we address the impact of remittances on both investment and human capital, which in return would have long term impacts on development.

Table 3.1. Summary of main gains and losses due to migration and remittances on development of the sending countries (based on existing literature)

	Gains due to		**Losses due to**	
Development outcomes	**migration**	**remittances**	**migration**	**remittances**
Economic Growth	- overall long term gain due to the incentives that potential migration can give to the human capital at home to invest in their education and training: A long term impact.	- Increasing national disposable incomes and GDP per capita (though in small amounts) (Fajnzylber and Lopez, 2007 - Source of foreign capital that could induce stability and low interest loans. - Increasing expenditure leading to increase market demands on goods and services, and hence increase economic turnover (Adams, 1991). Large potential impact on growth when financial sector is underdeveloped. Remittances and financial development are found to be substitutes (Giuliano and Ruiz-Arranz, 2009).	-Loss of output in contribution to economic growth in the short run due to migration of skilled and unskilled. -Loss of income due to absence of migrants from the household	-Deleterious impact in the medium and long term (Chami et al, 2003) due to following losses Inflation due to increase in incomes not matched with local production (Appleyard, 1989); -Due to the countercyclical relation between GDP per capita and remittances (remittances are sent to alleviate dropping growth and is expected to boost this GDP per capital growth in the medium term), the effects of remittances could appear negative (Chami et al , 2003). -Spurs Inflation in communities with increasing levels of remittances (Amuedo-Dorantes and Pozo, 2004)
Investment	-Increase entrepreneurial skills and training -establishments of business and investment by returnees (McCormick, B. and J. Wahba, 2001)	-Increase potentials direct investment. Though most remittances go to consumption it was seen that a proportion, however small, could be direct to investment (Buch et al, 2002). Increase potentials of investment by easing liquidity constraints, often in	Increase informal sector	

		under -development financial markets (Glytsos, 2002; Giuliano and Ruiz-Arranz, 2009;Yaseen 2012 and Eltayeb and Sidiropoulos (2010)). Better positive results could be found in presence of weak institutions (Bjuggren et al, 2010)		
Financial Development		Increase knowledge about financial institutions and their usages in villages and poor areas for transfers and savings and potentially investment. Remittances play the role of a substitute to the distorted financial markets (Giuliano and Ruiz-Arranz, 2009)		Remittances are sent in asymmetric information between sender and receiver and hence a risk of moral hazards.
International competiveness, Trade and exchange rates	Increasing trade with Migration network and diasporas.	Balance the current account and stabilizing external trade (Bouhga-Hagbe, 2004). Loss of competitiveness could be avoided if remittances are spend on investment rather than consumption (Mongardini and Rayne, 2009)		Appreciating real exchange rates and causing Dutch Disease (Acosta et al, 2007 and 2009) Disadvantaging the tradable sector and reduction of competitiveness due to appreciation (Amuedo-Dorantes and Pozo, 2004)
Labour Markets	Relieves labour market pressures in sending countries (e.g. Appleyard, 1989) Reduce unemployment Orrenius et al (2010) Increase wages (Yabuuchi and	Job creation due to investment in both capital and human development Increase productivity (Orrenius et al, 2010)	Depletion of labour force in sending countries (Sorensen et al. 2002). Loss of labour output due to migration, but this depends on the status of migration and type of employment	Remittances could increase dependence on the source of income and receiving individuals become reluctant to join the labour markets (Acosta et al. 2007)

	Chauduri, 2007 and Mishra, 2007). Either migrants are replaced by unemployed or underemployed or wages for the remaining labour increase (Lucas, 2005)		prior to migration. Migration of skilled (brain drain) and receipt of high remittances could induce other skill migration (McCormik & Wahba, 2000).	
Human Capital	Better education and training for the prospect of future migration (Brain gain) (Beine, Docquier and Rapoport, 2001, 2003, 2008 and 2011 and Cinar and Docquier, 2004).	Easing pressure and allowing more expenditure on human capital (education and health) (Jongwanich, 2007; Bertoli, 2006 and Zhunio et al , 2012).	Loss of human capital (brain drain) (Bhagwati and Hamda 1974). Induced education could be not beneficiary for the domestic needs and hence gains are not achieved (Di Maria and Stryszowski, 2009)	
Poverty and inequality		Remittances have been proved to alleviate poverty at a certain level of poverty (the one that can afford to send migrants (Adams and Page, 2005; Gupta et al. , 2007; Chauvet et al, 2008; Unctad, 2011 and Adenutsi, 2012). Remittances decrease inequality for middle income groups (an inverted U relation) (Koechlin and Leon, 2007)		Remittances seem to accentuate the inequality for very low level of income groups (as they do not normally receive the remittances, which are directed to higher groups) Adenutsi, 2012.
Network Effect	Transfer of Knowledge and communication skills Increase incentives to migrate and hence boost human capital at home.	Reduce the cost of migration and gives better access to information and provides support.		

Source: authors' compilations from empirical evidence

II. Macro Empirical Estimations on the Impact of Migration on Development

In this second part of the chapter, we present our empirical macroeconomic estimations of models that investigate the impact of migration on development through the remittance flows that these migrants send to their home countries. Building on some of the findings and concepts that were revealed in the analysis of the empirical evidence in the first part of this chapter, we attempt to look at a more global picture and address a broader definition of development.

It is important to remind that in our approach addressing the migration and development nexus, we gave evidence (in chapter 2) on the developmental causes of migration and we highlighted the important role of the aspirations and the capabilities of the individuals in linking these two variables. At the same time, we have seen, in the first part of this chapter, through the empirical analysis, that migration can have large impacts on these development indicators in return, either directly or indirectly through transmission channels. This causal relationship between migration and development constitutes a major challenge while developing empirical evidence.

The empirical review on the studies addressing the impact of migration gave some important and interesting results, however, as argued before, many of these studies have not taken into account the overall concept of development in their analysis, but have rather concentrated on one or two aspects (e.g. economic growth or investment). The empirical evidence was also found short of studies addressing the impacts on human capital (other than Brain Drain vs. Brain Gain analysis).

In addressing the impact of migration on development, we concentrate our empirical work on two transmission channels that were identified earlier to have a long-term impact on development. These two channels are the **investment and the human capital**. As argued earlier, investment could be considered as the engine that can achieve development (including economic growth, welfare, etc) and the human capital is considered the necessary fuel for this engine to be able to produce the needed impact on development. Endogenous growth models have identified the human capital as a main factor of long term growth (Lucas, 1988).

There are some limitations to this orientation, as there are other channels (as explained before) by which migration can impact development (such as trade, competitiveness, migration networks, etc), however, we could justify our choice by saying that: if we can find a positive impact of migration on those two channels, this gives evidence that migration through remittances, have a long term impact on development of the sending countries, due to the important role of these channels in achieve development in the long term.

This empirical part of the chapter will be organised in two main sections. The first section will present the conceptual background for the models, followed by some details about the variables, their sources, definitions and the methodology that is used in the estimations. The second section presents the empirical estimations of the impact of remittance flows on those two channels. This is presented in three models: the first model will address the impact of remittances on investment, the second and third models will investigate the impact of remittances on human capital outcomes, notably: education and health outcomes. Then the final section will conclude with an analysis and drawing some conclusions and potential future research.

1. Motivation, Data and Methodology

1.1. Motivation, Context and Conceptual Background

We focus our empirical evidence on investigating the role that migration could play in impacting the development of the sending countries, through the flows of remittances of those migrants. In order to achieve this, we estimate the impact of remittances on the two transmission channels that have been identified to transfer a lot of the impact of remittances to development: (1) the investment channel and (2) the human capital channel.

The choice of these two channels is due to the following reasons.

1. First, these two variables represent the two main pillars of any country's development: looking at a typical production Cobb Douglas function, we see capital (K) and labour (L) as its main components, together with the (A), the total Factor Productivity (including technology component, innovation, etc). Therefore, if we can give evidence that remittances can have an impact on those two variables, we would achieve a substantial progress in proving that remittances have an important impact on development.
2. Second, other than their impact on the country's production function, these two variables, and especially the human capital channel are argued to have a long term and spillover effects on the whole economy, as detailed before.
3. Third, these two channels are very much linked to our analysis on the causes of migration where the aspirations to migrate are induced by the lack of opportunities (i.e. not enough or not the right opportunities and employment offered due to low levels of investment and low levels of development) and where the capabilities of the individual play a major role in their decision to migrate (i.e. their level of human capital).
4. Fourth, despite the importance of these channels, there is a gap of knowledge in addressing the impact of remittances on these two variables especially the one on human capital where the number of studies is quite limited and more research is needed.

In terms of how remittances impact development through these two channels:

1. Remittances can impact **investment** directly and indirectly. The **direct** impact is clearly from the expenses towards investment from the remittances. Despite its small share, this could have important results. Remittances are often associated with better and higher allocation of capital for investment since they are sent to overcome home countries' poorly functioning financial and insurance institutions (Gupta, et al. 2007). This use of remittances includes establishing new business or just maintaining the existent ones. The indirect impact relates to the way these remittances ease liquidity constraints pressure allowing the possibility of increasing expenditures and encouraging the possibility of taking some risks through investment. Even the share of remittances that is used for consumption, is argued to increase domestic demand and feed-in the markets with currency, encourage more production, more employment and lead communities to be better and contributing to the development in the medium run. Remittances can work to overcome distorted financial and insurance institutes, increasing the overall creditworthiness and increase better access to international markets. These are important spillovers of remittances on investment and consequently on production and overall economic growth. We could argue that remittance flows themselves do not contribute to the Gross Domestic Production (GDP). Their impact on growth is achieved when these transfers are re-

injected in the economy as a way to contribute towards production factors, which in turn produce the GDP.

2. Remittances can have a direct impact on the overall **human capital** of the sending countries through increase what is spent on the **education and health**. They represent an additional source of income that could decrease the need for children labour, especially in agricultural and poor households, allowing the children to spend their time in education. Remittance flows can also help improve the overall status of **health** by increasing what could be spent on ensuring basic healthy environment. This could have a positive effect in decreasing mortality rates of infants and children under 5 years old. Existent empirical evidence is scarce on the issue of human capital, since most of the studies concentrated on the issue of the brain drain and its impact. Even those very few studies that addressed the impact of remittances on human capital have reached mixed results on the issue of education and have addressed rarely the impact on health. Moreover, despite the negative effect of migration due to loss of human capital (the brain drain) the empirical evidence has shown the possibility of a compensation effect where migration and remittances increase the aspirations of the non-migrants, and give them incentives to invest in their human capital to be able to migrate in the future (the brain gain). Human capital is a component of long-term growth, hence even small shares of remittances used in investment of human capital, could have long term implications.

The diagram in Annex 3.1 gives an overall idea about how migration and development are inter-related through a causal relationship and highlighting the two main transmission channels that are the focus of our study. This diagram is not exhaustive and is far from being complete, but it only meant to be indicative of the existence of a complicated relationship between the two variables. Adding to this complexity, and as discussed in the previous chapter on the causes of migration, is the idea that migration is in fact part of the development process and as much as it is influenced by the phases of development, migration does also influence development.

This approach could be considered novel in the way that it includes the two major aspects of development: social and economic and the impacts of transmission channels; hence we expect this empirical estimation to make a contribution towards this controversial issue on the impact of migration on development.

1.2. Data Sources and Methodological Approach

Given the above, our empirical evidence will consist of three models: The first will address the impact of remittance flows on capital investment of the home countries. The second and the third will address the impact of remittances on human capital development, this consist of one model on the impact of these flows on education outcomes at the home countries and the second will focus on their impact on the health outcomes.

To investigate these impacts, we use a ***panel data for a sample of 50 developing countries across a basic time series of 14 years (1995-2008)***. These 50 countries are defined following the definition of the World Bank listing of developing countries. They represent a share of almost 80% of the population of the developing countries (and hence they are considered good representation of the developing world populations). These countries have been selected to ensure grasping the right impacts for an average developing county (and not for a special case country such as

small islands with exaggerated rate of migration), we exclude those countries whose population are less than 350 thousands and/or with an emigration stock ratio of less than 1% of the population[27]. Also, developing countries in political conflicts or war were excluded as their conditions are rather an exception and because of no data available for these countries (a list of these 50 developing countries is available in the Annex 3.2).

Most of the data used is collected from international sources to ensure comparability and availability of long time series. Many of the macro data were found in the World Bank the '*World DataBank website',* this recent virtual source of the World Bank data makes available in time series more than 48 datasets on different topics and subjects (e.g. education, financial, etc). These datasets were collected in partnership with other international sources, such as the IMF, the OECD and made available. Details of each of the variables used will be explained below.

In addressing the impact of remittances on these channels towards development, we use data on **remittances inflows** (as percent of GDP) from one country (where normally the migrants reside/live) to another country (which would normally be their home or sending countries). According to the statistical agencies and international sources that publish data on remittance flows, these flows appear under three different items of a country's balance of payment[28]:

1. Compensation of employees (non-resident), which includes the gross earnings of workers residing abroad for less than 12 months (e.g. seasonal, short-term, or border workers) including values of in-kind benefits. This is recorded in the current income of the Balance of Payment under 'income'.
2. Workers remittances, which are the current transfers made by migrants who live and work abroad (for more than 1 year) to their home countries. This is recorded in the current transfers item of the Balance of Payment
3. Migrant transfers, which represent the net wealth of migrants that arise from migration or change of residence from one country to another. This includes the cost of migration itself as a process (transport costs, settling, ..etc.) and is recorded under capital transfers in the Balance of Payment.

In our model, we use what is defined by the World Bank Data as "*Personal Remittances, received, %GDP*" which is the sum of workers remittances and compensation of employees. This is a new series introduced by the World Bank in mid-2005 and that we use in our analysis. This definition is stricter, in terms of what it includes, compared to the definitions used in other empirical evidence (especially those before 2005). Most empirical evidence used the definition that includes the three components. (e.g. Chami et.al. 2003, Aggarwal, 2011, etc.), only a few studies followed this more strict definition (e.g. Catrinescu, 2006). Guilano, et al., 2009 have constructed their own time series, which basically include the three components but have manually excluded some of the components that were wrongly reported by the countries.

It is important to highlight the limitations of the data concerning the remittance flows, which can be summarised as follows:

[27] Similar exclusion criteria were applied by other studies (e.g. IMF, 2005, Rao and Hassan, 2011).

[28] based on definitions in OECD, International Migration outlook report, Catrinescu, 2006, Taylor, 1999 and Gheerarert, et. al. 2010.

1. Despite the standards and specified definitions of the IMF, data are still suffering from some comparability problems as not all the countries follow the same recording standards. For example, some countries record all migrants' remittances under compensation of employees even for those who have been abroad for longer than one year. Some Central Banks record remittances under the private transfers or do not separate what is migrant transfers within the capital account. Most of the studies use the component of 'workers remittances' to reflect the flows of the migrants. Others include also the two other items to ensure that all aspects of remittances are included (e.g. Aggarwal et al, 2011). However, as often these data is not available for all countries, some studies[29] calculates flows as the sum of "compensation of employees", "workers' remittances" and all what's in "other current transfers". This way of calculation has high risk of over estimation of the flows.
2. It is important to note that the remittances that are recorded in the Balance of payments are those that have been transferred through official channels such as banks and other financial institution, there is confirmed evidence that large amounts of remittances are transferred through informal channels such as by hand delivery through friends or in visits. Also remittances in kind are not included such as jewelleries, gold, consumer goods, etc. These are believed to be significant transfers that can range from 10 to 50% of total remittances (Ratha, 2003).

Our methodological approach in estimating the three models mentioned above will be systematic to ensure comparability and consistency. We will adopt the following approach:

1. First, we define the list of variables that will be included in the model (in terms of definition and sources and some of the expected results, with a special focus on the dependent variables and the main explanatory variables (which is the remittance flows as % of GDP and some of the control variables). A correlation matrix of the variables that will be used in the model is estimated to give some basic indications on the correlations between those variables, which will help in estimating the model.
2. Second, our model estimation starts with a ***Pooled Ordinary Least Square (OLS)*** methodology (using the panel data of the 50 countries over the 14 years), where the dependent variable is regressed on the explanatory and control variables and we assume that the regressor is exogenous. Results will be presented and briefly discussed. However, a major shortcoming with OLS estimation of Panel data is that it ignores the time variance and the heterogeneity among countries; these variations are hence included in the error term, which will become correlated with the explanatory variables. The underlying diagnostics and tests presented with the results. OLS tests include the Ramsey RESET test for linearity, which is considered minima requirement ensuring non-biased results. This is followed by Panel diagnostics tests which test for the model specification that would best fit the data whether a fixed-effect (within) or random effect models (between).
3. The next step is to estimate the model using both the **Fixed-Effect estimation** (within) and the **Random Effect estimation** (between). Then we estimate the necessary tests to check on the best specification for the data. Only the best specification is presented in our analysis:

[29] Daianu, D. 2001, Balance of Payments Financing in Romania – The Role of Remittances, Romanian Center for Economic Policies, Bucharest.

- ***The Fixed Effect model*** (FE) estimations (within) take into accounts the variations of the individuals' specific characteristics (i.e. the intercept is different across the countries), we also include time dummies to control for time variations. This means that for all our model estimations of the Fixed-effect, both individual and time effects are controlled. We use the F-test to test the specification of the estimation and where the null hypothesis test is whether cross section units have a common intercept (i.e. that the pooled OLS model is adequate) vs. the Fixed effect model (that the units have different intercepts).
- ***The Random Effect model (RE)***[30] estimations take into account the time effect (between) and it treats each individual with its own different intercept. We use the Breusch-Pagan test and the Hausman test to check the specifications of this model.
- ***The Breusch-Pagan*** test tests the null hypothesis that the variance is equal zero, if this is not rejected, then the OLS pooled is adequate, otherwise that the Random effect model is more adequate.
- ***The Hausman test*** tests[31] the null hypothesis is that the preferred model is the Random effects vs. the Fixed effect using Chi-2 test; if the null hypothesis is rejected than the Fixed effect model is more adequate. These tests are performed in each model and the result of the adequate model is only presented.

4. One of the main limitations of these estimations is that they assume the exogeneity of the regressor. This is an unrealistic assumption for our model where remittance flows are likely to impact the independent variables. Moreover, there might be variables that are omitted (such as the informal remittances transfers not recorded) that would be reported in the error term, which becomes correlated with the explanatory variables. Overcoming this problem can be done through the use of instrumental variables (IV). This method is commonly used to overcome endogeneity problems. Since the problem here is the correlation that exist between an explanatory variable and the error term, finding an instrument that is correlated with the potentially endogenous regressor but uncorrelated with the dependent variable except for its influence through this potentially endogenous regressor can solve this problem. One of the approaches that is commonly used are the two stage least square (2SLS), however, for dynamic panels, such as our database, the **system Generalised Method of Moments (sGMM)** is used. The sGMM provides a solution by using both the differences lags of the endogenous variables and lags of the levels of these variables as instruments in the equation estimations. Using the level lags was introduced by Arellano and Bover, 1995 and Blundell and Bond, 1998. This was considered an addition to the standard GMM method adopted before, which only used the differences lags. (More technical details on this methodology are is in Annex 3.3). This method is the one used in our empirical evidence and represents the final stage of the empirical evidence. *It is important to precise that all the sGMM estimators have used a time control dummy.* However applying this method requires the linearity of the models, which we will be doing by using the RESET test, as mentioned.

[30] This model specification is sometimes referred to as the Generalised Least Squares (GLS)

[31] The Hausman test tests the null hypothesis that the coefficients estimated by the efficient random effects estimator are the same as the ones estimated by the consistent fixed effects estimator. If they are insignificant (P-value, Prob>chi2 larger than .05) then it is safe to use random effects. If the test is significant than Fixed effect should be used.

2. Model Estimations, Results and Analysis

2.1. Testing the Impact of Remittances on Development through Capital Investment

The objective of the first model in our empirical analysis is to analyse how remittance flows can impact investment in the home countries. Investment is presented as a main transmission channel towards development where remittances have both direct and indirect impacts, as explained in details above.

Remittances directed towards investments are relatively low (most of the flows are used for consumption), and there are no overall estimations of this share at the macro level, but micro level data permitted the calculation of this share according to the country or region.[32] However, we argue that these low levels of investments together with the hard-to-specify indirect contributions can have an important role in the country's overall investment, which in return will translate into an increase in the production and development.

Hence our model is investigating the contribution of remittance flows in capital investment, where we include the remittance flows as an explanatory variable together with a number of other explanatory and control variables.

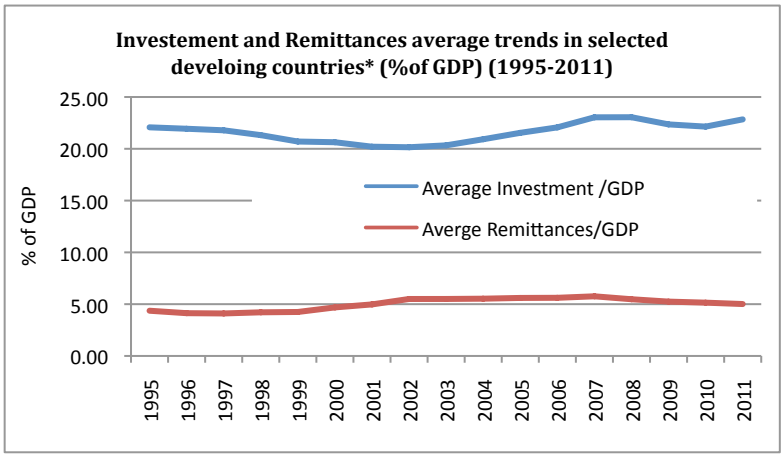
The model is based on the existent scarce empirical evidence that attempt to investigate the relation between those two variables (namely, Giuliano and Ruiz-Arranz, 2009 and Gheeraert et al. 2010). These studies showed that the effect of remittances on investment is through its effects on the financial sector development (FSD)[33]. Some studies found that remittances that are directed towards investment could increase with a good performing financial sector due to the reduction of transition costs, which encourage more investment (Gheeraert et al. 2010). However, other studies found that remittances could increase with poor performing financial institutes due to its pro-cyclical nature (i.e. responding to the needs of difficult times at the home countries but also to investment opportunities (Giuliano and Ruiz-Arranz, 2009). Our model will investigate which of these two scenarios defines the relation between financial indicators and remittances in their impact on investment in our developing countries. ***The model follows closely the model specifications in Giuliano and Ruiz-Arranz, 2009.***

Looking at the data of the two variables in the 50 developing countries under consideration (Fig. 3.6), we can observe how investment seems to follow increases in the remittances curve (e.g. slight increase in 2002/2003 in remittances is followed by an increase in 2003/2004 in investment). It is clear that there are a large number of other variables that impact investment and that remittances could only constitute a small share, and this is what we will be investigating in our empirical evidence: how much of these changes are due to remittances.

[32] based on several studies from the micro analysis details, this share could range between 2 and 20% of received remittances, depending on the country and the region. This is addressed in more details in the following chapter on the micro evidence.

[33] Empirical evidence that investigated the relation between remittances and growth has also found an important effect between those two variables through the financial sector development (e.g. Aggarwal, et, 2011). This was addressed in details in part I of the chapter.

Fig 3.6. Investment and remittances trends in 50 developing countries (% GDP) (1995-2011).



Source: World Bank Data, 2013
Note: the average trend is calculated for the 50 developing counties that are included in our analysis (A list of these countries can be found in the Annex 3.2)

1. Defining the variables

a. The dependent variable: Investment as percent of GDP (Inv_gdp) is defined as the 'Gross fixed capital formation as percent of the GDP'[34] and is collected from the '*World DataBank'* website. The variable is collected from the World Bank national accounts and covers the period 1995 to 2008 for the 50 countries under consideration. This variable includes any type of investments that are related to: land improvement, plant, machinery and equipment purchases. It also includes investments related to constructions of roads, schools, hospitals, private residential dwellings, and commercial and industrial buildings. The choice of this comprehensive variable for investment that includes almost all expenditures on investment in a country will allow capturing any indirect effects due to remittances, in addition to the direct ones.

The variable is estimated following this equation:

$$INVGDP_{i,t} = \beta_0 + \beta_1 Rem_{i,t} + \beta_2 FinDev_{i,t} + \beta_3 Rem_{i,t} * FinDev_{i,t} + \beta_4 X_{i,t} + \mu_t + \eta_i + \varepsilon_{it} \quad (3.1)$$

Where $INVGDP_{i,t}$ denotes the investment to GDP ratio, Rem_{it} is the workers' remittance flows; $FinDev_{it}$ is a matrix of financial development indicators; $Rem_{it}*FinDev_{it}$ indicate variables of interaction between remittances and financial indicators; X_{it} is a matrix of control variables; μ_t is a time specific effect and η_i is the unobserved country-specific fixed effects and ε_{it} is the error term.

b. Explanatory Variables

(Rem_{it}" is the **Workers' Remittance flows**, which is the main explanatory variable for our models (remit-gdp) calculated as a percentage of the country's GDP to reflect the relative size of these flows. This variable covers the 50 countries for the period

[34] This variable was formerly entitled 'gross domestic fixed investment' by the world bank

under consideration and is collected from the 'World DataBank' source of data and is based on data collected from the IMF balance of payments and the World Bank and OECD's GDP estimates. As mentioned earlier, the variable includes both the compensation of employees and the workers' remittances. Our argue here, is that if we can find an impact of these remittance flows that are really the basic or the minimum level of the transfers, then we are even more confident that higher estimations or levels of these remittances (in case we include the other items) have an even bigger impact. We expect that this variable would have a positive impact on investment.

Another explanatory variable is the GDP growth rate (**GDP_gro**) of a country receiving the remittances and it reflects the speed by which the country is growing (an indication of the phase of development). This variable is defined at the Gross Domestic rate annual growth rate as published by The World Bank, World Development indicators, 2013 and is expected to have a positive correlation with investment.

c. Financial Development Variables

"FinDev" represents a matrix of **Financial Development** variables, which are believed to play an important role in the relation between remittances and investment. The selection of these variables is based on empirical studies that attempt to develop investment model (e.g. Giuliano and Ruiz-Arranz, 2009 and Gheeraert, et. al. 2010). Moreover, as we are more interested in looking into how remittances and these financial variables interact in impacting investment, we include (other than the indicators themselves), interactive variables for each of the three financial indicators. This was also undertaken in other empirical evidence (e.g. Giuliano and Ruiz-Arranz, 2009, Bettin and Zazzaro, 2009).

Data for these variables are detailed as follows:

Variables	Definition	Source
Money Supply (M2) (%GDP) (M2_gdp)	M2 is the liquidity liabilities of the financial system. These include the supply of money in terms of currency and short-term deposits, saving deposits and interest bearing liberalities of banks and other financial institutions. This represents the broadest financial intermediation including the central bank, deposit money banks and other financial institutes.	The World DataBank[35] World Development indicators, 2013
Domestic credit provided by banking sector (%GDP) (credit bank)	This includes all credit to all sectors (private and public) that is provided by the banking sectors. This variable gives an indication of the amounts of credits provided through the intermediation of the banks and hence a reflection of the performance of the financial market.	The World DataBank, World Development indicators, 2013
Domestic credit to private sector by the banking sector (%GDP) (creditprivate)	This represents the financial resources provided to the private sector; this includes loans, purchase of non-equity securities, trade credits and other receivables that would require repayments.	The World DataBank World Development indicators, 2013

[35] The World Bank 'DataBank' is an analysis and visualisation tool that contains collections of time series data on a variety of topics

d. Control Variables

The matrix of control variables "X" denotes the countries' characteristics that could have an impact on the dependant variable. Controlling these variables can give better results on the relation between remittances and investment.

Variables	Definitions	Source
Real Effective Exchange rate (REER) (where 2005=100)	As defined by the IMF, measures the nominal effective exchange rate, which measures the value of a currency against a weighted average of several foreign currencies. This exchange rate is then divided by a price deflator or index of costs.	The World DataBank, World Development indicators, 2013
Interest rate (int-rate)	Deposit interest rate is the rate paid by banks and other financial institutes towards deposits or savings in their accounts. The higher the rate the more people and governments are encouraged to deposit their moneys into the bank and hence the more investment there will be. This means that individuals receiving remittances are more encouraged to save larger shares of their remittances in the banks to achieve good benefits then spending them on consumption. This relation is also vice versa.	The World DataBank, World Development indicators, 2013
Inflation rate (infla)	measures as the annual percentage change in the consumption price index (CPI) as published by the WDI.	The World DataBank, World Development indicators, 2013
Openness to international trade (openness)	which is defined as the sum of trade of goods (exports and imports) to the total output.	The World DataBank, World Development indicators, 2013
Population growth (%) (PopGrowth)	This control variable reflects the population growth of the home country and gives an indication of the growth of the demand on the financial services and puts in perspective the flows of remittances.	The World DataBank, World Development indicators, 2013
GDP per capita level (GDPcap_level)	showed the development level of a country from low developed to medium developed (we remind here that the 50 countries included in the analysis are developing countries). Empirical studies showed the importance of not only the growth of GDP but in fact the actual level of this GDP (e.g. Faini and Venturini, 2008).	The World DataBank World Development indicators, 2013
Official development assistance (ODA-gdp) (% GDP)	is another control variables whose value indicate: first the level of development of a country and how much it needs external resources; and second it gives an estimate of the commitments of a country to repayments of these loans.	The World DataBank World Development indicators, 2013

The correlation matrix presenting the initial relation between these variables is presented is presented in (Annex 3.4)[36].

[36] The matrix shows, as expected, a high correlation among the three financial indicators. There are limited correlation between remittances and investment, with a coefficient of 0.35 at a p-value of 5%. This could indicate that this relation is not a direct one and that there is a great deal of interrelations.

In the following we present the results of our estimations using different specifications, as explained. The analysis of the results will be given at the end of all the estimations.

2. Pooled OLS estimations

Following the methodological approach explained above, our first estimation of equation (3.1) with OLS Pooled method is presented in Annex 3.5, where model (1) presents the estimation without the financial indicators to emphasise the direct contribution of remittances towards investment and models (2) to (4) introduces the three financial indicators. These initial results show the positive and significant correlation between remittances (% of GDP) and investment (% GDP) for the four models (i.e. with and without the interaction with the financial indicators). The interactions between remittances and the different financial indicators were found negative and significant.

These estimations might be biased due to non-linearity as given by the RESET Ramsey[37] test. As mentioned earlier, this is an important pre-requisite that would allow the application of sGMM estimations. Hence, a second round of estimations is made for the four models using the same explanatory variables, however in different forms. Linearly was achieved with the usages of the natural logarithm (Ln) for the investment to GDP variable. Results of these OLS estimations are reported in Annex 3.6 in Models (1.1) to (1.4). Across the four models, the coefficient of the remittances as percent of GDP continues to be significant and positive indicating a robust relation with remittances[38]; the three financial indicators have positive and significant coefficients in relation with investment, while the interaction variables continue to have negative correlation across the three models, it was only significant in the case of M2 and the credit bank. The OLS model specification gives some indication on the form of the relation between the variables, which is confirmed to be linear (as tested by the Reset Test).

3. Fixed Effects and Random Effects estimations

In the second step, the same models are estimated with both **Fixed Effect (within)** and the **Random Effect (between)** estimations while controlling for the time effects using dummy variables. Results of the tests, notably, the F-test for the Fixed effect and the Breusch-Pagan test and the Hausman tests for the Random Effect estimations showed that the Fixed-effect estimation is more adequate than the Random effect estimation. Hence we present only here the results of the Fixed effect estimation in Annex 3.7. Models (1.5) to (1.8). The remittances (% GDP) contribute positively to the investment (% GDP) in all four models. However, only in the case of the variable M2 to GDP (model 1.6) remittances was insignificant.

Looking at the tests performed on these estimations, we notice the substantial increase in the value of the 'adjusted R2' compared to the OLS pooled confirming that these models of Fixed-effect explain better the variations in the investment variable. In order to take into account the endogeneity of the regressor, we use the

[37] Ramsey Regression Equation Specification Error Test (RESET) test

[38] the value of the coefficients are much smaller due to the transformation of the dependent variable into its ln form, the coefficients in this case indicate a proportional change against 1 unit change in the regressor.

final estimation methodology including the same variables, which is the sGMM model estimation.

4. Estimation of the sGMM models for investment

In this estimation and in order to solve the endogeneity problem we take advantage of the panel data to use a dynamic panel analysis, sGMM[39]. As explained earlier and in the Annex 3.3 this methodology introduced Blundell and Bond, 1998 combines the first-differences specifications of the GMM with the level-lags in a system GMM estimator (Blundell and Bond, 1998)[40].

Following the same procedure as the previous sets of models, we first estimate the equation without the financial development indicators and then we add individual financial indicators at a time[41]. Results of the sGMM estimations are detailed in Annex 3.8. (models (1.9) to (1.12)). These results confirm our main objective from these estimations, which is the positive and significant impact of remittance flows to investment. Before analysing these estimations' results, we highlight the most important results of the tests that these models have undergone to ensure their significance and reliability (these tests are defined in details in Annex 3.3). The auto-regression tests of order two AR(2) shows that there are no autocorrelation with the differenced residuals (confirming the reliability of the results and that the instruments are exogenous instruments). Second, the Sargan test (used to test for the over-identifications of instruments) showed that the models presents are well identified with good instruments.

These results confirm our initial hypothesis regarding the role of remittances in investment (A summary of the different stages of this empirical evidence is shown in table 3.2 below):

1. Across the four sGMM models' estimations we have shown the positive and significant contribution of remittance flows (% GDP) in investment (% GDP) of the home countries. This result was robust across the different specifications (OLS, Fixed effect and sGMM) and also with and without the use of the three different financial indicators[42]. This result is compliant with results from other studies that addressed the impact of remittances on investment through the financial sectors (e.g. Giuliano and Ruiz Arranz, 2009; and Yaseen, 2012).

2. The two financial indicators M2 and credit to the private were found positive and significant in relation to investment, while the variable on domestic credit from bank was found insignificant. This could indicate a causal and indirect relation with investment, as this domestic credit includes all types of credit (public and private).

[39] External instruments could be used, such as legal systems or creditor rights have been used however they suffer from non-variation across time (Giuliano and Luiz-Arranz, 2009)

[40] for more details refer to Annex 3.3

[41] Further estimations were made with sGMM where these three financial indicators were considered in the model (without interactions with remittances) and all these variables showed positive and significant relation with Investment. However, as we are not interested in the Investment as such but rather to the relation with investment, these models are not shown.

[42] Except for one model in the Fixed Effect with M2 which could be due to the endogeneity.

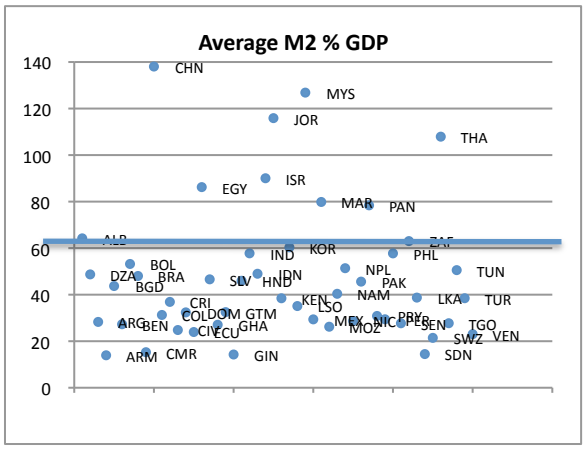
Table 3.2: Summary of main results on the impact of remittances on investment (%GDP) through financial development variables

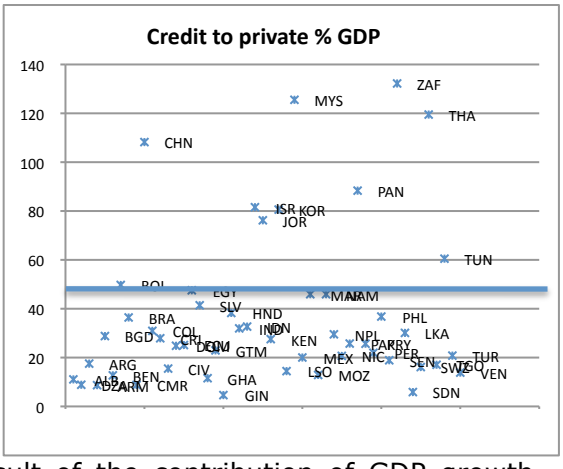
Model ID	(1.3)		(1.7)		(1.10)		(1.11)		(1.12)	
Methodology	OLS Pooled		Fixed-Effect		sGMM		sGMM		sGMM	
Equ(1) : Dependent variable: Investment percent of GDP (l_Inv_gdp)										
const	2.391	***	-2.434	***	2.1317	***	0.0707		2.3609	***
	17.990		-4.275		4.6200		0.1558		5.2530	
Inv_gdp(-1)					0.3219	***	0.8088	***	0.2579	**
					4.0850		16.1500		2.1390	
Explanatory variables										
remit_gdp	0.016	***	0.024	***	0.0307	***	0.0175	***	0.0171	**
	10.920		5.775		3.3540		5.1880		2.5220	
GDP_gro	0.021	***	0.007	***	0.0200	***	0.0251	***	0.0161	***
	8.077		3.267		4.6070		4.9720		4.3900	
Fin development variables										
M2_gdp					0.0046	***				
					3.1110					
Credit_bank	0.003	***	0.002	**			-0.0003			
	8.910		2.039				-0.3411			
Credit_private									0.0029	*
									1.8090	
Interaction variables										
remitXM2					-0.0005	***				
					-2.9910					
remitXcredbank	-0.000	***	-0.000	***			-0.0004	***		
	-4.122		-3.577				-3.6200			
remitXcredpriv									-0.0004	**
									-2.2150	
Control variables										
Dint_rate	0.004	***	0.003	**	0.0065	*	0.0001		-0.0002	
	3.582		2.264		1.7440		0.0435		-0.0631	
l_GDPcap_level	0.026	*	0.611	***	-0.0873		0.0169		-0.0432	
	1.759		8.342		-1.2150		0.3969		-0.9249	
openess	0.000		0.003	***	-0.0001		-0.0004		-0.0004	
	1.515		4.981		-0.1715		-0.4601		-0.7497	
infla	-0.002	**	-0.002	***	-0.0006		0.0029	*	0.0021	
	-2.074		-3.628		-0.2348		1.7690		0.7878	
REER	0.001	***	0.000	*	0.0041	***	0.0015		0.0028	**
	3.117		1.745		3.8670		1.3870		2.2390	
PopGrowth	-0.022	*	0.055	***	-0.1408	***	0.0172		-0.1785	***
	-1.773		2.731		-3.2880		0.2294		-3.6880	
ODA_gdp	0.005	**	0.008	***	0.0036		0.0020		0.0082	
	2.189		2.868		0.6686		0.4870		1.0750	
Tests										
N. of observations	700		700		700		700		700	
					-2.8338		-3.76867		-2.1876	
R2aj.	0.310		0.722	AR(1)	[0.0046]		[0.0002]		[0.0287]	
F statistics	29.515		25.864		0.35382		0.683079		-0.3539	
P -value	0.000		0.000	AR(2)	[0.7235]		[0.4946]		[0.7234]	
	0.128		FE>OLS;		28.6634		18.6204		27.0987	
Linearity RESET Sq	0.721	BP [1]	RE>OLS	Sargan	[0.9270]		[0.9996]		[0.9994]	
Linearity RESET Cub.	0.100 (0.752)	Hs [2]	FE>RE							

Notes: -t ratio in second row *1. BP is the Breusch-Pagan test; 2. Hs is the Hausman test*

3. All three interaction variables of remittances with the three different financial indicators showed negative and significant relations with investment. This result means that the two variables have an inverse relation. This indicates that, indifferently to the financial indicator used to evaluate the financial development market, remittance flows play the role of a substitute to the distorted or not well-performing financial markets. In more details and taking the example of the model with M2 (model (1.10)): while both remittances and M2 contribute each positively and significantly to the overall investment, a shortage of this liquidity (M2 decrease) would be compensated or substituted by an increase in remittances to ease this constraint. This is an important role played by remittances that we have seen coming across in different analysis, which is being confirmed. Similar analysis could be made in case of the private credit or domestic credit. Showing that remittances do play an important role in boosting the home countries' financial needs in case there is distortion in this market and the difficulty in obtaining loans. This result was robust using the OLS estimation model (annex 3.6). Similar results were obtained by Giuliano and Ruiz-Arranz, 2009; however different results were obtained with Gheerhart, et. al., 2010.

4. Calculating the effect of remittances on investment given the thresholds of these financial indicators, we found that, assuming a ceteris paribus, for the M2 model: remittances are expected to have a positive impact on investment when the M2 (% of GDP) is lower than 61.4%. This means that on average, countries such as Algeria, Tunisia, Turkey (and all countries who are below the threshold line in the figure below) will have their remittances positively contributing to their investment levels. If we calculate the same for the credit to the private bank indicator, we find that, ceteris paribus, a positive impact of remittances on investment is expected when the credit to the private is less than 42.75% (of GDP). This includes countries such as Turkey, Sudan and Brazil (countries below the line in the figure below).





5. As expected a positive and significant result of the contribution of GDP growth towards investment. This result was robust across the different estimations. However the level GDP per capita was found insignificant, denoting a strong causality between those two variables. The Real Effective exchange rate (REER) was found positively and significantly correlated with the investment across the different specifications confirming the robustness of this result of a positive contribution with investment[43].

[43] Except in Model (1.11) where it was found insignificant

In conclusion, this empirical evidence has considered investment as the transmission channel between remittances and development and tested the impact of remittance flows in boosting investment. The results of our empirical evidence showed that ***remittance flows (% GDP) contribute directly to the investment (% GDP) of the home countries (as shown by the positive and significant coefficients in all four models) and at the same time, they contribute indirectly to investment through their substitutional role in compensating the distorted financial development sectors and providing the necessary funding to ease liquidity constraints (M2) or provide needed loans (credit variables).***

After establishing this relation with investment, we then move to the second transmission channel towards development which is related to the Human Capital outcomes.

2.2. Testing the Impact of Remittances on Development through Human Capital

In this part of the empirical analysis we investigate the impact of remittances on development through the channel of human capital outcomes. These outcomes are presented in terms of education and health.

As argued in this chapter, migration and remittance flows could have large implications on the development of the home countries through the channel of human capital. However, these impacts could be mixed between positive gains and potential losses and the result depends on the dominant impact. The very few studies that addressed this impact found an overall positive impact on human capital development (e.g. Jongwanich, 2007 and Zhunio, et. al, 2012).

Given the little progress that have been achieved on the empirical evidence on this issue, we will attempt to contribute to this debate by estimating two equations for human capital outcome, the first on education and the second on health. The general form of these two equations could be presented ad follows:

$$HC_outcome_{i,t} = \beta_0 + \beta_1 Socio_{i,t} + \beta_2 Rem_{i,t} + \beta_3 X_{i,t} + \mu_t + \eta_i + \varepsilon_{it} \qquad (3.2)$$

Where $\mathbf{HC_outcome_{it}}$ represents the human capital outcome, in case of the education model, the outcome that tested is the mean years of schooling (another estimation on using tertiary enrolment rate will be performed for robustness); in case of the health model the outcome that is tested is the mortality rate (life expectancy will also be tested for robustness); $\mathbf{Socio_{it}}$ is a vector of socio-economic variables that contains control variables that are expected to impact the Human capital outcomes; $\mathbf{Rem_{it}}$ is the remittance flows variables described as above; $\mathbf{X_{it}}$ is a vector of characteristics and control variables.

1. Defining the variables

a. The dependent variables:

Dependent Variables	Definition	Source
Model (3.2a): **Mean years of schooling (school year)**	is defined as the average number of years of school completed in population over 14.	This variable was collected from the new database on "cross-country analyses of nation systems" (CANA)[44]
Model (3.2b) **Tertiary School enrolment**	Ratio of total enrolment in tertiary education, regardless of age, to the population of the age group that officially corresponds to the tertiary level. This variable was chosen in particular to avoid any compulsory enrolments implied by the governments	This variable was collected from the new database on "cross-country analyses of nation systems" (CANA).
Model (3.3a) **Mortality rate in less than 5 years old**	Under-five mortality rate is the probability per 1,000 that a newborn baby will die before reaching age five, if subject to current age-specific mortality rates.	The World DataBank, World Development indicators, 2013
Model (3.3b) **Life expectancy**	Life expectancy at birth indicates the number of years a newborn infant would live if prevailing patterns of mortality at the time of its birth were to stay the same throughout its life.	The World DataBank, World Development indicators, 2013

b. Economic Explanatory Variables

"Rem" is the Workers remittance flows and is integrated as indicated above in the invest equation.

c. Socio-Economic Explanatory Variables

"**Socio**" represents a matrix of Social and economic variables that are believed to contribute to both educational and health outcomes. The majority of these variables have been used in the empirical evidence literature; however, some variables were added as they were considered important in the social context.

[44] This panel data was put together by Castellacci, F. and J. M. Natera (2011): "A new panel dataset for cross-country analyses of national systems, growth and development (CANA)", Innovation and Development, 1 (2), April 2011. These authors have reconstructed the existing Barro-Lee and World Bank data and made available time series for 134 countries on six key country-specific dimensions: innovation and technological capabilities, education system and human capital , infrastructures, economic competitiveness, political-institutional factors, and social capital, for the period of 1980 to 2008.

Variable	**Definition**	**Source**
Women right	Is an Index constructed as the sum of three indices: Women's Economic Rights, Women's Political Rights and Women's Social Rights. It ranges from 0 (low women rights) to 9 (high women rights). It would be expected that this index would contribute positively to the social human capital outcomes.	Castellacci & Natera (2011) and Cingranelli & Richards (2008)
Population under 15	Population, age 0-14 (% of total) is the population between the ages of 0 and 14 as a percentage of the total population.	The World DataBank based on The United Nations Population Division, World Population Prospects.
Urban Population	Urban population refers to people living in urban areas as defined by national statistical offices as percentage of total population. It is calculated using World Bank population estimates and urban ratios from the United Nations World Urbanization Prospects. It would be expected that this share would contribute positively to the education outcomes.	The World DataBank based United Nations, World Urbanization Prospects.
Teacher to Pupil ratio	Primary pupil-teacher ratio (inverse). Ratio (number of pupils enrolled in primary school) / (number of primary school teachers) multiplied by (-1). It would be expected that this inverted ratio would make a positive contribution to the educational outcomes as it reflects the quality of education (i.e. the more number of teachers per pupil the better)	Castellacci & Natera (2011) based on the UNESCO
Public expenditure on education (%GDP)	Defined as the current and capital public expenditure on education as percent of GDP. This variable is expected to make a positive contribution towards the educational outcomes. The more the governments spend on the service the more it attracts more individuals.	Castellacci & Natera (2011) based on the UNESCO
Public expenditure on health (% GDP)	Public health expenditure consists of recurrent and capital spending from government (central and local) budgets, external borrowings and grants (including donations from international agencies and nongovernmental organizations), and social (or compulsory) health insurance funds. This variable is expected to make a positive contribution towards the educational outcomes.	The World DataBank based World Health Organization National Health Account database (http://apps.who.int/nha/database/DataExplorerRegime.aspx)

Total expenditure on health	Total health expenditure is the sum of public and private health expenditure. It covers the provision of health services (preventive and curative), family planning activities, nutrition activities, and emergency aid designated for health but does not include provision of water and sanitation.	The World DataBank based World Health Organization National Health Account database (http://apps.who.int/nha/database/DataExplorerRegime.aspx)
Private expenditure on health	Private health expenditure includes direct household (out-of-pocket) spending, private insurance, charitable donations, and direct service payments by private corporations.	The World DataBank based World Health Organization National Health Account database (http://apps.who.int/nha/database/DataExplorerRegime.aspx)

d. Control variables

The **matrix X_{it}** denotes the control variables that reflect the characteristics of the countries. The control variable in the educational and health outcomes model is the same as described above for the investment equations, these variables are: Population growth rate, level of GDP per capita, interest rate, inflation rate, Real effective exchange rate, to which were added the domestic credit provided by the banking sector (% of GDP) and the GDP per capita growth. The latter is considered better fit to the education and health outcomes than the general GDP growth and it would be expected to contribute positively to these human capital outcomes.

On another front, adding those macroeconomic variables (inflation, interest rate, REER and domestic credit) seems to be rather uncommon in empirical studies that addressed the human capital outcomes. However, as we explained earlier, spending remittances on education and health is considered a sort of long-term investment in human capital and hence this decision could be impacted by macroeconomic variables. It is true that on the social front, these indicators will not have the same weight as that in the investment, however the deposit interest rate, for instance would affect the decision on whether to spend money on the education or put them in the savings. Moreover, inflation can lead to increasing prices of medicines, health care or educational attainment (or even consumer goods) and hence remittances will be rather spent on the basic needs then on human capital.

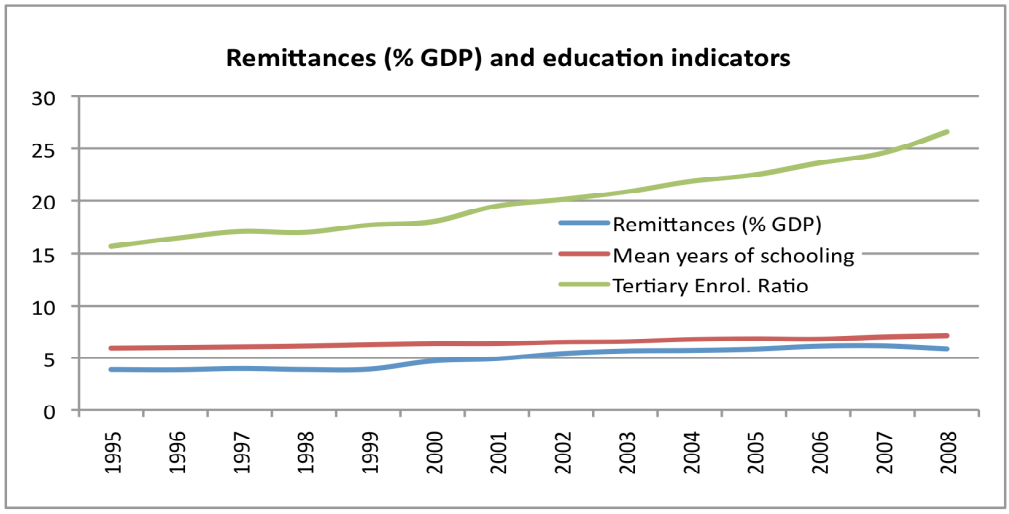
Finally, we have included a financial indicator variable to control for the financial aspect. We included the variable 'Creditbank', as defined in the previous analysis. This variable represents the credit provided by the banking sector to both the public and private sector. While estimating the educational and health outcomes, it would be important to look at how the domestic credit, and especially that directed towards the public sector is performing. An inefficient domestic credit means that none of the two sectors (private or public) have good access to loans, which in turn could have a rather negative effect on the human capital outcomes. Moreover, for the private sector this could mean that remittances should be used towards compensating this distortion rather than using it to spend on human capital outcomes. Therefore, it would be hard to speculate the role of this variable in these equations.

2.2. 1. Testing the impact of remittances on education outcomes.

First we will investigate the impact on the educational indicators and here we estimate the impact of remittances on ***the mean years of schooling***[45]. According to empirical studies addressed earlier, the results are not evident for all cases, however there was an overall positive effect. We estimate a second model for education using the variable tertiary school enrolment for a robustness check for the result of this model.

Looking at the relation between remittances and the two educational indicators we observe the increasing trend of both indicators with the increase of remittances, however tertiary enrolment's acceleration is higher. This could be due to the definition of the variable which included all the ratio of all the persons that are enrolled in this level of education regardless of their age and hence there is no ceiling to this ratio, contrarily to the mean years of schooling which are normally controlled by a certain number of years that individuals spend in education. Also, the mean years of schooling is a long-term variable whose variability takes longer than that of the tertiary enrolment which is rather a short-term. Our empirical evidence will look into a connection between those variables and whether this increase is related to the remittance flows or some other variables.

Fig 3. 7. Remittances and education indicators in 50 developing countries (1995-2008)



Source: Remittances from World Bank Data and Educational indicators from Castellacci and Natera, 2011 (CANA)

Adopting the same approach as the one undertaken for the investment equation above, we start by constructing the correlation matrix for the educational variables and examine their correlation with the different variables at 5% p value (Annex 3.9). Regarding the two main educational indicators of our interest, we found high correlation between them (which is expected). Remittance flows (% of GDP) was not

[45] As mentioned earlier, most of the studies that addressed the relation between migration or remittances and education focused on the status of migrants in terms of skills (brain drain) and their impacts. Even those few studies that addressed the impact of remittances on the education of those left behind have looked more into the school enrolment ratios.

found significantly correlated with the mean years of schooling in this correlation matrix or with the tertiary enrolment.

Following the general form of the human capital outcome equation (3.2) the model estimating the educational outcomes is presented in the equation below:

$$Educ_{i,t} = \beta_0 + \beta_1 Socio_{i,t} + \beta_2 Rem_{i,t} + \beta_4 X_{i,t} + \mu_t + \eta_i + \varepsilon_{it} \qquad (3.2a \ \& \ 3.2b)$$

We follow the methodological approach that was explained above, estimating the model for the **mean years of schooling** variable. We first present the different estimations and specifications of the models and then we will present the overall analysis.

First, we estimate the equation 3.2a with the pooled OLS regression model, where the mean years of schooling is regressed on a number of explanatory and control variables as indicated, including the remittances (% of GDP), as detailed above.

Results of the OLS estimations models are given in Annex 3.10 (models (2a.1) to (2a.3). The first model (2a.1) presents the initial estimation, without the interaction variable, while the second model (2a.2) presents the interaction variable between remittances and public expenditure on education (% GDP). The third model (2a.3) presents a better specification of the model that would ensure its linearity. The three models show the positive and significant impact of remittances towards the mean years of schooling. This interaction variable indicated a significant contribution with a negative sign. This is an interesting and important result that has not been addressed before according to our knowledge in the empirical literature.

The second estimation for the model is made using both the fixed-effect and the random effect estimations. Performing the Panel diagnostics checks on each model (F-test, Breusch-Pagan and Hausman tests) showed that the adequate specification would be to use of a Panel Fixed effect model. Hence, result of this specification is presented in Annex 3.10 (models 2a.4 and 2a.5). The first model presents the results without controlling for time effect and the second presents the estimation with controlling for time effects. As indicated earlier, the mean years of schooling has a long-term nature and its variability across time could take a long time, that's why we tested the model without control over time to test this idea. While remittances continue to be significant and positive in first model (2a.4), the variable becomes insignificant in model (2a.5) with time control. This could be due to the fact that the mean years of schooling being a social variable related to the behaviour of the population, takes a long duration to mark changes in it over time.

However, these models assume the exogeneity of the regressor, hence results could be biased. In order to overcome this problem of endogeneity, we use the sGMM model approach using the same set of variables that successfully passed the linearity test and we estimate the mean years of schooling model. First we estimate the model without the interaction to test the direct impact of remittances and then the interaction variable between remittances and public expenditure on education is introduced. Results of these two estimations are presented in Model (2a.6) and Model (2a.7) respectively in Annex 3.12.

The sGMM estimation continues to show the positive and significant contribution of the remittances (as % of GDP) in increasing the mean years of schooling for the

home countries' human capital, confirming our hypothesis about the important role of remittances towards human capital.

The final results of our estimation are presented in the following points (A summary of the results are presented in table 3.3 below):

1. Across the different model specification for the educational outcome presented by the mean years of schooling, we found a positive and significant contribution of remittance flows towards this variable. This result is considered interesting as the very little empirical evidence that addressed the impact of remittances on education has looked on the school enrolment ratios and the results found were mixed depending on the education level (Zhunio, et. al. 2012).
2. The contribution of the public expenditure on education in increasing the years of schooling was found insignificant across most of the models' specifications. This is not a surprising result, as several empirical evidence studies found similar results, and some have even found a negative and significant relation of the government expenditure on education (e.g. Di Maria and Lazarova, 2011). In developing countries, a high share of public expenditures on education does not translate into an encouraging and well-performing education coverage and system. These expenditures are dominated by large shares of wages and administrative expenses rather than on improving the quality of education or building new schools. Hence these expenditures that are centrally planned could lead to distortional effects.
3. This insignificant relation of public expenditure on education could bring the role of remittances, which contribute positively to increase the mean years of schooling. This is what the interaction variable between remittances (% GDP) and public expenditure on education (% GDP) has attempted to test. Across most the specifications of estimations this variable was found negatively and significantly correlated with the mean year of education. This means that the two variables have opposite relations denoting a substitutional effect, hence, confirming the original argument that remittances inflows could play the role of a substitute to the public expenditure when it comes to education: when public expenditure on education is found insufficient or not enough, remittances can substitute for this shortage. This is an interesting and original result that is considered a value added of our models[46].
4. Other interesting socio economics results could be highlighted such as the positive impact of the teacher-pupil ratio in increasing the means years of schooling. This variable reflects the quality of education. Women rights indicator showed a rather negative, however its significance was not robust across the different specification. This could indicate a causal relation between those two variables. The fact that women's rights in these countries might be rather low could represent a motive to seek better education to overcome this status.
5. Other macroeconomic results could be highlighted such as the positive contribution of the GDP per capita level (an indication of the level of economic development of the country), the public expenditure on health and the deposit interest rate (an indication that individuals are encouraged to save and these savings could be used for increase expenditure on education), whereas high inflation rates could negatively affect education, since individuals will need to spend more on either consumption goods or that the expenses on education would be too high to afford. This is an important and interesting result obtained from this estimation.

[46] As per our knowledge, this interaction variable has not been used before.

In order to test the robustness of our results, we estimate the same models as explained above using a different educational outcome, which is the tertiary enrolment ratio indicator (the variable definition and source are given above). Results of the OLS and the Random effect estimations (the choice of this specification was as advised by the panel diagnostic tests, as previously done) are presented in Annex 3.11. Also, the sGMM models are presented in Annex 3.12 (models (2b.6) and (2b.7)). The results of this robustness test showed that remittances coefficients are positive and significant across all the estimations of this second indicator. Moreover, the public expenditure on education (% GDP) was found mostly positive and significant, however this result was not robust as it was found negative in some basic OLS specifications. This relates to the unclear contribution of public expenditure on education. Finally, this estimation has given evidence of the robust result related to the role of remittances as a substitute to the inefficient public spending on education given the negative and significant coefficient with the interaction variable across most specifications.
This means, that regardless of the educational outcome indicator we use, there is a confirmed positive impact of remittances in boosting education in the developing countries. This result is important and holds a lot of potentials for these countries that are still struggling with low social indicators. Moreover, the robustness check has also confirmed the negative and significant substitutional effect between the public expenditure on education and remittances. Remittances are confirmed to absorb the shortage or the inefficient contribution of the public expenditure on education to increase the mean years of schooling.

In order to conclude this empirical evidence on the role of remittance flows (as % of GDP) in affecting the education outcomes, we summarise the most important results of the two sets of estimation in the table 3.3 below. Results are summarised in the following points:

1. There is a robust positive and significant contribution of the remittance flows (%of GDP) towards improving the educational outcomes in the home countries at the macro level. These impacts have an important role in boosting the human capital channel which leads to long term development of the home countries;
2. Despite the confirmed overall increase in spending on education in developing countries (UNESCO, 2012)[47], their impact on improving the education attainments is not always evident. This was found by many other empirical studies (e.g. Beine, et.al. 2001, Chauvet, et. la.2008; and Di Maria and Lzarova, 2011). One reason behind the inefficiency of the public expenditure on education could be due to the misallocation of the resources of the public expenditures where most expenditures are allocated towards current rather than capital costs (in Egypt for instance 75% of the current expenditure on tertiary education is allocated to wages and where the academics are surpassed by admin employees, (Ministry of Finance, Egypt)). This was reported in several other developing countries' governmental statistics;
3. At the same time, there is an important and confirmed interaction between remittance flows and the government expenditure on education. A value added of our empirical study here is to put emphasis on this relation, which has been shown to be rather a substitutional relation. In the presence of inefficient public expenditures on education, remittances play the role of a substitute to these

[47] According to UNESCO, 63% of poorer countries have increased the share of expenditure on education between 1999 and 2010 (UNESCO. 2012. Education For All Monitoring Report)

funds, confirming furthermore the impact of these remittances on improving the educational outcomes in these developing countries.

4. Among the socio-economic variables that are included in our analysis, we highlight the interesting contribution of the variable on women's rights. The final models have shown the positive contribution of this index towards increasing the education outcomes. This is an expected results as in countries where women enjoy their rights, it would be expected that this could contribute to the overall human capital[48];
5. Public expenditure on health showed an overall positive contribution indicating that a positive health status of a country would translate into a better educational outcomes;
6. Including financial indicators in the estimation of the educational outcome models has not been addressed before. Our argument in including these variables stems from the idea that education could be considered a sort of investment that would be expected to have a return and hence financial indicators could have a role. In fact, results showed some importance for these indicators. For example, it was found that the deposit interest rate showed an overall positive and significant contribution towards these outcomes, indicating that a high rate of interest could lead to more saving for education which would include remittances. Inflation also showed an overall negative impact, playing an opposite role to that of the interest rates. High inflation rates could lead to more money spent on consumption and hence less money spent on education leading to a decrease in the education outcomes; which was quite expected, as increase in prices would lead to confirmed empirical evidence on the usage of remittances towards; and
7. An interesting point is argued regarding the credit bank variable, despite being insignificant in most estimations on educational outcomes, it gave some important indications on how remittances can interact in the absence or distorted financial institutions to spend on education.

Having confirmed the role of remittances on education outcomes, the following section will address the second human capital outcome related to health.

[48] it would be interesting to further investigate this issue by including the gender distribution of tertiary enrolment.

Table 3.3. Summary of main results on impact of remittances on education Outcomes

Model ID	(2a.3)		(2a.7)		**Robustness check:** (2b.7)	
	OLS Pool linear interact		sGMM w interact		sGMM w interact	
Equ(2.1) : Dependent variable:	**Mean years of schooling**				**Tertiary enroll. ratio**	
const	8.173	***	-0.524		-26.232	***
	12.500		-0.282		-3.313	
Dependent Var (-1)			0.840	***	0.482	***
			9.481		3.999	
Explanatory variables						
remit_gdp	0.076	***	0.019	**	3.613	***
	3.987		2.135		3.822	ln
Socio-Economic variables						
Women_right	-0.105	**	-0.053		1.387	***
	-2.348		-1.277		3.269	
Pop_15	-0.009	*	0.044		-0.591	**
	-0.497		1.233		-2.387	
Pop_65	-		-		-0.010	
	-		-		-0.011	
Urban_pop	0.000		-0.010	*		
	0.398	sq	-1.878	sq		
Teacher_pup	0.060	**	0.019	*		
	8.028		1.677			
pubexpeduc_gdp	0.066		0.000		1.677	***
	1.470		0.014		2.919	
pubexphealth_gd	0.200	***	0.138	***	-0.010	
	4.019		3.007		-0.011	
Interaction variables						
remitXeducexp	-0.007	***	-0.002	**	-0.031	**
	-3.198		-2.121		-2.153	
Control variables						
PopGrowth	-0.574	***	0.078		6.428	***
	-5.836		0.731		3.933	
GDPcap_gro	0.031	*	-0.001		0.327	***
	1.935		-0.162		4.045	
GDPcap_level	0.000	***	0.126	***	2.245	***
	8.341		3.366		4.265	
Int_rate	0.002		0.029	**	0.510	***
	0.233		2.191		5.524	
infla	-0.013	**	-0.007	**	0.074	
	-2.575		-2.148		1.414	
REER	0.000		-0.004		0.110	***
	0.050		-2.355		3.442	
creditbank	0.000		-0.001		0.005	
	-0.200		-0.589		0.266	
Tests						
N. of observations	700		700		700	
R2aj.	0.623	AR(1)	-2.056]	[0.04]	-3.917	[0.0001]
F statistics	77.956	AR(2)	1.922	[0.06]	0.771297	[0.4405]
(p value)	0.000	Sargan	19.31	[1.00]	14.132	[1.0000]

*Notes t- ratio in second row; * significant at 10%; ** significant at 5%;*** significant at 1%*

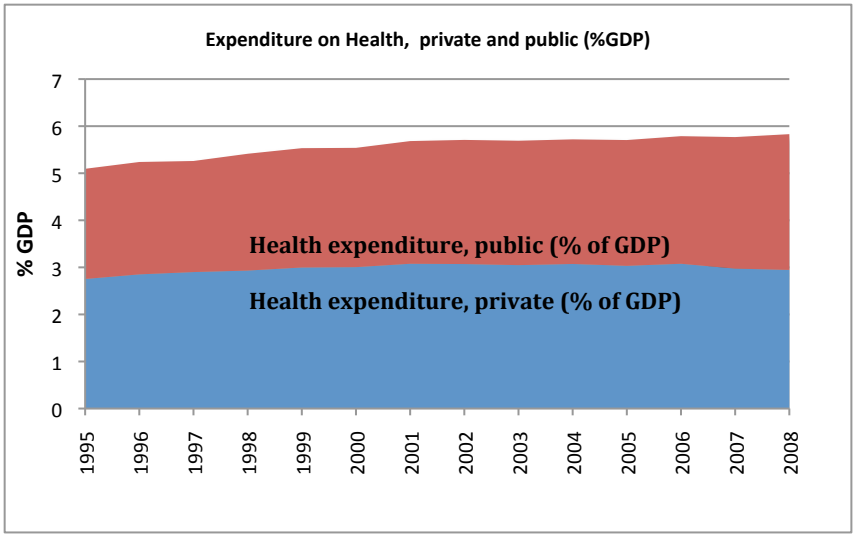
2.2.2. Testing the impact of remittances on health outcomes

The second part of investigating the impact of remittances on human capital outcomes is testing the impact of these flows on health outcomes. For the estimation of the health outcomes we select the indicator on '***Child mortality rate for those less than 5 years'.*** As mentioned in the literature review, an extremely few number of studies addressed this issue at the macro level and as part of the global human capital impact (Chauvet, et. al, 2008; Zhunio, et. al. 2012, both studies used the child mortality rate indicator). As would be expected, remittance flows, as an additional source of income, would normally have a positive impact on increasing the health status of the home countries, this effect would be not automatic or evident.

As a robustness check for the impact of remittances on the health outcomes, we estimate similar models using another health indicator, which is the ***life expectancy.*** Either these remittances would be used to cover medical services (including purchasing medicine and seeing doctors) or they can raise the overall hygienic status of the household or community and hence decrease the child mortality due to sickness or other unhealthy environments.

Before introducing the estimation process, it is important to note an essential fact about the health services in developing countries. As the quality of the public health service and coverage of medical insurance are very weak in these countries, private expenditures on health services is considered high and in many countries it is equal or even surpassing that of the public sector (e.g. Cameron and Cote d'Ivoire where the private is 3% of GDP higher than the public expenditures). Fig 3.8 shows the almost equal contributions of the two sectors in health expenditure and the almost stable total expenditure for the past 15 years (as % of GDP) in the developing countries covered by this study. It was reported that for these countries, the 'out-of-pocket' spending on health represents almost 48% of the total spending on health.

Fig 3.8 Expenditure on health, private and public as (% of GDP)

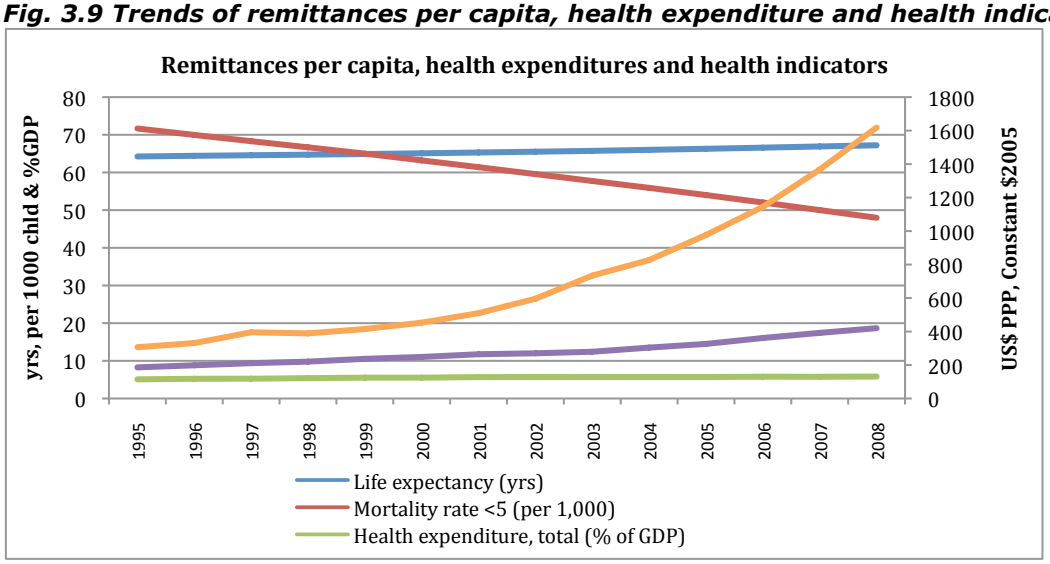


Source: World DataBank, WDI, 2013

This important contribution of the private sector in the health services can increase the potential impact of remittances as these flows can contribute towards improving access to the health services.

There is a positive progress achieved on the health outcomes of the developing countries (decreasing mortality rates of children under 5 years old and increasing the life expectancy). At the same time, the total expenditure on health (% GDP) has not increased much during this period, nor did the per capita health expenditure. However, we notice the substantial increase of the remittances per capita across time (Fig. 3.9). There are of course many factors that could improve the health outcome, and in the following model estimations we will look at how much of this progress could be attribute to the remittances.

Fig. 3.9 Trends of remittances per capita, health expenditure and health indicators



Source: World DataBank, WDI, 2013

First, the correlation matrix is presented in Annex 3.13 to reflect the relation between the variables that will be considered in this estimation. We would like to note here that given the importance of private sector's expenditure on health, we will differentiate in our estimations between: the total heath expenditure which includes both private and public (% GDP), the public expenditure on health (% GDP) and the private expenditure (% GDP).

Our empirical evidence will be consisting of estimating the following specific equation (3.3a and 3.3b) following the general equation (2), which in case of health outcome would be as follows:

$$Health_{i,t} = \beta_0 + \beta_1 Socio_{i,t} + \beta_2 Rem_{i,t} + \beta_4 X_{i,t} + \mu_t + \eta_i + \varepsilon_{it} \qquad (3.3a \ \& \ 3.3b)$$

Where ***$Health_{it}$*** denotes the health indicator under estimation, which is the ***Child mortality rate in less than 5 years old*** (we use the life expectancy variable as a robustness check for the analysis). The explanatory and control variables are similar to those indicated above in equation (3.2a and 3.2b).

Following the same methodological steps as explained before, we estimate the Pooled OLS model for the ***mortality rate in under 5 years old*** (mort_5).

We noted the strong impact of the geographic location of the countries in affecting the dependent variable, in particular countries belonging to the Sub-Saharan region,

extreme values of the mortality rates were observed. Hence, we use a dummy variable that would indicate the Sub-Saharan Countries ('afss').

Results of the OLS estimation are presented in Annex 3.14 models (3a.1) to (3a.3). In all estimations for this model, we have included the socioeconomic and control variables as previously done, however, as previously mentioned, in order to take into consideration the large contribution from the private sector towards health expenditures we have included the total expenditure on health (including public and private). Moreover, we have included in the analysis two different interaction variables for these expenditures with remittances: the first interaction ('interact 1') represents the interaction between remittances and the total health expenditure and the second interaction ('interact 2') is the interaction between remittances and the private expenditure.

It is important to note here that all three OLS models presented have linear specifications (confirmed by the RESET test). All three models show that remittances contribute to decreasing the mortality rates of children under 5 years old (a negative and significant coefficient).

We also estimate the Fixed effect and Random effect estimations for both interactions and while using time dummies. Panel tests suggested the use of the Fixed effect specification for the model with interact 1, while for the model with interact 2 the Random effect specification was found to be more adequate. Both these best fitting models are presented in the Annex 3.14 in models (3a.4 and 3a.5). Results for both estimations and using the two different interactions have confirmed the very significant contribution of the remittances towards decreasing the child mortality rates.

Solving the endogeneity problem, we estimate the models using the sGMM estimations. Results of this estimation are presented in Annex 3.16 where model 3a.6 present the result without the interaction variable and the model 3a.7 present it with the interaction 2, where the data was best fitted.

These models estimations have also showed the significant effect of remittances in reducing child mortality rate, which confirms our initial hypothesis. These results are summarised in table 3.4 below and the estimation results showed:

1. There is a confirmed positive and significant contribution of the remittances (% of GDP) towards decreasing the child (of less than 5 yrs old) mortality rates. This direct impact of remittances was confirmed across the different methodologies and model estimations and with and without the use of interaction variables. This result is compliant with results from Chauvet, et. al, 2008; Zhunio, et. al. 2012 (however with differences in the way the models were constructed).
2. We also found that the total expenditure on health (% GDP) contributed positively in decreasing child mortality rates. This result was also robust across the different estimations. Other studies that considered the contribution of the public expenditure found insignificant relation with infant mortality (Zhunio, et al. 2012). It is important to note here, that this variable holds a great deal of variations, since it includes both private and public expenditure and where the latter might be inefficiently distributed across the health sector, as previously noted.
3. In order to investigate the possible role of remittances in the total expenditure, we included an interaction variable with those two components ('interact 1').

Results related to this interaction were not robust confirming the large variations within this rather global indicator.

4. Therefore, we included a second interaction with remittances that is more focused on the private sector. As noted, a lot of the expenditure towards health sector is provided from the private sector and hence investigating whether remittances have a contribution towards this spending would be a value added. Including 'interact 2' in our model estimation showed that remittances play the role of a complement to this expenditure since the coefficient of this variable was found positive and significant. This is an important and interesting finding for our model which has not been addressed before in the literature.
5. Also, from the social indicators, we found the mean years of schooling to contribute in decreasing the mortality rate. This variable was found significant across the different estimations indicating an expected relation between health and education: the higher the level of education the higher is the awareness on health issues and hence the better the health outcomes. Moreover, an important finding was highlighted related to the variable on 'women rights'. In most models' estimations this variable was found significant and contributing to the decreasing of child mortality: the more the women are enjoying their rights, the more they are able to reduce the risk of the mortality of their children.
6. Evidence has been also given to the importance of the geographic location in reducing child mortality denoted by the fact that being in Sub-Saharan country accentuates the mortality rates of children.

Before we generalise our results, it is important to check again the robustness of these results.

In order to test the robustness of our results, we estimate the same models as explained above using a different health outcome, which is the life expectancy (the variable definition and source are given above). Results of the OLS and the Fixed-effect estimations (the choice of this specification is according to panel diagnostic tests, as previously done) are presented in Annex 3.15. The estimations of this new variable also include the two interaction previously noted. However, better results were found when the variable on public expenditure of health (% GDP) was used rather than the total expenditure (for interact 1). Results of these models' estimations show the significant contribution of remittances in increasing life expectancy.

Also, the sGMM models' results are presented in Annex 3.16 (models (3b.6) and (3b.8)). These estimations confirm again the positive contribution of the remittances in improving the life expectancy of the receiving countries. These models have also showed mixed results related to the contribution of the public expenditure on health. The interaction variable in case of the life expectancy was found significant with a negative sign indicating the potential role of substitutes between those two variables. This result on the interaction variable 'interact 2' is different from that obtained with the child mortality rate. The results obtained from these models are analysed and interpreted below.

This leads us to conclude that regardless of the health outcome indicator used, there is a confirmed positive impact of remittances in boosting health outcomes in the developing countries. This result is very important for our analysis and reflects large potential benefits for developing countries. Moreover, the robustness check has also confirmed this important finding. We summarise the most important findings of the

two sets of estimation in the following points (summary of some of the results are given in table 3.4 below):

1. There is a strong and robust contribution of remittance flows (% GDP) in increasing the health outcomes of the receiving developing countries at the macro level. This impact confirms the role of remittances in contributing to boosting the human capital and hence development of the home countries;
2. The contribution of the health expenditure indicator towards improving the health status is a complex issue, where the private sector seems to be playing a leading role. Total expenditure (including private and public) on health (% of GDP) was found positively contributing to increase the health outcomes (through impact of child mortality). At the same time, the contribution of the public expenditure gave insignificant results in some of the estimations; this could reflect the inefficiency in the allocation of these expenses towards improving the health service and coverage. The limited empirical evidence that investigated this relation found insignificant contributions (e.g. Zhunio, et.al. 2012).
3. One of the important findings of our estimations is the interactive role of remittances with different types of health expenditure. This interaction variable has not been addressed before in the empirical evidence, according to our knowledge. There are two ways by which remittance flows can interact with the expenditure on health: (i) first, they can act as a substitute to the public sector expenditure, which means that in the inefficient contribution of public expenditure, remittances could substitute this expenditure, this affects positively the overall general health of the country through its impact on life expectancy: and (ii) second, remittances could also act as a complement to the private sector expenditure. This gives evidence on the fact that remittances are actually used in the private sector expenditure in providing health care and service. This could be considered a novel finding as, according to our knowledge this finding has not been explored in empirical evidence before.
4. Some of the social variables introduced showed robust results. In particular the mean years of schooling which was found across the different estimations and using the different health outcomes as contributing positively towards these outcomes. In addition the women rights variables showed interesting relation with health outcomes confirming the fact that the more the women are enjoying rights the more the health outcomes are ensured.
5. Financial variables were also introduced, given their importance on the decision to use the remittances money towards compensation, saving or expenditure on human capital (such as explained in the case of educational outcomes). Variable on ODA gives some indication on the status of the country in terms of its development and how these transfers could also contribute positively towards the progress on health (Chauvet, et. al, 2008).

Table 3.4 : Summary of the results of the impact of remittances on health Outcomes

Model ID	(3a.2)		(3a.4)		(3a.7)		(3b.8)	
	OLS Pool w interact 1		FE (time dummies) w interact 1		sGMM w interact 2		sGMM w interact 2	
Equ(3.3a) : Depend.var:	**Mortality rate of less than 5 yrs old**						**Robust: Life expect**	
const	281.953	***	23.395	**	0.912	***	0.381	
	25.920		2.321		46.770		0.095	
Dependent Var (-1)			0.900	***	26.161	***	0.912	***
			33.710		3.294		18.910	
Explanatory variables								
remit_gdp	-1.660	***	-0.186	***	-0.708	**	0.355	**
	-4.067		-3.422		-2.024	ln	2.059	ln
Socio-Economic variables								
Women_right	-0.931	*	0.140		-0.453	***	0.091	
	-1.951		1.105		-5.436		1.057	
Pop_15	-		-		-		0.027	
	-		-		-		0.494	
Pop_65	-		-		-		0.155	
	-		-		-		0.763	
Urban_pop	0.081		0.014		0.023		-0.012	
	1.618		0.273		0.668		-0.850	
schoolyear	-23.338	***	-3.410	**	-5.360	**	0.252	**
	-11.270	ln	-2.300	ln	-4.121		2.426	
tt_healthexp_gd	-1.333	***	-0.782	***	-0.997	***	-	
	-2.724		-5.335		-7.331		-	
pubexphealth_gd					-		0.215	
					-		1.559	
Interaction variables								
remXttlhealth	0.165	***						
	2.873							
remXPrivHealth			0.062	***			-0.015	**
			3.650				-2.434	
remitXpubhealth					0.045	***		
					5.200			
Control variables								
PopGrowth	-0.740		-1.477	***	-2.089	***		
	-0.825		-3.042		-3.987			
Sub-Saharan African (assf)	50.495	***	4.838	**	3.815	**	-2.259	***
	31.010		2.193		2.366		-2.948	
GDPcap_gro	-0.175		-0.045		-0.024		-0.069	**
	-1.013		-1.424		-0.545		-2.335	
GDPcap_level	-21.570	***	-0.309		-0.181		-0.005	
	-14.310		-0.295		-0.256		-0.082	
Int_rate							0.071	***
							3.334	
infla	-0.067	*	-0.134	***	-0.042	***	0.013	
	-1.670		-4.260		-2.941		1.131	
REER	0.000	***	-0.018		-0.014		0.014	***
	4.500	sq	-3.289	sq	-2.984	sq	3.801	
creditbank	-0.114	***	0.029		0.036	***	-0.015	**

	-6.150			1.501		3.202	-2.397	
ODA_gdp	-0.326	**		-0.244	***	-0.038	0.052	**
	-2.143			-3.073		-1.067	2.495	
Tests								
N. of observations	700			700		700	700	
				-0.183188		0.843748	*-3.08135*	
R2aj.	0.890	AR(1)		[0.8547]		[0.3988]	*[0.0021]*	
				-0.335458		0.360992	*-1.01413*	
F statistics	435.430	AR(2)		[0.7373]		[0.7181]	*[0.3105]*	
				20.0754		19.4153	*8.78325*	
(p value)	0.000	Sargan		[0.7880]		[1.0000]	*[0.9980]*	

*Notes: t-ratio un second row * significant at 10%; ** significant at 5%;*** significant at 1%*

3. Conclusion

The objective of this chapter is to assess the impact of migration on the development of the home countries in a macroeconomic context. There is a growing interest in addressing this issue following the increasing flows of both migrants and their remittances across the countries, in particular the developing countries. This has raised attention on both the impacts of these flows on these countries in the process of developing, and whether they accelerate this process or create barriers that slows it down.

Measuring the impact of migration on development is a difficult task given the complexity of the relation between the two variables which also holds a great deal of causality and a series of interrelations and hence is often called the "Migration-development Nexus". In attempting to understand this complicated relation, both theories and empirical evidence have addressed it in different ways and from different angles.

In achieving this difficult task we undertook a large empirical review of the literature that exist on this subject and classified them into three groups to facilitate drawing the broad lines on their results. The empirical review was found rather scattered and where most studies addressed one or two variable of development with little reference to the overall impact of development.

From this empirical literature we found evidence that migration affects development of the sending countries in both direct and indirect ways and that the indirect impact creates a substantial spillover impacts on development. Given this, we have identified two main channels through which migration can impact development through remittance flows: investment and human capital. It was argued that these two channels are crucial to enhance the process of development, where investment is the engine of the development and the human capital is the fuel for this engine. We argued hence, that giving evidence of a positive contribution of remittance flows on these two channels would translate into positive impacts on development.

Departing from this idea, we estimate three empirical models on the potential contribution of remittances towards: investment, education outcome and health outcomes (the two latter representing the human capital). The findings of our estimations give evidence of the following in the developing countries and when countries' overall characteristics are taken into account:

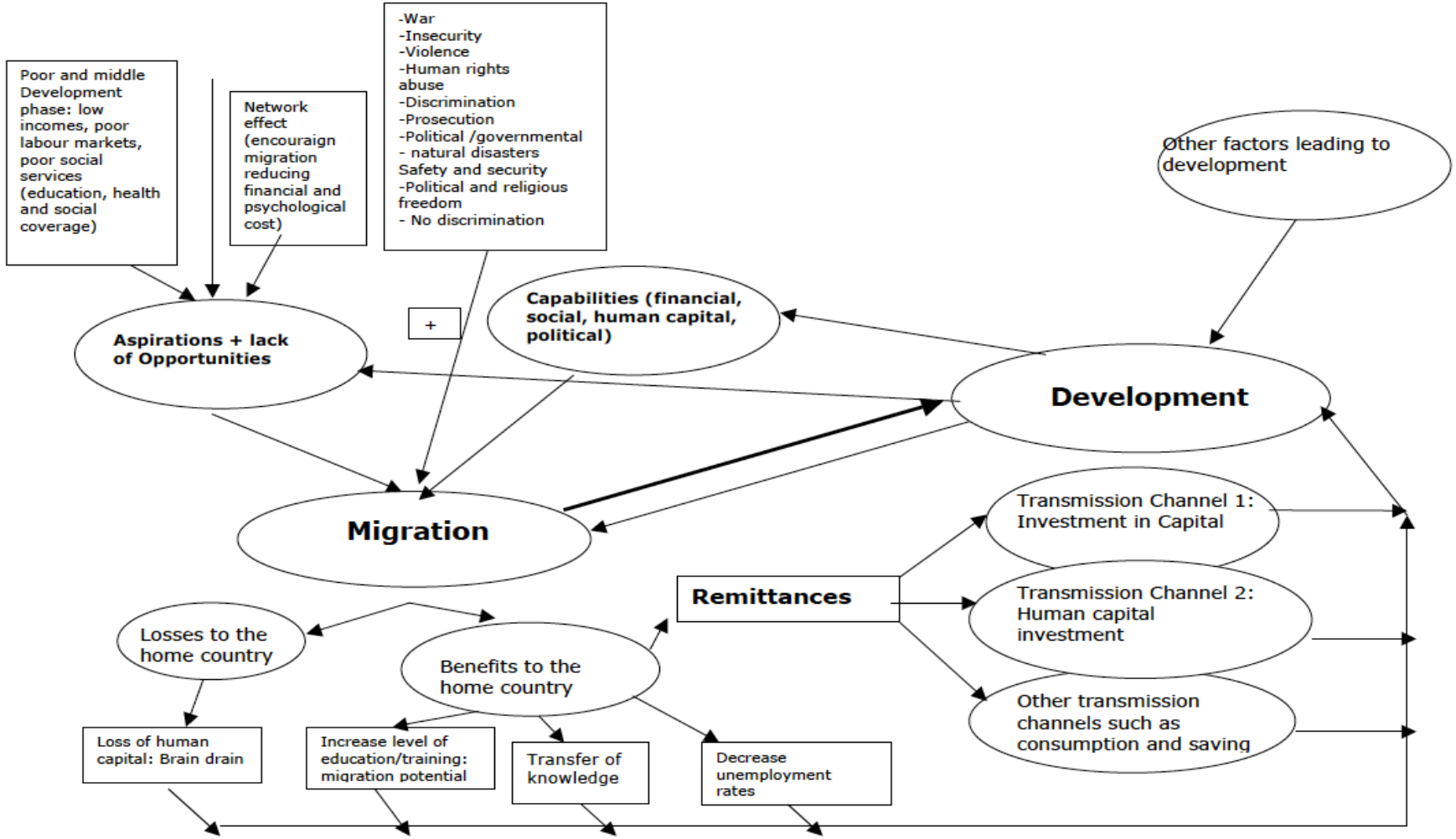
(1) Remittance flows have a direct and positive contribution towards investment;
(2) Remittances have also an indirect positive contribution towards investment in compensating the poorly functioning financial institutions in these developing countries. Remittances ease liquidity constraints and substitute the shortage of credits due to the distorted financial markets in a way that would impact positively on investment;
(3) Remittance flows have a direct and positive contribution in increasing the educational outcomes (measured by their contribution in increasing the mean years of schooling and increase the ratio of tertiary education);
(4) These flows have also an indirect contribution towards the educational outcomes in the way they substitute for the non-performing or low public expenditure on education;
(5) Remittance flows have a direct and positive contribution in improving the health outcomes (measured by their contribution in reducing the child mortality rates of less than 5 years old and their contribution in improving life expectancies);
(6) They have an a indirect positive contribution to these health outcomes in two ways: complementing the private expenditure on health when the total expenditure is found not significantly contributing to improving the child mortality rate; and substituting for the public expenditure to fill in shortage in health care to improve the life expectancy).

These results are considered innovative in the way they gather both economic and social dimensions for development. Moreover, they have given evidence of both the direct and indirect impacts of remittances in these different aspects.

A future interesting empirical step would be to integrate the outputs of these three models in a model of growth (in its broad definition) to test their long-term impact on development. This would be another innovation, as even though there are some studies that looked into this long term impact (e.g. supply side with a Cobb-Douglas function as done by Rao and Hassan, 2011 and demand side using the Y equation with, C, I, G by Glytsos, 2005.) they looked into the direct impact of remittances (by integrating it directly into the equations) and where the indirect effects were not considered, even though we have seen from our analysis that they are quite considerable in such a way that they might surpass the effects of these direct ones.

Annexes

Annex 3.1. The Migration – Development Nexus Diagram



Source: Authors' Classifications

Annex 3.2.

List of developing countries considered in the empirical evidence on the impact of remittances on investment and human capital

Albania
Argentina
Armenia
Bangladesh
Benin
Bolivia
Brazil
Cambodia
Cameroon
China
Colombia
Costa Rica
Cote d'Ivoire
Dominican Republic
Ecuador
Egypt, Arab Rep.
El Salvador
Ghana
Guatemala
Guinea
Honduras
India
Indonesia
Israel
Jordan
Kenya
Korea, Rep.
Lesotho
Malaysia
Mexico
Morocco
Mozambique
Namibia
Nepal
Nicaragua
Pakistan
Panama
Paraguay
Peru
Philippines
Senegal
South Africa
Sri Lanka
Sudan
Swaziland
Thailand
Togo
Tunisia
Turkey
Venezuela, RB

Annex 3.3. System Generalized Method of Moments regressions (sGMM) following Blundell and Bond, 1998

Several econometric problems occur when estimating equations in Panel database. In case of the database used for our models (investment, education and health), we identified the following:

1. Many of the independent variables that are assumed to be exogenous when applying the OLS or Fixed effects (or within) models are in fact endogenous. This effect together with other omitted or unobserved effects are hence reflected in the error term, which in turn becomes correlated with the regressors. This results in biased results.
2. The Fixed effect (time-invariant) of countries' characteristics could be correlated with explanatory variables.
3. The panel dataset is for a shorter duration T (T=17 or 14) than the number of the countries dimension N (N=50).

Therefore, we use the System Generalized Models of Moments (sGMM) to overcome the problem of endogeneity (Blundel and Bond, 1998). This model is considered a modification to the GMM model that was introduced by Arellanbo and Bond (1991). This original GMM model was based on principle of using the first differences of lags of the endogenous variable(s) for the equation. The idea behind this is that taking the first differencing of the regressors, the fixed country effect is removed (as this doesn't vary across time) and only the real variability will be shown. Moreover, the dependent variable is instrumented with lagged values.

So if our original equation was :

$$Y_{i,t}= \beta_0 +\beta_1 X_{i,t}+ \beta_2 W_{i,t} + u_{it} + \varepsilon_{it} \quad (1)$$

$$v_{it}= u_{it} + \varepsilon_{it}$$

Where X are exogenous regressors, while W are predetermined and endogenous regressors that could contain lags of Y and will be correlated with the error term.

It will be transformed to:

$$\Delta Y_{i,t}= \Delta\beta_1 Y_{i,t-1}+ \beta_{24}\Delta_{i,t} + \Delta \varepsilon_{it} \quad (2)$$

The Arellano-Bond (1991) method seems to have solved the problems mentioned above however it is best applicable for the Panel data where time T is smaller than the groups N.

However, some weaknesses were identified by Arellano and Bover (1995) and Blundell and Bond (1998) where it was found that the lagged levels of regressors represent poor instruments for first differenced variables, especially if the variables are close to a random walk. These authors suggested including both lagged levels and lagged differences as instruments. This modification to the original GMM estimator is called the sGMM estimator, since it specifies the model as a system of equations. Adding the level lags include more instruments and is proved to improve dramatically the first differenced GMM estimation of the models. However, while applying sGMM two important points need to be highlighted: (1) including level lags as instruments can result an increasingly large number of instruments, this all depends on the number of countries included in the panel; and (2) including first differenced instruments used for variables should be assumed uncorrelated with the country effect (Roodman, 2006). Therefore, it could be better to only include in the levels equations those variables that are uncorrelated with the fixed effects.

Usage of Instruments

One important issue that relate to the use of the sGMM estimator given the two lags (level and differences) is to control the number of instruments that are being used. Instruments can be constructed from the second lag and deeper as they will not be correlated with the current error term, while the first lag might be in the form of differences or lagged levels. Some authors argue that even the usage of third and fourth lags (in case of long time series) might be even better to ensure the non-correlation with the current error term. The higher the number of instruments, the weaker would be the estimation and the less would be the degrees of freedom (which are the number of instruments – the number of endogenous variables).

(a) Sargan test (also called the Hanson Test or the J test)
We use the Sargan test for over-identifications of instruments. The null hypothesis of this test Ho is that the instruments as a group are exogenous (they are not correlated to the error term)". Hence, if the p value of the test > 10% (0.1) this means we accept the null hypothesis that the instruments are exogenous and there is no over-identification and that the instruments are valid. (the higher the p-value of the Sargan statistic the better).

(b) Auto regression tests: AR(1) and AR(2)

The Arellano – Bond test for autocorrelation tests for the existence of correlation between the variable and its lagged values. The null hypothesis of the test is that there is no autocorrelation and is applied to the differenced residuals. In estimating sGMM we test for autocorrelation of order 1 AR(1) and order 2 AR(2).

As would be expected, the AR(1) rejects the null hypothesis since the process using the first differences entails autocorrelation. However, the AR(2) test is crucial in determining of the selected estimators are free from autocorrelation and hence we aim at not having to reject the Ho. Normally with test of value >10% (0.1) we could ensure the absence of autocorrelation.

Normally the p values could be as follows:
* < 1% (0.01) very strong against Ho
* 1 to 5% (0.01-0.05) strong against Ho
* 5 to 10% (0,05-0.1) weak against Ho
* >10%(>0.1) Not against Ho

(c) **The Wald test** is carried out to test the significance of a subset of regressors. There are two Wald test are computed linked to the sGMM models. The first test Wald (joint) to refer to the joint nullity of all parameters (which works like the F test). The second Wald (time dummies) test looks into the joint nullity of time dummies.

References

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Blundell, C. R.W. and S.R. Bond (1998b), GMM Estimation with Persistent Panel Data : An Application to Production Functions. The Institute For Fiscal Studies Working Paper Series No. W99/4.

Mileva, Elitza (2007) Using Arellano – Bond Dynamic Panel GMM Estimators in Stata, Economics Department, Fordham University.

Annex 3.4. Correlation matrix of variables in the investment model

Correlation Coefficients at 5% critical value,
(two-tailed) = 0.0672 for n = 850.00,

	Inv_gdp	remit_gdp	M2_gdp	creditbank	creditprivate	GDP_gro	GDPcap_level	Dint_rate	REER	openess	ODA_gdp
Inv_gdp	1.00	0.35	0.37	0.22	0.31	0.21	0.06	-0.04	0.01	0.23	0.02
remit_gdp		1.00	0.05	-0.18	-0.14	-0.01	-0.25	-0.13	-0.09	0.32	0.17
M2_gdp			1.00	0.79	0.78	0.08	0.29	-0.19	-0.14	0.31	-0.28
creditbank				1.00	0.92	0.01	0.39	-0.11	-0.16	0.16	-0.36
creditprivate					1.00	0.02	0.46	-0.17	-0.12	0.33	-0.34
GDP_gro						1.00	-0.04	-0.16	-0.03	0.01	0.10
GDPcap_level							1.00	0.05	-0.09	0.09	-0.46
Dint_rate								1.00	0.00	-0.19	0.03
REER									1.00	-0.06	0.15
openess										1.00	0.03
ODA_gdp											1.00

Annex 3.5. **Results of the OLS Pooled regression of the Investment (%GDP) on Remittances (% GDP) via Financial development indicators**.

Model ID	(1)		(2)		(3)		(4)	
Equ(3.1) : Dependent variable: Investment percent of GDP (Inv_gdp)								
const	7.701	**	6.208	**	9.805		13.978	***
	2.450		2.151		3.346		4.678	
Explanatory variables								
remit_gdp	0.303	**	0.656	***	0.475	***	0.439	***
	2.546		12.110		14.410		10.420	
GDP_gro	0.433	***	0.375	***	0.428	***	0.410	***
	7.252		6.905		7.746		7.406	
Fin development variables								
M2_gdp			0.112	***				
			13.670					
creditbank					0.072	***		
					11.080			
creditprivate							0.091	***
							11.800	
Interaction variables								
remitXM2			-0.007	***				
			-7.773					
remitXcredbank					-0.005	***		
					-7.993			
remitXcredpriv							-0.003	***
							-2.681	
Control variables								
Dint_rate	0.077	**	0.096	***	0.068	**	0.098	***
	2.546		3.529		2.443		3.500	
l_GDPcap_level	0.983	***	0.490		0.313		-0.149	
	2.943		1.589		0.973		-0.456	
openess	0.019	***	-0.003		0.004		-0.004	
	3.223		-0.447		0.645		-0.759	
infla	-0.051	**	-0.027		-0.025		-0.759	
	-2.505		-1.465		-1.338		-1.327	
REER	0.019	***	0.024	***	0.024	***	0.024	***
	2.704		3.883		3.665		3.728	
PopGrowth	-0.966		-0.543	*	-0.753	***	-0.971	***
	-3.196		-1.940		-2.681		-3.392	
ODA_gdp	0.053		0.142	***	0.110	**	0.098	**
	1.009		2.992		2.278		2.027	
Tests								
N. of observations	850		850		850		850	
R2aj.	0.221		0.362		0.332		0.332	
F statistics (p value)	27.814	*0.0*	44.783	*0.0*	39.350	*0.0*	39.319	*0.0*
RESET Ramsey test	*Not linear*		*Not linear*		*Not linear*		*Not linear*	

Notes: T ratio in second row *; * significant at 10%; ** significant at 5%;*** significant at 1%*

Annex 3.6. **Results of the OLS Pooled regression <u>for linear estimations</u> of the Investment (%GDP) on Remittances (% GDP) via Financial development indicators**.

Model ID	(1.1)		(1.2)		(1.3)		(1.4)	
Equ(3.1) : Dependent variable: Investment percent of GDP (l_Inv_gdp)[1]								
t-ratio in second row								
const	2.286	***	2.261	***	2.391	***	11.361	***
	16.450		17.510		17.990		8.930	
Explanatory variables								
remit_gdp	0.011	***	0.022	***	0.016	***	0.015	***
	8.439		9.413		10.920		8.075	
GDP_gro	0.021	***	0.019	***	0.021	***	0.411	***
	7.633		7.309		8.077		7.812	
Fin development variables								
M2_gdp			0.005	***				
			11.840					
creditbank					0.003	***		
					8.910			
creditprivate							0.003	***
							9.555	
Interaction variables								
remitXM2			-0.000	***				
			-5.614					
remitXcredbank					-0.000	***		
					-4.122			
remitXcredpriv							-0.000	
							-1.102	
Control variables								
Dint_rate	0.005	***	0.005	***	0.004	***	0.005	***
	3.468		4.130		3.582		4.278	
l_GDPcap_level	0.055	***	0.033	**	0.026	*	0.011	*
	3.701		2.393		1.759		0.769	
openess	0.001	***	0.000	***	0.000		0.000	
	3.312		0.051		1.515		0.039	
infla	-0.003	***	-0.002	**	-0.002	**	-0.002	**
	-3.137		-2.034		-2.074		-2.119	
REER	0.001	**	0.001	***	0.001	***	0.001	***
	2.300		3.393		3.117		3.037	
PopGrowth	-0.026	*	-0.016		-0.022	*	-0.032	**
	-1.946		-1.296		-1.773		-2.495	
ODA_gdp	0.003		0.006	***	0.005	**	0.005	**
	1.195		3.072		2.189		2.131	
Tests								
N. of observations	700		700		700		700	
R2aj.	0.231		0.360		0.310		0.322	
F statistics *(p value)*	24.334	0.000	36.711	0.000	29.515	0.000	31.206	0.000
Linearity RESET Sq	0.252	0.616	0.065	0.798	0.128	0.721	1.161	1.161
Linearity RESET Cub.	0.236	0.627	0.030	0.862	0.100	0.752	0.995	0.995
Normality (Chi2(2))	15.177	0.001	10.514	0.005	7.910	0.019	11.899	0.003
Heteroskedasticity (Chi2(x))	257.889	0.000	262.609	0.000	287.826	0.000	284.306	0.000

Notes:1.Values of the coefficients of the variables in this 2nd round of estimations are much lower due to taking the log of the dependent variable, which means that the coefficient represents the proportional change (and not the absolute change) in invest_gdp given the change in the regressor. ** significant at 10%; ** significant at 5%;*** significant at 1%*

Annex 3.7. Results of the Fixed Effect (FE) OLS regression (with control for time) of Investment (%GDP) on Remittances (% GDP) via Financial development indicators

Model ID	(1.5)		(1.6)		(1.7)		(1.8)	
	Fixed effect		Fixed effect		Fixed effect		Fixed effect	
Equ(3.1) : Dependent variable: Investment percent of GDP (l_Inv_gdp)								
P ratio un second row								
const	-2.522	***	-1.139	**	-2.434	***	-1.798	***
	-4.476		-2.423		-4.275		-3.241	
Explanatory variables								
remit_gdp	0.012	***	0.004		0.024	***	0.002	
	4.866		0.798		5.775		0.455	
GDP_gro	0.006	***	0.007	***	0.007	***	0.008	***
	3.031		3.527		3.267		4.015	
Fin development variables								
M2_gdp			-0.001					
			-1.254					
creditbank					0.002	**		
					2.039			
creditprivate							0.003	***
							4.326	
Interaction variables								
remitXM2			0.000					
			1.047					
remitXcredbank					-0.000	***		
					-3.577			
remitXcredpriv							0.000	***
							4.023	
Control variables								
Dint_rate	0.003	**	0.006	***	0.003	**	0.002	*
	2.264		4.744		2.264		1.942	
l_GDPcap_level	0.632	***	0.445	***	0.611	***	0.533	***
	8.802		7.413		8.342		7.471	
openess	0.003	***	0.003	***	0.003	***	0.003	***
	4.807		4.250		4.981		4.641	
infla	-0.002	***	-0.002	***	-0.002	***	-0.002	***
	-3.886		-3.973		-3.628		-4.104	
REER	0.000	*	0.001	***	0.000	*	0.000	
	1.705		3.385		1.745		1.067	
PopGrowth	0.057	***	0.097	***	0.055	***	0.051	**
	2.807		5.089		2.731		2.558	
ODA_gdp	0.009	***	0.009	***	0.008	***	0.009	***
	3.256		3.089		2.868		3.298	
Tests								
N. of observations	700		700		700		700	
R2aj.	0.717		0.706		0.722		0.739	
F statistics *(p value)*	25.941	0.000	29.027	0.000	25.864	0.000	28.083	0.000
Fischer Vs OLS			17.574	FE>OLS	21.571	FE>OLS	23.263	FE>OLS
Breusch Pagan			949.934	RE>OLS	1137.570	RE>OLS	1141.2	RE>OLS
Hausmann	77.371	FE>RE	89.524	FE>RE	86.499	FE>RE	96.989	FE>RE
Wald Time Dummies	17.654	Time	21.020	time	36.233	Time	36.726	time

*Notes: * significant at 10%; ** significant at 5%;*** significant at 1%*

Annex 3.8. Results of the sGMM estimators of Investment (%GDP) on Remittances (% GDP) via Financial development indicators

Model ID	(1.9)		(1.10)		(1.11)		(1.12)	
	sGMM		sGMM		sGMM		sGMM	
Equ(3.1) : Dependent variable: Investment percent of GDP (l_ Inv_gdp)								
const	0.5973	*	2.1317	***	0.0707		2.3609	***
	1.7700		4.6200		0.1558		5.2530	
Inv_gdp(-1)	0.6506	***	0.3219	***	0.8088	***	0.2579	**
	18.1600		4.0850		16.1500		2.1390	
Explanatory variables								
remit_gdp	0.0061	*	0.0307	***	0.0175	***	0.0171	**
	1.8800		3.3540		5.1880		2.5220	
GDP_gro	0.0139	***	0.0200	***	0.0251	***	0.0161	***
	4.3170		4.6070		4.9720		4.3900	
Fin development variables								
M2_gdp			0.0046	***				
			3.1110					
creditbank					-0.0003			
					-0.3411			
creditprivate							0.0029	*
							1.8090	
Interaction variables								
remitXM2			-0.0005	***				
			-2.9910					
remitXcredbank					-0.0004	***		
					-3.6200			
remitXcredpriv							-0.0004	**
							-2.2150	
Control variables								
Dint_rate	0.0113	***	0.0065	*	0.0001		-0.0002	
	3.8090		1.7440		0.0435		-0.0631	
l_GDPcap_level	0.0339		-0.0873		0.0169		-0.0432	
	1.0440		-1.2150		0.3969		-0.9249	
openess	0.0000		-0.0001		-0.0004		-0.0004	
	-0.0352		-0.1715		-0.4601		-0.7497	
infla	-0.0071	***	-0.0006		0.0029	*	0.0021	
	-4.6260		-0.2348		1.7690		0.7878	
REER	0.0016	*	0.0041	***	0.0015		0.0028	**
	1.9040		3.8670		1.3870		2.2390	
PopGrowth	-0.0888	**	-0.1408	***	0.0172		-0.1785	***
	-2.1900		-3.2880		0.2294		-3.6880	
ODA_gdp	0.0026		0.0036		0.0020		0.0082	
	0.6430		0.6686		0.4870		1.0750	
Tests								
N. of observations	700		700		700		700	
No. of instruments	70		66		68		80	
AR(1)	-3.69975		-2.83377		-3.76867		-2.18763	
	[0.0002]		[0.0046]		[0.0002]		[0.0287]	
AR(2)	0.890431		0.353815		0.683079		-0.35392	
	[0.3732]		[0.7235]		[0.4946]		[0.7234]	
Sargan Over_ID	27.202		28.6634		18.6204		27.0987	
	[0.9908]		[0.9270]		[0.9996]		[0.9994]	
Wald (joint)	611.84		97.2848		419.292		237.051	
	[0.0000]		[0.0000]		[0.0000]		[0.0000]	
Wald (time dummies)	*66.6325*		66.5999		52.6242		108.871	
	[0.0000]		[0.0000		[0.0000]		[0.0000]	

Notes: **(**t-ratio in second row); * *significant at 10%;* ** *significant at 5%;*** *significant at 1%*

Annex 3.9. Correlation matrix of variables in Educational Outcomes Estimations

Correlation Coefficients at 5% critical value,
(two-tailed) = 0.0672 for n = 850.00,

remit_gdp	schoolyear	Tert_enrolment	women_right	pop_15	urban_pop	teacher_pup	pubexpeduc_gdp	
1	-0.0078	-0.1402	-0.0578	0.1389	-0.1851	-0.1236	0.423	remit_gdp
	1	0.7113	-0.035	-0.6294	0.5521	0.6481	0.1673	schoolyear
		1	-0.0043	-0.6881	0.7275	0.6084	0.0471	Tert_enrolment
			1	-0.0697	0.0787	0.0356	-0.036	women_right
				1	-0.4819	-0.6814	0.0429	pop_15
					1	0.5738	0.051	urban_pop
						1	0.1565	teacher_pup
							1	pubexpeduc_gdp
pubexphealth_gd	PopGrowth	GDPcap_gro	GDPcap_level	int_rate	infla	REER	creditbank	
0.1258	-0.1355	0.0307	-0.2354	-0.1279	-0.0627	-0.099	-0.1827	remit_gdp
0.3872	-0.4567	0.16	0.6476	0.0069	-0.0796	-0.1546	0.3575	schoolyear
0.3733	-0.3237	0.0903	0.8021	-0.0013	-0.0581	-0.1265	0.3678	Tert_enrolment
0.1322	0.0265	-0.0945	0.0568	0.1491	0.0533	0.0721	-0.0691	women_right
-0.1748	0.6519	-0.2918	-0.6264	-0.0612	0.0313	0.2099	-0.4858	pop_15
0.4592	-0.1714	-0.0317	0.7278	0.1717	0.0638	-0.1237	0.2321	urban_pop
0.2829	-0.3744	0.0832	0.5546	0.111	0.0572	-0.1322	0.4503	teacher_pup
0.4124	0.0589	-0.1369	0.1597	-0.1523	-0.0458	-0.0524	0.1375	pubexpeduc_gdp
1	-0.0284	-0.0718	0.4198	0.0677	-0.0526	-0.0757	0.1576	pubexphealth_gd
	1	-0.313	-0.2315	-0.0697	-0.0157	0.216	-0.1468	PopGrowth
		1	0.0193	-0.1698	-0.0948	-0.0759	0.039	GDPcap_gro
			1	0.0858	0.0012	-0.0996	0.3819	GDPcap_level
				1	0.6622	-0.0127	-0.1016	int_rate
					1	-0.0427	-0.1856	infla
						1	-0.1601	REER
							1	creditbank

Annex 3.10. Results of the OLS Pooled and Fixed Effect Estimations of Educational outcomes (Mean years of schooling)

Model ID	(2a.1)		(2a.2)		(2a.3)		(2a.4)		(2a.5)	
	OLS Pooled		OLS Pooled w interact.		OLS Pooled linear w interact		Fixed effect w interact (w/out time dummies)		Fixed effect w interact (time dummies)	
Equ(3.2a) : Dependent variable: Mean years of schooling										
const	3.477	**	3.493	***	8.173	***	8.933	***	6.407	***
	2.580		2.602		12.500		17.320		11.480	
Explanatory variables										
remit_gdp	0.014	*	0.060	***	0.076	***	0.013	*	0.001	
	1.648		3.079		3.987		1.858		0.134	
Socio-Economic variables										
Women_right	-0.130	***	-0.118	**	-0.105	**	-0.007		0.002	
	-2.830		-2.570		-2.348		-0.570		0.111	
Pop_15	-0.039	**	-0.050	***	-0.009	*	-0.109	***	-0.025	**
	-2.379		-2.977		-0.497		-11.600		-2.055	
Urban_pop	0.009	*	0.009	**	0.000		0.001		0.000	***
	1.963		2.023		0.398	sq	8.574	sq	3.580	sq
Teacher_pup	0.046	***	0.042	***	0.060	**	0.006		0.003	
	5.946		5.292		8.028		1.562		0.870	
pubexpeduc_gdp	0.034		0.111	**	0.066		0.032	**	0.027	*
	0.949		2.410		1.470		1.965		1.761	
pubexphealth_gd	0.203	***	0.193	***	0.200	***	0.039		0.024	
	3.901		3.727		4.019		1.382		0.932	
Interaction variables										
remitXeducexp	-		-0.006	***	-0.007	***	-0.001		0.000	
			-2.620		-3.198		-1.016		-0.225	
Control variables										
PopGrowth	-0.445	***	-0.417	***	-0.574	***	-0.108	***	-0.081	**
	-4.401		-4.108		-5.836		-2.966		-2.390	
GDPcap_gro	0.029	*	0.030	*	0.031	*	0.002		0.001	
	1.738		1.785		1.935		0.626		0.232	
GDPcap_level	0.726	***	0.693	***	0.000	***	0.000		0.000	
	5.358	log	5.114	log	8.341		-0.111		-1.949	
Int_rate	-0.005		-0.001		0.002		0.000		0.002	
	-0.648		-0.112		0.233		0.193		0.981	
infla	-0.010	**	-0.011	**	-0.013	**	-0.001		0.000	
	-1.982		-2.211		-2.575		-0.517		-0.453	
REER	0.001		0.001		0.000		-0.002	***	0.000	
	0.669		0.845		0.050		-4.016		0.094	
creditbank	-0.001		-0.002		0.000		0.001		0.001	
	-0.430		-0.799		-0.200		0.431		0.668	
Tests										
N. of observations	700		700		700		700		700	
R2aj.	0.594		0.598		0.623		0.985		0.987	
F statistics	74.106		70.216		77.956		718.479		709.284	
(p value)	0.000		0.000		0.000		0.000		0.000	
RESET Ramsey for Linearity	Not lin.		Not lin		Linear		Linear		Linear	

Notes: t ratio in second row *; * significant at 10%; ** significant at 5%; *** significant at 1%*

Annex 3.11 Results of the OLS Pooled and Random Effect Estimations of Educational outcome (Tertiary enrolment)- Robustness test

Model ID	(2b.1)		(2b.2)		(2b.3)		(2b.4)		(2b.5)	
	OLS Pooled		OLS Pooled w interact.		OLS Pooled linear w interact		Random effect w/out interact		Random effect w interact	
Equ(3.2b) : Dependent variable: Tertiary Enrollment										
const	35.301	***	35.254	***	34.182	***	-1.140	*	-11.522	*
	5.860		5.861		5.648		-3.932		-1.836	
Explanatory variables										
remit_gdp	0.162	***	0.348	***	0.509	*	0.843	***	1.042	***
	3.038		2.873		1.847	ln	3.979	ln	4.816	ln
Socio-Economic variables										
Women_right	-1.154	***	-1.092	***	-1.140	***	0.093		0.067	
	-4.015		-3.773		-3.932		0.615		0.446	
Pop_15	-0.745	***	-0.783	***	-0.733	***	0.098		0.116	
	-5.981		-6.197		-5.875		0.760		0.905	
pop_65	1.024	***	0.940	**	1.076	***	2.245	***	2.289	***
	2.721		2.478		2.863		4.670		4.797	
pubexpeduc_gdp	-1.149	***	-0.868	***	-1.091	***	0.412	***	0.553	***
	-5.282		-3.193		-4.272		2.699		3.554	
pubexphealth_gd	1.499	***	1.442	***	1.529	***	0.364		0.365	
	4.916		4.708		5.012		1.285		1.301	
Interaction variables										
remitXeducexp	-		-0.022	*	0.007		-		-0.023	***
			-1.712		1.116				-3.731	
Control variables										
PopGrowth	1.636	**	1.725	***	1.609	**	-0.420		-0.529	
	2.556		2.690		2.506		-1.089		-1.381	
GDPcap_gro	-0.234	**	-0.226	**	-0.237	**	0.065		0.065	
	-2.257		-2.178		-2.275		1.583		1.600	
GDPcap_level	2.062	***	2.062	***	2.067	***	2.109	***	2.055	***
	17.710		17.740		17.440		10.030		9.817	
Int_rate	-0.168	***	-0.154	***	-0.165	***	0.021		0.019	
	-3.563		-3.220		-3.452		0.831		0.760	
infla	0.034		0.028		0.034		-0.033	***	-0.035	***
	1.071		0.875		1.094		-2.737		-2.955	
REER	0.000		0.001		0.003		0.007		0.008	*
	-0.029		0.109		0.227		1.509		1.678	
creditbank	-0.002		-0.007		-0.002		0.015		0.020	
	-0.171		-0.538		-0.127		1.204		1.619	
Tests										
N. of observations	700		700		700		700		700	
R2aj.	0.728		0.729		0.727	BP[1]	RE>OLS		RE>OLS	
F statistics	145.225		135.441		134.153	Hs[2]	RE>FE		RE>FE	
(p value)	0.000		0.000		0.000		0.946593		0.970674	
RESET Ramsey for Linear	No		No		yes		yes		yes	

Notes : t ratio in second row *; 1.BP is Breusch-Pagan test and 2. Hs is Hausman test : * significant at 10%; ** significant at 5%;*** significant at 1%*

Annex 3.12. Results of the sGMM Estimations of Educational Outcomes

Model ID	(2a.6)		(2a.7)		(2b.6)		(2b.7)	
	sGMM w/out interact		sGMM w interaction		sGMM w/out interact		sGMM w interaction	
Equ(3.2a & 3.2 b): Depend. Var	**Mean years of schooling**				**Robustness: Tertiary enrollment ratio**			
const	3.116		-0.524		-31.972	***	-26.232	***
	1.315		-0.282		-3.103		-3.313	
Dependent Var (-1)	0.688	***	0.840	***	0.775	***	0.482	***
	5.948		9.481		10.840		3.999	
Explanatory variables								
remit_gdp	0.015	**	0.019	**	1.175	**	3.613	***
	2.359		2.135		2.210	ln	3.822	ln
Socio-Economic variables								
Women_right	-0.133	**	-0.053		0.811	*	1.387	***
	-2.213		-1.277		1.901		3.269	
Pop_15	0.009		0.044		0.038		-0.591	**
	0.158		1.233		0.181		-2.387	
Pop_65	-		-		0.684		-0.010	
	-		-		0.800		-0.011	
Urban_pop	-0.038	**	-0.010	*	-		-	
	-2.049	sq	-1.878	sq	-		-	
Teacher_pup	0.059	**	0.019	*	-		-	
	2.027		1.677					
pubexpeduc_gdp	-0.055		0.000		0.920		1.677	***
	-1.290		0.014		1.616		2.919	
pubexphealth_gd	0.017		0.138	***	-1.665	**	-1.982	***
	0.247		3.007		-2.339		-2.782	
Interaction variables								
remitXeducexp	-		-0.002	**	-		-0.031	**
	-		-2.121		-		-2.153	
Control variables								
PopGrowth	-0.468	*	0.078		2.066		6.428	***
	-1.851		0.731		1.436		3.933	
GDPcap_gro	0.032	**	-0.001		0.232	***	0.327	***
	1.975		-0.162		3.496		4.045	
GDPcap_level	0.074		0.126	***	0.966	***	2.245	***
	0.803		3.366		2.598		4.265	
Int_rate	0.058	**	0.029	**	0.320	***	0.510	***
	2.514		2.191		4.667		5.524	
infla	-0.003		-0.007	**	0.052		0.074	
	-0.376		-2.148		1.103		1.414	
REER	0.007	*	-0.004		0.080	**	0.110	***
	1.805		-2.355		2.442		3.442	
creditbank	0.017	***	-0.001		0.022		0.005	
	3.648		-0.589		1.324		0.266	
Tests								
N. of observations	700		700		700		700	
No. of instruments	51		89		99		88	
AR(1)	-2.32136 [0.0203]		-2.05581 [0.0398]		-3.7526 [0.0002]		-3.917 [0.0001]	
AR(2)	1.216 [0.2240]		1.9215 [0.0547]		1.28087 [0.2002]		0.771297 [0.4405]	
Sargan Over_ID	12.8657 [0.9548]		19.3134 [1.0000]		21.3584 [1.0000]		14.132 [1.0000]	
Wald (joint)	1449.13 [0.0000		1251.59 [0.0000]		7724.13 [0.0000]		5987.62 [0.0000]	
Wald (time dummies)	66.463 [0.0000]		48.6054 [0.0000]		76.8176 [0.0000]		99.3286 [0.0000]	

*Notes: t ratio in second row ; * significant at 10%; ** significant at 5%;*** significant at*

Annex 3.13. Correlation Matrix of variables in the Health Outcomes Estimations

Correlation Coefficients, using the observations 1:01 - 50:14
5% critical value (two-tailed) = 0.0741 for n = 700

mort5_rate	life_expect	remit_gdp	women_right	pop_15	pop_65	urban_pop	schoolyear	tt_healthexp_gd		
1	-0.9444	0.0188	-0.0552	0.7651	-0.6388	-0.6096	-0.664	-0.1991	mort5_rate	
	1	-0.1024	0.0947	-0.7375	0.665	0.6348	0.5884	0.1425	life_expect	
		1	-0.0578	0.1389	-0.0355	-0.1851	-0.0078	0.1848	remit_gdp	
			1	-0.0697	0.1385	0.0787	-0.035	0.0836	women_right	
				1	-0.8378	-0.4819	-0.6294	-0.0506	pop_15	
					1	0.4977	0.6363	0.1815	pop_65	
						1	0.5521	0.4155	urban_pop	
							1	0.3134	schoolyear	
								1	tt_healthexp_gd	

pubexphealth_gd	PopGrowth	afss	GDPcap_gro	GDPcap_level	int_rate	infla	REER	creditbank	ODA_gdp	
-0.3546	0.4463	0.7811	-0.1449	-0.6236	-0.0823	-0.0041	0.2753	-0.4686	0.5506	mort5_rate
0.2886	-0.3672	-0.841	0.1419	0.6128	0.0837	0.0022	-0.2111	0.3899	-0.4868	life_expect
0.1258	-0.1355	0.0547	0.0307	-0.2354	-0.1279	-0.0627	-0.099	-0.1827	0.1563	remit_gdp
0.1322	0.0265	-0.069	-0.0945	0.0568	0.1491	0.0533	0.0721	-0.0691	-0.0219	women_right
-0.1748	0.6519	0.5789	-0.2918	-0.6264	-0.0612	0.0313	0.2099	-0.4858	0.4845	pop_15
0.241	-0.6263	-0.487	0.2696	0.6155	0.0252	-0.0595	-0.1064	0.2348	-0.3068	pop_65
0.4592	-0.1714	-0.4075	-0.0317	0.7278	0.1717	0.0638	-0.1237	0.2321	-0.3488	urban_pop
0.3872	-0.4567	-0.321	0.16	0.6476	0.0069	-0.0796	-0.1546	0.3575	-0.3681	schoolyear
0.7625	-0.0588	0.0476	-0.0856	0.2668	0.0056	-0.0964	-0.0884	0.0876	0.0659	tt_healthexp_gd
1	-0.0284	-0.0634	-0.0718	0.4198	0.0677	-0.0526	-0.0757	0.1576	0.0206	pubexphealth_gd
	1	0.356	-0.313	-0.2315	-0.0697	-0.0157	0.216	-0.1468	0.2454	PopGrowth
		1	-0.1812	-0.3547	-0.0972	-0.0476	0.1952	-0.2806	0.4152	afss
			1	0.0193	-0.1698	-0.0948	-0.0759	0.039	0.0526	GDPcap_gro
				1	0.0858	0.0012	-0.0996	0.3819	-0.4507	GDPcap_level
					1	0.6622	-0.0127	-0.1016	0.0239	int_rate
						1	-0.0427	-0.1856	0.0578	infla
							1	-0.1601	0.1791	REER
								1	-0.3482	creditbank
									1	ODA_gdp

Annex 3.14. Results of the OLS Pooled and Fixed Effect Estimations of Health outcomes (Mortality rate of less than 5 yrs)

Model ID	(3a.1)		(3a.2)		(3a.3)		(3a.4)		(3a.5)	
	OLS Pooled linear w/out interact		OLS Pooled linear w interact. 1		OLS Pooled linear w interact. 2		Fixed effect (time dummies) w interact 1		Random effect (time dummies) w interact 2	
Equ(3.3a) : Dependent variable: Mortality rate of less than 5 yrs old (mort_5)										
const	278.379	***	281.953	***	284.943	***	262.487	***	265.063	**
	25.630		25.920		25.990		8.891		14.410	
Explanatory variables										
remit_gdp	-0.510	***	-1.660	***	-1.776	***	-0.821	***	-2.718	***
	-6.359		-4.067		-3.152	ln	-2.665		-5.234	ln
Socio-Economic variables										
Women_right	-1.079	**	-0.931	*	-1.369	***	0.472		0.504	
	-2.264		-1.951		-2.859		1.316		1.457	
Urban_pop	0.104	**	0.081		0.075		0.184		0.096	
	2.089		1.618		1.485		0.875		0.858	
Mean years of School (ln)	-23.617	***	-23.338	***	-23.920	***	-42.884	***	-40.126	***
	-11.350		-11.270		-11.610		-9.731		-11.150	
tt_healthexp_gd	-0.651		-1.333	***	-0.474		-1.544	***	-0.756	*
	-0.651		-1.333	***	-1.069		-3.107		-1.872	
Interaction variables										
remXttlhealth	-		0.165	***	-		0.059			
	-		2.873		-		1.205			
remXPrivHealth	-		-		-0.092	***			-0.078	**
	-		-		-3.034				-2.555	
Control variables										
PopGrowth	-0.407		-0.740		-0.490		-2.421	***	-2.199	**
	-0.456		-0.825		-0.552		-2.641		-2.573	
Sub-Saharan African	50.761	***	50.495	***	48.490	***	-		52.294	***
	31.060		31.010		27.860		-		9.978	
GDPcap_gro	-0.166		-0.175		-0.182		0.134		0.156	*
	-0.957		-1.013		-1.058		1.402		1.691	
GDPcap_level	-21.846	***	-21.570	***	-22.179	***	-14.470	***	-17.031	***
	-14.440		-14.310		-14.690		-4.470		-6.975	
infla	-0.062		-0.067	*	-0.079	*	-0.053	**	-0.027	
	-1.534		-1.670		-1.941		-2.236		-1.154	
REER (sq)	0.000	***	0.000	***	0.000	***	0.000		-2.260	
	4.598		4.500		3.862	sq	-0.626		-0.864	sq
creditbank	-0.106	***	-0.114	***	-0.114	***	0.044		0.005	
	-5.746		-6.150		-6.134		1.379		0.180	
ODA_gdp	-0.317	**	-0.326	**	-0.284	*	0.146		0.154	
	-2.077		-2.143		-1.859		1.155		1.269	
Tests										
N. of observations	700		700		700		700		700	
R2aj.	0.890		0.890		0.891		0.979	F-t	FE>OLS	
F statistics	435.430		435.430		410.170		425.712	BP[1]	RE>OLS	
(p value)	0.000		0.000		0.000		0.000	Hs[2]	RE>FE	
RESET Ramsey for Linear	Linear		Linear		Linear		Linear		Linear	

Notes: t ratio in the second row; * *significant at 10%;* ** *significant at 5%;*** *significant at 1%; 1 BP is the Breusch-Pagan test ; 2. Hs is Hausman Test ;*

Annex 3.15. Results of the OLS Pooled and Fixed Effect Estimations of Health outcomes (Life expectancy)- Robustness test

Model ID	(3b.1)		(3b.2)		(3b.3)		(3b.4)		(3b.5)	
	OLS Pooled linear w/out interact		OLS Pooled linear w interact. 1		OLS Pooled linear w interact. 2		Fixed effect (time dummies) w interact 1		Fixed effect (time dummies) w interact 2	
Equ(3.3b) : Dependent variable: Life expectancy (life_expect)										
const	66.260	***	65.381	***	65.434	***	55.277	***	53.634	***
	28.750		29.270		28.490		14.770		14.890	
Explanatory variables										
L_remit_gdp	0.469	***	0.893	***	0.734	***	0.698	***	0.283	***
	4.805		7.926		6.018		6.520		2.601	
Socio-Economic variables										
Women_right	0.214	**	0.208	**	0.211	**	-0.164	**	-0.120	*
	2.033		2.041		2.020		-2.295		-1.745	
Pop_15	-0.233	***	-0.237	***	-0.223	***	0.222	***	0.224	***
	-5.111		-5.371		-4.941		3.289		3.460	
Pop_65	0.145		0.163		0.205		1.302	***	1.188	***
	1.042		1.214		1.475		5.342		5.057	
Urban_pop	0.078	***	0.083	***	0.081	***	-0.134	***	-0.105	**
	8.212		8.939		8.562		-3.151		-2.568	
School year	0.448	***	0.459	***	0.455	***	0.214		0.210	
	5.322		5.630		5.442		1.023		1.045	
pubexphealth_gd	0.412	***	0.710	***	0.487	***	-0.083		-0.176	
	3.683		6.096		4.315		-0.563		-1.327	
Interaction variables										
remitXpubhealth	-		-0.035	***	-		-0.016	**	-	
	-		-6.903		-		-2.453		-	
remXPrivHealth	-				-0.022	***	-		0.046	***
	-				-3.569		-		7.589	
Control variables										
Sub-Saharan African	-11.731	***	-11.197	***	-11.486	***	omitted		omitted	
	-30.520		-29.480		-29.660					
GDPcap_gro	-0.089	**	-0.090	**	-0.093	**	-0.029		-0.017	
	-2.325		-2.425		-2.435		-1.505		-0.928	
GDPcap_level	0.122	**	0.089	*	0.104	**	-0.129		-0.058	
	2.518		1.884		2.151		-1.095		-0.509	
Int_rate	-0.019		-0.023	**	-0.020		-0.015		-0.010	
	-1.107		-1.408		-1.217		-1.292		-0.861	
infla	0.005		0.009		0.006		-0.009		-0.008	
	0.444		0.843		0.574		-1.585		-1.526	
REER (sq)	0.004		0.005		0.004		0.012	***	0.010	***
	0.906		1.358		1.041	**	5.042		4.491	
creditbank	0.009	**	0.009	**	0.009		0.002		0.000	
	2.048		2.106		2.106		0.349		-0.047	
ODA_gdp	-0.050	*	-0.059	**	-0.054	*	0.012		0.015	
	-1.664		-2.052		-1.826		0.503		0.644	
Tests										
N. of observations	700		700		700		700		700	
R2aj.	0.879		0.887		0.881		0.979		0.981	
F statistics	339.207		342.678		324.262		430.302		466.309	
(p value)	0.000		0.000		0.000		0.000		0.000	
RESET Ramsey for Linear.	yes		yes		yes		yes		yes	

*Notes: T ratio in second row; * significant at 10%; ** significant at 5%;*** significant at 1%*

Annex 3.16 Results of the sGMM estimations of Health Outcomes

Model ID	(3a.6)		(3a.7)		(3b.6)		(3b.8)	
	sGMM w/out interact		sGMM w interact 2		sGMM w/out interact		sGMM w interact 2	
Equ(3.3a & 3.3b): Depend var:	**Mortality rate of < 5 years old**				**Robustness test with: Life expectancy**			
const	32.387	***	0.912	***	6.649	***	0.381	
	3.873		46.770		2.674		0.095	
Dependent Var (-1)	0.896	***	26.161	***	0.850	***	0.912	***
	29.300		3.294		40.510		18.910	
Explanatory variables								
remit_gdp	-0.044	**	-0.708	**	0.265	**	0.355	**
	-2.121		-2.024	ln	2.552	ln	2.059	ln
Socio-Economic variables								
Women_right	-0.419	***	-0.453	***	-0.043		0.091	
	-3.300		-5.436		-0.631		1.057	
Pop_15	-		-		-0.040		0.027	
	-		-		-0.908		0.494	
Pop_65	-		-		0.146		0.155	
	-		-		1.090		0.763	
Urban_pop	0.049		0.023		-0.015		-0.012	
	1.550		0.668		-1.126		-0.850	
School year	-4.327	**	-5.360	**	0.240	***	0.252	**
	-2.417	ln	-4.121		2.794		2.426	
tt_healthexp_gd	-0.464	***	-0.997	***	-		-	
	-5.640		-7.331		-		-	
pubexphealth_gd	-		-		0.274	**	0.215	
	-		-		2.408		1.559	
Interaction variables								
remXPrivHealth	-		0.045	***	-		-0.015	**
	-		5.200		-		-2.434	
Control variables								
PopGrowth	-3.213	***	-2.089	***				
	-7.504		-3.987					
Sub-Saharan African	6.573	***	3.815	**	-2.777	***	-2.259	***
	2.906		2.366		-3.953		-2.948	
GDPcap_gro	-0.095	***	-0.024		0.029		-0.069	**
	-3.348		-0.545		0.983		-2.335	
GDPcap_level	-1.052		-0.181		0.018		-0.005	
	-1.291		-0.256		0.333		-0.082	
Int-rate					0.124	***	0.071	***
					5.988		3.334	
infla	-0.107	***	-0.042	***	0.002		0.013	
	-4.237		-2.941		0.227		1.131	
REER	-0.016	***	-0.014		0.018	***	0.014	***
	-2.924	sq	-2.984	sq	9.333		3.801	
creditbank	0.019	*	0.036	***	-0.016	***	-0.015	**
	1.703		3.202		-4.398		-2.397	
ODA_gdp	-0.118	*	-0.038		-0.020		0.052	**
	-1.667		-1.067		-0.996		2.495	
Tests								
N. of observations	700		700		700		700	
No. of instruments	82		81		73		54	
AR(1)	0.578406		0.843748		-1.92979		*-3.08135*	

	[0.5630]	[0.3988]	[0.0536]	*[0.0021]*
	-0.220201	0.360992	-0.173247	*-1.01413*
AR(2)	[0.8257]	[0.7181]	[0.8625]	*[0.3105]*
	27.1869	19.4153	15.852	*8.78325*
Sargan Over_ID	[0.9994]	[1.0000]	[1.0000]	*[0.9980]*
	50896.2	43490	32774.1	*32971.5*
Wald (joint)	[0.0000]	[0.0000]	[0.0000]	*[0.0000]*
	148.771	64.845	43.537	*66.6897*
Wald (time dummies)	[0.0000]	[0.0000]	[0.0000]	*[0.0000]*

Notes: t ratio in second row *; * significant at 10%; ** significant at 5%;*** significant at 1%*

Chapter 4

Migration and Development: Microeconomic Empirical Evidence

Introduction

Studying the relation between migration and development could not be complete without looking into the fundamental level on which this relation is based. The microeconomic level represents the building block of studying the migration and development relation. Unfortunately, overtaken by the global picture of worldwide migration flows, the remarkable increase of remittance flows and their impacts on the economies, the empirical evidence, in many cases, overlooks the nucleus of these flows: the individual and his/her household.

Migration is after all a behavioural phenomenon that is taking place following a choice made by individuals and their households. Hence, the decision to migrate starts from this initial level and the impact of migration pours in this initial level as well. Building on this level and because migration is undertaken by several individuals, it has constituted an aggregate phenomenon of migrants stocks and migrants flows. Similarly, because a number of these migrants decided to transfer money to their households, it has created flows of remittances across the world.

In order to complete the picture on the migration and development nexus, the aim of this last chapter is to address this nucleus of the relation and analyse in some details the behavioural choice that makes the individual migrate and how does this migration impacts the member of his household that are left behind.

One of the main reasons, that the micro evidence of migration is not as large as the macro one, lies within the complication of this relation and the need to access micro data that is based on surveys and questionnaires, which is quite a difficult process and requires quality resources and experience. This is not readily available in all countries and accessing this kind of data is often an impossible task. This could explain largely, why the empirical evidence is concentrated in a number of countries and not others. For instance, we will notice that the most repeated case studies are countries from Latin America and in particular Mexico. It is not hard to speculate that this is because of the availability of the data on migrants from Mexico to the US at the US side.

The two previous chapters on the macroeconomic relation between migration and development, showed that migration is part of the development process of the home countries and that it impacts their economies in an overall positive way in certain conditions and context. However, this empirical evidence could not explain the mechanism by which a person is selected to be a migrant; or the mechanism by which the household's behaviour towards the received remittances could 'make or break' the potential positive impact on the development of the overall economy.

A thin line exists, when studying the relation between migration and development, between what we can consider as a macro and what is considered as micro (except when it comes to the data). This was reflected also in the theoretical review (presented in chapter 1) where no strict division between the micro and macro theoretical approaches was made; nor there was a cut-off line in the theoretical literature between the reasons and the impact of migration.

Given this, this chapter is devoted to look into the micro level causes of migration, including the selectivity process of the migrants. On the other side of the relation, this chapter will also look into how migration and remittances are affecting the households left behind in terms of its economic and social aspects with the aim to understand how

these basic relations, when aggregated give the overall picture we have seen in the previous two chapters.

The chapter is divided into two main parts. The first part will look into the empirical literature of the migration process at a micro-economic level. For this, two main issues will be addressed in two sections: the first section will address the empirical evidence that look into the reasons behind the decision to migrate, this will include a review of the studies that looked into the propensity to migrate and the selectivity of migration. The second section will address the empirical evidence that looked into the economic and social impacts of migration and remittances at the level of the individual, the households and the communities. This includes studies that looked into the expenditure behaviour of the remittances received by the households, the investment potentials, the impact on the community, the impact of the returned migrants, the impact on poverty and inequality and lastly, the impact on human capital.

The second part of this chapter will present an empirical estimation of microeconomic model on the impact of migration on the social development of the households. The model takes the special case of Egypt, being one of the highest remittances' receiving countries. This part will be composed of three main sections. The first section will give an overview of the migration and remittance flows in Egypt. The second section will present the data and the methodological approach; and the third section will present the empirical evidence on the impact of remittance on the households left behind in terms of human capital, using the Egyptian Labour market survey.

I. An Empirical Microeconomic Review on Causes and Impacts of Migration

The difficulty in separating between what could be a macroeconomic feature or a microeconomic behaviour in addressing migration is understandable: migration is a decision made by the individual (or the household) at the micro level because he/she is impacted by a social or economic condition that could be either related to him/her only or that is affecting the overall nation. For instance, an overall low level of incomes or an overall high unemployment rates at home country could be affecting a person and not the other. If he/she is affected by these macro variables, then the macro cause becomes a micro incentive. In other words, the macro causes are the accumulations of the micro ones and not the other way round. A person migrates because he/she finds it hard to find employment and not because the unemployment rate in the country is high (while he/she has work). Similarly, migration and remittances have large overall impacts on the economy (despite discrepancies in how these impacts are featuring), however for the individual, he/she might not be impacted by migration or remittances the same way as the global impact.

Moreover, as noted in previous chapters, having an economic or social reason to migrate is not enough to actually migrate. This should be coupled by the aspirations of the person to look for better opportunities and better conditions (as detailed in chapter 2). Another important condition for migration to actually take place is that the person would have the capability to migrate. This was defined in previous chapters broadly as the financial means, the required skill, the necessary level of education, the existing policies that would allow this migration, etc.

The macroeconomic empirical evidence dominates the literature of migration. Early theories and studies used the macroeconomic aspect to address migration as a macro equilibrium mechanism to adjust (relative) wages and employment differentials. Only recently, there was a shift towards addressing migration at the microeconomic level and looking into why an individual or a household decides to migrate. Contrarily to the macro empirical evidence, we noticed that the micro empirical evidence is more concerned with the impact of migration rather than the causes that lead to this migration.

Despite their relative success and recent progress in explaining some of the reasons behind migration (as seen in the previous chapter 2), there are many questions that were left unanswered. One of the most interesting and important of these questions is that: if migration can maximize the profits, minimize the risks and is beneficial for the individual and his/her household (even if its overall impact on the country is debatable), why not all individuals that are affected by migration pressures, migrate? Also the macroeconomic evidence could not find the mechanism by which migration impacts individuals.

This first part of the chapter on the microeconomic literature empirical review will attempt to give answers to these questions in two main sections. The first section will address the causes of migration at the micro level and the selectivity of migration. The second section will address the impact of migration on the households, including impact on expenditure behaviours (consumption, savings and investment), the impact on the communities, the impact of returned migrants and the social impact on households and individuals in terms of poverty, inequality and impact on the human capital development of the households left behind.

1. Micro Models on the Decision, Propensity and Selectivity of Migration

While the macroeconomic empirical evidence has addressed the overall causes of migration, by either analysing the determinants of migration or by looking at the global picture of the migration development relation in the migration transition theories (Chapter 2 and 3), it did not address the mechanism by which the person decides to migrate; macro models did not answer the question on what makes some people be selected for migration and others are not.

This is what the theories and empirical evidence at the micro level have addressed after all, migration is a micro phenomenon and hence the causes are generally related to the individuals, as explained above. Microeconomic theories of migration are a mix of neoclassical benefits' maximization and migration selectivity. Both concepts have been addressed in the theoretical chapter one. Though separated in the theory, the empirical evidence was found to be a mix between the two concepts. From one hand maximizing the benefits or utility is a common motive or objective that precedes the decision to migrate, but it is not a sufficient one. From the other hand one cannot address the issue of the selectivity of migration without looking at the objective of this selectivity, which is the idea of maximizing a benefit or a utility.

In fact, as detailed in chapter one, migration selectivity models are based on the concept that individuals are 'selective' to migration based on the level of their skills (Borjas, 1987). This concept explains a lot of the growth in spatial inequality (among countries and communities) despite growing migration.

In the following section, we will highlight some of the studies that belong to each of the two groups, with a focus on the second group, due to its importance in the decision to migrate.

1.1. Benefit Maximization and Propensity to Migrate

This first group of studies based their analysis on the neoclassical concept of individuals' rationality in maximizing benefits. However, empirical evidence has found that it takes more to migrate than to maximize benefits and hence, this topic has not attracted many recent empirical evidence. This group of studies also includes studies that have looked on the propensity or likelihood of migration at the micro level (these correspond in a way to the idea of the determinants of migration addressed in the macro literature).

Despite their common theoretical background, these studies are varied in the way they consider the components of the utility or the impact of this utility on the decision to migrate and the way they introduce other considerations related to the households and migrants characteristics.

For instance, the study by **Kennan and Walker, 2005** looked into the expected income as main driver of maximization. They develop a tractable econometric model of optimal migration based on the concept that expected income is the main reason behind migration. The paper used data from the National Longitudinal Survey of Youth collected from several states in the US about mobility between States in 1979 and with some more data from the census of 1990 and where wages are compared statistically to the expected wages in other states (using methods of likelihoods). The results confirmed that the differences in expected wages are a significant determinant of migration decision. Several control variables (such as the cost of migration, age, climate differences, location sizes, etc.) were introduced as well as robustness check and the results remain robust.

On a different tone, some studies included the cost of migration as part of the maximization process given its importance in measuring the capability of the person to migrate. The cost could be presented as the actual monetary cost but also as the social and psychological costs which seem to be growing with age.

This concept was developed by **Goss and Paul, 1986**, where they undertook the concept of maximizing benefits by developing a logit model of maximum likelihood to measure the probability of migration based on measuring the costs and benefits of migration. The decision to migrate is hence taken if the net present value is positive. Using data from the Panel Study of Income Dynamics on the mobility between the States in the USA, they included in their model a large number of variables including current employment status, income, years of education, age and mobility. Results of the model showed that age has an important role in the decision to migrate due to the high cost it can bring. However the level of education and experience could reduce this cost. Hence, the authors argue on the importance of including the adjusted age with the experience.

The idea of the net gain models in the decision to migrate was criticized in several writings, such as DaVanzo (1981), who states that the net gain model for migration is in fact the net gain from the "*…difference between the expected utility of the present discounted value of the life time real income stream, the migrant expects to receive, if he or she moves to that destination and the expected utility of the present discounted value of life time real income stream, the migrant expects to receive if he or she does not move, less the costs of moving*" (DaVanzo, 1981).

Hence, there is a broader meaning to benefits' maximization that goes beyond the level of incomes, as the principal of 'utility' could involve other social aspects such as the value of the leisure time, living in a friendly area, etc. In case of developing countries, there are other sources of utility for households such as home-grown farm products, food, housing, etc. Also related to the idea of the cost of migration, is the impact of poverty on the ability to migrate. This concept was long debated in the causes of migration, which was seen to be a way to escape poverty, where as figures and recent studies found that it is not the poor who actually migrate.

This is what the study made by **Du et al. 2005** attempt to investigate while taking the case of China. The authors used two complementary national data sets. The first data set contained information collected between 1997 and 2001 from the "The China Poverty Monitoring Survey (CPMS)" which is conducted every year and focused on poor counties gathering information for 50,000 households. The second data set is much smaller as it includes only 582 households. To investigate the potential impact of households endowments on the decision to migrate, the authors first used a non-parametrically approach by regressing the log of households net income per capita on a set of

exogenous endowments. The authors define endowments by years of education, cultivated land per capita, household size, share of household members in labour markets, share of children and dummy variables to denote the community characteristics that might affect migration. This resulted in a non-linear relationship between migration probability and the log net income per capita: at low incomes of endowments, the likelihood of migration increased with endowments, at the moderate levels of endowments, migration declines with endowments. The inflection point was found to occur at a log per capita income of about 6.5, which was found to be close to the poverty line. This inverted U shaped migration – endowments pattern indicates that households that are closer to the poverty line are more likely to migrate than those either much lower or much higher than this line.

Testing the propensity to migrate among households in Egypt, **Roushdy, Assaad and Rashed, 2009** used the Egyptian Labour Market Panel Survey of 2006 in a probit model to estimate the likelihood of migration according to a set of household characteristics. In order to overcome endogeneity, the authors avoid characteristics of the households that could be caused by migration (such as number of children, wealth, etc.). Also, they used the characteristics of a neutral household head (the spouse of male head's) to proxy for the household head who could be a migrant. The results of the model, showed that the households that are more likely to have a migrant (and receive remittances) are those: that have large numbers of males (all ages) and females (age 15-29) and whose head of household (or rather his replacement) have a secondary degree or above. Whereas those households that are less likely to migrate are those that have members with an average years of schooling of more than 18 years for males and whose head of household is either divorced or a widowed. Using the percent of households with at least one migrant in the village/shiakha from the Egyptian Census of 2006 and its interaction with the average year of schooling of adult member of the households to proxy for the possible impact of networks, showed a positive likelihood of migration (and receiving remittances) in case those networks existed.

A large number of studies were conducted along the same lines, analyzing the determinants of migration and the characteristics of the households that increase their propensity to migrate at the micro level. It is impossible to gather these studies, due to their diversity and the number of case studies they address, however the concept remains the same. The main aim of migration within this context is to maximise a certain benefit that matters the most to the individual.

Despite their contribution in explaining some of the behaviour of individuals when it comes to migration, empirical evidence on the propensity to migrate could be considered as a way to characterise actual migration conditions. Migration is a selective process and only 'selected' individuals can translate these into actual migration. This is what the following section will address while looking at the empirical literature.

1.2. The Selectivity of Migration

Growing from this concept of maximizing a certain utility and taking into account the constraints, the idea of the selectivity of migration was developed by Borjas, 1987. This idea dominated the micro economic evidence on the causes of migration. Migrants are not randomly selected from a population that have equal chances or probabilities of being selected, or else more than 3% of the world population would have migrated. It is a selective process: not every person who wishes to maximise his/her benefits from migration can or is selected to migrate.

The idea of selectivity was initiated following the failure of neoclassical theoretical and empirical models to explain the growing spatial inequality despite the growing migration between less developed to more developed areas within the principle of maximizing profits from migration. Therefore, a major modification or 'upgrading' was introduced on

this basic concept of maximizing utility to introduce the idea of the selectivity of migrants. By selectivity, we look at the characteristics of the migrant that allow him/her to be selected (and not others) for migration, and this relies heavily on the level of his/her education and skills. More precisely, high skilled individuals would seek better opportunities to benefit from their human capital elsewhere. Hence, the few empirical studies that addressed this issue focused on the education or skill of the individual as a cause of migration, as detailed below.

The paper by **Levy and Wadycki, 1974** is one of the early papers that looked into the selectivity process of migration. Considering the level of education in three groups of Venezuelan migrants, shedding some light on an ambiguous and controversial relation between education and migration (i.e. are the more educated more likely to migrate than the less educated?). Using data from the 1961 Census of the national statistical office of Venezuela, the author identifies the dependent variable as the share of the number of migrants with a given level of education in the number of the origin population having the same level of education. These levels of education are: no education, primary school education and secondary school education. The independent variables include characteristics from both the origin and the sending countries: variables denoting distance, unemployment, and national education variables. Results of the model show that increased education levels significantly increase the probability of migration. This was explained by the fact that more educated persons are more likely to adapt, to change and face lower risks when migrating.

This is considered an early finding on the selectivity process of migration and the fact that highly skilled and educated migrants look for opportunities to maximise their skills.

As detailed in chapter one on the theoretical review, the first to introduce the idea of selectivity is Roy, 1951. His theory was later developed by **Borjas (1987, 1992, 1994 and 1999)**, and on which are based most of the empirical studies that addressed this issue as will be shown below. The main assumption of Borjas, following Roy's theory, is that the position within an income distribution is a reflection of the ability, skills or what he called "ethnic capital" and that this distribution matters in increasing the potential to migrate. He argued in his model that there is a negative selectivity of migration in the sense that the less skilled (and hence receiving less wages) have more potential to migrate from countries that have large differences between their levels of national skills and earnings (i.e. countries that have large skills and wages inequalities) to countries with small differences among skill and earnings levels (i.e. countries that have low skills and wages inequalities) (Borjas, 1987 and 1991).

Borjas based his arguments on the case of Mexican migrants to the US, where he argued that selectivity of migration depends very much on the expectations of the returns on skills or education in the potential host countries: the more the returns to education are, the more the probability to migrate and vice versa. He argued that positive (negative) selection is when the migrants earn wages at the upper (lower) end of the distribution in both source and host countries. He assumed that the cost of migration are small and does not vary with the level of skill of the migrant. In order to prove his model he regressed a dummy variable of the degree of income inequality on the sending country relative to the US (this also reflects the ratio of the top earnings to the bottom earnings in the sending country compared to the level and rate of change of migrants' earnings' (Borjas, 1990). This dummy variable was found inversely correlated with earnings and this was justified by the fact that there is an adverse selection of migrants based on their ability of skill differentials Borjas (1987).

Despite the importance of these arguments, only few empirical studies tried to test their validities and these studies are mostly concentrated on the source countries that send migration to the US. This sort of analysis requires very detailed and comparative data, which is rarely available outside the US.

One of those studies is the one by **Ramos, 1992** where he puts to the test the model of negative selectivity of Borjas (1987). Using 1980 Census data for the United States and Puerto Rico, he tested the idea that migrants choose to migrate in the country that offers higher rate of returns to skills[1]. The author applies the Roy model to estimate the migration decision model. The hypothesis is that migration takes place when expected earnings (after excluding the cost of migration) would be larger in the receiving country than in the sending country. Calculating the Gini Coefficient to measure the distribution of earnings between the two territories showed higher inequality in Puerto Rico than in the US. Taking into consideration some individual characteristics such as education levels and variables of control such as wages and calculating the costs of migration (monetary and psychological)[2], the selection model was calculated. The data showed: 1. There is a significant difference in the hourly wages of migrants to the US and those who stayed, with the latter being higher; at the same time, 2. The most educated Puerto Ricans are those who did not migrate to the US but preferred to remain. The model confirmed the idea of Borjas of negative selectivity: Puerto Ricans who migrate to the US are relatively unskilled, while those who stayed are those highly skilled. This is because better opportunities and higher returns on skills exist in Puerto Rico. This also explains why returned migrants to Puerto Rico are those who are more skilled and educated than those who stay.

Though Ramos took into consideration the cost of migration, he did not take into account its variability according to the levels of skills. This was addressed by **Sotomayor, 2008** in his study on migration from the same source country Puerto Rico to the US. Using data from the two countries drawn from integrated public micro data sample from the US census, he constructed the model by comparing wages of migrants and non-migrants. The author introduced the counter factual effect of wages (the distribution of wages that migrants would have earned in the source country) and calculating the differences in densities of wages; results showed that the cost of migration could increase with increasing skill levels. The model results showed that most migrants did not come from the bottom distribution of skills but rather from the middle level skill. This is consistent with an intermediate selectivity that is generated by a time equivalent cost of migration which is large but declines with skill. As returns on education is lower in the US than in Puerto Rico accompanied with an effect of cost due to skill, migrants are rather from the middle skill distribution and not from the bottom as predicted by constant cost empirical evidence.

Migration to the US from Puerto Rico seems to be the exception rather than the general rule. This was showed in the rather macroeconomic study by **Feliciano, 2005** who applied the migration selectivity model at the macro-level on 32 countries, which are sources of migration to the US. The results showed that although nearly all immigrants to the US are more educated than those who stayed behind, they differ in their degree of selectivity depending on the variables related to their origin countries and the timing of this migration. The exception of this was found to be Puerto Rico which had a negative selectivity of migration, due to the higher returns for skills in their home countries compared to the US (details of this study can be found in the previous chapter 2 on Macro economic evidence).

This idea of migration selectivity and the negative selectivity of Borjas was criticised by **Chiquiar and Hanson, 2005** who used data on Mexican migrants to the US to look into the relation between the existence of large gaps in skill levels (and earnings) in the original countries and the potential to migrate. The authors use population census from Mexico and the US for 1990 and 2000. Migration of Mexicans to the US in this period was

[1] Puerto Rico is territory of the US and hence no restrictions in crossing the borders between the two territories.
[2] The monetary costs are observed before migrating and the psychological are the cost observed after the migration.

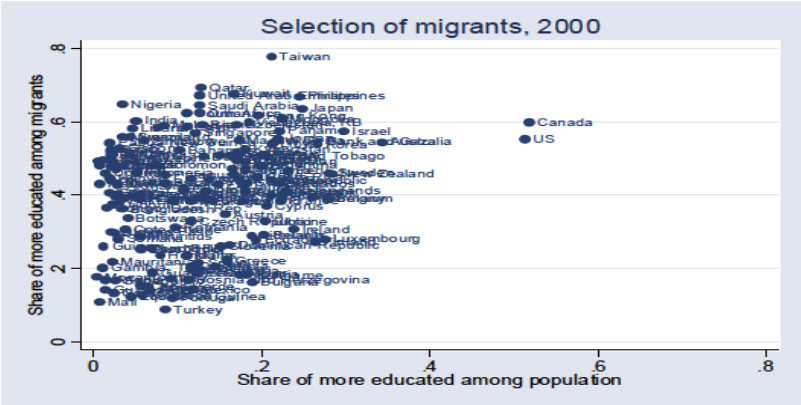
extremely high (representing 9.4% of the Mexican population). They implicitly assumed that the wages at the destination is pre-determined. Data showed that Mexican migrants to the US are more educated than those that stayed in Mexico, but less educated than the US natives. Moreover, there is a strong argument by Borjas of a negative correlation between the level of skill and the cost of migration[3]. The authors applied the Roy-Borjas migration model and using counterfactual wage densities, they introduced variables such as age, schooling and marital status. The model was applied on men between age 21 and 65. Results showed that it is not the lowest wage individuals, who are more likely to migrate to the US, but most Mexicans who migrate are from the upper half of wage density, or more precisely the middle and upper middle wage distribution. The same result was obtained when introduced a parametric estimation. Mexican born-men encounter intermediate selectivity of migration, whereas Mexican born women, encounter positive selectivity. For both, these results contradict the negative selectivity hypothesis of Borjas. It is to note that these results are based only on observable variables and that unobserved skills are not considered.

On a larger context, and including a large number of countries, **Grogger and Hanson, 2010,** undertake an aggregate approach to the selectivity of migration (Fig 4.1)[4]. The objective of the paper was to examine the scale of migration (the fraction of the population that emigrates), the selectivity of migrants in terms of schooling (the relative emigration of high skilled versus low skilled), and the sorting of migrants by schooling level across destinations (the skill composition of emigrants by destination). The authors argue, that not only there is a positive selectivity of migration towards the more educated, but there is also a positive "sorting for migrants". For example, US and Canada (characterised by high returns on skills and large differences between wages) receive 51.4% of OECD migrants with more than 65% of its immigrants with tertiary education. Whereas in Europe (characterised by low returns on skills and relatively small differences between wages), attracted 38.4% and only 23.6% where with tertiary education. The authors use the Roy model (1951) to test the income maximization theory as the main cause of migration. Using data from Docquier, Lowell and Marfouk (2009) on the stock of migrants in OECD by education level and by country of origin in 2000 (fig. 4.1), they assumed that the decision to migrate is based on maximizing the utility while taking into account the cost of migration. Hence, the model assumes that the utility associated with migration is a linear function of the difference between wages and migration costs. The explanatory variables of the regression model are functions of wages based on skills' groups in both the sending and the receiving countries. To estimate wages, the authors use the "Luxembourg Income Study (LIS)" for various years, which collects micro data from 30 developed countries worldwide and using quintiles of country's earnings distribution. For the sending countries, a mix of Gini coefficient data, based on GDP per capita, and data from Freeman and Oostendorp (FO) collecting information on earnings by occupation and industry from the ILO is used. The model includes other explanatory variables such as sharing common official language, distances as proxies to the cost, and migration networks. The authors calculated regression models for the scale, selection and sorting of migration derived from the linear utility model. The results showed: 1. On the 'selection' regression, the larger the skill-related difference in earnings between the sending and the receiving country is, the more educated the migrants are (relative to non-migrants). In other words there is a positive selectivity of educated migrants when the returns to skills in the receiving country is relatively large. 2. On the 'sorting' regression, that the relative stock of more educated migrants in the receiving country increases with the increasing differences in the earning levels between high and low skilled workers.

[3] This could be explained by several factors: educated migrants meet easily the requirements of the migration, in shorter periods of time and would be able to cover the costs of migration with less working hours.

[4] Even though this study is more on the macro level, it is considered rather exceptional in putting the selectivity of migration to the test at this level, given the amount of data it required.

Fig. 4.1. Selectivity of Migration, 2000



Source: Grogger and Hanson, 2011, based on Docquier and Marfouk (2006).

Moreover, the more highly favourably selected migrants are, the more successful they will be in adjusting to their countries of destinations and hence the better contributions they make towards these economies. Inversely, those highly favourably selected migrants can have more adverse effects on their origin countries (Cheswick, 2007). However, it could be argued that the benefit of a better settlement for those highly selective migrants in the sending countries, can translate into a positive impact on the sending countries through channels such as remittances and transfer of knowledge.

In an attempt to find more relevant and more specific answers to these questions related to the selectivity, **Gibson and MckZenzie (2011)** undertake a very unique and interesting database where they tracked down the best and brightest academic performers from three Pacific Countries, which vary in their development levels, population size and brain drain: Tonga (75% of their population with tertiary education live abroad), Papua New Guinea (PNG) (29% of brain drain) and New Zealand (highest percentage of skilled emigrants in OECD about 24.2% of the population)[5]. The initial data showed that 83% of the top students that were questioned in Tonga have migrated before (i.e. 'ever migrated'), 67% of top students from New Zealand and 37% of top students from PNG. Return migration was also high, estimated between one quarter and one third of those students that migrated. Migration included two objectives: to work abroad and to undertake tertiary education, which were found interrelated by the authors. First, in modelling the decision to migrate, the authors use a utility maximization function denoting the utility associated with working in a certain location by a certain person with a specific skill level. This function takes into consideration wages earned at the location (either home or abroad) and the cost of migration. It was clear from the analysis that maximizing incomes was not the most important factor that made those individuals take the decision of migration. The authors used regression analysis to regress the migration status (Current or returned) and individual characteristics on the income earned. However, this approach was found rather biased due to the impact of education on income. The authors used this special survey to collect data about what would the migrant be working at if he/she stayed home and calculating the average wages. These approaches showed large gains from migration on income level (e.g. between US$ 800 and US$1000 per week for New Zealand's tip students). Given these gains the authors measured the determinants of migration in terms of characteristics of the individuals that could impact this decision, in terms of age, sex, schooling, etc. and using the utility maximization framework. The study found very interesting results from this analysis: despite the fact that salaries of those migrants was higher overseas, the strongest predictors of 'ever migrating' are from variables that were associated with their

[5] Survey samples were: 851 for New Zealand, 245 for Tonga and 691 for PNG

preference such as: risk aversion and with subjects learnt in high school. It was interesting to find that this decision was not linked to economic variables such as liquidly constraints, or income gains or other macroeconomic factors. Same results were found for the return migrants whose most important determinants of their return is their preferences, specially related to family and life styles. These were found more strongly connected to the return migration.

The different results obtained by the empirical evidence on the issue of selectivity of migration whether it is positive, intermediate or negative, mainly depend on the definition of the level of skills used in the measurement of selectivity, and the difficulty to isolate the level of skills or ability of the migrant. As previously indicated, Borjas, for instance used the placement of migrants within the distribution of skills to interpret migration to the US and he argued that earning differentials drive the persons from the low end of the Mexican earnings distribution to migrate to the US. Moreover, he explains the negative selectivity (migration from the low skill is higher than of high skills), by the relatively higher wages for less educated than those for higher educated immigrants. On another front, Chiquiar and Hanson, 2005 were seen to use a more direct measurement for the selectivity. They compare counterfactual earning schemes of the Mexican migrants if they had remained in their own labour market rather than migrate to the US. They found that the Mexican migrants would be more from the middle and upper sectors of the Mexican wage distribution, hence a positive selectivity of migration.

Jensen et al., 2008 attempts to relate to those results by developing a new model that is based on three basic assumptions that are hardly controversial: (i) Migration occurs when the wage differential, net from the cost, is positive; (ii) Accumulation of human capital and skills increases wages (in sending and receiving countries), with various rates; and (iii) Human capital level depends on initial endowment and subsequent accumulation and the latter is costly. The model is based on differentiating between the baseline ability and the skill accumulation. Authors use the Mexican Migration project surveys data from large number of households in Mexico collected between 1982 and 2007. Measuring ability as the school attainment (ratio of years attained to the cluster mean of years attained). The model shows that the negative selectivity of Borjas can be explained by the fact,that the difference in the marginal returns to human capital between the US and Mexico is negative among the high skills individuals and hence migration mostly happens in the less skilled. Even in the cases where this difference in marginal returns between the two countries is positive, there is an adverse effect of increasing costs of skill accumulation that would exceed the marginal difference. The same model can explain the results obtained by Chiquiar and Hanson (2005), where a mix of intermediate and high skill individuals have high probability of migration due to their native ability and training. These levels of skills have preferential advantages especially in the poor areas as they are relatively able to provide the cost of migration compared to their community. This increases the force of selection due to the ability or skills from poor areas and they are capable of generating positive returns. Results of the model show that Mexicans with high levels of education are relatively more likely to migrate than those with lower educational level. They argue that the case of Mexico represents the rule that could be applied on developing countries where the ability of the individuals is high but their educational supply is constrained and hence cannot be used as measurement of both ability and skills.

The idea of using the level of incomes (GDP per capita) to proxy for migrants' earnings at destination countries was highly criticized. **Bertoli et al., 2013** sees that studies that addressed this issue rested on two main assumption: 1. That the skills of the migrants are freely transferable regardless of the destination countries; and 2. The migrant is not impacted by specific unobserved factors that could influence his earnings and his decision to migrate. Hence, their study aims at addressing this issue while estimating a migration model using individual level of earning for both sources and destination countries, and allowing for unobserved individual factors that could influence both earnings and

migration decision. This model is based on the Roy-Borjas model controlling for self-selection using the state-of-the-art techniques used by Dahl, 2002 and applying it on a micro level data on Ecuadorian migrants. More than 600,000 persons migrated from Ecuador in the late 90s, following an economic crisis and 85% of them went to USA and Spain. The data used micro level data of household surveys from Ecuador, USA and Spain. A puzzling observation was that the number of migrants to Spain was three times larger than those that migrated to the US, despite the large difference in per capita incomes between the two destinations and the existence of migration networks in the US. The authors estimated the model in two stages (an advanced version of the Roy 1951 model): first by estimating the wage equation and second they estimated the migration decision equation, using the instrument of the occupational categories to predict earnings, while omitting them from the nested logit estimation. Results of these models: 1. Confirmed that earnings differences are important determinants of the decision to migrate, despite the fact that most migrants in this episode preferred the lower income destination (Spain) over the higher income one (USA); 2. There is an important effect of the differences in earnings within the same destination on the choice of destination. This result was also confirmed by other studies (e.g. Grogger and Hanson, 2010) and was called the 'sorting' of migration; 3. Econometric analysis confirmed the relevance of unobserved individual specific factors that impact the decision to migrate; 4. The selection- control procedure used (following Dahl 2002), made it possible to derive the counterfactual effect of earnings that could be affected by unobserved individual heterogeneity; 5. Costs matters: cost of moving to Spain is much cheaper than the US; 6. Other variables or constraints played important roles such as the migration and visa policies at the destination countries and other language and cultural factors. 7. There was a significant role played by migration network, but this impact was surmounted by other factors (given that the migration network in the US is much bigger than in Spain).

1.3. Conclusion

The causes of migration at the individual level can be best summarised as a process that takes place in mainly two phases. The first phase sees the average individuals being affected by one or more social or economic cause. This was presented in the empirical studies that looked into the propensity and the likelihood of migration. Aiming a maximization of benefit(s) represent one main cause of seeking migration. Phase two sees the individuals that want to maximize their benefits and who have a certain high propensity to migrate to actually being selected for migration. This second group of empirical evidence has looked into the factors and conditions for this selectivity.

The principal of the selectivity of migration explained many of the ambiguous observations such as the relatively low share of world migrants compared to the population. The idea that migrants are selected depending on their levels of skills relative to the rest of his/her home population and the returns expected on this level of skill if migrated, was proved to be logic and consistent with factual observations. Either negative, intermediate or positively selected, it all depends on the position of the migrant in the wage and skill distribution in his/her home country and the returns to skill elsewhere.

In fact, based on the empirical evidence, one can summarise the nature of selectivity as follows:
1. If the home country has high returns on skills + large differences in distribution of wages → Intermediate or Negative selectivity of migration (medium and low skilled, e.g. Migrants from Puerto Rico to the US are less educated than those non-migrants because of high returns in their homeland).
2. If the source country has low returns on skills + small differences in distribution of wages → Positive selectivity of migration (high skilled, e.g. Migrants from Mexico to the US are more educated than those non-migrants because of low returns in their homeland).

The idea of the positive selectivity of migration could appear to have negative impacts on the home countries, since the more educated and skilled the person is, the more selective he or she will be for migration. This could mean the sending countries are losing their best and brightest human capital to mainly high wage OECD countries. However one could argue that there could be some gains from this migration: 1. Skilled and educated migrants are better and easily established in the receiving countries, this will translate into well-established and sustainable incomes that would allow them to send remittances to their families at the sending countries; 2. The process of positive selection of skilled and educated persons could translate into improving incentives for better education for individuals in their home countries for the hope to be selected for migration even if this does not occur. This idea of the brain drain vs brain gain has been addressed in several parts of this study. However, we would just mention here that, other than the fact that it is considered a macro phenomenon, it is also a result of migration and not a cause of migration.

2. Micro Models that addressed the Impact of Migration on Households

In studying the impact of migration on development, one has to start from the initial level where migration starts to take place and where the first immediate impacts are manifested. This is the level of the individuals and households. The way migration of a member impacts members of his/her household that are left behind is considered the initial layer in a series of successive layers that transfers this impact from the individual level to the community level and then to the national level.

Despite its many difficulties and challenges, studying the impact of migration at the household level is a key issue to understanding the overall impact on the whole economy. As addressed in the previous chapter 3, the macroeconomic empirical evidence has shown that migration impacts the development of the home countries in a number of direct and indirect ways and these are transmitted through a number of channels and where remittance flows are considered the other side of the migration coin. Two main channels were identified to make the most contribution in the development of the home countries; these are investment and human capital channels.

This same concept at the macro level could be applied at the micro level. So, if we are looking into how migration and remittances are affecting the development of the household that is left behind in the home country, we can observe a number of direct and indirect effects that could impact this development and we can identify a number of channels that would transmit these effects. However, contrarily to the macro analysis of the impact of migration, at the micro level, it is the behaviour of the individuals that have an important impact on their own households.

The main immediate direct impact of migration on the households, is the absence of a member of the household and all what this entails from an immediate reduction in income, a disruption of the household's life, a potential increase of the workloads for the rest of the members, etc. However, an important positive direct impact is in the remittances that this migrant sends back to his household, which normally not only compensates the loss of income occurred, but also allows for other additional expenses that were not possible before without those remittances. Remittances could hence ease liquidity constraints and pull the household out of poverty. They are an additional source of income for the household that would normally ease the liquidity constraints and allow the household to use these remittances in a number of ways, mainly consumption goods (highest share spent in remittances) and often just to purchase basic daily life needs. However, these transfers could contribute towards education and health and towards savings and investment.

The indirect impacts could take longer time to be effective, but are argued to have a much longer time span in terms of their impact and their spillover effect. Some of the important indirect impacts on the development of the household are due to the way these remittances are spent. Using part of these remittances towards education of the children of the household and improve the overall health of the household, is considered a very important channel towards a long-term contribution to the development of this household. Moreover, spending remittances on investment (such as agricultural investment, machinery purchase, establishing a small business, etc.) are all considered to be another important channel for a long term improvement and development of this household.

However, these positive effects are argued by some of the early empirical evidence, which see migration as having negative effect in undermining the potentials of the economic growth (pessimistic view). According to this view, migration and receipt of remittances could be seen as potentially increasing community dependence, where remittances tend to increase the income levels and living standards of the communities receiving them, without expanding their economic activities and income generating jobs. This would create non-sustainable communities that suffer from high inequality, loss of production and higher unemployment.

Recent empirical evidence has criticized this approach and argued that the large positive potential impact of those indirect effects of migration and remittances could compensate the potential losses from the direct impacts. Moreover, this pessimistic view was mainly based on theoretical frameworks that do not entail empirical approaches that could confirm their outcomes and they did not take into consideration those indirect impacts (Taylor and Lopez-Feldman 2007).

In fact, the way remittances can impact the households depends on how this household expect or see from these flows. **Adams and Cuecuecha, 2010** differentiate between three types of views. The first view is that remittances are considered as an addition to the normal income and hence are spent on daily and normal consumption activities. This view is the most common view and has raised the issue of 'dependency' of the households. The second view is that remittances can cause behavioural changes of the households by spending more on consumption goods and ease pressures as most empirical studies have showed. The third view which is rather recent, is that remittances are treated as a transitory (or a temporary) type of income and hence households tend to spend them on margin activities such as investment in both human and capital which would enhance the development (Adams and Cuecuecha, 2010).

Given these important debates, the empirical evidence on the impact of migration and remittances on the micro level is gaining a lot of interests, especially in recent years due to the substantial improvements in the data collection and the surveys process. In the following sub-section we will address in some details the empirical evidence that addressed the impact of migration and remittances on the households and the communities.

In this section, we address the empirical evidence related to the impact of migration and remittances on the different aspects of the households and communities. The first section is the basis of the analysis, where the we consider the behaviour of households in using their remittances between consumption and investment and the role of these expenditures in improving the status of the households will be investigated. The second section will look at the impact of these households' expenditure behaviours on the communities as a whole, and the third section will address the empirical evidence on the migration returnees, given their important role in boosting the development of their households and their communities. In the fourth section we will address the impact of remittances on poverty and income inequality (or distribution). The fifth section will be devoted to the impact of remittances on human capital development of the households.

This latter is considered an important and a long-term development factor that will represent the empirical evidence that we will undertake in the second part of this chapter.

Hence, the following section will be as follows:

1. Impact of Remittances on the Households' Spending Behaviour
2. Impact of Remittances on the Communities' Development
3. Impact of Returned migrants, their Occupational Choices and the Communities
4. Impact of Migration and Remittances on Poverty and Inequality
5. Impact of Migration and Remittances on Human Capital Development

2.1. Impact of Remittances on the Households' Spending Behaviour

Empirical literature related to the impact of remittances on households spending behaviour is somewhat limited. Earlier studies addressing this issue have focused on how remittances received by the households are divided between consumption and investment. These studies have only considered the direct impact through investment as the only way to achieve any kind of gains, without considering any spillover effects or indirect impacts of these expenditures. Whereas other empirical evidence showed how the indirect impact of these expenditures can have important impacts, even if most of the remittances were spent on consumption goods, a common observation by most studies.

We sub-divide these empirical studies into three main groups: the first group is called "remittances-use" studies (Taylor et al, 1996) whose main focus is on the division of remittances expenditure between consumption and investment. The second group of studies looks into the indirect, but in many ways, larger impact of expenditure on consumption on the households and community development; and the third looks into the more straightforward impact of expenditures on investment.

2.1.1. "Remittances- Use" Studies: more consumption and less investment

Earlier studies (undertaken around the late 70s and early 80s) were too much focused on the remittances use per se, without looking deeply on the implications of such usages on the households and the communities. These studies were even called 'remittances-use' studies (Taylor, et al 1996). This group of studies were largely influenced by the 'dependency theories'[6] and have created a 'disillusionment' over the development impact of remittances. The fact that they considered that most remittances are directed towards consumption while very little is directed towards business or improving agriculture practices, increased the conviction of the dependency of the households (Carling, 1995). This dependency might have a negative effect on the households' labour participation and productivity.

A number of empirical studies have addressed this issue related to the ways of spending remittances in specific country case studies**.** In Indian villages, for example 90% of remittances where absorbed by everyday consumption needs while investment is the last priority for the household's spending (Lipton, 1980). Similarly, in Pakistan, remittances are used primarily on consumption goods, followed by social ceremonies, then real estate and trading (Perwaiz, 1979). Studies from the Middle East and North African region confirmed these results in Egypt (Amin and Awany, 1985) and Yemen (Swanson, 1979)).

[6] first published by Hans Singer and by Raul Prebisch in 1949, who were originally looking into the terms of trade of under-developed countries relative to the developed ones. The theory predicts that resources flow from a periphery poor (or underdeveloped) country towards a core and wealthy one, enriching the later on the expense of the former; for more details check Kearney, 1986.

In general, remittances generate higher per capita income that increases the consumption rates of the households. Some of these studies argued that by spending on consumption, remittances have not contributed to the development of the communities, while others found that an indirect positive impact from remittances have stimulated the production and generated employment opportunities.

More refined studies such as **Gilani et al., 1981** show that even though priorities of spending remained focused on consumption, the remittances received did not necessarily increase the consumption's share in the households in Pakistan. The spending behaviour of households receiving remittances was not different when compared to other households that are not receiving remittances. Pakistani households were found to distribute their remittances in the following way: 62% used in consumption, 22% in real estate, 13% in investment in projects and 3% in financial investment. This study argued that in analysing the expenditure behaviour of the households, one should not look into the division of the remittances between consumption and investment but rather to compare the expenditure behaviour of receiving households and non-receiving households in the same communities.

These studies that addressed the division of remittances between consumption and investment have not looked at the broad definition of investment. In the following sub-section we address studies that considered investment in a broader definition.

2.1.2. Less Consumption and More Investment

The high shares of consumption from remittances that are observed almost systematically across all countries and regions are not end-results. Recent studies have detected some changes in the behaviour of households that receive those remittances in the way they distribute these transfers between consumption and investment. It is also important to differentiate between what could be called the non-productive use of remittances and consumption (Taylor, et. al, 1996). For instance, some empirical studies considered expenses towards education and health (e.g. paying school or hospital fees, purchasing books or medicines, etc.) as non-productive expenses, since they are not directly used for investment. This of course was highly criticized by a large number of empirical studies as will be showed in a later section related to the human capital. Moreover, it is important to keep in mind that any type of expenditures on purchasing of goods represent the following chain: increase domestic demand on the good, increase domestic production, balance prices and ensure competitiveness, and in each phase of this chain a large number of jobs are created. This is the indirect impact of consumption that was often ignored by pessimistic empirical studies.

Redefining the definitions of consumption and investment gave better optimistic results. For example in the **Middle East**, Adams, who conducted several studies on the Egyptian households usages of remittances (**Adams, 1989 and 1991**) based on survey of 1,000 households conducted in 1986-1987 in the Minya Governorate of Egypt (where about 40% of the sample contained at least one migrant), found further results. He distributed the sample into quintiles first according to their predicted per capita income and second according to their expenditures in order to take into account the original status of the households (poor, middle and rich). He compared the expenditure behaviour of migrant to non-migrants households within the same quintiles. 150 households were interviewed about their expenditure and consumption behaviours (where half are migrants and half are non-migrants) and a comparison between the two groups of households were made (within their different quintiles)[7]. Results showed that: (i) except for the poorest quintile

[7] In order to estimate the migrants' households' income without remittances, he used the non-migrant households incomes.

(who spent 71% of their increments on consumption), budget shares spent towards consumption for migrant households are 32% or less. This means that as soon as the household satisfied some of its basic consumption needs, they start spending on non-consumption goods. This was further investigate and it was found that only 12% of the increase of the income of the households is spent on this category: (ii) housing is an important expenditure of the migrant households; results showed that 54% of the remittances that are not spent on consumption goods go towards housing (construction, purchase or repairing); (iii) migrants household showed a higher propensity to migrate than non-migrant households; and (iv) marginal share of spending on investment are higher at all quintiles levels for migrant households compared to non-migrant ones. The main investment target is towards purchase of land.

Also one example of those studies from **Latin America** is the one conducted by **Durand and Massey, 1992**, addressing the 'well-searched' complicated migration relation between Mexico and the USA[8]. In surveying 37 communities that receive remittances, the results showed that between 68% and 86% of remittances were spent on consumption. However, this study reports that there was also a share of remittances (less than 50%) that was directed towards financing productive projects. Even the money that was spent on consumption goods was found to create additional demand for local products either agricultural or manufactured in Mexico (wheat, beef, clothes, shoes). These flows of remittances (also called Migradollars), stimulates demands for health, transportation and education services. This creates multipliers effects that can boost the whole communities and markets (Durand, et al. 1996).

Also, in Latin America, a study by **Adams and Cuecuecha, 2010** showed that households in **Guatemala** that receive international (and also national) remittances spend less at the margin on consumption goods (mainly food), than what they would have spent without the receipt of these remittances. Also, they spend at the margin more on investment in education than what they would have spent if they did not receive those remittances. This was estimated at 377% more in case of internal remittances and 194% in case of international remittances. A third result showed that households receiving remittances (national and international) spend more at the margin on housing (136% and 81% more respectively) than what they would have spent without the receipt of these remittances (Adams and Cuecuecha, 2010).

This rather positive attitude is not only observed in Latin American countries, but similar patterns could be found in other regions. In **South East Asia** for instance, **Griffiths, 1979** noted in his study on the usage of remittances in Philippines that a large proportion is devoted towards agriculture, either to promote production or to purchase new lands. A more recent study on Philippines by **Yang, 2005** found positive results on the ways remittances were spent. Using survey data conducted on 1646 households in Philippines before and after the Asian financial crisis of 1997, the study reported how the pattern of expenditure changed during this period, where the crisis resulted a positive exchange rate shock, which meant that the household received more remittances income. The study showed that this increase was not 'wasted' on consumption of food and drink but was rather spent on education and reduction of total hours worked by children. It also showed that those households were able to invest in physical capital enterprises such as transportation communication and manufacturing, since they were no longer challenged with credit constraints.

Similarly, productive investment has been noted in countries of **Africa**, as reported by Taylor et al (1996), in countries such as Ghana, Sudan, Kenya, Malawi and Mozambique.

[8] There are a relatively high number of studies on migration from Mexico to the US, given its size and the amount of remittances sent by their migrants, estimated at between $24 billion a year (including informal and clandestine transfers) to the extend that the Economist call these transfer flows "New Rivers of Gold" (The Economist, April, 2012)

If some good consumption behaviour was reported in some recent studies, this could be reflected in good expenditure behaviour towards investment, the following sub-section will address this issue.

2.1.3. Positive effects of spending on investment

It is true that it has been evidently proven that spending remittances on investment is far from being the first priority of spending from households receiving remittances, but it is not off the list of priorities either. Some studies report that remittances have been used in capitalization of businesses, in maintenance of existing ones or in establishing new ones. In fact, some empirical studies showed that in many cases households consider that remittances are a transitory and temporary source of income that should not be dealt with as normal income and hence should not be spent the same way (Adams, Cuecuecha, 2010).

Considering investment in its broader definition means that expenditures on purchasing agricultural, land production, real estate and housing are considered types of investment. These types of expenditures could be considered as a sort of assets or capital that could create further investments. Moreover, expenditures on education and health are another crucial types of investments that have important developmental impacts on the households (this will be addressed in details). In this part we will address some of the few empirical studies that looked into the impact of migration and remittances on the capital invested (or non-agricultural and non-housing related activities), such as SMEs by members of the households that are left behind.

For example, a study by **Massey and Parrado, 1998** used data collected from a survey of 5,653 households in thirty communities in Mexico conducted in 1982-83 and a follow-up in 1987-92 on migrants' households and their established business, if any. Using a model to estimate the likelihood of households to establish a business, the authors used several variables such as education, occupation skills, migration experience, current migration, in addition to some households and community characteristics, local market potentials and national macroeconomic conditions as explanatory variables for the remittances and savings. The authors use retrospective life histories following the person from age fifteen and monitoring changes occurring in the above mentioned variables on the personal level, as well as the households, community and national levels. Using regression analysis, the results showed that about 2 percent of the persons surveyed had formed a business. This was a low amount but it was found that the more personal resources, assets, education and skills, the more likely a person would establish a business. In fact each additional year of schooling raised the possibility of establishing a business by 5%.

A study by **Woodruff and Zenteno, 2004** used data from a survey of more than 6,000 self employed workers and small firm owners located in 44 urban areas of Mexico (where 92% of Mexico's urban population reside) to estimate the contribution of remittances towards the capital of these businesses. Using data from the sample to estimte regressions models using the historical migration rates as instrumental variable, the authors estimate that about 27% of capital invested in urban microenterprises results from remittances. The study also confirms the links between access to remittances and investment levels.

Therefore, the confusion between the non-productive use of remittances and consumption has created this pessimistic view about the 'loss' of remittances towards consumption. Moreover, the "dependency" idea that these studies have been advocating is not necessarily true. Several studies showed that remittances are initially used to satisfy basic needs for the poor households, once these are satisfied there are great possibilities that larger shares are directed towards investment in its broader definition (Durand and Massey, 1992).

Hence, empirical evidence has agreed that households tend to use a large amount (in most of the cases the majority) of their remittances towards consumption goods (this include, but is not limited to: food, drink, consumable, etc. This was found regardless of the country addressed or the region. However, results concerning the existence of other more productive expenses from the remittances and their proportions to total remittances have shown different results depending on the country and the region under consideration. Some studies found a relatively higher share of expenses towards buying real estate, restoration of building and agriculture lands, than others. Moreover, empirical evidence showed the often use of remittances towards schooling and health (this will be addressed in details in a later section).

Hence, despite their small shares, investment in capital and in human capital has been highlighted in studies addressing the behaviour of household concerning the expenditure on the remittances received. These are two important channels of development, as shown in the previous chapter 3, that could created a self-generating source of income that could benefit not only the household but also the community.

The way remittances impacts the households that receive them is a first layer of how migration and remittances are impacting development. There are strong arguments in the empirical evidence that these impacts at the household levels have implications at the level of the communities where these households are residing. This not an automatic transfer from the remittances receiving households to the non-receiving ones. However it is interesting to analyse how these spillover effects take place and under what conditions. This is what will be addressed in the following sections on the impact of remittances on the communities.

2.2. Impact of Remittances on the Communities' Development

There are much more into the effects of remittances on the households than just boosting households' incomes and increasing their spending on consumables or investments. Many studies have detected spillover effects from these households towards the communities to which they belong.

Spending remittances in either consumption or investment products means that non-remittances recipients' households can also benefited in an indirect way from these remittances. If these expenses are made within the local community (such as purchasing goods from a community shop or requesting service from a community worker, etc.) then these remittances have made a turnover effect in the local community of this household and where the chain of activities, referred to earlier will create a multiplier effect within this community[9].

Several studies investigated this principle, which showed that even if remittances were only spent on purchasing consumption goods, this could generate benefits for the economy through a multiplier effect. This effect depends very much on the initial level of the community: remittances could provide an important source of income that ease liquidity pressure in the absence of efficient credit markets to non-migrant households boosting up the community, either through giving incentives to the community's markets as explained or through loans in between households (Taylor et al, 1996). In fact, spreading the (negative or positive) effects of migration and remittances on the community depends very much on the linkages between households (migrant and non-migrant) in these communities.

A number of studies tried to measure these indirect effects of remittances on the community through the households that receive them. In rural Mexican village for instance, **Adelman, Taylor and Vogel, 1988** tried to estimate the income and

[9] The multiplier is a simple Keynesian structural model that estimate remittances multiplier

investment multipliers for a migrant-sending community. They used the Social Accounting Matrix (SAM) for the village. This matrix of input-output system of accounts includes the payments in between all production activities, factors, household groups, and capital (saving and investment), government and trade accounts in the local community[10]. Within this matrix, the authors found that a $1 of remittances generates $1.78 in additional village income or 0.78 cents worth of spillover (or also called second round effects). This additional generated income is created by the additional expenditures from migrant-households receiving remittances, creating demand for locally produced goods and services and hence adding to the income of other households (who in case these remittances did not exist would not have this additional income). The study found also that these remittances stimulate investments in physical capital by $0.25 cents per dollar of remittances and schooling by $0.13 cent per dollar of remittances. These results have to be taken with caution as the model did not take into account the possible competition between migration and local activities and their effect on local wages and prices.

This study triggered a new range of studies on impact of remittances on communities and villages. Many of these studies used CGE models, which offered a more realistic view on the migration-community development interactions. One of these studies is by the same authors **Taylor and Adelman, 1996**, where they used the CGE model approach to calculate this multiplier. The authors applied CGE models of communities in Mexico, Java (in Indonesia) and Kenya to estimate the multiplier effect of 1% change of remittances on the income of these communities in the short-term. The result of their model showed that there was an income multiplier effect of: 0.3% in Mexican villages, 0.4% in Kenyan villages and 0.03% in the Indonesian village. Comparing these income elasticities with average share of remittances in total household incomes for the three communities (0.19%, 0.11% and 0.10% respectively) shows a positive impact on income in the Mexican and Kenyan cases but negative in the Indonesian case. This is due to the fact that in this village of Java of Indonesia is highly commercial and the labour is scarce, hence increasing demand leads to higher wages for the available labour and hence less employment opportunities. Moreover, remittances are sent to large land-holders' households. The same exercise was done for the three villages using two-period CGE model to test the long-term impact. In the long run (period 2), productive capital is stimulated by the investment occurred earlier (in period 1). This long-term investment effect of remittances raised the income elasticities by 10% in Mexico (0.33%) by two-thirds in Kenya (0.7%) and by one–third in Java (0.04%). This long-term impact reversed the negative effect of loss of local production to migration. This lead the authors to conclude that, in order to achieve the highest positive impact from migration, the households need to have a minimum loss of human resources from outmigration and a pattern of household of expenditure of the remittances that is directed towards local income multipliers (Taylor and Adelman, 1996).

This idea of the multipliers effect of the remittances on the receiving communities was also addressed in the paper by Durand, et al, 1996 using Mexican data. The paper confirmed the same mechanism of how remittances enhance the market demand and create the multiplier effect. Other papers also addressed the same issues however using different case studies.

Going further into the mechanisms by which migration and remittances can create multipliers into the community that can be transmitted from the migrant households to non-migrants households, Taylor et al, 1999 look into the degree of linkages between migrant and non-migrant households in villages in El Salvador (which is well known with its large number of migrants, about 10% of its population). Using a micro-economy-wide

[10] This matrix hence can detect all the households expenditures within the local community or that are 'imported' from outside this community allowing to estimate the turnover of the capital or the cash within this community

model, the authors use the Social Accounting Matrix (SAM) at the village level to assess the input and output of the production activities, factors and capital, government and trade for the local village, as previously done in their earlier study of 1988. This matrix was constructed from a sample of 199 households in municipality of Santa Elena in El Salvador. The impact is measured by simulating the model with a 10% exchange rate devaluation, which means an increase in the value of remittances sent by migrant. The results showed two immediate effects: 1. The value of remittances in local currency increases, raising the income of the households; and 2. Families allocate more members to migration. This latter could affect the local labour market if this market has no surplus of labour. This means increase the wages of the remaining persons by 5.4%. First, if there are no substitutes for this loss of labour, local production starts to fall: agriculture and non-agriculture production fall each by 4.8%. The authors argue that migration generate a 'Dutch Disease' effect on village town in the short term. However, this loss in production is compensated with an increase in the total-village income of about 1.1%, this of course is not equally distributed across the village (more focus on equality will be discussed in further section). As the migrant households will see their income rise by 6.5%, other non-migrant households will see their incomes fall by 2.4%. This rise stimulates local demands that can generate growth linkages. This will increase local investment by 0.6%. Second, if other members of the households can substitute the loss of migrants in the production (i.e. local wages are endogenous), the 10% devaluation in the exchange rate could lead to a decrease in local wages by almost 2% (this is because the substitute labour is imperfect). Output falls in both agriculture and non-agriculture sectors, but with less than in the first case (4.2% and 1.8% respectively). The non-migrant households fall by only 1.4%. The total-village income will rise by 1.7%, where the non migrant households' income will fall by only 1.4%. The study then addresses the impact of this on investment in the medium to long run. The investment accumulated in the short turn is added to the village capital stock to investigate the impact on the medium-long run. This capital accumulation offsets the negative impact of the loss of labour on local production. This increases the marginal productivity of labour in local production sectors. Taken into account this investment, the production of agricultural and non-agricultural sectors in the case of endogenous labour will fall by only 3.3% and 1.2% (compared to 4.2% and 1.8%). The total-village income will be higher (1.9%) and the impact on the income of non-migrant households will be smaller (-1.2%). Overall, these results show that migration generates negative loss of labour effects on migrant and non-migrant households in the short run if not enough labour is available, but positive investment effects in the long run that could offset these losses if the right polices that ensure linkages in the community are put in place (Taylor, et al. 1999).

In search for other indirect effects of remittances on households and the community, **Taylor and Lopez-Feldman, 2007** found that remittances could raise rural households incomes per capita and the productivity of both the land and the human capita over time. This result was found when exploring the impact of remittances using sample data of 1,782 households in 14 Mexican states in 2002. The authors select a base year of 1990 to compare (a year that witnessed massive migration from Mexico to the US). Comparing incomes and the productivity of households with migrants and those without, significant results showed that the 2002 average total income per capita is 51% higher for households that had a migrant (to the US) in 1990 than those that did not. As expected households with migrant (in 1990) had higher remittances and provide more public transfers. However, households that did not have a migrant in 1990 had almost 58% higher per capita income from wages than those with at least one migrant in 1990. Regression results showed that households with at least one migrant in 1990 had significantly higher marginal returns on land in 2002 than those households that did not have any migrants (about US$ 111.00 of returns to an additional hectare of land vs US$ 8.00). Returns on farmer's schooling for non-migrant households was found higher than those in households with migration, but it was insignificant. This shows that the indirect effect of remittances can take several years until it is felt.

Around the same idea, **Lucas, 1987** showed that labour migration from five African countries to the South African mines have generated remittances that enhanced agricultural productivity and livestock accumulation in the long-run in their households. This has also increased the domestic plantation wages despite a short-term immediate loss in domestic crop due migration of labour. In a more recent study by Lucas, 2007, he argued that migration from rural areas could have a more direct impact on their rural communities, than those from urban areas. He reported that large portions of emigration are drawn from rural areas and these are dominated by low skill workers[11]: migration from urban areas (either skilled or unskilled) can induce internal migration from rural to urban areas as a replacement. It is to mention that a lot of internal migration from rural to urban regions is a transitional one before the international migration. Hence, reporting the origin of migration (rural/urban) could be quite hard.

Contrarily to this idea, a study by **Azam and Gubert, 2004** on western Mali's households, found that though migration helped the adoption of new technology in agriculture, the performance of migrants' households in agriculture is not any better than that of non-migrant households. The authors explain this by the reduction of efforts put towards farming by those households that receive remittances, which offsets any kind of potential additional gains from technology. This brings about the 'dependency theory' at the community level where it is believed that the more remittances received in the community, the less labour participation. This was also was found in a study in villages in Managua, Nicaragua (Funkhouser, 1992) and rural villages in the Philippines (Rodroiguez and Tiongosn, 2001).

It is to note that migration of one active member of the household is likely to induce the remaining members to work to compensate the loss of income from his/her migration. These studies that suggest that once remittances are received the households members reduce their amount of work could be somehow misleading. It is argued that these studies did not differentiate between the types of work that the remaining members leave or change, nor they differentiate between female and male labour or between rural or urban areas, but focus more on the 'decision to work'.

This was observed by **Amuedo-Dorantes and Pozo, 2006** in their study on hours worked by members of households in Mexico that receive remittances and the type of employment. The database contain 42,341 persons where 5.5% are in households receiving an average per capita remittances of about $57 per month. Using some specific regression techniques to avoid problems of reverse causality, the results showed that a 100 peso increase in remittances (16% of average monthly per capita remittances) is correlated with 15% reduction in formal secure work by men in both urban and rural areas, and with a 5% reduction in self-employment of male in urban areas. However, this same increase in remittances is associated with an increase of about 14% and 13% increase in informal sector work in urban and rural areas respectively. This increase in informal labour is mainly to compensate the loss of income with the migrant leaving, which forces the non-migrant in the households to search for informal market. For the females, results showed that female labour supply decreases with this same increase in remittances, by 4% in nonpaid 7% in informal work. This means that women tend to leave the work where they are poorly paid when receiving remittances. It is important to note that according to the authors calculations, these reduction of incomes due to less worked hours is offset by the 100-peso increase in remittances income.

This idea of the impact of migration on the labour participation of members of the households and especially women has been the subject of an increasing number of studies. Here we refer to the Egyptian case, which was addressed in the paper by **Binzel**

[11] Observed by Lucas, more than 20 million migrants with less than nine years of schooling were living in OECD countries in 2000 and migrants to the Gulf countries are dominated by low-skilled from lower income countries, which are normally contracted directly from their rural local areas.

and Assaad (2011) drawing on the Egypt Labour Market Panel Survey 2006 (ELMPS). The study analyzes the labour participation of the wives depending on whether their husbands work abroad and remitting. The authors differentiate between types of work for women (wage and non-wage employment) and types of areas (urban and rural), and the number of hours worked. Results showed a decrease in wage work by female in rural and urban areas, however it was found that women who's husband is abroad are more likely to engage in non-wage work and subsistence work, specially in rural areas. This result is stronger in households where the migrant is not remitting. This could be explained by the fact that women could substitute their wage work with non-wage work to maintain the family business (e.g. land or other domestic investment). This result confirm the fact that labour participation of the households left behind is likely to increase in order to compensate the loss of income due to migration of one of its member. It is worth noting that the nature of the Egyptian labour market implies some restrictions on women working in private sector so they take up non-paid family and subsistence work especially in rural areas (Binzel and Assaad, 2011).

Other than impacting the development of the community through per capita incomes, productivity and labour participation, remittances could have a more direct impact on the community through investment in Micro and Small enterprises, either through direct investment or returned migrants. The following section will address this issue.

2.3. Impact of Returned Migrants and the Occupational Choices on the Communities

Despite the importance of returned migrants on the development of their own households and communities, this topic has only gained interest in recent years. This could be due to the unconfirmed results on the activities of the returned migrants and the absence of both the theoretical evidences and the data necessary to assess such an impact.

The returned migrants bring back home a number of assets. Other than their savings and a number of goods of clothes, etc., they bring back non-tangible assets of knowledge, skills, experiences, and new ideas: social, economic and/or political. Depending on the destination country and the duration spent in this destination, this transfer of culture could be positively or negatively contributing to the development of the household and communities. Measuring these kinds of assets is a very difficult task and can only by estimated through surveys of those actual returnees.

Moreover, studying the returned migrants involved many aspects including the factors determining their return, their characteristics and mainly what kind of contribution they make towards their household and economy upon their return. In serving the main objective of this study, we only focus on this aspect of return migration where there is an impact on the development of the households, communities or economy.

The majority of migrants, who are either on temporary or medium term basis, save a considerable amount of their income for their return. In fact, many migrants especially in rural areas who leave their family behind,do migrate to be able to save money for the family. These savings that the returnees bring home, could have an enormous boosting effect on the households. This would spread across the communities through the increasing demands of these households for goods (food, clothes, real estate, agriculture, etc.) and services (health, education, communication, etc.).

Several studies that addressed this topic found that savings of the migrants' returnees become a significant factor in their choice of activity upon their return between self-employment and waged employment. This was found in a study using Pakistani data on returnees by Ilahi (1999). Upon their return, Pakistanis are more likely to work as a self-

employed rather than taking a waged-employment if they have managed to accumulate enough savings abroad. Moreover, some studies looked more in depth to the nature of self-employments, differentiate between a self-employed and an entrepreneur, where the latter is an employer or self-employed who actually owns the enterprise.

Egyptian returnees who managed to accumulate savings were also found to have similar preference of activity choice upon their return. This was found by **McCormick and Wahba (2001)**, who looked into the probability of entrepreneurship of Egyptian migrants' returnees. The paper uses data from the Labour Force Sample Survey (LFSS) of 1988 where 1,526 migrant returnees' were surveyed about their pre and post migration employment histories. Based on the characteristics of these returnees, the authors construct two probit models to measure the probability of becoming an entrepreneur, the first takes into consideration that the returnees was an entrepreneur before migrating and the second considering those that had no pre-entrepreneurial activities before migration. The results showed that for literate returnees, both the overseas savings and the long duration of migration have positive effects on the probability of becoming an entrepreneur upon return, as these two variables will ensure both a capital to start the business and a good experience to run it (given the long duration in migration). However, for the illiterate only the savings mattered in terms of the probability of entrepreneurship. Also, being an entrepreneur before migration increases this probability to almost 55%. Moreover, it was shown that there was a significant shift from public sector as pre-migration activity to the private sector upon return, especially for higher educational levels (McCormick and Wahba, 2001). Several studies addressing other countries experiences found evidence that returned migrants are not only more likely to be self-employed by but to also be entrepreneurs compared to non-migrants. This translates into employment creation and development to the communities (e.g. Albania by Piracha and Vadean, 2010)[12].

This result was further investigated on the Egyptian case by **Wahba and Zenou, 2012** who develop a theoretical model about the trade off that the returnees face between the accumulation of human and physical capital abroad and the potential loss of social capital at home upon migration. The authors use the Egyptian labour market Survey dataset for 1998 to estimate the probability of a return migrant to become an entrepreneur compared to a non-migrant. In order to measure social ties with home, the authors used two variables: first the fact that another member from the household travelled with him which will increase the possibility of loosing the ties with home and second the size of the community in which the migrant lived in; since the smaller the community is, the stronger the ties. Their first results, using a probit estimation, confirmed that there is 10% more chance for a returnee to become an entrepreneur than non-migrant[13]. The second results using the recursive bivariate probit model confirmed that the returnee is less likely to become entrepreneur if there is a loss of social capital of the migrants. Moreover, the result showed the positive and significant effect of accumulation of human capital overseas in the probability of entrepreneurship and that savings or credit matter for this probability. The study found, interestingly, that there is also a trade-off between the decision to return and the decision to become an entrepreneur this was explained by the authors as depending on other characteristics of the individual of being a risk taker for example if we consider than returning could be a risk.

Moreover, some studies went even further to study the survivals of these entrepreneurial activities undertaken by the returning migrants. Investigating if being a returned migrant increase the survivals of these enterprises, **Marchetta, 2012** looks into the Egyptian enterprises using longitudinal data of Egyptian Labour Market Panel Survey conducted in 2006 (ELMPS 2006) which was a follow-up to the survey conducted in 1998 (which what used by other studies on Egypt as mentioned above). Using probit model and then

[12] For a list of similar studies, refer to McCormick and Wahba, 2001

[13] The authors use the price of oil to overcome the endogeneity problem.

recursive bivariate probit model to avoid endogeneity, the results concerning the returnees showed a significant higher probability of survivals over time for entrepreneurs returnees than non-migrants. This is explained by the probable accumulation of both physical and human capital while abroad, i.e. the amount of money that is injected in the enterprises from savings and the acquired skills and knowledge from working abroad.

More studies confirmed the idea related to the occupational choice of the returned migrants, and how this impacts the households and communities.

The study by **Dustmann and Kirchamp, 2001** looked into two aspects of returned migrants: ultimate migration duration and the activities of the returned migration, through a unique survey data of Turkish returning migrants from Germany. The survey chose a sample of 1,200 Turkish who were migrating in Germany and expressed their wish to return in 1984. The survey traced 800 of those individuals and re-interviewed them in 1986 and 1988 in Turkey, excluding young females from the survey, leading to a sample of 646 individuals. This study has introduced activity choices for returned migrants: working as a salaried employer, self-employed, or retirement as choices. The data showed that more than half of the returned migrants preferred to have a self-employed or entrepreneurial activity, while 43% decided to retire and only 6% preferred to engage in salaried work. Furthermore, the survey included the type of entrepreneurs where the highest percentage (39% of entrepreneurs) worked in agricultural activity, about 30% in trade and the remaining worked in crafts or services activities. Most of these establishments are micro (with only one person) and those employing more than one person included members of the households among the staff. More importantly, it was found that more than 60% of those establishment stated that their savings in Germany were the primary source of their capital. Using maximum utility functions, results showed that the ultimate duration of migration depends on the choice of activity after return. The study also finds that the level of schooling decreases the length of migration period. This is explained by the fact that those highly educated achieve higher wages abroad and hence leading to shorter migration duration to reach the necessary savings. On the choice of activity, the study found that it depends on the age of the migrant at entry: higher age returnees are more likely to retire than those younger.

Tunisian returnees were found to have rather different behaviours as confirmed by **Mesnard, 2004**. Using data from a survey conducted in 1989 (by the Office of settled Abroad Tunisians) and consisting of a sample of 944 Tunisian workers (age 20-60) who never migrated and 1,168 Tunisians who have returned from migration. The data showed that 26.3% of returned migrants became self-employed, which was not significantly different from self-employment among non-migrants (23.8%). It is to note that only 20% of those migrants were self-employed before migration. Confirming the idea that migration duration depends on the choice of activity upon return, the data showed that the average duration of the self-employed is longer (5.7 years) than that of waged workers (3.5 years). Accumulating savings for a longer period permitted the establishment of a self-employment upon return. This is confirmed by the high number of self-employed workers that used their own capital to establish their businesses (87%). Moreover, it was found that having a high education level affects negatively the probability of being self-employed. This result could be somewhat surprising compared to OECD's countries results, but it is quite expected if we understand the nature of labour markets in the Arab World. Acquiring higher education give incentive to waged-employment (with relatively good pay) and hence lower or no education workers are better off establishing their own businesses (Mesnard, 2004).

Looking into the Maghreb region as whole, as a very active region in exporting labour across Europe (specially in the 60s and 70s), **Gubert and Nordman, 2011** use a survey conducted on a sample of returned migrants from Algeria, Morocco, and Tunisia between September 2006 and January 2007. The authors found that one third of returnees are either employers or self-employed. This result holds some differences among the three

countries. Algeria was found to have the lowest proportion due to first, the nature of its migrants and hence returnees (being older and worked in lower-skilled employments aboard, mainly in France, they prefer to retire after their return); and second, the business environment in Algeria might not be giving the right incentives to investments. The data showed a high proportion of employers were found to have a high education levels in both Algeria and Morocco (51% and 47% of corresponding total number of entrepreneurs in each of the countries). The probit model used by the authors estimate the choice of becoming entrepreneur upon return and the explanatory variables contains six groups that relate to: demographic characteristics, education dummies, occupational choice prior to migration, characteristics of stay aboard (human capital accumulation), conditions and timing of return and destination country dummies. Results showed that there is strong positive impact of the levels of educations on becoming an entrepreneur. In Algeria, returnees are 47% more likely to become entrepreneurs if they hold a university degree compared to those with no education. The situation is different in Tunisia, where high university degrees holders do not have high probabilities of being entrepreneurs (this confirms the findings by Mesnard, 2004). For Moroccans, the impact of education is weaker. The results also showed that being an entrepreneur before migration increases the probability of being entrepreneur upon return (this probability was 27% in Algeria, 19% in Morocco and 18% in Tunisia). This relates to the experience of the migrants as confirmed by previous studies. Finally, the model did not find any significant relation between the duration of migration and the occupational choice upon return (contrary to other studies as explained above, that found a more positive correlation).

In order to investigate this occupational choice behaviour by migration returnees, we look into studies that were conducted in other regions in the world. From the East Asian region, we look into the case of Chinese migrants[14]. The number of international migrants stock in China is relatively low (8,343.6 thousands representing 0.6% of the large population). At the same time, internal migration in China is considered the highest in the world, with about 211 million internal migrants registered to have moved from rural poor areas to the growing urban cities. This is despite the governments imposed restriction on internal migration[15]. Given this, the empirical literature related to migration in China, was dominated by internal migration rather than international one. Though it is not the focus of our study, we found that internal migration in China holds many similarities to international migration in general: high mobility restrictions and costs (monetary and social), and the huge discrepancy between rural and urban areas (as if it was a different country). Studies addressing this issue were numerous and they often refer to facts, theories and evidences related to international migration in their focus on internal migration.

For instance, the recent study conducted by **Demurger and Xu, 2011** looks into the case of Chinese migration returnees to their home (Wuwei) county and their occupational choices. The authors use a probit model on the utility self-employment function using a dummy for migrant and non-migrant, characteristics and a randomly distributed residual. Then, a recursive bivariate probit model is estimated that captured the potential

[14] Since transition towards being an open market economy, international migration has started to increase dramatically and in 2010 the number of Chinese migrants were estimated at 800,000 persons, with main destinations to the United States, Europe and South East Asia (IOM, 2012). The World Bank estimated that it is the second largest recipient of remittances (amounting to US $57 million)

[15] This is called the 'Hukou' systems were households are registered in a sort of internal passports. Rural migrants to the cities are not entitled for city benefits (such as schooling, healthcare, social insurance, etc.). Rural households however are entitled to arable lands in their native villages (as a sort of safety net). This is believed to maintain some kind of stability among this highly populated country.

endogeneity of return migration decision to be self-employed. The results of the two models show that return migrants are more likely to engage in self-employment activities than non-migrants. Also the effect of age was found non-linear. On the role of the gained experience upon migration on the probability of becoming a self-employment, the data showed that first: there was no systematic relation between pre and post migration occupations (in fact, 51% of migrants were farm labour and 26% had no occupation before migration). Data showed a potential relation between migration experience (length of stay), accumulated work experience or savings and occupational choice after return. In particular, it was found that there is relation between the amount of remittances during migration, as well as the frequency of job changes and the choice of self-employment, confirming the fact that both accumulated savings and human capital experience contribute to this choice (in fact, it was found that an increase of return savings by one standard deviation, which corresponds to more than doubling the savings brought back by an average return migrant, would lead to an increase in the probability of self-employment from 41.7% to 64.2%).These occupational choices by Chinese returnees were confirmed by other studies (e.g. Murphy, 2002 and Zhao, 2002) and similar occupational choices in Pakistan (Arif and Irfan, 1997).

In brief, this sub-section looked into the empirical literature that addressed the impact of returned migration on their households and communities through their choices of occupation upon their return. Returned migrants bring along to their communities of origin, two major assets: accumulated savings (i.e. capital) and accumulated human capital (years of experience). These two sources of development lead a vast majority of the returnees to engage in self-employment and entrepreneurships activities, shifting from waged work and employees status. These entrepreneurial activities reveal the potential role that migrants can play in stimulating their local communities in creating suitable environment that can have a positive externality effect on non-migrants, which in return will enhance the development of the whole economy.

The social impact of remittances on both the household and community is an important aspect of development. The idea that remittances either alleviates or increase poverty for the households is a complicated issue. Also closely linked is the distribution of income in the community and how does remittances affect this. These subjects are addressed by a number of studies; we highlight some of the important ones in the following section.

2.4. Impact of Migration and Remittances on Poverty and Inequality

The impact of migration and remittances on poverty and inequality of the household is a complex issue. In case of poverty there is a causal relationship between poverty and migration: from one hand, poverty could represent a major factor that would lead to migration and from the other, migration could either lead to poverty due to the loss of income encountered from the migration of a member of the household, or could lead to poverty alleviation due to the remittances sent by the migrants to his home households. The theory of the New Economics of Labour Migration (NELM) argues that what really matters in the decision to migrate is the relative deprivation, or how individuals see their level of income (or poverty) pair with their surrounding community, rather than in the absolute term. Migration in this theory aims at to not only maximizing benefits but also to minimize risks by diversifying income resources (Stark, 1978). This means that migration could be beneficiary to poverty if the migrant sends remittances, but here an important question is raised: does poor always remit?

It is even more complex when looking at the impact of migration or remittances on income distribution and equality. It is clear that if households in the community receive remittances and others in the same community and living standards don't, there is a high probability of inequality rising among households of this community. However, there is empirical evidence to suggest, as discussed earlier, that even households that don't receive remittances are indirectly positively impacted over time, either through migration

networks or spillover effects from households receiving remittances. This in return could decrease their poverty (but obviously not the same way as the receiving households) and potentially the severity of inequality.

It is worth mentioning that in studying the impact of migration (and remittances) on poverty and inequality, most studies are faced with major general obstacles: first the causality of this relationships, second that remittances are not randomly assigned across the communities, so any causal relationship between remittances and aggregate outcome may not be able to reflect this causality, creating a problem of reverse causation and third, the resulting endogeneity of these variables.

In the following section we will highlight some empirical evidence that addressed the impact of migration or remittances on poverty, then we will look into the evidence related to their impact on income distribution and inequality. Some studies addressed the two subjects together, which we will also review.

2.4.1. Do Migration and Remittances Alleviate Poverty?

A number of studies addressed the impact of migration and remittances on the poverty of the households. Looking at poor households, it is clear that a migration of a member of this household will not improve their poverty situation; on the contrary this could even worsen the situation due to the loss of a member of the households and the income that this person could have brought to the households. However this is argued to be only a short term impact. Some studies found that the loss of this member of households can push the other members of the household towards the labour market to compensate the loss of income (see section 2.2 above). Other studies have found that returned migrants could bring many positive impacts (as discussed in section 2.3).

However, a much more positive situation could occur if the migrant abroad send remittances to his/her poor household. Regardless of the macro impact and its spillover complexities, it would be safe to say that receiving an additional source of income to a poor household (estimated as a worldwide average of 30-40% of migrants' households incomes, World Bank, 2011) will have a positive impact on this household's poverty (Taylor et. al., 2005). However this depends very much on a large number of factors, such as the amount of these remittances and whether it is enough to compensate the loss due to migration, the poverty status of the households, their characteristics (size, education, etc.), the characteristics of the village or community of these households and the policies adopted by governments regarding these remittances.

However, since we know, by now, that migration does not come normally from the poorest quintiles due to the associated cost, these remittances do not flow to the poorest and hence the overall poverty alleviation could be counterbalanced (Taylor, et. al., 2005). It seems that the real impact on poverty lies in between those two extremes and depending on many factors as explained.

The microeconomic empirical literature has addressed this relation at both the regional and country-level. At the regional level, two important studies have addressed the impact of remittances on poverty. The first is done by Adams and Page (2005) who looked into the impact of remittances on 71 low and middle developing countries using households' surveys.

First, **Adams and Page, 2005** used households' surveys from 71 low and middle development countries[16] to analyse the impact of migration and remittances on **poverty**. The data used in this analysis was collected from several sources, where migration flows

[16] This includes countries from Latin America and the Caribbean, Middle East and North Africa, Europe and Central Asia, East Asia, South Asia, and Sub-Saharan Africa.

and stock were estimated using data from major receiving countries (USA, OECD and Europe, data on Arab Gulf was not available). The paper used the Ravallion (1997) and Ravalliaon and Chen (1997) basic growth-poverty model to reach its objective and measure the impact of remittances flows on poverty. Poverty is measured by three different indices: the poverty headcount index (as US$1.00 a day), the poverty gap (measuring the average expenditure of the poor compared to their poverty line) and its square (to reflect the severity of the problem). This paper overcame the problem of the endogeneity of remittances and migration with poverty outcomes using various instruments and proxies (distance between the countries from which remittances outflow to the countries they reach to calculate the cost of migration; education and government stability). The control variables include a measure for inequality (presented by the Gini index), level of income, income inequality and geographic region. The results of this analysis showed that a 10% increase in share of international migration will lead to a 1.9% decline in share of people living on less than US$1.00 a day. Moreover, remittances reduce the effect of poverty (for the three indices), in fact a 10% increase in share of remittances in GDP, reduces the share of people living on less than 1% by 1.6%. In addition, the study found an inverted U curve relationship between country per capita income and international migration. Moreover, inequality was found to be positively correlated with poverty. These results lead the authors to the conclusion that there is a positive regional effect of remittances on poverty reduction at the country level.

The second regional study focused on the **Latin American region**, by **Acosta et al 2007 and 2008** using households' surveys from 11 Latin American countries[17] conducted between 2000 and 2004 and containing information on remittances receipts. Confirming the variation of the effect of remittances on poverty given the conditions of the households and communities receiving it, the two papers by Acosta et al, 2007 and 2008 show that this impact depends on the position of the migrants' household on the income distribution curve. The authors use 'counterfactual approach' to compare the observed level of poverty and inequality in the presence of remittances and compare them to another scenario where there is neither migration nor remittances. The authors used two-step model to estimate per capita non-remittances income overcoming the selection bias using a technique proposed by Heckman The methodology used allows for country heterogeneity and the authors to compare. They found a vast heterogeneity in the impact of remittances on poverty among those countries: 10% increase in the ratio of remittances to GDP could reduce poverty by a range from 0.04% to 0.5% depending on the position of the migrants' households in the income distribution, where smaller reduction corresponds to initially poorer countries and higher reduction to initially richer countries. This means that at the regional level, and given that remittances in Latin America represent an average of 4.9% of GDP, every percentage point increase in remittances to GDP ratio, leads to an average decrease of about 0.37% in poverty. At the micro-level, poverty reduction is greater, when no imputation is made (i.e. when remittances is accounted for) for the income of remittances senders for the bottom of the distribution income, than when imputations are made (i.e. remittances are not accounted for).

Going down to the country level, there are a number of studies that assessed the impact of remittances or migration on the poverty at the level of the communities using micro data. In the following section will address some of these studies while attempting to cover various regions.

First from the **South-East Asian region**, a study on the case of the Philippines by **Dean and Martinez, 2005** on the impact of remittances on poverty and inequality in migrants' home community use households' survey data collected by the national statistics offices, which included 1,646 migrant households and 26,121 non-migrants households. The

[17] Bolivia, Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Mexico, Nicaragua, Paraguay and Peru. The 2008 study excludes the Dominican Republic.

authors use the poverty lines calculated in 1997 and 1998 this allowed them to monitor the changes in the outcome variables. They overcame the problem of reverse causation by using a source of random variation in remittance flows: the exchange rates chocks[18]. Due the Asian crisis of 1997-1998, the US$ and Middle Eastern currencies (most common destinations of the Filipino migrants) appreciated by 52% against the Philippines' currency (peso). This leads to the increase of the values of remittances sent to the households, this allowed the authors to estimate the causal impact of the shocks on remittances and hence evaluate the impact on income and poverty of the households. Similar regression models are used for both migrant and non-migrant households, except for the shock that is only implied on the migrants. The coefficient estimated on the exchange rate shock showed that the incidence of poverty has decreased in the migrants' households. In fact an improvement in the exchange rates by 10% leads to a reduction in the incidence of poverty of about 0.6 percent point in migrants' households. The authors take a further step in examining any possible spillover effects on non-migrants' households which could be transmitted through economic activities or direct transfers from migrants' to non-migrants households as 'gifts'. Using the same exchange rate shock on non-migrant households, they found evidence to believe that indeed an increase in the mean exchange rate shock have lead to a decline in both the incidence and depth of poverty of non migrant households and an increase in their households income (Dean and Martinez, 2005).

Confirming the impact of migration and remittances on poverty, however with smaller scale from **East Asia**, **Du et al., 2005,** look to the case of **Chinese** rural migration and its impact on poverty. Using two complementary large national data sets, they first look into the impact of poverty on the decision to migrate[19] and second, they look into the impact of this migration on the poverty in the local communities. The main objective of this model is to estimate the effect of migration on the welfare and poverty status of the households. The authors look into the immediate effect of migration on income and remittances. They use regression analysis and overcome the endogeneity problem by using the village migrant social network as instrument. Results showed that migration increases income per capita between 8.5% and 13.1% (depending on the usage of instruments). This result on the level of GDP per capita is simulated into poverty headcount comparing the counterfactual effect where households have no migrants. This has showed a small decrease of about 1% in poverty (from 15.4% to 14.4%) for non-migrant households. The authors justify this small result by the fact that most of the poor households do not have migrants (Du, et al, 2005).

In the **South Asian** region, **Loshkin et al, 2007** found almost similar results while looking into households survey data of **Nepal**, which is considered the poorest country in this region. With more than one million of working age population who are working and living outside, remittances grew by 30% in 2003, representing more than 15% of GDP. Using data from two rounds of national households survey between 1995 and 2004 including 73 districts of Nepal and including information on 3,373, 3,912 and 1,160 households. The authors estimate the impact of remittances and migration on poverty and inequality by simulating four different scenarios of the different levels of migration (no migration, same level of migration and remittances in two different points of time and 10% increase in levels of domestic and international migration) while comparing their observed effects to a counterfactual household expenditure distribution. The authors use instrumental variables to overcome the problems of selectivity bias. Results showed that first, the elasticity of poverty reduction is higher for domestic migration than for international migration. This is explained by how remittances are treated by the receiving households: external shock in case of international and a mix of transitory and

[18] This special case in the remittances flows of Philippines have been used by several studies at the macro and micro empirical evidence since it gives a picture of the impact of remittances in its high and its low levels, avoiding the usage of standard instruments.

[19] This was addressed in the first part of this chapter

permanent income for local transfers. Second, a 3.6% points increase in poverty would be expected in case there is no migration[20]. Moreover, poverty rate in households with an internal migrant could be doubled if this migrant had stayed home. Another important result of this study that almost 20% of the decline in poverty in Nepal between 1995 and 2004 can be attributed to increased internal and international remittances.

Moving to the **Middle East region**, **Adams, 1986** investigates the impact of remittances on poverty, income distribution and development in **Egypt**. He uses data from households survey conducted in three villages in Minya Governorates in 1986/87, which was done in two rounds on the migration experiences of 1,000 households and in the second round data were collected from 75 returned migrants and 75 non-migrant households. The author uses this data to estimate income equations for the two cases: households without remittances and households with remittances. Results showed that the mean per capita income of migrants' households is 130% more than that of non-migrants households. The model related to poverty found that international remittances had a small, but favourable, effect in reducing the poverty in some rural areas of Egypt. In terms of poverty counts, the number of poor households declines by 9.8%. Regarding the poverty index, which counts the number of people living in poverty and weighs the amounts by which their incomes fall short, this index fell by about 12% when remittances were included. Moreover, remittances were found to increase inequality in this study (which will be addressed in the following section). Looking on the impact of remittances on inequality, the author used 3 equations, the first specifies the socioeconomic determinants of migration, the second used to predict gross household incomes excluding remittances for 3 sets of Households (no migrants, migrant once abroad and migrant still abroad); and the third to predict gross income including remittances. This methodology uses OLS to run the first equation and then the author estimated the households income function based on factors of production for non-migrants households, using the counterfactual concept. He then applies the coefficient estimates and the endowment bundles of migrant households to impute their earnings under no migration. Comparing the results of rural income distribution with and without remittances showed international remittances had a negative impact on rural income distribution, which was worsened (both in gross terms and in per capita terms), as these remittances were mostly earned by the already upper class in the village. The results of this analysis showed a negative impact on rural income distribution in Egypt, both in gross and per capita terms, since they were earned by the already upper class. Moreover, Adams noted that the amount of remittances is higher in this upper class in proportion to the higher number of migrants that this class is able to send.

Looking at the **African** continent, **Adams, 2006** studies the case of **Ghana**. Using households' surveys data (including 5,998 urban and rural households), the author addresses the impact of remittances (internal and international) on poverty. He uses the counterfactual approach to estimate the incomes of migrant and non-migrant households to predict their values with and without remittances. Using the 2 stages Heckman-type selection model to overcome the selection biasness, the author finds that both internal and international remittances reduce the level, depth and severity of poverty in Ghana, however the size of poverty reduction depends on the type of remittances received and how poverty is measured. Severity of poverty (measured as the squared poverty gaps index) shows considerable decrease, compared to headcount index. Also, results showed that when international remittances are included in the income there is 34.8% decrease in severity of poverty, compared to 4.1% in case of internal remittances, suggesting that international remittances has more effect on poverty than internal one. Moreover, results showed a slight increase in inequality, measured by the Gini coefficient, calculated at 3.5% increase due to internal remittances and 2.7% due to international remittances.

[20] This was estimated at 5% for Ghana 6 % in Bangladesh and 11% in Uganda. (Adams, 2005)

Almost the same results on poverty were obtained by a study undertaken by the same author on the impact of remittances on poverty in Guatemala from **Central America** (Adams, 2004). Using almost the same techniques and different poverty measures, the results showed that remittances have a positive impact in reducing poverty in Guatemala, but the scale of this decrease depends on the poverty measurements. However, there is difference in the impact on poverty depending on the source of remittances: the severity of poverty is reduced by 19.8% when international remittances is included in the income and by 21.1% when internal remittances are included. The author justifies this result with the high percentage of internal remittances received by the most poor (bottom deciles) estimated between 50 and 60% of their income.

Looking at the **Latin American** region and the case of Mexico, both **Lopez-Cordova, 2005 and Taylor et al., 2005** found a positive impact of remittances on reducing poverty in **Mexican** villages. Lopez-Cordova used the year 2000 population and Housing Census as a basis, which included an extended questionnaire included 2,400 municipalities. To overcome the problem of endogeneity of remittances, he uses two stage least square models using the municipal rainfall patterns and the distance to Guadalajara (city in Central Mexico with high migration and remittances rates) as instrumental variables. Poverty is measured as the proportion of population whose income is equivalent to, at most, the minimum wage "extreme poverty", while this proportion of population with incomes, at most, two minimum wages are labelled 'poverty'. Results showed that remittances may not seem to reduce the incidence of extreme poverty, while those at the 'poverty' level seem to benefit more from remittances. This results go along the idea that migration is too costly for the extreme poor and hence less beneficiary. Results also showed that remittances had a positive impact in the reduction of infant mortality rates and reduction of illiteracy (which will be discussed in further details in the following section).

Taylor, et al., 2005 confirm the idea that the impact of remittances on either poverty or inequality depends on the region and the migration prevalence. Using 2002 **Mexican** National Rural Household survey with a sample of about 1,782 households (in which 16% had a migrant abroad to the US and 26% an internal migrant) covering five regional rural areas of Mexico. In measuring poverty, they use a modified version of the poverty index (FGT)[21], which they found to satisfy the good measures of poverty. The study estimates the impact of small percentages change in remittances on the this index (which used three variants: headcount measure, poverty gap (which measures the depth of poverty) and squared poverty gap (measuring severity of poverty). Results showed that as an overall poverty decreases with increase in remittances, however international remittances showed a more positive impact than internal remittances. A 10% increase in international remittances, decrease the FGT index by 0.53%, while the same increase in internal remittances, decreased the index by 0.3%. This general result holds some differences when looking into the different regions. It is clear that the higher the prevalence of migration in the region, the higher the positive impact of international remittances on reduction poverty. A 10% increase in international remittances reduced poverty by 1.64% in the higher migrant region of West Centre Mexico, compared to a decrease of about 0.11% only for the South-South West region (with much lower prevalence of migration). Results showed that international remittances have larger effect on alleviating poverty since the share of households with access to remittances income increases; international remittances were found to have a positive impact on equalization as well (this impact on equality is addressed in the following section).

From the above empirical evidence, we can conclude that the impact of remittances on poverty ranges from an extreme positive effect that alleviates rural poverty, to an extreme negative effect that does not have any impact, or sometimes have negative effects the poverty on the community. This depends in many ways on the status of the

[21] called the Foster-Greer-Thorbecke (FGT) index

households and the community and the behavioural choices that could spread across the communities. Taylor et al. (2005) call this process the 'diffusion hypothesis' where, little effect on poverty could be found, if few households from middle and upper income groups have access to migration and receive international remittances. Among those groups, poverty is already not a problem, but inequality could increase. However, larger positive effect on poverty are more likely to be found among households of the lower income groups, where remittances would be diffused downward through income distribution, which could have a more tangible impact on alleviating poverty. The higher the prevalence of migration (and remittances), the more positive impact on poverty.

2.4.2. Impact of Migration and Remittances on Inequality

This brings us to look more in depth to the impact of remittances on income distribution and inequality. Early studies showed that there are more widespread negative impact of migration and especially remittances in increasing **inequality** and dependence on the community on external non-productive funds.

Lipton, 1980 for example, argued that migration is likely to lead to worsening of communities' **income distributing** and hence loss of rural welfare. According to his study, the absence of migrants from poor rural areas, due to its high costs, generates negative externalities that lead to worsening the distribution and that the net impact is negative since remittances are quite small or disproportional to other level incomes to compensate the losses. In his study[22], he found from exploring 40 villages in India (that focused more on internal rather than international migration), that migration increased rural inequality. Following the push-pull theory of migration, he explained that 'better-off' migrants are pulled towards prospects jobs (in a city or abroad), whereas the poor are pushed by rural poverty and labour-replacing methods' (Lipton, 1980).

More broadly, the paper **by Stark et al, 1986** finds that the impact of remittances on distribution is not the same for all types of migration or all types of migration histories of the villages. Looking into data of households of two Mexican villages, the authors used a sample of 425 adults (13 years and older) in 61 households, to construct the Gini coefficient index measuring inequality. They use the decomposition framework to compare the effects of remittances on households' income distribution in two ways: 1. Omit remittances from the households' income and compare the resulting Gini with the observed Gini; and 2. derive an expression for the marginal effect of a change in remittances in income distribution. Results showed that the effect of remittances on income inequality depends on three factors: (i) the share of remittances in the total village income; (ii) the inequality of remittances distribution within the village; and (iii) where the remittances' recipients are located in the income distribution of the village. The two chosen villages, despite their close characteristics, differ substantially in their migration history. Overall, results showed that income inequalities decrease when migrants' remittances are considered: a drop of 3% points for village 1 vs. a drop of 7 % points in village 2 (with longer history of migration). However, looking more closely to the impact of small changes in the three income components of households in the two villages showed that: a 1% increase in remittances increase inequalities in village 1 by 0.14% and reduced inequalities in village 2 by -0.10%. The inverse is observed for internal remittances where a 1% increase in internal remittances reduced inequality in village 1 by -0.07% and increase inequalities in village 2 by 0.11%. This confirms other studies that the impact of remittances depends on the source of remittances and the situation of the village in the income distribution. The study also confirms that an increase in remittances has a positive impact on welfare, but the magnitude depends on the source of remittances and the history of migration.

[22] previously addressed hen looking into the decision to migrate

The paper by **Barham and Boucher, 1998** started from where Adams 1989 has stopped. They used the same methodology to examine the net effects of migration and remittances on **income distribution** using a sample of 152 randomly selected households from Bluefield's, Nicaragua. This paper develops counterfactual scenarios of no-migration and remittances through an econometric approach and imputation process. The parameters of earnings are estimated in an econometric model of a double selection, which model the choice of migration and the choice of labour force participation (non-migrants). This incorporates the potential endogeneity of labour participation decisions. This is used to construct 2 counterfactual scenarios: one that replaces the remittances in households' incomes by imputed values of migrants' home earnings; and the second that allows the effect of return migrants on the participation decisions and earnings outcomes. The econometric analysis investigated how income distribution would compare when remittances are treated as a substitute for home earnings. Observed income distribution including remittances generates a Gini coefficient of 0.43, while home earning of non-migrants Gini was of 0.47. Compared to household's income per adult, the Gini is 0.50 and the observed is 0.46. There is a nearly 10% more inequality in households without remittances than in those with remittances in both cases. Similar results were obtained by Stark et al., 1986 and Taylor, 1992. The Gini decomposition of income (remittances and home earnings), is lower in income with remittances than that of that with non-remittance income and the correlation of remittances with total income is much lower than that of non-remittance income with total income. The authors conclude that remittances reduce income inequality if they could be considered as an exogenous source of income. However, if counterfactual non-migration effects are used where migration and remittances are treated as substitute for home earning, income inequality was found to be lower in the no-migration counterfactuals than with the migration one.

Investigating the impact of remittances on poverty and inequality, **Gubert et al., 2010** use data that were collected in Mali in 2006 and that includes 4,494 households and 40,810 individuals. Using the counterfactual approach to estimate the impact, the authors model three scenarios: (1) Counterfactual 1: where remittances are subtracted from total consumptions in households receiving; (2) Counterfactual 2: where consumption is imputed of remittances-recipient (using the methodology adopted by Braham and Boucher (1998) and (3) Counterfactual 3: which is the same as one but where the error term is treated so as to ensure its independence. Using the poverty headcounts and the Gini coefficients and the standard Heckman two-step estimation to control for selection bias, results showed: First, that in all the counterfactual scenarios of non-existence of remittances, poverty will increase severely (ranging from 2.4 to 5% depending on the scenario. Second, regarding impact on inequality, results showed that in the scenario counterfactual 3, there is an equalizing effect of migration and remittances: the lower the quintile the higher the equalizing gains in consumption distribution, in fact upper quintiles are losing on average consumption.

Using the same counterfactual approach, in a larger study that addressed the impacts of internal and international remittances on both poverty and inequality in **Ghana, Adams, 2006** finds that including international remittances in household incomes, leads to a small increase of inequality, this increase is more accentuated in case of internal remittances (an increase of 3.5) than international remittances (an increase by 2.7%). This increase in inequality were coupled with decrease in poverty (as previously showed), which means that most of the poverty reduction comes from increased in households incomes as a result of those remittances.

Taylor et al., 2005 looks into the impact of remittances (internal and international) on inequality using national survey data from Mexico and looking into five rural regions. The authors used the Gini coefficient to estimate inequality and include three components related to remittances: (i) the weight of remittances in total income; (ii) how equally or unequally the remittances are distributed; and (iii) to check if remittances is correlated or not to total income. Results of this exercise showed that international remittances had a

stronger correlation with per capita income (estimated at about 0.78) than internal one, but there is more negative effect on equality. A 10% increase in international remittances increased the Gini coefficient by 0.3%. This overall result is not necessarily true across the different regions of the sample that hold a great deal of discrepancies in their characteristics and especially on the number of migrants. Applying the same exercise but separating the regions, showed different results. In fact, it was shown in this study that there is an inverted U-curve between migration and distributional effect of international remittances, where regions with lower rates of migrants seem to suffer the more from inequality.

This concept was confirmed by the theoretical model developed by **McKenzie and Rapoport, 2007**, however in a broader and more inclusive manner. The authors considered both the direct and indirect effects of remittances (considering the multiplier effects on spending as well as other spillovers effects on the community, including network effects). They used two data sets from surveys conducted in Mexico on 57 rural communities located in areas of high migration together with demographic dynamics survey of 14 rural communities in Mexico. This large set of data, allows a broader spectrum of the analysis. Using instrumental variables (historic state-level migration rates and US labour market conditions), the authors isolate the possible impact of community level migration on propensities to migrate and hence inequality. The results of their empirical work showed that further migration reduces inequalities among communities with high historical or initial levels of migration experience, whereas a small and non-significant impact on inequality was found in households with smaller migration network. In other words, the larger the network size the higher the propensity to migrate in lower households. In terms of impact on inequality, results showed that at high levels of migration prevalence, there is reduction in inequality. In fact, authors found an inverted U shaped relation between migration and inequality: where migration increases inequality at the lower migration experience and lowers inequality as migration increases. The authors argue that migration could have a negative impact on inequality on the short term, but as experience accumulates in the long term, the inequality is reduced.

From the above empirical evidence, one could conclude that the impact of remittances on inequalities gives mixed results. The empirical evidence suggests that there are some main factors related to the household that could decrease or increase the inequality in the communities. First, the existence of migration history in the community for long times allow for an equalizing effect, due to the accumulation of knowledge regarding migration and the use of networks that generates better usage of remittances and hence reduces inequality. Second, on the position of the household on the class to which belong the household: belonging to the middle or upper classes causes an increase in the inequalities within the community.

It is important to note that results of the empirical study also depend on the economic question being asked and the empirical technique that is being used to generate the estimates of income and income distributions. In most of the studies, remittances were treated as an exogenous transfer of income by migrants and hence the economic question that was being investigated was how remittances affected income distribution and observed levels of welfare of the receiving communities, hence the result would lead to conclude that remittances increases income inequality. However, as seen in other empirical studies (e.g. McKenzie & Rapoport, 2007), when remittances are considered as substitute for home earning, the economic question becomes how the observed income distribution compares to a counterfactual scenario without migration and remittances but including an imputation for home earnings of migrants if those migrants would have stayed and worked at home, better results on inequality were reported.

Moreover, many of the differences of the results in the empirical studies are due to the differences in the reference points for these studies. Some studies look into the inequalities between rural and urban, between persons or families or between towns and

counties. However, it is clear that there is some kind of agreement that the stages of migration (or migration history) of the town or community play an important role in accentuating or closing these inequalities. Moreover, this could also be attributed to the lack of unambiguous concepts related to income distribution and social welfares (Stark, et al, 1986).

Despite the fact that these types of studies dominate the empirical evidence literature at the micro level, more research still needs to be done in order to reach more concrete conclusions.

Addressing the social impact of migration and remittances does not stop on their poverty and inequality which are considered rather the basic needs, going to a more pro-active stage, we will investigate their impact on the human capital development in the households. This impact is argued to have long-term development impact on the household.

2.5. Impact of Migration and Remittances on Human Capital Development

The impact of migration and remittances on the human capital[23] of the individuals could have 'life-changing' implications on the households; between potential losses and gains the net effect depends very much on how this household would respond to these migration and remittances.

It is true that migration of a member of the household could lead to the loss of the income that this member could have brought to the household if he/she stayed. This could also affect negatively the educational attainment of some members of this household if they will need to work to compensate this income loss. Moreover, there have been some indications on the adverse effect of children growing up separated from their parents (or at least one of them) due to migration in terms of their schooling and their commitment to education. This abstract negative scenario could be true in the absence of remittances towards this household.

However, on the indirect front, migration can positively impact education of the children of the household left behind, when they can change the expectations of future employment (and future migration potentials) and returns on education and hence give incentives to invest in the education (this is part of the brain gain effect).

However, a more positive scenario could be taking place in case there are remittances sent by this migrant to the household. These remittances will compensate this loss of income and hence young members will not need to drop off from their education to work. More importantly, as remittances ease the liquidity constraints of the households, there is evidence that this allows households to spend more on the education of their children (and that they would not have done so in case they did not receive these remittances). (e.g. Taylor, 1992, Durand and Massey, 1996).

Moreover, these remittances are often used to improve the health status of the households, this includes more health care, visits to doctors, ability to purchase medicines and improving on the households basic infrastructure such as access to sanitary water, healthy diets, solid flooring for the house, etc.

[23] In order to focus our analysis and be able to measure the impacts, we look at the rather strict definition of the human capital which is the level of education and the overall level of health of the individuals.

Despite these considerable potential impacts of migration and remittances on the human capital of the home countries, the numbers of studies addressing this issue are very limited[24](McKenzie, 2005).

Given the importance of this subject for our study and its implication on the overall development of the communities and economies, we will review some of the important studies that have addressed this issue at the micro level. This will serve as guidelines for our own model that comes at the second part of this chapter. We will start by presenting the studies that looked into the direct impact of migration on the educational outcomes followed by studies that looked into the effects of remittances on human capital (education and health) and other studies that made some interesting remarks and additions.

2.5.1. Impact of Migration in Human Capital

The impact of migration on human capital have inconclusive results, as mentioned. On the direct front, absence of one member of the household due to migration (especially if the parent) can have negative impacts on the remaining members in terms of their education and human capital and from the other hand migration can have an indirect positive impact on school attainment of the children of the household left behind, given its role in raising the expectations of future employment and the more positive returns on education. Empirical evidence on this issue has not reached the same result. In the following three empirical evidence reviewed, we will find how these results are substantially different even for the same country: Mexico. These studies have not considered the role of remittances in their analysis.

Hanson and Woodruff, 2003 conducted a study on the impact of migration from **Mexico** to the US, on the education using data from a 10% subsample of the 2000 Mexico Census of population and Housing. The authors focus on accumulated schooling (grades completed) for 10-15 years old in rural areas. The authors establish their theoretical assumptions by defining education attainment (number of school grade) for a child, in a household in a region, according to the characteristics of the households' resources and potential returns to education and the characteristics of the family structure. Looking at the sample data, and first without controlling for observable variables, it shows that children in migrants' household tend to accumulate more schooling years. To avoid the problems of endogeneity of migration, the authors use instrumental variables using data on historical migration patterns in Mexico. Using the number of school grades completed as the dependent variable and the IV instruments controls, showed a confirmed positive impact of migration to the US as it was associated with an additional 0.9 years of education for 10-12 years old girls and an extra of 0.7 years for 13-15 years old girls. For the boys the results were not conclusive.

The impact of migration on human capital in Mexico was again studied in the paper by **Boucher et al., 2005.** The authors look into how a small probability of migration can have a positive impact on human capital. Using data collected from the National Rural household Survey of **Mexico**, including 1,430 households and data about their characteristics, they test the 'brain-drain vs brain-gain' hypothesis at the micro level. This hypothesis suggests that the average level of human capital in a village is higher where there is a positive but small probability of migrating to a destination where economic returns on education will be higher than in the origin. More precisely, this study tests the idea that the gains to the human capital with those who will want to migrate

[24] It is important to note that there are large number of studies that addressed issues related to the determinants of human capital in general (such as education and schooling, health and welfare, etc.) but very few of them considered the role of remittances as a main contributor. In this section we will only consider those studies that looked on the impact of remittances on human capital, which is the main focus of our study.

but will end-up not migrating, exceeds the drain caused by the human capital migration[25]. Interestingly, it was observed that internal migration is dominated by more educated than those who are left behind, whereas international migration towards the US is not positively selective, and hence it does not significantly influence human capital formation. Contrasting the results obtained in terms of internal and international migration the empirical evidence showed: in case of internal migration in rural Mexico, there is a positive impact on the village schooling. A one year increase in the average schooling is associated with an increase in internal migration by 1.54 percentage points. In fact, access to high skilled internal migration networks increases the probability that children will attend school (beyond the compulsory grade) for the potential of migration in the future. In contrast, the same is not obtained from international migration: there was no evidence that international migration selects positively on schooling, reflecting low returns to schooling for village migrants in US, where access to low skill internal networks decreases the probability of schooling. This is a special case related to the US-Mexico migration where most of international migration to the US is that of low-skilled and hence there is no incentive by individuals wanting to migrate to gain more education nor skills. These findings suggest for the authors that there is brain gain. Even in the case of international migration, it is assumed that prospective returns to schooling are high in a foreign country compared to the sending country.

Contrarily to these rather positive results, other studies on Mexico found a rather dominating negative impact of migration on the households left behind in particular on schools' attendance while addressing the same country: Mexico. **McKenzie and Rapoport, 2011** found evidence that migration affected negatively schooling attendance for boys and girls in rural **Mexico**. They used data from 1997 national demographic survey and where they restricted their analysis on rural communities with a sample of 20,388 children aged 12 to 18 years, living in 12,980 households. The authors focused on the age brackets of 16 to 18 years old, given that the education system of Mexico imply compulsory education until this age and hence other choices (than education) could be offered, such as working or even migrating. To overcome the endogeneity problem of migration, they used instrumental variables method using the historical migration network formed in 1920 as an instrument. Using educational attainment to measure the degree of schooling of the children: first the probit model showed a significant and small negative impact of being in a migrant's household on school attendance for boys and an insignificant effect for girls; second, when migration instruments were introduced, the results showed that being in a migrant's household, significantly lower the probability of attending school for boys aged 12-15 years old by 16% and for boys aged 16 to 18 years old by 21%. Same negative results were obtained for girls (20% percentage point lower probability if they are between 16 and 18 years old). This result was negative but insignificant for younger girls (12-15 years old). Moreover, using years of schooling to estimate the impact showed almost same negative results for both boys and girls. The authors finally examine what the children do if they are not attending schools and found that chances of being in a migrant's household increase the chances for boys to be migrating themselves between 16 and 198 years old while girls are doing housework.

Assessing experiences from other countries, **Mansuri, 2006** looks into the impact of migration on human capital in **Pakistan**, while considered gender inequalities related to schooling. Using data from the Pakistan Rural household Survey (conducted in 2001/2002) and collecting detailed information on migration and other households characteristics from 2,531 households in 143 villages. The author looks into the impact of temporary migration on investment in child schooling. Using the indicator on accumulated schooling, the author focuses on children age 11-17 years old. It is important to note that there is a large gender inequality in the education of rural poor

[25] This concept was addressed on the macro level and an overall positive impact was found (Beine, Docquier and Rapoport, 2001 in chapter 3), but only very few studies addressed it at the micro level.

households in Pakistan. In the sample surveyed, 58% of the girls aged between 11-17 had never been to a school compared to 26% for the boys. Data shows also a significantly lower child labour in migrants' households, especially for the girls. The author estimates a regression function where school attainment is the dependent variables and variables such as the households has a migrant, child's gender, as well as other child and households characteristics. To overcome the problem of endogeneity, the author use the prevalence rates of migration in the population as the instrumental variable measured by the number of adult males in the households, where, the more the number of males in the households the more likely that there would be a migrant. Results showed that children's in migrants' household are likely to attend school and to stay in school than those that are in non-migrant households. This result was stronger for girls, which are 19% more likely to be enrolled in a school if they live in a migrant's households than if they don't, whereas for the boys this difference accounted for only 7%. Also dropout rates decline more for girls than for boys (55% vs 44% for boys). Moreover, girls in a migrant's household seem to be more likely to complete more grades than boys. Therefore, this reduced the gender inequality gap for education. These results could be due to the fact that in the absence of the male, there is greater reliance on boys[26]. Consequently the results have showed that children in migrants' households are less likely to work with 66% percentage point.

2.5.2. Impact of Remittances on Human Capital

One of the main studies that addressed this issue is the one by **Acosta et al. 2007**. This study covered 11 countries in Latin America[27] and investigated the impact of remittances on poverty, education and health using national households surveys conducted between 2000 and 2004. As previously outlined in the previous section, the authors use the counterfactual effect and instrumental variables to overcome the problem of endogeneity of migration. As indicated in the previous section, it was found that remittances could have an important role in decreasing poverty, especially for poorer households. Using the same methodological approach for education, the authors compare school enrolment rates for children between 12 and 17 years old in households receiving remittances to those that don't receive these flows. Following the equations by Hanson and Woodruff, 2003, they estimate the number of school grades completed by children as a function of their households' characteristics according to the quintile the households belong to. Results showed that receiving remittances is positively and significantly correlated to higher education attainment in 6 out of the 11 countries (the exceptions were from Mexico, Paraguay, Peru, Jamaica and Dominican Republic). Moreover, there were discrepancies in this result according to the areas (rural vs urban) and gender. For Mexico the effect is positive in case of the low education of the mother, which was an unexpected. Looking at the impact of remittances on child health and in particular on infant mortality, results of analysis showed an important impact of remittances in reducing infant mortality. Furthermore, the study looks into the anthropometric indicators for young children[28] and the impact of receiving remittances on these health indicators. Results showed that there is a positive impact on health growing indicators for children in households receiving remittances, especially in low-income households.

A similar study conducted on the impact of remittances on the human capital of 11 countries in Latin America by **Fajnzylber and Lopez, 2007** showed that children of families that receive remittances are more likely to remain in school, except in the case of Mexico. The study also revealed that the positive and significant impact of remittances

[26] This principal was observed in other countries and other studies such as in El Salvador in Acosta, 2005

[27] Bolivia, Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Mexico, Nicaragua, Paraguay and Peru.

[28] Weight for age and height for age

on the education attainment in these 11 countries was larger when the parents' level of education is low.

Looking at the country level, we found that the empirical evidence on the impact of migration and remittances on human capital is dominated by studies related to the Mexican case. Other than the fact that Mexico is considered one of the largest exporters of human capital, it is also considered one of the largest recipients of remittances. Moreover, these kinds of studies require specific data related to children in migrants or remittances-receiving households, which is not readily available or easy to access. A third reason could be related to the controversial results reached by empirical studies on Mexico.

One of the large studies undertaken on the Mexican case is the one by **Lopez-Cordova, 2005** where he looks into the impact of migration, through the channel of remittances, on the overall development of households. He used the year 2000 Mexican census (which was applied on 10% of the households) to investigate the relationship between remittances and developmental outcomes, with a special focus on school attendance, health status, poverty and marginalization. The data showed that households with migrants had substandard welfare indicators (low income per capita, income inequality, high infant mortality rates, high illiteracy rates, less children attending schools and large share of population living in poverty). The author believed that these conditions were actually the causes (and not the consequences) of migration. To avoid such causality, the author used instrumental variables[29] and ran 2SLS to isolate the causal direction. The dependent variables include: infant mortality, illiteracy in 6 to 14 years old, school attendance between 6 and 14 years, population earning less than one minimum wage and marginalization index constructed by the author. Regression analysis includes a number of regressors, other than remittances, reflecting the characteristics of the municipals. Controlling for endogeneity, the results of the regression showed that an increase by 5% in the number of households that receive remittances would decrease infant mortality by 4.7%, it would also reduces child illiteracy by 5.3% points and improves school attendance by 3.0% percent points. Also school attendance will rise by 11%, however this impact is insignificant among the 6-14 years old and negative for the age group 15 to 17. Also this same increase in households receiving remittances would reduce the fraction of population earning one minimum wages by 29.1 percent points. Finally, using an index created by the authors on marginality of the community, it was found that remittances would reduce the municipal marginalization and hence improve its welfare. Hence, this study manages to prove that remittances could have an overall positive developmental effect on households.

Looking into the studies that looked more specifically on the impact of remittances on schooling, we note the study by **Cox Edwards and Ureta, 2003** which looked into the impact of remittances on schooling decision of the households with migrants in **El Salvador**. The authors used data sets of a sample of cross section of 14,286 individuals aged between 6 and 24 from the 1997 Annual Household Survey collected by the National Statistics Office in El Salvador. The authors use the 'Cox proportional hazard' model to examine the determinants of school attendance with a cross-sectional data. They estimate the impact of the characteristics of the individual and the family, controlling for remittances and income separately, on the hazard of dropping out from schools. The study found that the key important determinant of school retention is parental schooling, also that incomes (without remittances) have a small, but significant, impact on the hazard of leaving schools, while remittances have a larger significant impact on school retention. In fact, and despite its small effect, in urban areas, remittances effect on schooling is still 10 times more the size of the effects from other

[29] The instrumental variables used here are the product of the distance from the municipality to the US-Mexico border and the historical migration rates (measure by the percent of residents migrated between 1955 and 1959, which was believed instruments that reduce the cost of migration.

incomes; whereas in rural areas, this effect is estimated to be about 2.6 times more than other incomes. Moreover, in urban areas, a US$100 increase in remittances lower the hazard to leave school by 54% and 27% (grade 7th and 6th respectively). In rural areas, an increase of US$100 in remittances lowers this hazard by 25% at all grades. It is worth noting that parents have leading roles in the education system in El Salvador and in expansions of schools and private investments. While this is considered not a problem in urban areas, in rural areas, the government allocated resources to parents' associations to enable them to fund the schooling. This makes remittances received by households (amounting for 14% in rural and 15% in urban households) relax budget constraints, and have an important impact on education of children (in case parents have lower education).

These results for El Salvador were confirmed in the paper by **Acosta, 2006** where spending behaviour especially on the education of the households' children are investigated. The author use data from a cross-sectional national household survey undertaken in 1998 (in urban and rural areas) containing demographic characteristics of almost 12,000 households and their related individuals. Using as instrumental variables migration networks at the village level to overcome the endogeneity problem of migration and the Propensity Score Matching (PSM) to correct for the sample selection problems. Results showed that there is in general a positive impact of remittances on education, where children in remittances recipients' households seem to have more chances of staying in schools (7.1% more with no controls, 4.6% with control for characteristics of parents and their education and 1.8% controlling for the wealth of the households) than others in non-recipients' households. In particular, estimation suggest that girls between age 11 and 17 years and boys between age 11 and 14 years old seem to benefit the most from remittances, whereas older boys of age 15 to 17 years old are not significantly affected. Results also showed a negative correlation between child labour and remittances and adult female labour supply, whereas there is no associating with male labour supply. Being in a recipients households, reduces the child chances of working by 2.8-percentage point, this result was found insignificant when controls for the household wealth was introduced.

Using exogenous shocks on the remittances to measure their impact on schooling and child labour, **Alcarza et al (2012)** used the impact of the US recession (in 2008-2009) on the sent remittances to the **Mexican** migrants' households, to test the implications on school attendance and child labour[30]. The data used from Mexican occupation and employment survey including quarterly data of 315,867 persons of 12 years and older in 106,170 households. The authors followed 658 children in the first round, in remittance receipt households in 2008, and compare them to a control group of 13,950 children, who are in households that do not receive remittances. The authors use the Difference in Differences (DiD) analysis to measure the impact of the reduction or suspension of remittances in 2009 (due to the US recession) in households that used to receive remittances in 2008 and compare them to those households that never received remittances. Instrumental variables are used to overcome the problem of endogeneity of migration, using the distance from the village to the US borders (including the railways) and adjusting with the cost[31]. Using the 2SLS approach to estimate the equations, results showed a significant effect of remittances on the incidence of child labour: there is an increase in the probability of child labour for a decrease in remittances (estimated at 11.4 percentage points without controlling for incomes and at 9.8 percentage points using controls). In terms of schooling, results confirmed the negative impact of remittances reduction on school attendance: the probability that a child goes to school is reduced by 15.4 percentage points when remittances is reduced (with or without controlling for incomes). Furthermore, dividing the sample into rural (under than 15,000

[30] It is important to note that the education system in Mexico implies compulsory schooling until the age of 15 or 16 years old.

[31] this IV was previously used by several other studies, such as Woodruff and Zenteno (2004)).

persons) and Urban (more than 15,000) revealed more accurate results: child labour in rural households are significantly affected by reduction of remittances, with an increase of about 12.3% in the probability that the child will work (including all controls). This test was found insignificant in urban villages. As for school attendance, it was found that both rural and urban area's children are likely to not attend school in case of reduction in remittances. These results were significant in rural but not urban areas.

Along the same lines, **Yang, 2003** looked at the impact of remittances on child human capital in the **Philippines** from two different aspects: child schooling and child labour. Using household survey panel data on overseas Filipinos, conducted annually, the author used data of 1997-1998 to measure the impact of remittances on school attendance. The interesting aspect of this paper is the way the author measured the impact of remittances in the context of the financial Asian crisis (between 1997-1998), where currencies in major middle Eastern counties (an important destination to workers from Philippines), have appreciated by at least 50% against the Philippines' peso and somewhat less for most other Asian currencies. The idea of the model was to compare the change in remittances generated by the exchange rate shock with the changes in child outcomes and then deducting from this the impact of remittances on child outcomes. The result of this exercise showed that an increase of 10% in remittances could increase the fraction of attending schools (between 17 and 21 years old) by more than 10.3% points. The study also found that in this case, child labour declines by almost 3 hours per week. Confirming the same idea, Gordon et al, 2003 showed, using the year 2000 Mexican census, that children belonging to households receiving remittances complete significantly more years of schooling.

Emphasizing the role of migration networks in the relation between remittances and education, the study by **Calero et al., 2009** on the case of **Ecuador**, looks into the impact of remittances on human capital through transnational networks. Using data from household surveys in Ecuador from 2005 to 2006, collected from 13,581 households including 55,666 individuals, the study looks into the school enrolment and working hours for children. The survey also included data on the size of cash transfers received from abroad and ways by expenditure. Other data were collected also on consumption, wealth, households' shocks (illness, death, etc.) and regional shocks (drought, floods, etc.). It is worth mentioning that there was a large wave of migrants from Ecuador's in the first half of 2000, following the economic crisis and the country's dollarization, which resulted in a large wave of remittances flows to the country and the creation of migration networks that had an important role in facilitating further migration, reducing costs of migrations and provide support to migrants' households. This had an immediate effect on school enrolment (a 5.2% increase in primary enrolment and 5.7% in secondary enrolment) was observed between 1995 and 2005. The authors estimate the probability of being enrolled in a school, participating in income generating activities or domestic work as a function of remittance transfers, individual and households' characteristics. To overcome the causality problem of remittances, the authors use the exogenous variation in transaction costs of international financial transfers. Using the data of 8,600 children (age between 10-17 years old) from the sample, results of the IV probit showed that remittances increase schooling, especially for girls, children in rural areas and poor households. An increase of US$1.00 of remittances per month could lead to a 0.09 increase in enrolment rate; this is means a decrease of 19% in non-enrolment. Remittances were also found to decrease child labour, but this result is only valid in non-poor and in rural areas. This means that despite the potential positive effect of remittances in increasing school enrolment of the poor households children, they are not high enough to compensate for the earnings expected from child labour. Results showed a negative impact of remittances found negative on children domestic work, which could be explained by the need to replace the work left behind by the adult migrant. Looking at the role of transitional network in supporting households overcome shocks, it was found that while shocks did not seem to have a negative impact on school enrolment, they had a negative impact on increasing child labour.

An additional factor that could be added to the impacts of migration and remittances on the education of the children left behind relates to the **gender of the migrant**. If the absence of one parent could represent a disruption to the child's educational attainment, this must depend on the gender of the migration and his/her relation to the household. In Indonesia, **Nguyen and Purnamasari, 2011** showed a weak and insignificant correlation between the number of children in the households that are in schools and the gender of the migrant. Moreover, in terms of hours' worked by children, it was found that being in migrant's household reduce the hours worked of the children by 7% points compared to non-migrant households. Interestingly, it was found that being in a female migrate households reduced the share of children working by 32 percent points than in households with at least some male migrants.

Other studies on the issue showed that, while male migrants tend to send remittances towards investment in their home countries (as they plan to return home), female migrants prefer to direct these remittances towards the education and health of her household left behind (De La Cruz, 1995). This was confirmed by other studies that addressed the idea of the bargaining power of the female and its impact in boosting the remittances flows towards the human capital of the households[32] (Guzmana et al., 2008 and Pfeiffer and Taylor, 2008). There is a large literature on this issue that will not be addressed here in details, we will just give some of the most important highlights.

To clear this confusion between the impact of migration from one side and remittances from the other, on human capital, an investigation of the trade-off between flows of remittances and absence of parents due to migration in the child outcomes and human capital have been made by **Parinduri and Thangavelu, 2011,** who found that remittances increase the likelihood of children remaining in school by 23 percent. This result is even larger when controlling for child and households characteristics. At the same time, that school attendance and performance due to migration of one parent could deteriorate. Mixing the two results of this analysis found, that even though remittances can increase school attendance, it does not have any impact on either improving or deteriorating the child's performance in school (i.e. grade repetitions). The authors conclude that this could indicate that the trade-off between parents leaving households to work abroad, may have negative impacts on children's human capital accumulation.

On a completely different and positive note, **Amuedo-Dorantes and Pozo**, 2010 undertake a study on the Dominican Republic that clearly separates the two effects. Using national data from the Latin American Migration Project survey including 907 households and 1,123 children between 7 and 18 years old, they differentiate between migrants' households (include 12% of the total children considered in the survey) and non-migrant households (including the remaining 87%). Data showed that 19% of all children belong to a household that received remittances. The authors estimate school attendance[33] for children controlling for whether they receive remittances or no and including characteristics of the child and his/her households. As expected, many of the children that receive remittances belong to households with migrants (48%). This could create conflicting effect on the child, from one hand remittances will improve income and release constraint, and could potentially have a positive impact on children's school enrolment and from the other hand, migration could have a rather negative effect on their schooling by either the need for them to be engaged in labour markets to replace the loss of income due to migration, or the need to take responsibilities domestically, etc. The authors hence use the data for children who are in non-migrants households but who

[32] Some other general studies that are not linked to migration or remittances gave evidence on the influence of the mother's power on her children's education, health and labour (Reggion, 2011 and Gitter and Barham, 2008)

[33] This was preferred over year of education or school attainment, since this could be likely dependent on previous years of remittances receipts.

receive remittances (from a distant family member or friend) to ensure that the effect measured is only that of remittances. To overcome the endogeneity, the authors use two stage probability model and instrument remittances receipts with unemployment rates and average real earning in personal care and service occupations in the US states were migrants were likely to work. Results showed that an increase of 10% in the probability of receiving remittances raise the likelihood of school attendance by almost 3% points. However, the study showed a counterfactual effect when the sample was expanded to include children in households with migrants.

It is worth noting that most of the studies that addressed the impact of migration or remittances on the human capital, focused on their impact on children's school attainment and child labour in migrants' households and very few on health. Some of these studies are addressed below with some details highlighting the different results obtained and the different methodologies.

2.5.3. Impact of Remittances on Health

To complete the picture of the human capital, a closer look on the ***impact of remittances and migration on child health in the households*** left behind shows contradicting impacts. From one hand, the absence of (one of the) parents could reduce the likelihood of receiving health care for the children especially if the children have to work to compensate the loss of income, but at the same time, and on a more positive note, mothers in migrant families seem to be more aware of health measures, which could spread out to non-migrants households through migration networks (Mckenzie, 2005). From the other hand remittances could act as a driver to improve health outcome, by lowering infant mortality, increasing birth weights and healthy growth, either through access to better infrastructural services such as sanitary water, sewage systems, better homes, etc. or through access to health services especially for mothers and babies. Hence the overall impact of migration and remittances could be ambiguous and could depend on other factors that are very much related to the community under consideration. Despite the importance of this subject for developing countries and the potentials that could be achieved through remittances on these conditions, very limited number of studies addressed it and consequently, policies have also been shallow on these aspects. Health outcomes are crucial aspects of households' development and ensure that the household will have long-term development.

These contradicting effects were addressed by **Kanaiaupuni and Donato, 1999** when they examined the effect of migration on survival outcomes for Mexican infants, using data collected in 25 Mexican communities. The study looks at a retrospect to all lives, deaths and births of households since 1950. They measure the impact on the infant mortality from three variables: the first is the amount of remittances received from the US (migradollars as previously pointed out); the second is the intensity of migration from each village; and the third reflects the institutionalization of the migration process in the communities. For each of these three variables, the authors estimated a model using the log-odds coefficients to investigate the impact of these main variables, together with a number of other control variables related to the households. Results of these models show an initial negative effect of migration on the infant survival due to the disruptive effect to the households and the surrounding communities. However after long periods of migration, it becomes institutionalised in the community and infant survival for the community picks-up. Moreover, the existence of remittances improves the infant survival. This made the authors argue that the effect of migration on infant survival unfolds over time and that eventually infant survival will improve as an overall in the community irrespective of migration experience due to the development related to migration (Kanaiaupuni and Donato, 1999).

McKenzie, 2005 and also Hildebrandt and McKenzie, 2005 are two studies that looked into the role of migration on child health using data from **Mexico**. The data are

based on the 1997 national survey of demographic dynamics collecting data for more than 70,000 households. Variables used include information about migration, child health and women fertility. To measure the impact on child health outcomes, the author estimates a function where child health outcomes are dependent on a dummy variable of being in a migrant or non-migrant households, characteristics of the child's households and community controls (infant mortality rate in 1930, number of doctors and hospitals per patients, GDP per capita, etc.). To overcome the endogeneity of migration, the studies used the instrumental variables approach where they instrument migration with the historic migration networks in 1924. The aim of the methodology is to determine the overall impact of migration on the outcomes of the individuals left behind, without taking into consideration the remittances and using the Grossman health production function in order to explain channels through which migration can affect health outcomes. Outcomes health includes: infant mortality (less than 1 year old), child mortality (between 1 and 4 years), birth weight and low birth weights. Other variables were also considered such as: child delivered by a doctor, child breastfed and receiving all vaccines. Several results were found in this study: it showed that children born in migrant households are 3% more likely not to die in their first year of birth; Weaker probability is estimated for children between 1 and 4 years old of 0.5% lower chance to die but significant; migration was also found to raise birth weight and to lower the probability of under weight birth by 5.4 percent. Moreover, the analysis showed that there is an important and significant impact of migration networks in reducing costs of migration and benefits the most. Consequently, migration was found to increase the mother's knowledge about health. Also, the same analysis showed that migration had a negative impact on years of schooling for educated mothers (more than 6 years of education). This latter result was found in contrast with previous studies confirming the role of migration on parents'' education that could also be transmitted to non-migrant households. This negative impact is again explained by the fact that children with a migrant parent tend to leave their school to migrate, especially with a low return for schooling when migrating. Adding to this the need to replace the migrant's role in joining the labour force.

On the impact of remittances on increasing child health, some positive results were found in the study conducted by **Acosta el. al, 2007** (previously mentioned) and where the authors found that migrants' households have lower infant mortality rates and higher birth weights. Moreover, overall, there was a positive impact on health growing indicators for children in households receiving remittances, especially in low-income households.

The study by **Fajnzylber and Lopez, 2007** used data from **Guatemala and Nicaragua** to investigate the impact **of migration on household's health** through several indicators: (i) children's (1 to 5 years) anthropometric health; (ii) incidence of doctor-assisted births and (iii) the probability that children between 2 and 5 receive complete vaccinations. Data on those two countries showed that children in the households receiving remittances have higher weight for age and height for age than those in households that don't receive remittances. The regression model estimated used the different health indicators as the dependent variables separately, where remittances where included and allowing its effect to vary according to the first, second and higher quintiles of the income distribution using counterfactual income (before migration). The model showed that children from households that receive remittances exhibited higher health outcomes than those that do not receive remittances, while controlling for the demographic and socioeconomic characteristics. The positive impact of remittances is concentrated on households in the lowest quintile.

The impact of migration and remittances on the human capital of the households left behind is very controversial. Empirical evidence found mixed results for both impacts, even when addressing the data related to the same country. However, there was an overall positive impact of remittances on households' education attainment, (using different indicators such as school attainment, years of schooling or illiteracy), whereas

the same couldn't not be said about migration, whose results showed some contradicting results. This impact depends on the age brackets and the gender of the children. In general, it was found that older boys are the least to benefit from remittances for their education given their role in replacing the male head due to migration and having to undertake some work or domestic responsibilities.

Studies that addressed the impact of migration alone, found more negative results, concerning the education specially that of boys (McKenzie and Rapoport, 2010). Moreover, more education attainment did not necessarily mean less children work in all cases, where it was found that in many occasions and for certain age groups boys or girls still have to contribute to either domestic work or paid wages.

The empirical result addressing the issue of impact of migration and remittances on human capital is rich. We have highlighted some of the most important studies on this issue, which are the ones that have been referred to the most in the literature.[34]

2.6. Conclusion

The empirical evidence on the impact of migration and remittances on the households left behind gave a mix of positive and negative results on the overall development status of these households. This is due to the complicated way by which these flows are affecting the economic and social aspects of these households and the different conditions that surround them, which could give different results. Simply, the impact depends on the initial condition of the household, its characteristics and the impact of the community around it. Moreover, the empirical evidence has also shown that these impacts are not only restricted on the household that has a migrant or that receives remittances, but there are strong evidence of spillover effects on the communities in which these households are located. This is how the link is established between the impact on the micro level and the macro level, which was shown to be more than just the aggregate impact at the micro level.

Nevertheless, one could strongly argue that there is much more that concerns these impacts than the restricted direct impacts caused by the way households use their remittances, which is in the majority, to satisfy their basic needs from consumption goods. In considering the expenditure on consumption, for example, one has to differentiate between the non-productive use of remittances and consumption. The latter was proved to have, not only a positive direct impact on the household overall development, but also on the neighbouring households and the community due to the multiplier effect that these expenditures are producing to turn the wheels of the economy. Also, the way the expenditure on human capital (including expenditure on education and health) was often considered as consumption whereas recent empirical evidence has considered a long term investment.

Regarding the use of remittances for investment, it is important to realize that even though investing with the remittances transfers has an immediate effect on development, the conditions that are necessary to encourage these sorts of 'risks' by the households are in the very heart of the causes of migration (low income, low productivity and lack of investment opportunities). This dilemma is coupled with unsuitable macroeconomic conditions such as uncertain markets and high inflation, which leads to investment in real estate rather than real economic and productive activities. Despite these restrictions on investment, there is strong evidence on the occupational choice of the returned migrants to become entrepreneurs, mostly in their own communities. This could ensure a long-term positive impact on the household but also on the community around it, especially if this business would include other members from the community.

[34] One study that addressed the case of Egypt and the impact of remittances on education by Roushdy et.al which will be addressed in the following section Elbadawy and Roushdy, 2010.

Other than these potential economic gains, looking at the social impacts of remittances, have a more complex relation. There is strong evidence that remittances do improve the poverty status of the household that receives them, with higher impact for the lower income quintile, however, with a potential loss of labour participation from the middle and higher income quintiles. Income inequality hence could be negatively impacted within the community, if households' receiving remittances only use their remittances for non-productive expenditures, especially in the short term. However, it was argued by some optimistic empirical evidence that as soon as these remittances start to move and turnover the community's economy, the inequality will be reduced.

Empirical evidence has looked at a longer term and much less 'risk taken investment', which is the investment on human capital. In development economics, it's believed that human capital creates a self-sustained endogenous growth. Any positive impacts from migration or remittances on the socio-economic variables, specially related to education performance and health status, will surely have a positive development impact on the community and the country as a whole (Lucas, 1987). This is a key fundamental belief in how migration and consequently remittances could have a positive role on development.

Despite the usual controversy that relates to the human capital and the role of migration and remittances, one could argue that as an overall, positive effects could largely be withdrawn from these flows. It is true that migration of a member of the household could have some immediate negative effects on the children of the household (lowering of income, child labour and disruption is schools), however these short term are soon compensated with the remittances that this migrant sends back to his/her households. The empirical evidence shows, that these remittances, in general, have positive effects in increasing the educational attainments and improving the health status of the children. Of course, some differences could be observed among different countries.

Hence, given this empirical literature and in order to complete the picture on how migrants with their remittances flows can affect the human capital development we devote the second part of this chapter on investigating this precise issue for the case of Egypt, a country that holds a lot of potentials in terms of human capital development.

II. Impact of Migration and Remittances on Human Capital Development in Egypt: is it a Missing Link?

Human capital represents an important asset for households, almost at no risk factor. This type of capital can generate, not only economic but also social benefits that can go beyond those achieved with investment (or physical capital). However, such as capital investment, human capital investment needs resources to be allocated for it, in this case these are mainly time and money. In poor households, where resources are scarce, this type of investment is often neglected and undermined and children are often asked to participate in domestic labour (in the house or in the fields or others) rather than going to schools, in search for an immediate, but very short term and small, marginal financial benefit. This is particularly true in case a member of this household is away for migration and the household had lost his/her contribution to the household income.

This is why remittances can represent a solution for these households as an additional source of income that can support education for children (in this case no need for child labour) and also can secure, or often create, a safe and healthy environment for their growth. Once they become adults, they participate in the labour market, earn wages, progress their economic and social development and self-generate or achieve benefits for longer terms (returns on investment). This is our main argument theoretically, however in practice, things do not always move in this direction.

Looking back at the empirical evidence from the macro chapter (chapter 3) a channel has been established between remittances flows towards developing countries and their human capital development (presented in their educational and health outcomes). In this second part of the micro chapter and in order to complete the picture of the relation between migration and development, we will investigate if remittances contribute to the human development at the micro level in the case of one of the highest remittances' recipients' countries in the Middle East, Egypt.

The choice of Egypt is supported by several factors, among which:

1. Egypt is a developing lower middle-income country, representing one of the largest population and economies in the Middle East and North Africa with a large and growing population (about 2% per year) reaching more than 82 million;
2. Migration outflows from the country is relatively low but increasing (Egyptian migrants currently represent 7-8% of the population), putting this country at a low risk from brain drain as confirmed by several studies (e.g. Beine, et.al. 2008);
3. The amount of remittances inflows to Egypt places the country as one of the top 10 among developing countries, and the top country in the Middle East according to most recent data (e.g. OECD and the World Bank) as will be detailed below.
4. Despite large improvements in its social indicators in the past 2 decades (reduction of illiteracy, increasing educational attainment and improving health status), the country is still lagging behind its potential;
5. In addition to these initial conditions, the country's economy is currently facing important economic and social challenges, especially after a period of political and economic instabilities, following the two revolutions in January 2011 and June 2013, which caused an overall economic slowdown in terms of production, industry, trade and revenues from the tourism sector, which represents one of the country's most important source of foreign revenues;
6. This downturn have added more pressure on migration outflows, but has also increased dramatically the remittances inflows to unprecedented levels putting an evidence on the importance of the countercyclical effect of these flows in the case of Egypt. Given this, one could see the wide spectrum of opportunities and benefits that are offered for the country's development, which is at current utmost need.

As mentioned earlier, any impact from remittances stem from the behaviour of the households and the way these remittances are used and whether or not they make a positive contribution to the household's development.

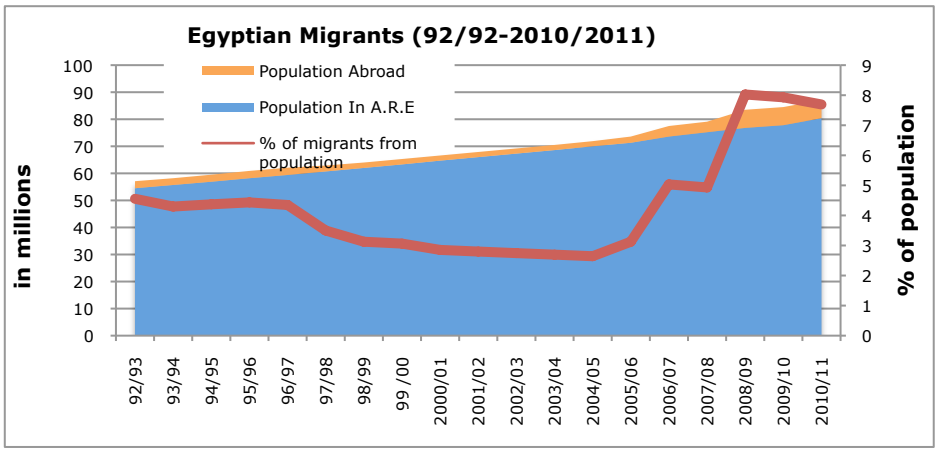
The purpose of this second part is to attempt to empirically investigate if the remittances received by the Egyptian households contribute to the development of the human capital left behind. This will be done in two sections. The first section will provide an overview of the Egyptian migration and remittances flows, highlighting some of their important characteristics and overall trends. The second section will present the empirical evidence to estimate the impact of remittances on human capital outcomes in Egypt, using the Labour Market Survey of 2006. This empirical investigation will include mainly two models; one addressing the education outcomes and the other will focus on the health outcomes. Results of the models will be presented and discussed. The section will finish with an overall conclusion.

1. Outflows of Migrants and Inflows of Remittances: is there a Trade Off?

In Egypt, migration represents an important social phenomenon. Egyptian migrants represent one of the highest numbers among the south Mediterranean countries. The most recent official figure estimated those migrants abroad at around 7-8 million persons (CAPMAS, 2013). This is compared to about 4 million in Turkey and 3 million in Morocco (Fargues, 2008). However, relative to the population, they only represent a share of 7-8% of the population (Fig 4.2) compared to Lebanon with the highest share of 18%,

Morocco at 9% and Tunisia and Algeria around 6% (Fargues, 2008). As the case with many developing countries, data on migration is difficult to get, due to inaccurate registrations and differences in definitions and ways of calculating.

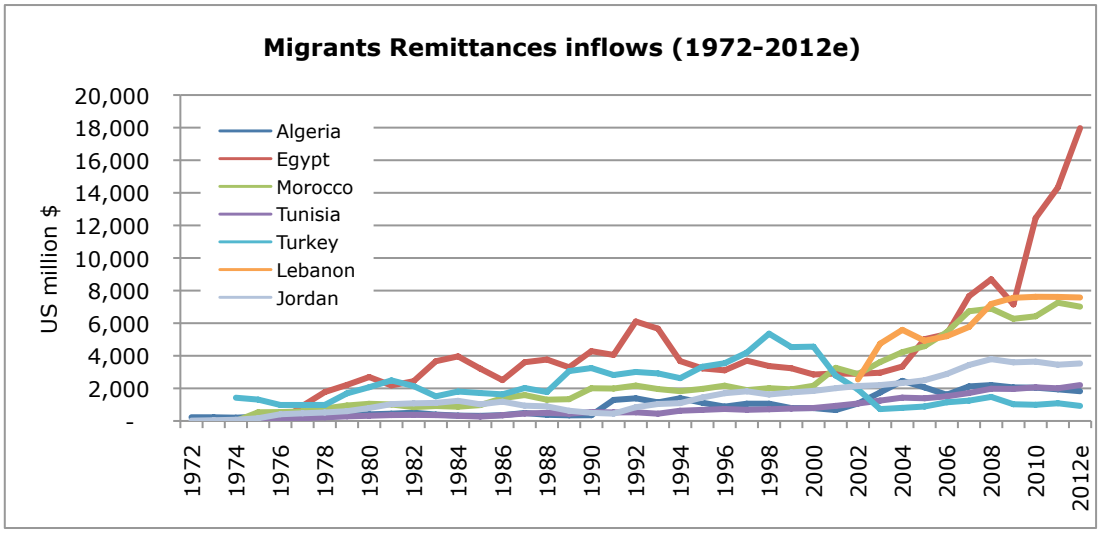
Fig. 4.2. Egyptian Migrant Stocks (in millions and % of population) (1992-2011)



Source: CAMPAS, 2013

Remittances flows towards Egypt are considered the highest in the South Med region especially in recent years (Fig 4.3), and recently they recorded one of the highest inflows in the developing countries (Fig. 4.4) reaching almost US$18 billion in 2012.

Fig. 4.3. Remittances inflows towards selected South Med countries (1972-2011)

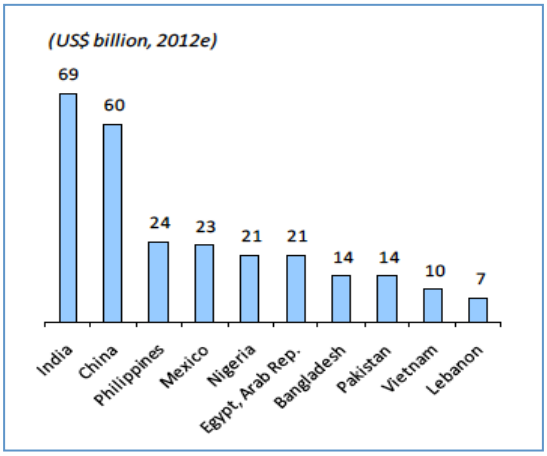


Source: World DataBank, 2013

Egypt ranked 13th across the world in the amount of remittances it received (according to the World Bank figure) in 2010 and 6th in the developing countries' ranking. It is important to note that remittances accounted here are those reported in the Balance of payment and is believed somewhat underestimated due to the unofficial transfers and hand-to-hand delivery. It is also interesting to see that remittances flows towards Egypt has increased dramatically in the past 2 years since the revolution in 2011 when the economy starting going into a recession due to political and economic instability. This gives evidence of the persistent and altruism nature of the remittances towards Egypt, which is yet another important reason to the potentials that these remittances can achieve in the country.

However, before we measure these potential impacts, it is important to give some detailed overview regarding the migration flow from and the remittances flows in Egypt so as to understand the complexity of the issues.

Fig. 4.4. Top 10 recipients of migrants' remittances in developing countries



Source: World Bank, 2013

1.1. Brief Historical Background about Migration in Egypt

Emigration is a relatively recent phenomenon in Egypt that started to take a proper shape in the early 70s. Before that and in the 1950s, Egypt was often an immigration country, receiving workers from neighbouring Mashrek countries (such as Lebanon and Syria). Emigration was controlled by the government and only involved a small number of skilled administrators. Also, with the policies of 'Nationalization' in the 1960s, thousands of Egyptian left the country for a permanent migration to the USA, Canada, Australia and some West European countries.

Migration in Egypt has gone through different phases of ups and downs following dramatic internal and external events. However, there is one important fact that remains relatively unchanged: most Egyptian migrants are residing in neighbouring Arab and Gulf countries. It comes at no surprise that a lot of the ups and downs of the migration flows came in response to what is taking place in the Gulf or Arab neighbouring states, especially for what concerns the Oil prices.

In the early 70s, and despite adopting the 'Open Door' Policy, there was an increasing internal pressure on the economic, social and political fronts. At the same time, the oil boom in the oil exporting countries had created an increasing demand for expatriates to work and live in their territories. Massive outflows of Egyptian migrants (which was estimated to be 70 thousands persons) went to Saudi Arabia, Iraq and other members of the Gulf States after the 1973 war. The number of Egyptian emigrants was estimated at 1.4 million persons in 1976 and reached its peak of 3.28 million in 1983. This period was also characterised by a steady increase of remittances flows to the country, from US$928 million in 1977 to a peak of US$3.9 billion in 1984. In terms of occupations, Egyptian migrants were mostly teachers, responding to the demand in Arab and Gulf States. However, later in the 70s this has expanded to include also health sector migrants[35].

A new phase started in the mid 80s of declining migration outflows due to the decreasing oil prices following the end of the first Gulf War towards 1988 and the adoption of new policies in these States substituting foreign workers with national ones and cheaper Asian labour. This has lead to a decrease in the number of Egyptian abroad to about 2.25 million in 1986 (Egyptian Ministry of Manpower and Migration (EMMM), 2009).

[35] Several sources: Nassar, 2005 and Wahba, 2007

Yet a third phase of declining migration flows started in the early 90s with the second Gulf war, this was accompanied by massive returns of migrants to their home country. The stock of Egyptian migrants went down to 1.1 million in 1991 (Nassar, 2005). This was also accompanied by a substantial increase in remittances as migrants sent their savings back before returning to Egypt.

After the end of the second Gulf War in 1991, the period between 1992 and 1997, witnessed an increasing demand from the Gulf countries towards Egyptian manpower to help reconstructing and establishing new industries and services. Hence, many contracts were offered to Egyptians and the number of migrants to the Gulf increased again and almost doubled by 1997 (reaching 2.1 million) (Nassar, 2005). Migration represented about 3.9% of the population (EMMM, 2009). This fourth phase of migration wave was characterised by a high share of unskilled migrants to the Gulf States, while skilled ones preferred to migrate to the OECD countries. During this time, illegal migration to Europe has increased, while Egypt became a destination country for neighbouring South African countries such as Ethiopia and Sudan as refugees.

However, this fourth phase of increasing migrants to the Gulf States did not last long due to the Asian financial crisis at the beginning of 1998 to 2000 and that had an impact on the Gulf Economies and many Egyptian migrants returned home due to increasing unemployment in these countries. Remittances from these countries also fell sharply.

Migration from Egypt entered a fifth phase where it started to pick up again towards the 2004/05 and where the highly skilled migrants share increased. This phase was accompanied by an increasing number of emigrants and refugees from Sudan and other South African countries. During this time, Egyptian migrants reached one of its highest record of 3.9 million in 2006 (close to 5% of the population) (CAPMAS, 2013).

The sixth phase started in the early 2011 following the revolution in Egypt and the uprising that also touched other countries of the region (i.e. the Arab Spring). At the beginning of 2011 there was high optimism towards raising democracy and prosperity and many Egyptians were encouraged to return. However until mid- 2013, two years after the revolution, there were concerns from increasing religious extremism increasing the potentials of permanent migration of Egyptian to OCED countries: there is a remarkable increase in the visa seekers towards USA and EU[36] (Hafez and Ghaly, 2012). The second revolution of June 2013 secured the return of democracy but with a large increase in political and economic instabilities. The impact of this is not clear, however, reports have already documented increasing illegal migration towards nearby South European countries[37].

As an overall, migration has been a very dynamic process responding to the different waves and shocks with a certain elasticity that reflects the country's status. It is also clear that these flows are not likely to be decreasing, if anything, it seems like it is taking an upward trend, at least in the medium term. Remittances flows towards the economy seem to be also accelerating, representing a possible 'rescue circle' for a drowning economy.

In the next section we will highlight some of the important features about those two flows in Egypt to enable to analyse their impacts on the households.

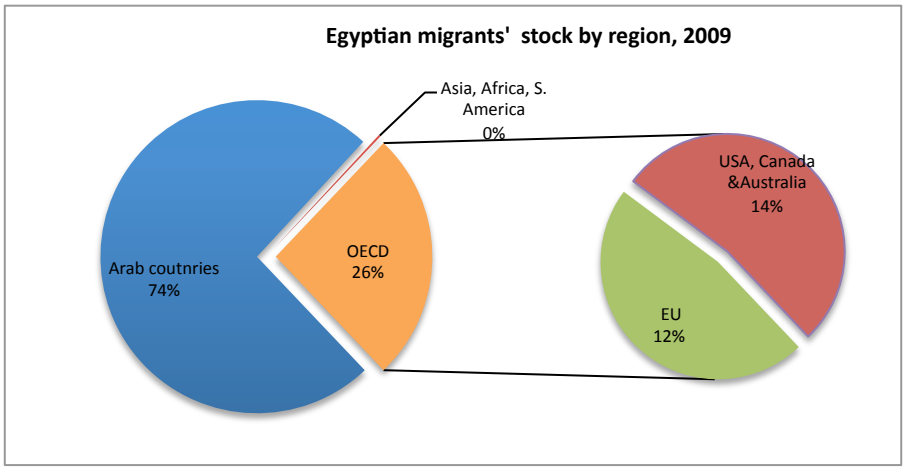
[36] especially from liberals, Christians and businessmen

[37] with many failing to successfully arrive to these shores, (The Guardian news, August 2013)

1.2. Characteristics of Egyptian Migration Stocks and Flows

In order to study the impact of remittances on the household's development, it is important first to look at the characteristics of those who migrate from Egypt, their destinations, their level of skills and education.

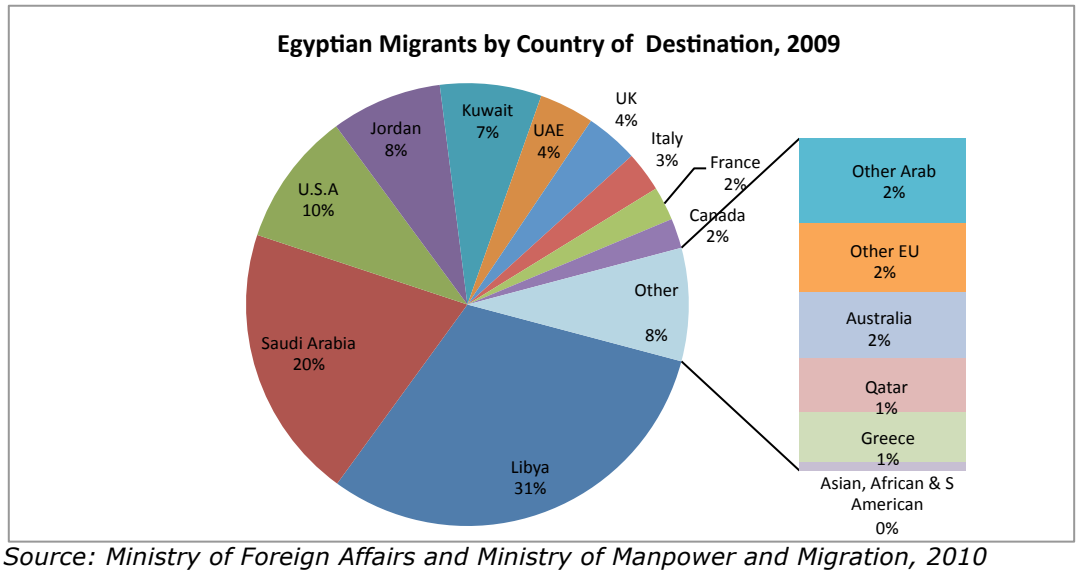
Fig. 4.5. Number of Egyptians stock of migrants by Destination (2009)



Source: Ministry of Foreign Affairs and Egyptian Ministry of Manpower and Migration, annual reports 2010.

a. In terms of destinations, most of Egyptian migrants are residing in Arab and Gulf States (about 74% of migrants in 2009). The remaining quarter of Egyptian migrants live in the OECD countries (12.2% are living in Europe and another 14% living in the USA and Canada (Fig. 4.5).

Fig. 4.6. Egyptian Migrants by country of destination, 2009



Source: Ministry of Foreign Affairs and Ministry of Manpower and Migration, 2010

Egyptian migration to the Arab and Gulf countries is mostly temporary as it is strongly linked to the labour demand in these countries. Whereas most of these migrants receive pre-determined work contracts to be able to enter their destinations, there is a considerable amount of migrants that are either illegal or working informally (especially in Libya and Jordan). While these pre-determined contracts are naturally of a short term, they are usually renewed every year, which turns many of these so-called 'temporary'

migrants into rather a long-term one. According to the Central Agency for Public Mobilization and Statics (CAPMAS), the number of temporary migrants[38] in 2009 reached 1.12 million up from 0.6 million in 2000. In 2009, 96% of temporary Egyptian migrants' flows were towards Arab and Gulf states, of which 50.2% were in Saudi Arabia and 16.69% in Kuwait. In general, within the Arab and Gulf States, Libya and Saudi Arabia are the top destinations of Egyptian Migrants (Fig. 4.6).

In the OECD countries, the top destination of the Egyptian migrants is the USA (hosting 10% of total Egyptian migrants). In Europe, Italy and the United Kingdom host the highest number of migrants from Egypt (table 4.1).

It is important to note that there is great deal of discrepancies when it comes to data regarding Egyptian migration, to the extent that differences between the different sources could reach more than 200% (Annex 4.2. for more details).

Table 4.1. Flows of Egyptians Permanent Migrants according to destination, in thousands (2000-2009)

Destination Country	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Total flows (2000-09)
USA	257	226	174	133	196	240	205	210	175	129	1945
Canada	152	185	137	104	118	141	126	97	126	141	1327
Italy	113	308	323	39	19	22	25	33	60	58	1000
Australia	26	22	20	19	35	49	30	36	49	40	326
New Zealand	14	10	8	6	1	..	2	3	..	4	48
Other Countries	11	..	..	..	2	..	3	3	10	1	30
United Kingdom	4	3	4	4	..	1	2	3	..	3	24
France	5	3	3	2	2	1	2	2	..	3	23
Germany	4	2	7	3	2	1	1	..	..	..	20
Netherlands	4	3	5	..	2	1	..	..	..	..	15
Austria	..	2	..	..	1	..	..	..	..	..	3
Total	590	764	681	310	378	456	396	387	420	379	4761

*Source: Central Agency for Public Mobilization and Statistics, Bulletin on Permanent Migration, 2009. Note: *. Permanent migrant are defined in CAPMAS as those who migrated officially and those who moved to the destination country and turned into migrants after a period of time*

b. In terms of occupations and skills, the occupational choice of migrants depends very much on the destinations. While migration towards OECD countries has been generally dominated by highly skilled migrants, that towards the Arab countries has changed its composition.

In the mid 80s migrants from Egypt towards the Arab countries were dominated by unskilled or low skilled workers and was concentrated in the production sector; scientists and professional migrants represented then only 20%. These migrants fulfilled the jobs that nationals could not fulfil either because of shortage of labour supply (of high skilled) or because they were unwilling to undertake (semi skilled and skilled) (Zohry, 2007). This pattern has changed recently, and Egyptian migrants' skill composition is balanced between skilled (scientific, technicians, managers, clerical, sales) and unskilled (agriculture, fishing and production) (Table 4.2). These figures report the documented

[38] CAPMAS considers that all migration to Gulf or Arab countries as temporary one

migration, whereas there is a large number of undocumented migrants that work in the Arab and Gulf States which are mostly unskilled. It is important to note that these figures regarding the occupation of Egyptian migrants in Arab countries are fairly recent.

At another front, Egyptian migrants in the OECD countries are mostly highly skilled and professionals (this include doctors, engineers, dentists, etc.) representing about 62.1% of total migration to these countries (CAPMAS, 2007). Interestingly, Egypt's migrants have very low overall unemployment rates in these labour markets (8.3%) even lower than that of OECD nationals (8.5%), where unemployment among the highly skilled is about 6.5% and among the unskilled about 12.9% (Human Development report, 2009). This is an interesting figure, given that the unemployment rates at home country varies between 12 and 16%. Also, several reports records the success of the Egyptian Diaspora in Europe, North America and Australia in establishing good and strong links and projects in their home country to alleviate poverty and improving on education, training and increasing skills in Egyptian villages (IOM, 2010).

Table 4.2. Percentage Distribution of Egyptian Migrants by Occupation in Arab countries, 2002 and 2005

Occupation / Country	Scientific & Technicians		Managers		Clerical workers		Sales & services		Agriculture, animal husbandry & fishing		Production workers		
	2002	2005	2002	2005	2002	2005	2002	2005	2002	2005	2002	2005	
Saudi Arabia	40.5	41.8	0.4	0.9	0.3	1.2	20.6	11.5	7.1	4.7	31.1	39.8	100
Libya	57	96.6	9	0.0	0	0.0	0	0.0	0	0.0	34	3.4	100
Jordan	1.4	6.1	0	0.0	2.1	0.0	1.7	0.3	31.9	91.1	62.9	2.5	100
Kuwait	53.5	22.3	1.1	0.1	9.6	5.7	21.5	16.1	0.2	12.9	14.1	42.9	100
UAE	41.1	40.3	4	0.0	1	2.3	2.9	15.5	0.9	2.7	50.1	39.3	100
Iraq	2.6	-	0	0.0	0	0.0	1.5	-	33	-	62.9		100
Qatar	51.5	40.4	1.9	0.0	2.1	1.6	6.1	9.3	1	4.1	37.4	44.6	100
Yemen	69.1	-	18.1	-	4	-	1.1	-	0	-	7.7	-	100
Oman	52.9	-	8.1	-	2	-	4.1	-	1.4	-	31.5	-	100
Lebanon	0	-	0	-	2	-	2.3	-	21.1	-	74.6	-	100
Bahrain	27.2	-	5.5	-	9.3	-	24.3	-	0	-	33.7	-	100
Total	39	-	2.4	-	1.5	-	12.7	-	8.6	-	35.8	-	100
Skilled Vs unskilled (2002)	55.6%								44.4%				100 %

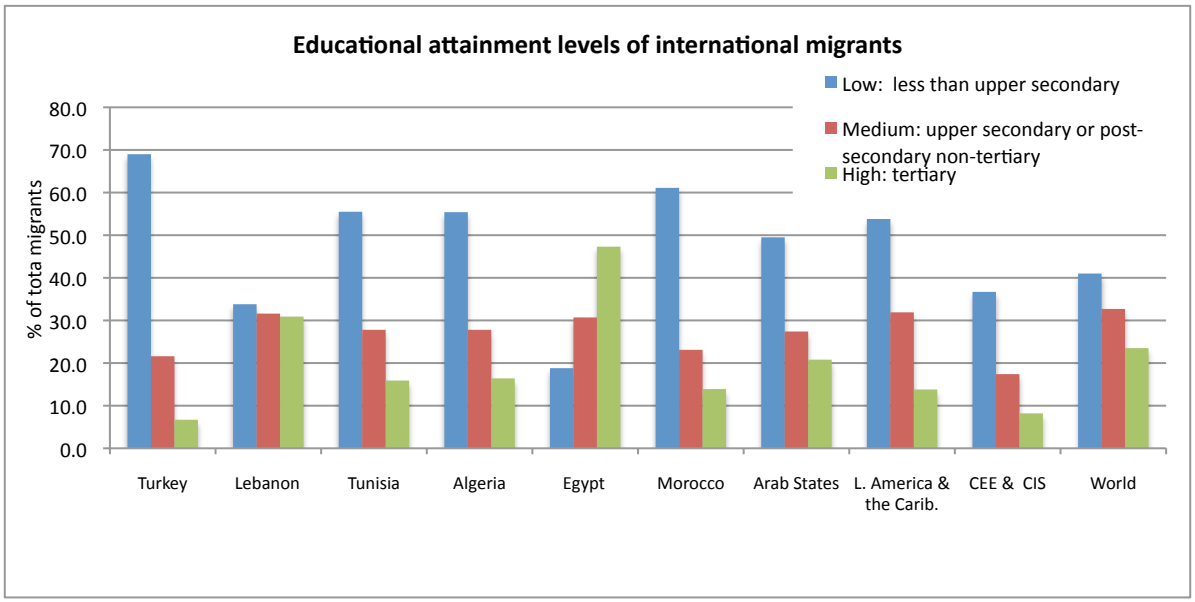
Source: Ministry of Manpower and Emigration 2002 and 2005

According to a recent report by Docquier et.al, 2011, skilled migration from Egypt is among the highest 30 countries in the world (22nd) estimated at 150 thousands migrants in 2000 (Morocco is 25th with 141 thousands), this figure might be high in absolute terms, however in proportion to the population this type of migration represents 0.2% of the total population (while for Morocco it is higher representing 0.5% of the population). As noted in previous chapters, the issue of Brain drain has been explored in the empirical literature, where countries were identified to be either high risk (losers) or low risks (winners) from the Brain drain. According to the study by Beine et. al, 2008 Egypt is among the countries that are experiencing a beneficial brain drain: the risk of brain drain is linked to a migration rate of more than 20% of the population and/or the proportion of highly educated is more than 5% (Beine, et.al. 2008)

c. In terms of the level of education, almost half of the Egyptian migrants (47.3%) are of high educational attainment (tertiary education), third are of medium education (upper secondary or post secondary) (30.7%) and less than fifth are low education (i.e. less than upper secondary) (Human Development report, 2009).

The tertiary education of the Egyptian migrants is considered relatively high, especially if we compare it to: (i) the share of tertiary education within the same age in the domestic population (about 30.2%); and (ii) the share in the level of education in migrants from other countries from the South Med region and the average of other regions such as Latin American or Central and Eastern Europe (CEE) or the world average (Figure 4.7).

Fig. 4.7. Educational Attainment of migrants of selected countries and regions, 2009



Source: Human Development Report, 2009

The idea of the selectivity of migration from Egypt is an interesting issue to explore. Docquier and Marfouk, 2005 develop a selectivity indicator calculating the "selection rates" as the proportion of skilled emigrants in the total emigration stock[39]. Not surprisingly, Egypt was one among the highest 30 countries, with a high selection rate of 58.9%. Morocco, Tunisia and Algeria were found to have some of the lowest selection rates of 12.9%, 14.9% and 14.1% respectively. Moreover, looking into the data constructed by Docquier and Marfouk on the trend of emigration rates as per educational attainment compared to that of the population, we found that despite the high emigration rate among the highly educated /skilled in Egypt, this rate seem to be decreasing between in the past 3 decades[40] (Figure 4.8).

[39] From Kaczmarczyk (2008): The migrant selectivity index is illustrated by the following formula:

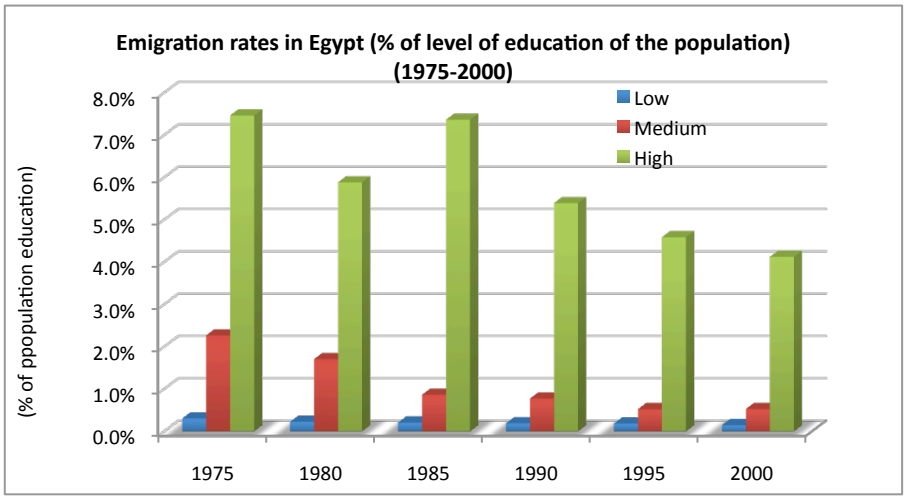
$$SIV=i= \frac{(MV=i\ /M)}{(PV=i/P)}$$

$$PV=i/\ P$$

where: SIV = i is the index for category i of variable V; MV = i and PV = i are the number of migrants and number of people in the general population, respectively, falling into category (or value) i of variable V; and M and P are the overall number of migrants and people in the general population, respectively. The selectivity of outflow takes place if the index assumes a non-zero value for any category (value) of a given variable. A positive SI value means that migrants falling into a specific category (variable) of a given variable are relatively more numerous than people in the general population with the same characteristics, whereas a negative SI value (but equal to or higher than –1) means the opposite. The higher the positive value or the lower the negative value of SI, the stronger the selectivity.

[40] Mapping education levels with skills levels: According to the International Standard classification of Education (ISCED), UNESCO:
Level 1 and 2 skill (or unskilled) comprise those with primary and intermediate education (0-8 years of education); Level 3 are those semi-skilled and have completed a minimum of 9-12 years of education; Level 4 and above are those skilled that have complete more than 13 years of education. This grouping has been used by Docquier et al (2000) in their well-known database collected on emigration according to education levels.

Fig. 4.8. Migration rates in Egypt per level of education (1975-2000).



Source: Docquier and Marfouk, 2005

Furthermore, Upper Egypt areas (at the south) are less developed than Lower Egypt (at the north). This contributes to the selectivity of migration related to the skills and the area of origin: large numbers of semi-skilled and unskilled worker seek to migrate from Upper Egypt governorates towards the Gulf and other Arab countries. Whereas, most of the skilled and educated migrants are originated from the north of Egypt, where the societies are better educated and have higher skills. This facilitates their positive selectivity towards the OECD countries: a migration that is more likely to be permanent.

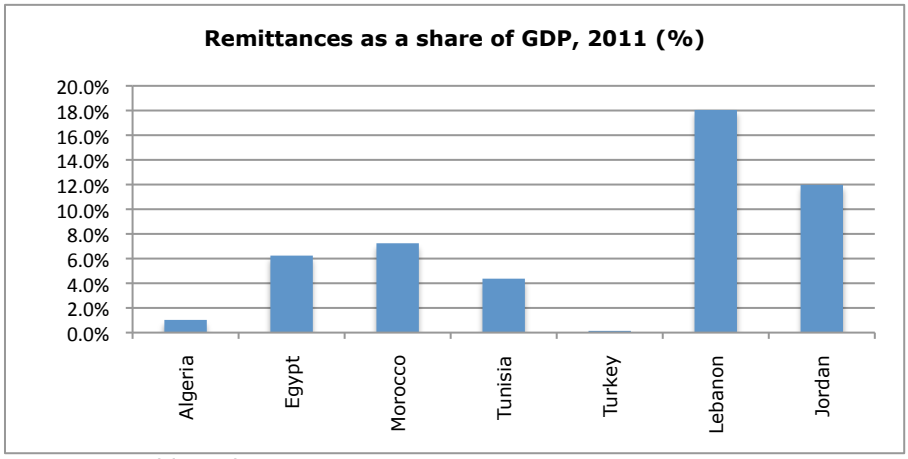
d. In term of motivation for migration, a survey undertaken by the Population Council in Egypt on a sample of 15,000 of young Egyptians (age between 10 and 29 years old) showed that about 33% of the surveyed male at the tertiary education in Egypt and above reported their aspiration to migrate (Population Council, 2011).

Another interesting survey was conducted by the International Organization of Migration (IOM) on the Egyptian Diaspora to investigate the links they have to their home country in an attempt to boost the contribution of this group in the development process. The survey was conducted on a sample of 323 Egyptians living abroad in three countries (Kuwait representing the Arab countries and the USA and the UK representing OECD countries) and backed with some interviews of a selected number of those expatriates. Some of the important highlights of the responses collected from this survey related to the reasons behind their migration. The highest proportion of responses was given to the 'difficult economic situation and poverty in Egypt' (27.6%) however what's interesting about this choice of the reason is in the high weight given to this reason from migrants in the Arab countries (41.1%) compared to those from OECD countries (14.5%). The second overall reason was related to "corruption and prejudice in Egypt' (25.5%) with almost equal weights for both types of migrants. The third is related to the 'impossibility of personal development' (20.7%), with a higher weight from OECD migrants (29.1%) compared to Arab countries migrants (12%) (IOM, 2010a).

1.3. Characteristics of Remittances Inflows to Egypt

As mentioned earlier, remittances inflows to Egypt are among the highest in the world, putting Egypt at rank 13 across the world and the first among the South-Mediterranean countries in terms of absolute remittances flows. These flows account for about 5-6% of GDP yearly (Fig. 4.9), which is considered also quite large, compared to Turkey for example, whose GDP is almost double of that of Egypt, while their remittances flows represents only 1/25th of that of Egypt, especially in recent year where remittances towards Egypt has witnessed a huge increase.

Fig. 4.9. Remittances flows as share of GDP (%), 2011

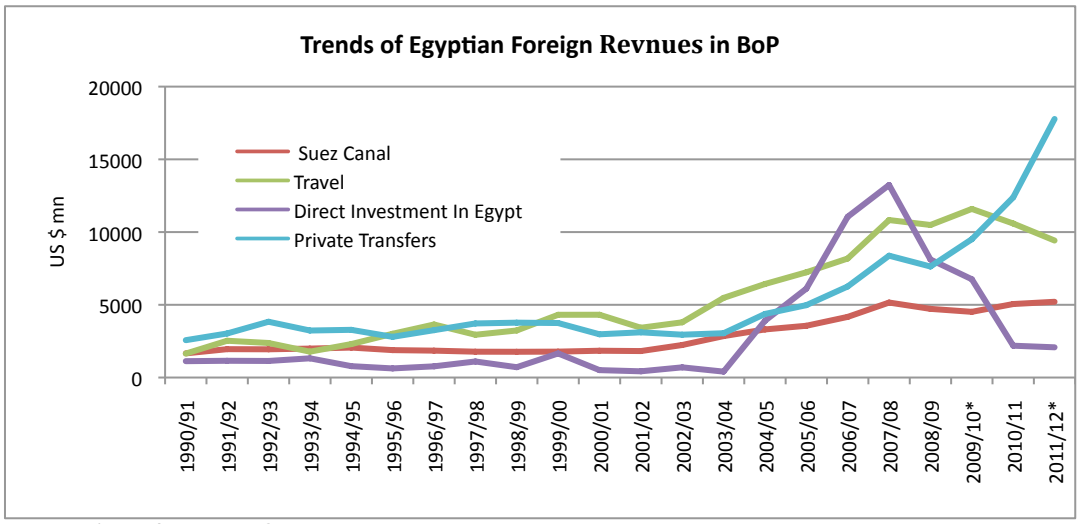


Source: World Bank estimations, 2013

Remittances inflows to Egypt represent currently the most important source of foreign currency surpassing the country's FDI flows, Suez Canal revenues and revenues from tourism (Fig 4. 10).

These flows have been stable since the beginning of the 90s around US$ 5 billion until mid 2005 when it witnessed dramatic increases that continued to accelerate. In 2009/2010 and along with the increasing political instability in Egypt during this time, coupled with a frozen economy, these flows escalated with an unprecedented growth rate of 87% in less than 3 years between 2009/10 and 2011/12, hitting a peak estimated at around US$ 18 billion in 2012. This is an important and interesting fact related to the remittances flows in Egypt, which confirms not only their stability, but their countercyclical nature in increasing in times of slowdown of the economy, this means that a large share of these flows are sent by 'altruism' with the objective to support the households at home.

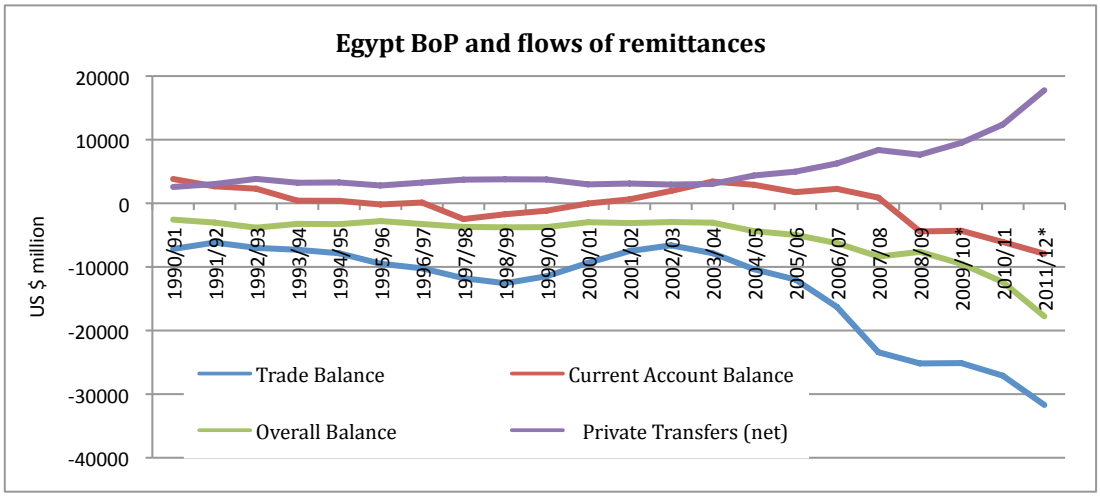
Fig 4.10. Foreign Revenues towards Egypt's Balance of Payments (1990-2012)



*Notes; * preliminary figures*
Source: Central Bank of Egypt, 2013

Other than their role as important sources of foreign currencies, these flows have enormously contributed to balancing and decreasing dramatically the possible deficits that could have occurred in the Balance of Payments, especially in the past 2 years where the trade Balance have been hit hard by the economic and political instability, as well as decrease in tourism revenues and FDI. Remittances flows (together with a rather stable revenues from the Suez Canal) have taken the burden of filling these deficits. However in the past year it was too large to be compensated even by these flows from migrants (Fig 4.11).

Fig. 4.11. Egyptian Balance of Payment and Flows of Remittances (1990/91-2011/12)



*Notes; * preliminary figures*
Source: Central Bank of Egypt, 2013.

An interesting indicator related to these flows is the value of remittances per migrant, which gives the ratios of these flows to the migration ratio. In 2000, remittances were calculated as US$1,311.6 per Egyptian migrant, this amount increased in 2010 to US$5,190 per migrant. However, if we look at this rate according to the origin of the remittances, we notice that migrants in OECD, though only a quarter of total Egyptian migrants, have the highest per migrant share. Switzerland[41], for example, despite the relatively small number of migrants, has the highest per migrant remittances reaching US$7,529, whereas Saudi Arabia who has the highest number of migrants (about 1 million), sent one of the lowest per migrant remittances amounting to US$738. This relates to what we addressed about before regarding the occupation of migrant, his education and skills that differ according to the destination. Migrants in OECD countries are more educated and of higher skills and hence are able to send more remittances. This observation is crucial in estimating the brain gain vs. brain drain in the case of Egypt (table 4.3).

Remittances inflows towards Egypt are transferred through different channels. Unfortunately, a considerable amount of these remittances go through informal channels and hence are unaccounted for. Remittances could be transferred from hand to hand during visits or through relatives or friends. This is especially true for Egyptian migrants that work informally in Arab countries (such as Iraq or Libya), whereas those who use the formal channels (either through bank transfers or money transfer companies) are those with formal employment abroad. According to some estimates, informal remittances in general can add from 10 to 50% to the total remittances (Ratha, 2003). Also, remittances in-kind towards Egyptian households are not negligible. They take the

[41] This amount could be biased by the existence of a large number of Swiss bank accounts of businessmen from Egypt

form of electronic equipments, household goods, gold and jewelleries, clothes, etc. Remittances have an important impact on the households receiving this additional source of income easing liquidity constraints as evidenced in the empirical literature and contributing to increase consumption and investments and savings.

Table 4.3. Remittances flows to Egypt per Egyptian Migrant in destination (2000/01)

Country	Remittances 2000/01 (mn US$)*	Egyptian Migrants (2000)	Remittances per migrant (US $)
Switzerland	105.4	14,000	7,528.57
Germany	96.6	25,000	3,864.00
USA	1,048.80	318,000	3,298.11
UAE	301.9	95,000	3,177.89
Bahrain	12.7	4,000	3,175.00
United Kingdom	95.7	35,000	2,734.29
Qatar	44.4	25,000	1,776.00
France	48.8	36,000	1,355.56
Lebanon	14.6	12,500	1,168.00
Kuwait	222.3	190,550	1,166.62
Saudi Arabia	681.3	923,600	737.66
Oman	11	15,000	733.33
The Netherlands	16.5	40,000	412.5
Italy	34.6	90,000	384.44
Spain	3.1	12,000	258.33
Greece	5.6	60,000	93.33
Canada	6.2	110,000	56.36
Libya	2.6	332,600	7.82

*Source: Zohary, 2007 based on figures from * Central Bank of Egypt Monthly Bulletin** CAPMAS figures of migrant stocks per destination*

In another study undertaken by the IOM in 2010 (IOM, 2010b) on remittances receipts in Egypt, where a survey was undertaken on a sample of 200 households receiving remittances in a selected four major governorates with high migration rates (Cairo, Menofeya, Sharkia and Fayoum), it was found that the majority of the remittances are spent on consumption goods. These flows are received monthly by half of the sample, whereas about quarter receive them every several months and the remaining quarter received remittances on an irregular basis. The questionnaire included five main groups of questions: basic demographic information, personal migration histories, pattern of the remittances received and how those remittances are allocated between consumable and investments goods (for more details about this study refer to Box 4.1 below).

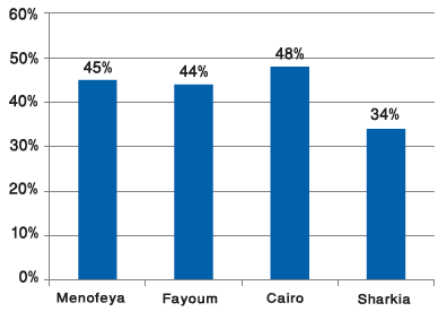
Box 4.1. Migration and remittances profile in Egypt: A study by the IOM

The IOM study (IOM, 2010b) includes a sample of 200 household residing in four of the major exporters of labour in Egypt: Cairo, Menofeya, Fayoum and Sharkia. The aim of the survey was to collect information about how remittances are used and if there are any investment practices and the mechanism of the decision-making. The findings of the survey are summarised in the following points:

1. There is a dominance of male migrants (91% of the households selected had a male migrant) confirming most of the Egyptian literature on migration.
2. The average age of migrants is 37 years, while the age was ranging from 15 to 70 years old.
3. 59% of migrants in the sample had a university degree, which does not reflect the proportion of the population.

4. In terms of the motivation for migration: 25% replied that the migrant had a work contract from abroad, 20% justified the migration to the lack of suitable employment opportunities, 14% reported that the migrant was looking to improve the standard of living of the household, 11% highlighted the financial constraints, 4% specified the fact that the migrant needed money for certain purposes (marriage, etc) and only 1% of the households linked the migration to the intention of savings to invest.
5. Most of the sampled households confirmed that migration was not a sudden decision but that it was carefully studied (on average it takes migrants 7 months to leave the country).
6. 90% of the sample confirmed that migration was done legally and 68% had permanent residency.
7. In terms of destinations, it was found that 81% of the migrant where residing in the Gulf countries (47% in Saudi Arabia, 12% in UAE, 11% in Kuwait, 7% in Qatar, 3% in Oman and 1% in Bahrain). 10% where residing in a MENA country (Libya, Algeria, Jordan and Yemen), 8% in European countries (mostly Italy, France, Germany, Greece, the Netherlands and Spain) and 2% in the USA. The relation between the choice of the destination and the occupation is not clear. 42% of the "managers and professionals" migrating from Cairo went to Saudi Arabia and 23% of those migrated to Kuwait. 63% of the same occupations migrated to those two destinations from the remaining three governorates under study.
9. Overall, 44% of the migrants where professionals (accountants, teachers and engineers); 13% worked in crafts, construction and trade industries and 10% in the services and sales.
10. 51.6% of the sample household received monthly remittances, 22% received them on intervals and 25% received them on irregular basis.
11. Most of the sample 62% used the banks to make the transfers, especially those from the Gulf. Informal transfers through a friend or a relative presented 22.5% of received remittances through the post office and 3% through Western Union.

Fig Box 4.1. Share of Remittances in Total household incomes



12. Remittances represent close to half of the households' overall income (between 45 and 48%) except for the Sharkia Governorate where it represents only 34% (Fig Box 4.1).
13. In terms of the usage of the remittances the responses of the household showed that most of the households used the money primarily for the daily essential living expenses (74%), more than half confirmed that they use the money for education and a quarter said that they use it also for health care. 20% of the cases responded that the money is also used in savings. Other consumable usages of the remittances have been suggested by the different households, such as utilities, food, personal items, rent, to finance marriages, etc. 8.2% said they use part of the remittances for property investment, 3.1% for capital investment and only 1% for investment (Table Box below).
14. 25% of the migrants advised their households to save the money, 24% advised them to use them for daily expenses and around 18.8% advised them to use in some kind of investment either capital or land.
15. When it comes to investment, the survey showed that 20% of the households engaged in a kind of investments using the remittances (40 households out of the 200 surveyed). 39% of those investments were in real estate, followed by 22% in small private business with less than 5 employees. 11% invested in agriculture activities, 9% in the stock market, 6% in medium size firms employing less than 20 employees, and 8% invested in retail and other transportation activities.

16. The 80% of the households that do not invest have given several reasons behind this: financial difficulties (28%), no confidence in the market climate (20%), no access to enough cash or credit (11%), not fully aware of the opportunities and the know-how and where to invest (10%) and lack of time (7%).
17. The majority of the households found that the government policies played a major role in their decision to invest, things like the high taxes, bureaucracy and corruptions.

Table Box. 4.1. Remittances uses in HH in Egypt

Gen. Expenses	144	34.80%	74.20%
Education	64	15.50%	33.00%
Health	49	11.80%	25.30%
Savings	40	9.70%	20.60%
Family	34	8.20%	17.50%
Food	23	5.60%	11.90%
Utilities	16	3.90%	8.20%
Property invest	16	3.90%	8.20%
Personal items	6	1.40%	3.10%
Capital Invest	6	1.40%	3.10%
Emergencies	5	1.20%	2.60%
Rent	3	0.70%	1.50%
Marriage	3	0.70%	1.50%
Investment	2	0.50%	1.00%
Nothing specific	2	0.50%	1.00%
Insignificant	1	0.20%	0.50%
Total	414	100.00%	213.4

Despite the relatively modest size of the sample and its biasness in the selection process (the snowball method was based on informal networks), the results of this study give some indications on the remittances characteristics in Egypt.

This overview on the Egyptian migration and remittances flows represents the background on which our empirical evidence will be based, where the impact of the remittances flows on the human capital of the households receiving them is empirically investigated.

2. The Impact of Remittances on Egyptian Households' Human Capital: an Empirical Estimation[42]

Given this overview, one could see a lot of potentials to the impact of remittances on the development of the households in Egypt. This is the main objective of our empirical model to investigate at the micro level the existence of such as an impact on the human capital outcomes of the children in the households left behind.

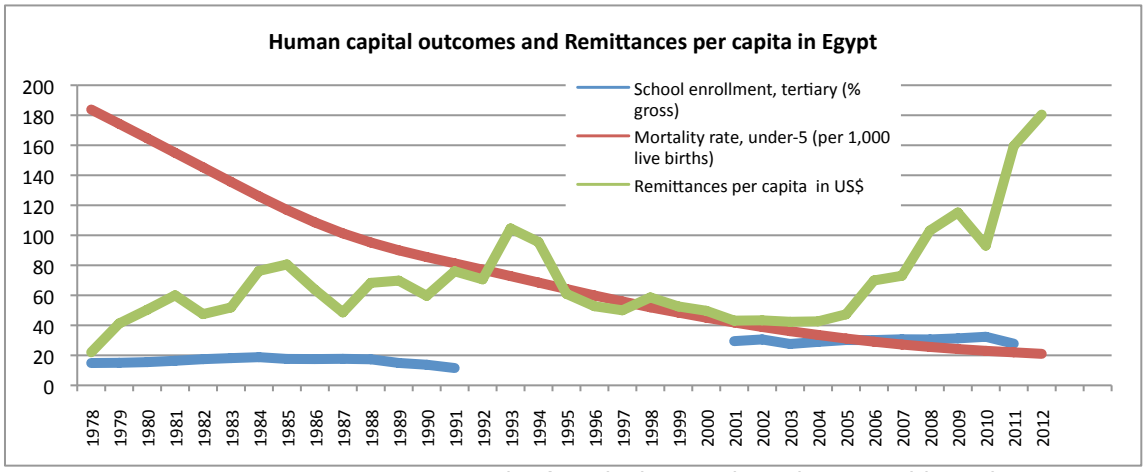
2.1. Objectives and Motivations

Egypt's human capital is considered one of the country's assets, characterised by being the largest population in the region and with one of the highest percentage of youth (more than 41% of the population are between the age of 15 and 39, UN population figures). This youth bulge as much as it is a 'gift' for the economy to possess a large share of potential contributors to the country's development, as much as it could be a 'burden' and a challenge to provide enough opportunities to absorb this human capital.

The past three decades have witnessed improvements in this human capital educational and health outcomes, however this progress is still not enough to improve the overall development of the country either on the social or economic level (Fig 4.12).

[42] This empirical evidence is part of a joined paper under preparation for publication in collaboration with Marion Dovis and Charles Lai Tong (GREQAM, Université Aix Marseille) whose efforts and contributions are highly appreciated.

Fig 4.12. Remittances per capita and Human Capital outcomes in Egypt (1978 to 2012)



Source: Remittances per capita are author's calculations based on World Bank Data on Private transfers and human capital outcomes from World DataBank data, 2013.

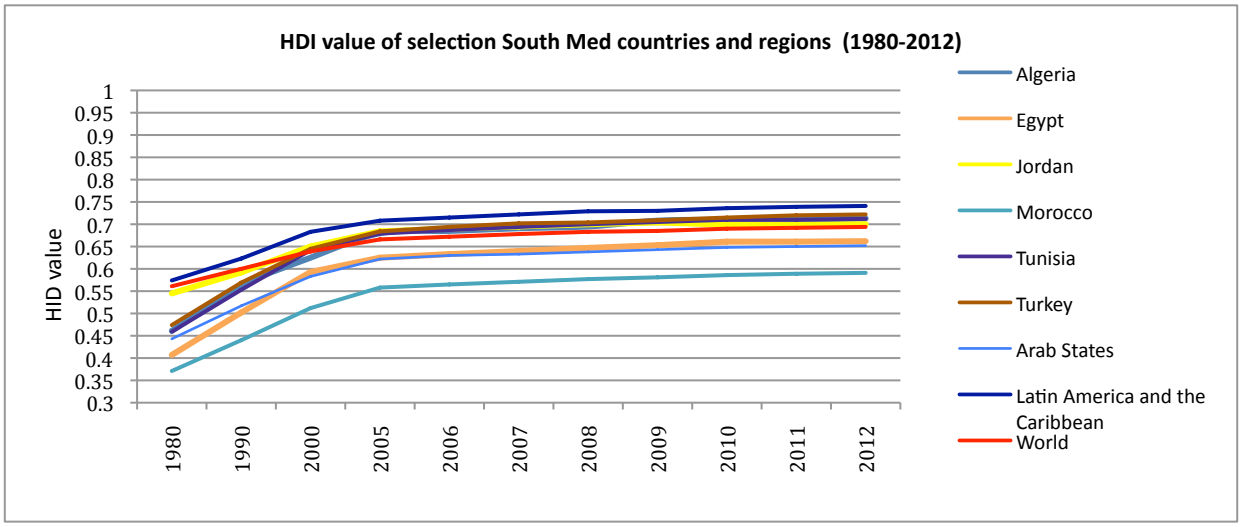
In terms of education, the high illiteracy rates were brought down from about 44% in 1996 to 28% in 2010 and the school enrolments especially among girls has increased (secondary school enrolment for girls has reached 71% in 2010). However, government expenditures on education, which is averaged between 12 and 15% of total expenditures, are considered rather small compared to the regional average. Moreover, most of the expenses are directed towards wages and administrative issues and not much towards improving the quality of the education or schools' equipments. Other than eliminating the illiteracy rates, there are many challenges that are facing this sector: low school enrolment in secondary and tertiary education, low quality of education, school drop-out rates, incomparable wages of the teachers (too low for public school teachers and too high for private ones), contents of the curriculum that are not suitable for fulfilling the need of the economy, the misallocation of resources between pre-university and university levels, etc.

Similarly, the healthcare sector in Egypt has achieved some improvements in the past few years, however it is still falling behind its minimal potentials. Life expectancy has improved dramatically reaching 73 years in 2010 (up from 66 years in 1995) and infant mortality rates have dropped to 18 per 1000 births in 2011 (down from 48 per 1000 in 1995). However, the quality and the coverage of the health services are far from their expected potentials. There are insufficient numbers of beds compared to the dramatic increase in the population (the number of beds per 1,000 persons had decreased to 1.7 per 1000 in 2010, down from 2.1 beds per 1000 in 1996.). Moreover, despite the increase in the health expenditures, this has not translated into improving the quality of the services nor its coverage as most of these expenses are absorbed by the increasing number of public admin staff.

According to the Human Development index[43] (HDR, 2010), Egypt's still ranked number 113 over 186 countries in 2010, even though this could be considered an improvement from its previous position as 123 over 182 countries in 2009, the country is still far from achieving its developmental potentials. Just about the same level of average developing Arab states, the country's value of the HDI index is still one of the lowest in this region just above that of Morocco but still below that of Tunisia, Algeria and Turkey (Fig 4.13).

[43] The HDI created in 1990 by the Human Development report (part of the UN) has been accepted as a conventional measure to national development of the nations it includes three main components: income, health and education

Fig 4.13. Human Development Index values (HDI) in selected South Med countries and Regions (1980-2012)



Source: HDR, 2010

It is clear that the low performance of the human development index in Egypt is due to the lack of capacities and planning to direct the resources efficiently towards the right channels. As a result, many Egyptians prefer to use the private services of schools and hospitals to access better quality and more reliable services, despite the increasing costs of these services in the private. Those who cannot afford it might be left out without accessing these services at all. In rural areas, where poverty is high, households are often reluctant to send their children (especially girls) to schools and prefer that they help in the domestic labour or in the farming or agricultural work. However this trend has decreased in the past few years and one could observe the increasing net enrolment rates in primary education from 87% in the mid 1990s to 95% in 2010. It is important to note here that according to the education policy, the primary and intermediate education levels are provided free by the government and are compulsory. Also, the free health services through public hospitals are also available but the services and the health care is very poor. The increasing poverty in some rural areas of Egypt and the absence of basic infrastructure such as good sewage systems and sanitary water, increase diseases and risks of deaths especially among infants.

This overall picture of the poor status of the human capital in many areas in Egypt and especially in rural areas, show the potential positive role that remittances flows can do in improving these conditions. However, one question remain to be investigated, does these remittances really impact the human capital outcomes of the Egyptian households?

This is the objective of our empirical evidence undertaken in the following section, where we investigate the impact of receiving remittances by the households on both an education outcome (tertiary education) and health outcome (mortality of less than 5 years old).

2.2 Data and Descriptive Statistics

Our empirical evidence on the impact of remittances on Egyptian households is based on data from the Egypt labour Market Panel Survey of 2006 (ELMPS06). This is a unique nationally representative longitudinal household surveys that was conducted on Egypt in 2006. This survey is a second round that tracks down households and individuals that were first interviewed in 1998. The Egyptian Labour market survey of 1998 (ELMS98) and the ELMPS06 are both conducted by the Economic Research Forum (ERF) with collaboration with national statistics authorities (Central Agency for Public Mobilization and Statistics - CAMPAS and the Population Council).

It is worth noting that there were few other surveys that were conducted in Egypt (other than the public Census) but these were on much smaller scale. Just to name a few: (1) a survey carried out by Adams in 1986 on three governorates of Egypt (Adams, 1986); (2) two surveys conducted by the World Bank and the IOM on Egyptian Diasporas and investment opportunities (IOM, 2010a and IOM, 2010b); (3) interviews and case studies on the potential of migration that was conducted by Zohary, 2007; (3) There are also the data collected related to the project on Push and Pull Factor of International Migration (PPFIM) collected by EuroStat, where data was collected from 3 countries of the south Med (Egypt, Morocco and Turkey) in addition to Senegal an Ghana from Africa and 2 countries from the EU (Italy, Spain and the Netherlands); and (4) Another interesting database that was conducted by the Population Council in Egypt included data on 'international migration aspirations': this data looked into the aspiration of young Egyptians (male and female) to migrate (Population Council, 2011).

The Egyptian labour market Panel Survey of 2006 (ELMPS06) includes 8,351 households that were randomly selected across the country using the database of the Egyptian Central Agency for Public Mobilization and Statistics (CAPMAS). This is a unique survey in Egypt, which includes, as previously mentioned, households that were surveyed in a previous survey conducted in 1998 (Egyptian Labour Market Survey (ELMS98). The 2006 ELMPS re-interviewed 3,685 of those households to follow-up on their status. Moreover, an additional 2,167 new households were derived from these 3,685 (due to splits of families for reason of marriage or other reasons). In addition to 2,498 new households that were included in the sample. The table (table 4.4) below summarizes the details of the households (HH) included in the sample:

Table 4.4. Summary of the sample of the ELMPS06

Contents of ELMPS06	**Number of HH**
Households that were included in ELMS 98	3,685
Households that were split from 3,685 households	2,168
Households that were freshly introduced	2,498
Total households in the ELMPS06	8,351

The survey included three questionnaires: (1) The first collected data on the household characteristics (including its different members and whether they lived in the household in 1998 for tracking purposes, housing service and facilities and consumer durable goods); (2) the second questionnaire collected data about the individuals (position of the member in the household, characteristics, education, migration, employment or unemployment, occupation, female work, fertility, mobility, earnings); (3) the third questionnaire collected specific data on migration, transfers, and other sources of income including family enterprises. These data collection has gone through many phases of checks and revisions. Also, the sample was corrected for attrition by using – unless otherwise stated – sampling weights that correct for the probability of non-response. More details about data collection methodology and sample attrition properties can be found in: Barsoum, 2007 and Assaad and Roushdy, 2009.

We start our empirical analysis by presenting some important descriptive statistics about the sample that we will be addressing. As we are interested in looking into the impact of remittances on the households' human capital outcomes, we divide the sample data into two groups of households: (1) households that receive remittances and (2) households that do not receive remittances (Table 4.5).

Table 4.5. Mean Values of households' indicators according to the remittances status

	Overall sample	Remittance recipients (i)	Non-recipients Remittances (ii)	Difference (i)-(ii)	
Number of observations	8351	280	8071		
HH size	4.447	4.450	4.447	0.003	
Num HH members aged 0-6	0.736	1.039	0.725	0.314	***
Num HH members aged 7-17	0.923	0.982	0.921	0.0611	
Num HH members aged 18-22	0.525	0.554	0.524	0.029	
Num HH members aged 23-65 in labour force, Males	0.920	0.386	0.939	-0.553	***
Num HH members aged 23-65 in labour force, Females	0.474	0.596	0.469	0.127	***
Age of HH head	46.932	42.293	47.093	-4.800	***
Female household head (%)	0.170	0.675	0.153	0.522	***
HH head education					
Illiterate (%)	0.327	0.371	0.326	0.046	
Read & Write (%)	0.092	0.068	0.093	-0.025	
Less than intermediate (%)	0.158	0.121	0.159	-0.037	***
Intermediate (%)	0.229	0.293	0.227	0.066	
Above intermediate (%)	0.045	0.046	0.045	0.001	
University (%)	0.149	0.100	0.151	-0.051	***
HH head in Labour force (%)	0.769	0.486	0.778	-0.293	***
HH head employed in Agriculture (%)	0.158	0.293	0.154	0.139	***
Rural HH (%)	0.413	0.564	0.408	0.156	***
Telephone in HH (%)	0.581	0.700	0.576	0.124	***
Computer in HH (%)	0.094	0.125	0.092	0.033	
Wealth score by PCA based on durable goods owned by HH [1]	0.000	0.439	-0.015	0.454	***
Wealth score by PCA based on dwelling characteristics of HH [2]	0.0000	-0.00228	0.00008	-0.00235	

Source: based on the Egypt labour Market Panel Survey of 2006 (ELMPS 06)

*Notes: *** denotes significant at the 1 percent level, ** at the 5 percent level, * at the 10 percent level.*

1. *Based on PCA estimations using ownerships of the households of durable goods*
2. *Based on PCA estimations using the conditions of the dwelling of the households*

The table indicates some interesting differences between the two groups. As the size of the household does not seem to matter between the two groups, there are significant differences in the labour force participation, which also depend on the gender of the household member. Males (age between 23 and 65) in households that do not receive remittances are much more participating in the labour force (on average 0.9 member in each household) than those in households that receive remittances (0.4 member in each household). This could be justified by the fact that being in households that receive remittances could imply that the male of the household is absent and hence the participation is lower.

Interestingly, the other way round applies to the females (age between 23 and 65), where they are more participating in the labour force (0.6 member on average for each household), if they are in a household receiving remittances than those that are in households that do not receive any remittances (0.47 member for each household). This is an interesting result that implies that households who receive remittances have probably their male as a migrant is abroad. This implies that the female left behind needs to engage in work activities to replace the absence of the male migrant, which means that the female would seek employment to compensate this role. Evidently, 67% of the

household that receive remittances have a female as the head of this household. This is kind of an automatic role, yet being the head of the household does not necessarily imply controlling resources or owning the 'bargaining power' (this will be fully discussed below).

In terms of the education of the households' members, the differences between the two groups are quite small, with the highest presentation of an intermediate level of education in both groups. Interestingly, being in a rural area slightly favours being in a households that receive remittances. Finally, there are obvious differences in the wealth indicators between the two groups, with the ownership of telephone and computers higher in household that receive remittances. Moreover, two wealth indices were constructed to represent the wealth of the households, one is based on the presence of durable goods and the other relate to the dwellings and characters of the house (more details will be given in variable discussion below).

2.3. Methodological Approach

As mentioned earlier the usage of survey data presents some ***methodological challenges*** that we faced. They could be summarised as follows:

1. The first issue that comes across in dealing with sample survey data related to migration is in the self-selectivity nature of this phenomenon. Migration households are not randomly selected and they differ from non-migrants households and hence they will not react the same way. In fact, Roushdy et al (2009) give evidence of this selectivity problem in the ELMPS06 data by showing differences in demographic and socioeconomic characteristics in the data of migrant and non-migrant households. The use of standard econometric models might give biasness results;
2. A second important issue that relates to this data is the endogeneity problem which is manifested in the existent correlation between the explanatory variables and the error term, this occurs due to several reasons: (i) heterogeneity and the omitted variables are unobserved variables in the estimations and are only presented in the error term; (ii) the reverse causality, which basically refers to the causal relation between dependent variables and independent variables. In our model, for example, as we are estimating the impact of remittances on the educational outcomes, we would expect that education also would have an impact on remittances, as parents for instance are motivated to provide better education to their children so they migrate and send remittances for their education.
3. A third potential challenge with the data relates to some missing information or measurement errors. Notably, the fact that some of the households who receive remittances do not have a migrant, this represent an exception to the assumption of correlation between existence of migration and receiving remittances (Roushdy, et. al, 2009).

There are several methods by which this biasness can be corrected (for more details please refer to Annex 4.3). In our empirical evidence we follow the method adopted by a large number of empirical studies, which is the use of **instrumental variables** (IV) (e.g. Hanson and Woodruff, 2003; Hildebrandt and McKenzie, 2005; and Binzel and Assaad, 2011).

Our methodological approach *will consist of estimating two models related to the human capital outcomes of the Egyptian households: one relates to the educational outcome and the other relates to the health outcome. In each of these models, we first present the list of variables to be included, and then we estimate the model and discuss the results.*

We will initially estimate two models; (i) educational outcome, where we estimate the probability that a person aged between 18 and 22 years old would be in education; and

(ii) health outcomes which will be presented by the probability (or rather the risk) of the mortality of a child aged between 0-5 years.

This will be done on two steps:

1. Due to the nature of our data, we use the **probit estimation** technique. Being a binary data, this methodology estimates the probability that the dependent variable will have either values of 0 or 1 based on the independent variables that will be considered in the model. This method uses the *maximum likelihood procedure* in estimating the models. This estimation assumes that remittances are exogenous and we estimate their impact on the two human capital outcomes.
2. In the second step, we look into the identification strategy, as this first estimation might be potentially be biased (due to endogeneity as detailed above), we overcome this problem, by introducing an instrumental variable (IV) and we adopt the **recursive bivariate model** estimation and instrument for the endogenous variable.

The model is estimated using recursive bivariate probit (bi-probit) regression model where two equations are estimated, the first represents the estimation of the dependent variable and the second represents the instrumented endogenous variable. This methodology is adopted by a large number of empirical evidence as earlier described in the literature review.

The choice of the instrument has to satisfy the following two conditions: first, it has to be exogenous, hence not correlated with the error term and second, to be strongly correlated with the potentially endogenous regressor (i.e. remittances). We choose the instrumental variable to be the '*migration network'* at the village level. This variable will identify the villages that are considered 'sender' villages (with high overall rates of migrants) due to the presence of network abroad. This increases the likelihood of being a remittances recipient household. Migration network are considered exogenous to the model and at the same time they impact remittances through the way they induce more migration from other households members and hence more remittances. This variable is estimated using historical migration rates. This instrument is frequently used in the empirical studies, as shown before (such as Hanson and Woodruff, 2003; Lopez-Cordova, 2005; Acosta, 2006; Acosta et al., 2006; Woodruff and Zenteno, 2007 and Assaad and Binzel, 2011 as well as Elbadawy and Roushdy, 2010 in the case of Egypt).

Our database is providing information at the level of the village (shiakha). This means that the IV selected has to be provided at this same level. Unfortunately, for the case of Egyptian data, a historical migration rate at the level of the villages (shiakha) is not available from previous national Censuses (as it only started to be included in the 2006 Census). Hence we constructed the ratio of migrants to the male population aged 15-64 years old at the shiakha level, using the data available on the distribution of the population per shiakha in Egyptian Census of 2006 and the distribution of migration rates per shiakha from the ELMS of 1998. These two databases were mapped to reconstruct a migration rate per shiakha that would correspond to the data of the 2006 ELMPS.

Ideally this migration network instrument would preferably be before 1984 so as to ensure that the children (age between 18 and 22 under consideration) are not impacted by this migration. However at this deep level of the geographic distribution (the villages), migration rates would be small and the variations across time will be limited. In the following section we provide the model estimations of the human capital outcomes.

2.4. Estimation of the Impact of Remittances on the Human Capital of the Recipients' Households

The two models of the human capital outcome take the following general form:

$$\Pr\left[HC_outcomes_{ij}=1\right]=\alpha+\gamma Z_i+\delta' V_j+\beta Remit_i+\varepsilon_{ij} \quad (4.1)$$

where,

a. The dependent variables

HC-outcomes$_{ij}$ is the binary human capital variable to be estimated. In the first model we test the probability that a person would be attending school between the age of 18-22 year old '***SchoolAttendance***' and in the second model we test the probability (or rather the risk) of child mortality before the age of 5 '***Childmortality***'. For simplicity, we refer to these two categories of individuals concerned as 'Child' referred as 'i', while the household he/she belongs to is referred by 'j'.

b. The independent and control variables

Remit$_j$ is a dummy variable that takes the value of one if the child belongs to a household that receives remittances and zero otherwise. We include remittance receipts rather than remittances level because the latter may suffer from biasness, as respondents may not recall the exact amounts. Moreover, these remittances only present what the household receive from abroad only (does not include internal remittances) and they do include the remittances in kind (which might represent durable goods, electronics, clothes, gold or other non-cash type of remittances).

Z$_i$ is a vector of child characteristics. This vector includes variables related to the child: which includes his/her age, the gender (a dummy variable equal to one if the child is a boy (Boy)) as well as other indicators. This is in-line with other empirical studies such as Amuedo-Dorantes and Pozo, 2010.

V$_j$ is a vector of household characteristics. This vector includes characteristics related to the household such as: education of the parents, number of the children in the households, etc.

In addition to these variables, we have calculated a "***wealth score index***" based on durable goods[44] (Wealth score). The wealth score is a way to measure the historical accumulated wealth of the household. This index aims to control for the wealth of the household while estimating the impacts of remittances on human capital outcomes. The problem with including this index is in the possibility of including some items that are impacted by the remittances. However, almost all empirical studies on the human capital issues have included a sort of a control over the wealth. Given this, we made several attempts to introduce a kind of a control for the wealth of the households. Following Filmer and Pritchett, 2001, we calculate a wealth index out of the available assets and housing characteristics using the method of the Principal Component Analysis (PCA). According to the authors: "*Principal Components analysis provides plausible and defensible weights for an index of assets to serve a proxy for wealth*". The advantage of this method is that it provides the weights according to the data and hence overcoming the lack of data on the values and the dates of purchase. This index was used by several scholars such as Hildebrandt and McKenzie, 2005; Boucher, Stark and Taylor, 2005; Acosta, 2006; and Marchetta, 2012.

[44] Wealth score estimated using the Principal Component Analysis (PCA).

Based on this, we calculate two indices one for durable goods[45] and the other one for the basic infrastructure of a house (dwellings)[46]. Introducing the two indices showed that the latter did not have any effect and hence was excluded.
Other empirical evidence included measurement for the level of household labour income (e.g. Cox and Ureta, 2003 and Alcarza, et. al, 2012), others used one indicator to express the wealth such as 'home ownership' (Hanson and Woodruff, 2003), some others used an ideal wealth indices which is the historical ownership of lands (as a family heritage), which puts at a minimum any kind of causality with remittances (e.g. Mansuri, 2006).

Finally, in order to **control for the community** in which the child lives, we use dummy variables for the governorates where the household is located, as they may differ in terms of per capita incomes, infrastructure capacities, public services (education and health), etc[47].

2.4.1. Estimating the impact of remittances on School attendance

Following the above general methodological approach and general equation 4.1 we estimate the impact of remittances on school attendance, where ***Pr[SchoolAttendance$_{ij}$]*** is the probability of school attendance by child i between the age of 18 and 22 years old in household j.

This age bracket corresponds to high educational tertiary level or high skilled level (this could be university education) according to the education system in Egypt. The reasons behind the choice of this age group are: first, this age bracket will ensure avoiding the compulsory levels of education (6-14 year old)[48] which would bring clearer any impact of remittances; second, this level of education reflects a real choice made by the child (and/or and his/her household), since at this age, in general, after completion the secondary or vocational education, many choose to stop their education, either for marriage (especially for girls) or for joining the labour markets; third, if we can give evidence of an impact of remittances on the attendance of schools at this high age level, it means that the impact is even more pronounced at younger age (i.e. 15 to 17 years old) since our sample only includes those that are already in an education; and fourth, this level of education, even though subsidized by the government, is not free and hence would require payments towards its fees and educational requirements.

Following equation 4.1, the variables that are included in the educational outcome equation can be presented as follows:

[45] This includes durable goods as fridge, freezer, dishwasher, coloured TV, black and white TV, video, air conditioner, microwave, cooker/stove, kerosene cooker, electric fan, water heater, heater (gas, oil or electric), sewing machine, iron (electric or other), radio, tape recorder, CD player, washing machine, camera, private car, computer, cell phone and satellite dish
[46] This includes dwellings such as types of floor, type of roof, source of water, disposal of waste, sewage systems and electricity access.
[47] Other attempts included the control variable rural/urban (models not shown) but results don't change quantitatively.
[48] The public education system consists of three levels: the basic education from 6 to 14 years old is both free in state or government schools and compulsory. This consists of primary education (6-12 years old), followed by the intermediate level (12-14 year old). The secondary school (15-17 years old) includes standard education or specialised education (technical or vocational education). This is followed by the tertiary level (18 and over), which includes university or any other specialised degrees. These two latter educational levels are not compulsory, however they are considered free in public schools. Public Tertiary education (university and other) is not completely free as students have to pay registration fees but which are highly subsidized by the government.

1. "***Remittances' receipts"*** is the main independent variable in our estimation. We argue that remittances can impact the education attendance of the 18-22 years old by at least four different ways:
   (i) on the direct effect, remittances could be used to directly finance education attendance of the child at this education level;
   (ii) on an indirect way, remittances ease the liquidity constraints of the households, reducing the chances of child labour and hence the child can pursue his/her education at this level rather than joining the labour markets;
   (iii) Receiving remittances could lead to an overall increase in the household level of development (economic and social) which increase the aspirations of the youth of the household (as detailed in chapter 2 on the positive relation between development and aspiration), encouraging them to continue their education in order to seek better opportunities (at home or abroad); this is also called the Brain Gain effect. In fact, in the study by Population Council in Egypt on the aspirations of migration, it was found that the more the person is educated the more he/she has aspirations to migrate (Population Council, 2011);
   (iv) On a negative note, migration of one member of the household could have two negative effects: it could imply that the child will need to join the labour market to compensate the loss of income and take the role or the domestic responsibilities of the migrant, as explained earlier; and the absence of one parent could have a negative impact on the child's commitment and performance and hence lead to drop-outs.

2. The estimation includes a vector of the **child's characteristics** as previously noted and a vector for the **household characteristics**. In the case of the school attendance estimations this vector includes the following variables:

   (i) The father's and mother's education, which is divided into 5 categories: illiterate; read & write; less than intermediate; intermediate; and above intermediate & higher;
   (ii) The number of children in the household in three categories according to the age bracket: 0-6 years old, 7-17 years old and 18 to 22 years old. This variable is interesting in controlling for the impact of having brothers and/or sisters in the household and whether this affects the educational attendance of the child or not;
   (iii) We also include dummy variables to control for the governorates and the wealth index that was constructed as previously explained.

Results of the first round of probit model estimation are presented in table 4.6 column (1) and (2) (and Annex 4.4 for details about the governorates). The first column presents the model without the wealth index and the second is presented with this index. In these two estimations, remittances receipts are assumed to be exogenous. The results show that these remittances do not seem to affect the probability of school attendance. However, in these two models, the effects of remittances are biased and generally smaller in magnitude due to the endogeneity problems as explained. Moreover, as discussed above, the impact of remittances on school attendance is not direct.

Hence, on the second round of estimations, we consider the endogeneity of the remittances and we use the Instrumental Variable (IV) to estimate a recursive bivariate probit. As mentioned earlier we use the migration network presented in the migration rate at the level of the villages that corresponds to these households. Results of this estimation are presented in the same Table 4.6 in column (3) and (4) (with and without the wealth index). The wealth index is used as a control and to test the robustness of the results obtained in model (3). The Wald Test rejects the null hypothesis that the error terms are uncorrelated, hence remittances receipts are endogenous and hence the results of the IV estimations are therefore considered to be the good specification for the model.

Results obtained show that remittances increase the probability that a child will continue his/her education at the age between 18 and 22 years old. ***In fact, the marginal effects estimation indicates that being in a household that receives remittances increases the probability of a child to attend school, between 18 and 22 years old, by 42-43%.*** This considered an important finding for our model on Egyptian households and the impact of remittances on their education of their children between the age of 18 and 22.

Similar positive results were found in other studies (e.g. Hanson and Woodruff, 2003; Acosta, 2006 and Acosta et. al., 2007 and Cox and Ureta, 2003; on Latin American countries; and Elbadawy and Roushdy, 2010 on Egypt), as addressed in the empirical literature. However these impacts were not always evident and they depend on the age group and gender under consideration. Looking at studies that considered high age group to estimate the impact of education, we can highlight that of Lopez-Cordova, 2005, for instance, who found mixed results on the effects of remittances on schooling as these were negative for the high age group of children 15 to 17 years old and positive otherwise. Similarly, McKenzie and Rapoport, 2005 found that children 16-18 years old have lower education attainment. Moreover, it is important to note a difference between our results and those reached by other studies, which could be related to the school education system: most studies considered age brackets between 6 and 17 years old (i.e. primary, intermediate or secondary levels of education), which could be considered in many countries as compulsory or a minimum requirement. However, selecting a higher bracket of education reflects a potential choice made between education and employment. From the literature we identified, Yang, 2011, that addressed a higher age bracket (17-21 years old) on his study on Philippines, and Elbadawy and Roushdy, 2010 who found positive results for school attendance for the age bracket of 6 to 17, but also for school/university attendance (17-21) with stronger results for boys.

Other interesting results of our model estimation show:

1. Boys between age 18 and 22 years old have more probability in attending school than girls in the same age bracket. This result is conform with the gender distribution of tertiary education in Egypt, where females' tertiary enrolment is lower than those of the males (26% vs 29%, respectively)[49]. This could be related to the marriage of the females at this age, especially in rural areas.
2. There is an important impact of the parents' education. We observe that the higher the parents' level of education (reference to the 'illiterate' variable), the higher the probability of children attending schools at this age bracket, for both parents. This is quite logic as the more the parents are educated, the more they want their children to be at least as equally educated.
3. The number of smaller children in the household seems to also matter in the estimations. The probability of a child to pursue his education between the age of 18 and 22 decreases with the increase of the number of very young children (age 0-6 years) in the household. This could be justified by the fact that the youth might be asked to drop university education and join the labour market (or help in domestic work at home) to help the household with the expenses and to take the role of the head of the household in the absence of the head (which would probably be the father). This is not the case when the number of older children (between 7 and 17 years old) increases where we see an increase in the probability of pursing the education of the youth (18-22). This could reflect a kind of economies of scale, for the cost of sending one to school would make it cheaper for others. These same two results were also found in Acosta, 2006.

[49] National figures for the Gross Tertiary school enrolment (% of population within the age bracket). This figure is for the gross, i.e. regardless of age, so we expect those within the age to be much lower.

Table 4.6. Impact of remittances receipts on School attendance: probit & bi-probit models

	Probit Models		Bi-probit Models			
	(1)	**(2)**	**(3)**		**(4)**	
Dependent variable	**School attendance**	**School attendance**	**School attendance**	**Remittances**	**School attendance**	**Remittances**
Remit	0.186	0.104	1.445***		1.503***	
	(0.129)	(0.131)	(0.477)		(0.377)	
Age	-0.340***	-0.347***	-0.334***	0.0101	-0.340***	0.00560
	(0.0179)	(0.0181)	(0.0181)	(0.0303)	(0.0181)	(0.0306)
Boy	0.165***	0.167***	0.163***	0.0354	0.164***	0.0596
	(0.0483)	(0.0485)	(0.0478)	(0.0888)	(0.0479)	(0.0888)
Father's education						
(ref. Illiterate)						
Read & Write	0.317***	0.271***	0.274***	0.404***	0.230***	0.334***
	(0.0698)	(0.0704)	(0.0704)	(0.111)	(0.0700)	(0.112)
Less than intermediate	0.264***	0.215***	0.256***	-0.0602	0.217***	-0.0979
	(0.0748)	(0.0756)	(0.0744)	(0.150)	(0.0747)	(0.150)
Intermediate	0.437***	0.341***	0.405***	0.286*	0.320***	0.114
	(0.0812)	(0.0832)	(0.0816)	(0.154)	(0.0825)	(0.161)
Above intermediate & higher	0.964***	0.826***	0.947***	0.0152	0.830***	-0.169
	(0.0980)	(0.101)	(0.0977)	(0.209)	(0.1000)	(0.216)
Mother's education						
(ref. Illiterate)						
Read & Write	0.0300	-0.0213	0.0431	-0.225	0.000721	-0.270
	(0.0927)	(0.0935)	(0.0920)	(0.168)	(0.0926)	(0.169)
Less than intermediate	0.357***	0.273***	0.370***	-0.337*	0.302***	-0.409**
	(0.0805)	(0.0823)	(0.0800)	(0.188)	(0.0817)	(0.189)
Intermediate	0.702***	0.554***	0.704***	-0.242	0.581***	-0.425**
	(0.0889)	(0.0927)	(0.0882)	(0.186)	(0.0918)	(0.192)
Above intermediate & higher	0.935***	0.684***	0.899***	0.112	0.682***	-0.316
	(0.120)	(0.127)	(0.121)	(0.231)	(0.126)	(0.256)
Num children aged 0-6	-0.190***	-0.188***	-0.202***	0.158***	-0.199***	0.167***
	(0.0368)	(0.0367)	(0.0361)	(0.0475)	(0.0358)	(0.0472)
Num children aged 7-17	0.0622***	0.0728***	0.0611***	0.000683	0.0696***	0.00771
	(0.0204)	(0.0206)	(0.0201)	(0.0350)	(0.0203)	(0.0355)
Num other children aged 18-22	0.000178	-0.00729	-0.00445	0.0338	-0.0119	0.0155
	(0.0320)	(0.0322)	(0.0317)	(0.0536)	(0.0318)	(0.0542)
Wealth index		0.0854***			0.0713***	0.121***
		(0.0141)			(0.0144)	(0.0234)
% of Migrants at shiakha level				0.0969***		0.0998***
				(0.0287)		(0.0286)
Governorates						
(results shown in Annex 4.4)						
Constant	5.794***	5.932***	5.695***	-2.514***	5.795***	-2.569***
	(0.366)	(0.369)	(0.367)	(0.646)	(0.369)	(0.653)
Marginal effect of remit receipts	0.051	0.029	0.4215**		0.4340***	
	(0.0356)	(0.0358)	(0.2006)		(0.1653)	
Wald test of Rho=0 (Prob>Chi2)				0.0349		0.0058
Observations	3,754	3,754	3,754	3,754	3,754	3,754

*Notes: Author's calculation based on ELMPS (2006). Standard errors in parentheses. *** denotes significant at the 1 percent level, ** at the 5 percent level, * at the 10 percent level. Significance levels of the marginal effect are based on bootstrapped standard-errors with 200 replications.*

4. The geographic location[50] does not seem to have important impacts on the probability of school attendance, except for two of Upper Egypt governorates Luxor and Aswan, where the probability of education at this age bracket was negative (in reference to Cairo). It is important to note that these two governorates rely heavily on tourism and many youth prefer to join immediately this very rewarding labour market (with minimal education).
5. Wealth index, as expected, was found to contribute positively to the probability of education for this age group.

2.4.2. Estimating the impact of remittances on Child Mortality

Following this result on the first human capital outcome related to education, we move to the second outcome related to health. In this empirical evidence we estimate the general equation 4.1 and where ***Pr[Childmortality$_{ij}$]*** is the probability (or risk) of the mortality of a child *i* before the age of 5 in household *j*.

The variable on child mortality was constructed from the survey data based on the mother's answers to two different questions in the questionnaire, since there were no data collected about the year a child (if any) was deceased. Hence we infer the information from the mother's answers about: (i) how many children born after 2000 and (ii) her answer about is this child is alive or deceased at the time of the survey (2006), this will basically give us the children deceased at the age between 0 and 5 years old. So in fact, the dependant variable here is the answer to the direct question 'is the child born after 2000 deceased?'. It is important to note here that the data in this model are that relating to the mother (and not the child as in the previous model).

We chose this variable in particular to represent the health outcome due to its contribution towards the human capital and it represents a reflection of the overall health status of this household. As shown in the empirical review, very few studies addressed the impact of migration and remittances flows on health in general, and the results found were mixed results. The ones that focused on migration considered the mortality rate (e.g. Kanaiaupuni and Donato, 1999 and Hildebrandt and McKenzie, 2005), however those that addressed the impact of remittances looked into the child's weight-for-age, height-for age indicator (e.g. Acosta, et. al 2007).

Following equation 4.1, the variables that are included in the health outcome equation are almost the same as those for the educational one.

1. ***Remittances' receipts*** is the dependent variable as detailed above. We argue that the impact of remittances on mortality rate of children could be in at least 4 ways:
   (i) On a direct front, remittances can be used directly to finance the improvement in the children's health status. This starts from the health of the mother, the delivery of the baby and includes visits to the doctors, vaccinations, purchase of medicines, etc.
   (ii) On an indirect way, remittances could ease liquidity constraints in a way that the household would spend more on the ensuring a minimum basic healthy environment (e.g. sanitary water, sewage system, concrete floors, protective roofs, etc.)
   (iii) However, the absence of a parent from the household for migration (normally the father) could have a negative impact on the health of the children. This could be

[50] We would like to remind that other attempts included the control variable rural/urban (models not shown) but results did not give any quantitative changes.

due to the work load of the mother or her incapacity to ensure the health environment for the children;

(iv) Nevertheless, there are some positive impacts from migration related to increase the awareness of the households' members left behind on the proposed health standards for the children (Hildebrandt and McKenzie, 2005).

The child characteristics' are included in the vector as done before and to which we add few variables related to the mother. Other than the gender of the child, we also include the child's rank in the households (Rank of child), the age of mother at the child's birth (Age of mother at the child's birth) and its square. The age of the mother is expected to have a non-linear relation with the risk of child mortality.

The characteristics of the household are also included as a vector as previously done in the education outcomes. However some changes are introduced:

(i) The parent's education is introduced differently: in these estimations we include the highest educational level between the mother and the father (as in Acosta (2006)) presented in the five categories as previously done.

(ii) A dummy variable denoting the mortality of older siblings (the variable equal to one if at least one of the older brothers and sisters is deceased "mortality among siblings");

(iii) In order to control for external factors related to accessibility to the health service, we use data that relates to the necessary travelling time to the nearest hospital (the variable takes the value of 1 if it takes more than one hour and 0 otherwise ('More than 1 hour to the nearest hospital');

(iv) We also inject a new variable in some of the estimations, which is the mother's final say. This dummy variable denotes the mother's ability to take the decision to take her child to the doctor, which could be a reflection of her 'bargaining power'[51]. We construct this dummy variable "final-say" as follows: the variable takes the value of 1 if the mother answers 'yes' to the question if 'she has the final say alone and/or with her husband to take her child to the doctor', otherwise the variable takes the value of 0[52]. In the empirical review, we denoted few studies that have investigated the issue on female bargaining power in the context of the gender of the migrant and its impact on the expenditure schemes of the households (e.g. Guzmana, et. al., 2008 and Pfeiffer and Taylor, 2008). According to our knowledge, this variable has not been tested before in any models' estimations for Egypt.

The remaining control variables related to the wealth index and governorates are presented the same way as before[53].

Results of the first round of probit model estimation are presented in Annex 4.5. in columns (1) to (4). A summary of two of these models (1) and (4) is presented in table 4.7 below. As indicated in the table, the four models present different attempts using different control variables: wealth index, or final say, or both. Results of these attempts show that remittances do not seem to play a direct role towards child mortality rates (for those less than 5 years). However, we notice the significant strong negative correlation between the probability of child mortality and the mother having the final say in the two models (3) and (4) where this variable was introduced.

[51] Defined as having an influence to make decisions and here, it is to make decisions related to her children

[52] This 0 value of this variable indicates the involvement of other persons in the decision either the in-laws with the mother or without or other persons that do not involve the mother

[53] Similarly as before there were other attempts included the control variable rural/urban (models not shown) but results did not give any quantitative changes.

The second round of estimations uses, as before, the recursive bi-probit models to take into account the possible endogeneity problem and using the same instrumental variable related to the rate of migration at the level of the villages. The results of these estimations are presented in details in Annex 4.6 model (5) to (8). The table 4.7 below gives a summary of results of the two models (5) and (8). The models presented reflect the different usage of control variables (wealth index and final say) as done before. Results of the bi-probit estimations of the probability of child mortality continue to show an insignificant impact from household's remittances receipts.

Moreover, the Wald test indicates that we cannot reject the null hypothesis that the error terms are uncorrelated. This means that remittances receipts are considered exogenous to the models and hence using Instrumental Variable bi-probit does not seem to be necessary in this estimation (contrarily to the previous model on education outcome).

As mentioned earlier, there were very few studies that addressed the impact of remittances receipts on children's health, and most of them used the 'weight and height' measurements to reflect the health outcome and found positive results (e.g. Acosta, et. al, 2007). The study by Lopez-Cordova, 2005 used the infant mortality (i.e. less than 1 year old) to test the impact of remittances and found negative but weak (and non-robust) results denoting the improvement of the mortality rates with remittances. Finally, the study by Hildebrandt and McKenzie, 2005 also used infant mortality but had a different approach, as they were testing the impact of migration (and not remittances) on infant mortality and they found positive results as previously noted in the empirical evidence. To our knowledge, there were no studies that have been conducted on the impact of migration or remittances on the child health in Egypt.

Given our results, remittances receipts do not seem to have a direct contribution in reducing the probability of child mortalities, this could be due to one or more of the following reasons: (i) the contradicting impacts that both migration and remittances can have on the children mortality rate, as explained earlier, might lead to a non-significant relation as nor the positive or the negative impact prevail, despite the fact that some empirical evidence found that migration could have positive impact on child mortality (e.g. Hildebrandt and McKenzie, 2005); (2) There are external factors that relate to the households and could play an important role against a positive impact, such as poor environment or being located in remote areas' that could lead to the difficulty of these remittances to impact the child mortality rate, in addition to the possible poor performance of the health service in general (as mentioned before), this could be particularly true in some of the under-developed areas, as discussed earlier; and (3) it is important to note here that any possible impact is far from being instant, slightly different from the school attendance estimated above, it takes long periods of time and continuity of remittances to be able to make improvement in the health status of the household and hence eventually being able to change it.

Given these results, one could identify some of the dominant factors that have affected the probability of child mortality as follows:

1. First in terms of the gender of the child, results of the bi-probit showed that there is some weak positive role of being a boy in increasing the probability of child mortality. This contradicts the common incorrect belief that girls are at a higher risk than boys (in fact most recent data on under-5 mortality rates showed a lower rate for girls than boys in 2010 and 2012: down from 22 to 20 (per 1,000) for girls and down from (24 to 22 for boys (per 1,000) for the same years[54];
2. The age of the mother of child matters significantly. As expected, the age of the mother does not have a linear relation with the probability of child mortality. This was confirmed by the significant results showing the existence of a U curve. In

[54] World Databank, 2013

villages in Egypt, where females tend to marry very young, their children are at high risk of mortalities. At the same time, as women grow older, the risk of mortality for their children grows again (e.g. Acosta, 2006 and Hildebrandt and McKenzie, 2005).

3. The variable reflecting the mother's final say (in probit models (3) and (4) and in bi-probit models (7) and (8)) gave interesting results: a persisting negative and significant relation with the probability of child mortality. This means that the more the mother has the final say (alone or with her husband) in taking her child to the doctor, the less probability of child mortality. This corresponds in a way to some of the results obtained in the very few empirical evidence on the role of bargaining power of women, as previously indicated. *Moreover, this is an interesting result that we found worth further investigation as it might help in understanding the insignificant impact of remittances on child mortality. Precisely we will investigate the impact of remittances on this particular variable and whether mothers in remittances recipients' households have a bargaining power that allows them to make decisions about their children health.*

Beside those dominant variables, other interesting outcomes could be found in the results of the bi-probit, presented below:

1. In terms of the highest degree of education of parents, results showed that the higher the level of education of parents, the less the risk of child mortality. This is quite an expected result and similar findings appear in the literature.
2. The mortality of an older sibling in the household seems to increase the risk of child mortality of those less than 5 years old. This could indicate an overall low level of health in the household and little access to basic infrastructure.
3. The control variable related to the duration of travel to the nearest hospital matters increases the probability of child mortality. This could indicate the villages or areas that are remote or under-developed with no basic infrastructure that would reduce the overall health status and increase mortality rates.
4. Wealth index was found insignificant in this estimation and the effect of being in specific governorate did not have any impacts.

As mentioned in the analysis, the strong relation between the mother's 'final say' and the child mortality could represent a key factor in the relation between the remittances and the child mortality. This is what we will investigate in the coming section, as we will estimate a third model that is quite related to the health outcome model, where the impact of receiving remittances on the 'final say' of the mother will be investigated.

Table 4.7. Summary results of impact of remittances on the risk of Child mortality: Probit and bi-probit models

	Probit		Bi-probit		Bi-probit	
	(1)	(4)	(5)		(8)	
VARIABLES	Child mortality	Child mortality	Child mortality	Remittances	Child mortality	Remittances
HH received remittances from abroad	-0.0322	0.0509	1.010		0.546	
	(0.186)	(0.189)	(1.205)		(1.473)	
Boy	0.102	0.145*	0.104	-0.0665	0.146*	-0.0694
	(0.0762)	(0.0803)	(0.0755)	(0.0614)	(0.0801)	(0.0631)
Rank of child	0.0398	0.0544	0.0437	-0.0892***	0.0559	-0.0804**
	(0.0329)	(0.0341)	(0.0328)	(0.0304)	(0.0342)	(0.0313)
Age of mother at child's birth	-0.139***	-0.122**	-0.143***	0.146***	-0.125**	0.134***
	(0.0476)	(0.0502)	(0.0472)	(0.0506)	(0.0502)	(0.0521)
Age of mother at child's birth, squared	0.00200**	0.00178**	0.00207**	-0.00248***	0.00183**	-0.00236**
	(0.000828)	(0.000870)	(0.000822)	(0.000909)	(0.000873)	(0.000934)
Mother has final[1]		-0.212**			-0.213**	0.0547
		(0.0875)			(0.0872)	(0.0752)
Highest education between mother & father						
(ref. Illiterate)						
Read & Write	0.0961	0.145	0.120	-0.428**	0.161	-0.412**
	(0.151)	(0.155)	(0.151)	(0.168)	(0.159)	(0.169)
Less than intermediate	-0.140	-0.132	-0.116	-0.285**	-0.115	-0.361***
	(0.125)	(0.135)	(0.126)	(0.115)	(0.141)	(0.119)
Intermediate	-0.204*	-0.115	-0.188*	-0.143	-0.101	-0.319***
	(0.110)	(0.121)	(0.110)	(0.0885)	(0.126)	(0.0945)
Above intermediate & higher	-0.264**	-0.119	-0.243*	-0.243**	-0.0962	-0.572***
	(0.129)	(0.149)	(0.129)	(0.100)	(0.158)	(0.114)
Mortality among older siblings	0.636***	0.600***	0.623***	-0.000154	0.595***	0.0309
	(0.125)	(0.128)	(0.125)	(0.142)	(0.129)	(0.146)
More than 1 hour to nearest hospital	0.582*	0.684*	0.557	0.504	0.665*	0.665*
	(0.346)	(0.357)	(0.344)	(0.369)	(0.359)	(0.387)
Weath score		-0.0355			-0.0398	0.125***
		(0.0259)			(0.0275)	(0.0191)
% of Migrants at shiakha level				0.125***		0.131***
				(0.0180)		(0.0186)
Governorates (details shown in Annexes 4.5 and 4.6)						
Constant	-0.00618	-0.194	0.0159	-4.273***	-0.180	-4.180***
	(0.674)	(0.714)	(0.669)	(0.715)	(0.713)	(0.738)
Marginal effect of remit receipts	-0.0017	0.0025	0.123		0.042	
	(0.0096)	(0.0091)	(0.193)		(0.160)	
Wald test of Rho=0 (Prob>Chi2)				0.3926		0.729
Observations	5,758	5,758	5,758		5,758	

*Source: Author's calculations based on ELMPS (2006). Notes: 1. Mother has the final say alone or with husband, for taking child to the doctor; 2. Significance levels of the marginal effect are based on bootstrapped standard-errors with 200 replications Standard errors in parentheses. *** denotes significant at the 1 percent level, ** at the 5 percent level, * at the 10 percent level..*

2.4.3. Estimating the impact of remittances on the mother having the 'final say'

The idea of estimating this model was generated from the findings that there was an insignificant impact of remittances on the child mortality while there was a strong correlation between the variable related to the mother's 'final say' on reducing the risk of mortality.

We follow the same methodology and general equation 4.1 to estimate this model and where ***Pr[Finaldecision$_{ij}$]*** is the probability that the mother *i* has the final say, alone and/or with husband, in taking the child to the doctor in household *j*. This variable is defined as previously mentioned.

The dependent and control variables used in the estimation of this model includes:

Remittances' receipts is the dependent variable as detailed above. The impact of receiving remittances on this probability is very much related to the conditions around the household, the communities' traditions and the countries' cultures. Existent empirical evidence, which is quite limited, found that the general women's bargaining power is connected to her control over the households' resources in the absence of the husband. This generally leads to spending more on the education of the children and health to some extent (Guzmana, et. al. 2008).

The mother's characteristics are presented in the vector Z_i, which includes: the number of the children (*Number of children*), and the age of the mother (*Age of mother*). It is important to highlight here that the sample used from the database is the one related to the mothers.

The characteristics of the household are presented as a vector in the model and it includes: the highest education level of both parents, the wealth index and dummy variables for governorates[55].

Results of the first round of the probit model estimation are presented in columns (1) and (2) in Table 4.8 below (more detailed results with Governorates are presented in Annex 4.7). The results of these probit models (with and without the wealth index) show that there was no significant relation between receiving remittances and the probability that the mother will have the final say in taking her child to the doctor.

We then estimate the model using the instrumental variable of the rate of migrants at the village level in bi-probit, as previously done. The results of these estimations are presented in the same table 4.8 (and in details in Annex 4.7 column (3) and (4). The Wald test shows that remittances can not be treated as exogenous and hence we consider the results of the bi-probit estimations as better specification.

Interestingly, we found that in the case of Egyptian households, receiving remittances by the household decreases the probability of the mother to have the 'final say' with regards to taking her child to the doctor. Other interesting results showed that having a large number of children reduces this probability. While the mother's age and the parents' educational level increases this probability.

[55] In this model estimation also there were other attempts included the control variable rural/urban (models not shown) but results did not give any quantitative changes

Table 4.8. Estimation of the mother's 'final say' and impact of remittances receipts- Probit and bi-probit Models

	Probit Models		bi-probit model		bi-probit model	
	(1)	(2)	(3)		(4)	
Dependent variable	**Final decision**	**Final decision**	**Final decision**	**Remittances**	**Final decision**	**Remittances**
Remit	0.0247	-0.00945	-0.826*		-0.789*	
	(0.100)	(0.101)	(0.426)		(0.422)	
Age of mother	0.0121***	0.00974***	0.0120***	8.66e-05	0.00917***	-0.00789
	(0.00335)	(0.00342)	(0.00333)	(0.00544)	(0.00342)	(0.00569)
Num of children	-0.0581***	-0.0540***	-0.0624***	-0.0807***	-0.0572***	-0.0665**
	(0.0181)	(0.0182)	(0.0181)	(0.0309)	(0.0181)	(0.0318)
Highest education level between mother & father						
(ref. Illiterate)	0.0818	0.0585				
Read & Write	(0.0883)	(0.0886)	0.0671	-0.134	0.0413	-0.182
	0.268***	0.232***	(0.0881)	(0.149)	(0.0886)	(0.152)
Less than intermediate	(0.0710)	(0.0717)	0.249***	-0.175	0.208***	-0.276**
	0.248***	0.175***	(0.0712)	(0.121)	(0.0724)	(0.124)
Intermediate	(0.0610)	(0.0646)	0.234***	-0.0716	0.150**	-0.275***
	0.350***	0.222***	(0.0611)	(0.0972)	(0.0654)	(0.103)
Above intermediate & higher	(0.0658)	(0.0751)	0.328***	-0.169	0.183**	-0.545***
			(0.0664)	(0.107)	(0.0771)	(0.124)
Wealth index		0.0434***			0.0498***	0.127***
		(0.0124)			(0.0126)	(0.0193)
% of Migrants at shiakha level				0.110***		0.115***
				(0.0197)		(0.0200)
Governorates						
Details in Annex						
Constant	0.911***	1.001***	0.945***	-2.077***	1.048***	-1.920***
	(0.135)	(0.137)	(0.135)	(0.237)	(0.138)	(0.244)
Marginal effect of remittance receipt	0.0068	-0.0026	-0.2773**		-0.262*	
	(0.02775)	(0.0278)	(0.1383)		(0.1403)	
Wald test of Rho=0 (Prob>Chi2)				0.0572		0.0746
Observations	4,970	4,970	4,970	4,970	4,970	4,970

*Source : Author's calculation based on ELMPS (2006). Notes: Standard errors in parentheses. *** denotes significant at the 1 percent level, ** at the 5 percent level, * at the 10 percent level. Significance levels of the marginal effect are based on bootstrapped standard-errors with 200 replications.*

The negative impact of being in household receiving remittances on the mother's final say regarding taking her child to the doctor reflects her poor bargaining power on this issue. One has to be cautious about generalizing this part of the effect on the mother's overall bargaining power, as this might be a special case related to this issue in particular[56]. Moreover, another important point is related to the differentiation between the mother's autonomy as she becomes the household's head taking the place of her

[56] An innovative research subject would be to further investigate other variables related to her 'final say' in the survey to reflect her bargaining power and relate them to remittances and other human capital outcomes.

husband's being away for migration (67% of women became head of their households) and their bargaining power in taking decisions related to her child (Brink, 1991).
Therefore, away from generalizing this particular effect[57], we can analyse the results obtained by this model estimations as follows:

1. Women could have lower probability of having the final say, due to the involvement of other members of her 'extended family' in the decision. In villages of Egypt, often time different generations live in the same household. Living in 'extended family house' limits substantially the power of the mother to make decisions on her own especially in the absence of her husband for migration (Brink, 1991)[58]
2. Adding to this there are limitations on the female's mobility in villages of Egypt imposed by the culture and traditions, which means that for the women to take her child to the doctor she has to take permission from her husband (and if away other members of the household);
3. An interesting relation could be made with the females' labour participation and this variable about her final say. In the sample we find females (aged 23-65) are participating more in the labour market (in households receiving remittances than males) than male (Table 4.5). This is confirmed by the study of Binzel and Assaad, 2011, where it was found that the women left behind increase their labour participation engaging in unpaid family and subsistence work rather than paid work, as they are taking-up the role of their migrant husband in maintaining the house's assets (such as land, farms, etc.). Hence the idea that more bargaining power is given to more control over resources seem quite limited with regards to this particular case (Guzmana, et. al. 2008). Adding to this, the fact that the mother is not automatically the one that control the resources[59].
4. Finally, it is important to highlight a general observation about the destinations of migrants from Egypt. Most of the migrants from Egypt live in the Gulf States, as explained in the overview section and as the sample show: 40% of the migrants live in Saudi Arabia and another 40% live in other Gulf States (Kuwait, UAE, Qatar, Oman) and only 4% live in OECD countries. Migrants are often impacted by the hosting countries' culture and tradition and hence in this case for Egypt, stricter religious traditions could be imposed on the role of women and her decisions (Gruntz and Pages-ElKaroui (2013). This impact called 'social remittances' would require further investigations.

Other results form the estimations indicate that: the older the mother is the higher probability that she would have the final say. This could be due to the fact that the older the age, the more probable that she would be living in a nuclear family (this is confirmed by Louhichi, 1997[60]). However the finding that the larger the number of the children, the lower the probability of the mother having the final say could confirm this idea about 'social remittances' and the impact of the migration destinations of having large numbers of children. Also, as would be expected the more educated the parents are the more probability that the mother would have the 'final say'. All these findings related to the impact of remittances and other factors on the mother's final say in the household are considered novel, as they have not been addressed before in the case of Egypt.

[57] since more research, that would include more final say variables need to be done.

[58] based on a small survey/case study conducted in rural Egypt on a small sample of 79 women.

[59] On a survey conducted on Egyptian migrants in 1994, it was found that 35% of the women whose husband migrated less than a year ago and 19% of those with more than 4 years of migrated husband have no power concerning these transfers, as this power is given to a male member of the husband's family (Louhichi, 1997).

[60] Based on a national survey conducted in Egypt in 1994 about "Migration and the Status of Women" carried out by the *Unité d'Etudes et de Recherches en Population* (UERP/LAS) in collaboration with UNFPA

Now, to wrap up our findings and linking the findings of two models were remittances had an insignificant impact on child mortality, but a negative one on the variable of 'final say', we could suggest the following inter-related behaviour of the three variables:

1. If 'final say'(yes) + probability of Child mortality (no) - → inverse significant relation (i.e. the more power of mothers the less mortality of less than 5 years children); and
2. If remittances (yes) + 'final say' (no) - → inverse significant relation (the more remittances receipts, the less power of mothers); then:
3. Remittances (yes)→final say (no)→child mortality (insignificant).

This simply says that the risk of child mortality is reduced by the mother's having the final say, however the remittances' receipts reduce this final say for the mother. Hence, this leads to an ambiguous result between remittances and child mortality.

To conclude this part of our empirical model, we have established a relation between remittances and the increase in the probability of attending education for the Egyptian households at the age between 18-22 years old. This is an important finding as it could have long-term benefits for both the households and the economy. Regarding the health outcome, a direct relation could not be established between remittances and the decrease of the risk of child mortality due to the dominance of other characteristics related to the households and the communities on this variable. However, this result has highlighted the important contribution of the mother' power to take a decision regarding the child health in reducing the risk of mortality rate.

2.4. Conclusion

Egypt's migration is considered one of the highest in the Arab region in absolute terms but they only present around 7-8% of the population. At the same time, the amount of remittances is remarkably high especially in the past few years after decades of a stable flow. The remittances per capita have significantly increased but the human capital outcomes of Egypt are still far from reaching their potentials despite their recent improvements in the past two decades. This motivated us to investigate the existence of a role that these remittances could play in contributing to the human capital development of the households at the micro level.

Our empirical evidence on the possible link between remittances and human capital outcomes of the Egyptian households gave interesting and mixed results. First, a direct and significant impact of remittances have been established on the educational outcomes of the Egyptian households. This was presented in a positive and significant contribution of remittances receipts in increasing the probability that a child would continue his/her education at the age of 18-22 years old (i.e. tertiary and university education). In fact, it was found that being in a household that receives remittances increases the probability of a child to attend school at the age 18-22 years old by 43%. The education at this age would normally be a tertiary enrolment, which grants a high-skilled education. This could be the result of a direct contribution of these remittances to finance this level of education together with a mix of other indirect impacts. These could include, but not limited to: the role of remittances in easing liquidity constraints and hence the ability to direct resources for education and avoiding the need for children to join the labour markets; the important role related to the motivation and aspiration of the youth whose remittance' improved their household's development level and hence are more aspired to pursue better opportunities through education. Other impacts could exist, but the bottom line is that remittances have proved to be an important source of achieving better educational outcomes.

However the impact of remittances' receipts on the health outcomes has not given similar direct results. Health outcomes were presented by the risk of child mortality for

the less than 5 years old. The model estimations gave insignificant result for the impact of remittances on the risk of child mortality. Establishing this link with remittances is much more difficult, due to several reasons and due to the dominance of other important factors. One important reason relates to the long-term nature of this health variable, which is caused by a mix of poor health services, poor infrastructure and low levels of awareness and knowledge. Therefore, it could take years of substantial and consistent remittances flows to be able to mark a change. In addition to this, the dominance of other factors could reduce the impact of remittances. These factors could be related to the household's characteristics or could be considered external. One important factor that related to the characteristics of the household was related to the mother's power to have the final say when it comes to take the child to the doctor. This variable was found to have an important impact on reducing the risk of child mortality. Further investigations and estimations on this variable and linking it to the remittances receipts showed that being in a household that receives remittances could in fact reduce this power for the mother. This has obviously contributed to accentuate the problem related to transferring the benefits of remittances to the health outcomes. This is why the impact of remittances was clearly impeded from reaching the child mortality probabilities (or risks). Moreover, there are other important external factors that could reduce the impact, which relates to the poor quality of the health services, the poor insurance and health coverage[61], being in remote areas or villages with no easy access to the medical services[62], etc. However, one could think that the impact of remittances on the health status could be more pronounced in poorer households and this was reflected in some of the few studies that addressed this issue[63].

This empirical evidence is considered novel and original in at least two ways: (i) in the way it integrates both the education and health outcomes in the overall context of the human capital development of Egyptian households, which has not been addressed before at the micro level; and (ii) in the way it establishes a potential link between the health outcomes and an indicator of the mother's bargaining power in taking decisions regarding her children's health. This connection has not been addressed before in the micro empirical evidence on Egypt and could be interesting to look more in depth in this relation.

Establishing a link between remittances and human capital outcome, could have long term positive effects on the household whose children will become better educated and living in healthier environment that will enable them to find better opportunities and to better contribute to the long term development of their households, which could translate into better overall human capital level for the whole country.

[61] according to latest figures insurance covers only 47% of the population, El-Zanatay and Way, 2008

[62] It is important to remind here that the model estimations controlled for the duration of travel to the nearest hospital, but other factors could be considered such as the difficulty of the transportation.

[63] This could be another interesting point to expand to in the health model to include household in income quintiles

ANNEXES

Annex 4.1. Micro data and Econometrics of Migration: The Big Challenge

There is no paper or study that addressed the microeconomics of migration, which has not highlighted the difficulties of obtaining micro data on migration. Even if this type of data exists following tremendous efforts to collect them, they are still contaminated with problems of randomization, coverage and even non-transparency. Despite all these difficulties, micro data are considered a treasure of information for researchers who wish to have first hand information on migration, directly from the person who actually perform it or related to him or her.

Moreover, even if the paper or study managed to access good micro data for their analysis, set-up their framework, assumptions and models, here comes the second challenge: the great amount of correlations and endogeneity between the variables, that makes the straight application of econometric modelling impossible. This is of course a common challenge in all social variables, but in particular the migration ones, since it involves a chain of human behaviours and decisions that are not easily brought clearly.

Despite their inaccuracy, micro data based on household surveys are considered the most reliable source of migration especially in developing countries, where macro data is not only scarce but far from being consistent and reflecting the reality. Micro level data is a mine of first-hand information, where both individuals and households provide actual information about many aspects of their social, economic and developmental life. Other than understanding the characteristics of the households with migrant(s), they provide information about the conditions and the reasons behind the decision of migration of one (or more) of the household members and how did this impact their lives. Micro data also give information about remittances received from the migrant(s) abroad, their amounts, frequencies and most importantly in what way they are spent (saving or an additional source of income to be spent, and on what it is spent: consumption, education, social events, or investment).

This kind of first hand data is highly important in understanding the migration phenomena and linking it to the real lives of the individual. These disaggregate micro level data and analysis gives details of the overall picture of a community, region, city and a country. It can help drawing targeted policies and understanding the drivers and the consequences of migration. Ideally, this could be complemented with the macro data to complete the picture.

Despite the great benefits that the micro data bring to the analysis, this comes with an expense. There are several shortcomings in the way the data is collected, their accuracy and there are many methodological problems related to the way this data is used in the empirical studies.

First of all, most of the national household surveys where migration data can be found are not designed for migration households and hence do not entail migrant specific questionnaires. However, in recent year, many efforts have been made to undertake sample surveys targeting 'high migration areas' with migration specified questionnaires.

Secondly, most of the data collected at the household levels on remittances are under-estimated. Households are reluctant to give accurate information about the amounts they receive. This is also the case at the macro level, as previously discussed, where large sums of money are transferred through informal channels and hence not accounted for.

Thirdly, these sample target surveys entail common problem of selection bias, as migration itself is not a random sample of the population. This biasness could relate to the decision to migrate, the country of destination and to remit. Household migrants' are

often selected in the survey because they are known to include migrant. Many studies overcome this by using selection-correction models such as that developed by Heckman, where a two-stage estimation procedure is used. The first stage includes an estimation of a probit regression, which is used to obtain an inverse-Mills ratio to control for migration selectivity (Taylor, 2007).

Other than those problems related with the micro data, there are challenges in the way the econometric analysis are applied:

First, the most common problem that has been addressed in all micro analysis related to migration is the endogeneity of variables and their multicollinearity. This constitutes one of the largest challenges facing researchers on how to separate the so closely related variables. Several techniques have been used across the empirical literature and some of the most common ones are the use of instrumental variables techniques (IV).

Second, another common problem that we noticed is the confusion in addressing the research question in some of the studies. Often studies mix between migration (i.e. the fact that one person leaves the households) and remittances (the fact that the migrant send remittances to his or her home households). While the former might have an overall negative effects on the households, the latter, could have an overall positive effect.

Third technical issue is related to the remittances and whether they are treated as an exogenous transfer or an additional source of income. In case of the former, the analysis would be on the impact of remittances on the observed level of welfare and poverty, while in case of the latter, it is treated as a potential substitute for household earnings than the analysis would focus on comparing the observed level of welfare and poverty in a country or household to a counterfactual scenario without migration and remittances, including an imputation of the home earnings of migrants, if they had stayed and worked at home (Adams, 2004).

One of the most famous databases of micro data is the one from the Directorate for Employment, Labour and Social Affairs (DELSA) at the OECD. This database combined country censuses to count foreign-born individuals living in the OECD countries together with their country of birth and their education level. This was followed by the famous Docquier and Marfouk (2005) data based on skills emigration rates and levels of education by country of birth. Similar work has been done in Latin America at the Centre of Demography for Latin America and the Caribbean (Xenogoani, 2006). Moreover, surveys of household migrants have been undertaken in high migrants sending countries such as Mexico, some Asian countries, such as Philippines and other African and Middle Eastern countries such as Egypt. It is to note that at the micro level, remittances data are essential and many empirical researchers undertook their own surveys to collect data about remittances and their usages.

Annex 4.2. Data on migration in Egypt: what source? What definition?

All empirical studies on Egyptian migration have highlighted the large discrepancies in the data on migration, either in total or according to the destination countries. This is due to several factors among them: is the difference in the definition of migration between the different sources, the way migration is recoded, migrants that are unaccounted including illegal migration, etc. The main source of data on migration in Egypt is Central Agency for Public Mobilization and Statics (CAPMAS), who relies on data collected from: (i) Egyptian Consulates in the different destination country; (ii) records of cross-border flows from the Ministry of Interior; and (iii) emigration permits from the Ministry of Manpower and Migration. From the destination country side, data about immigrants depends on how these countries are counting their migration inflows and the accuracy of their records (either entrance or exist as migrants to the country)[64]. Just to give an example, there is a 180% difference in the number of Egyptians in the USA between the number recorded in Egypt and that at the USA (table Box 1.4).

	According to		
Destination	**Destination states**	**Origin states**	**Percentage difference**
Austria	4,721	14,000	197%
France	15,974	36,000	125%
Germany	14,477	25,000	73%
Greece	7,448	60,000	706%
Italy	40,879	90,000	120%
Netherlands	10,982	40,000	264%
Spain	1,567	12,000	666%
United Kingdom	24,705	35,000	42%
Australia	33,370	70,000	110%
Canada	35,975	110,000	206%
Jordan	124,566	226,850	82%
Switzerland	1,369	14,000	923%
United States	113,395	318,000	180%
Sub-total	429,428	1,050,850	145%

Source: Fargues, 2005

[64] This might explain the almost non-existence data on migration flows or stock published by international organisations (including the International Organization of Migration (IOM) and to some extend the United national for Population).

Annex 4.3. Correction for Biasness and some Methodological issues

As previously mentioned, the idea of measuring the impact of migration or remittances on a certain outcome of the households means that we would compare this outcome in households that have migration (or receive remittances) to an identical household who does not have a migrant or receiving remittances. This a difficult task, as there is no identical households in the real world. There are different methodologies that could help go around this difficulty:

1. The use of the Propensity Score Matching (PSM) technique will make it possible to compare the outcomes with non-migrant (or non-recipients) households that have the same propensity to migrate. This is 'selection correction' technique that has been used by many studies (Acosta, 2006, Binzel and Assaad, 2011)
2. The Instrumental Variables technique (IV) is also commonly used in correcting for endogeneity and selection bias problems. This requires a selection of a set of one or a number of variables that could be considered as instruments. To choose an IV it has to have the following feature: from one hand it has to be exogenous (and hence not correlated with the error term) and from the other hand it has to be strongly correlated with the independent variable.

For example in the case of our empirical evidence, migration and remittances are strongly correlated with the human capital characteristics of the household (i.e. education, health, etc.). Hence we need to find an instrumental variable that would be strongly correlated with the migration (and remittances) but that is uncorrelated with the human development characteristics of the households. Finding a variable that satisfies these conditions is difficult, however empirical evidence have shown some interesting choices, such as:

1. Historical migration levels: the longer the lag, the better is the instrument since it will be far from impacting the current characteristics (Hanson and Woodruff, 2003). The existence of migration networks at the community level, since migration networks are strongly correlated with migration but do not impact the characteristics of the migrants (e.g. Acosta, 2006, …).
2. The number or Western Union offices per capita in the previous year interacted with household education structure (Amuedo-Dorantes and Pozo, 2006 and Claero et al 2009).
3. A lucky instrument would be the existence of external shocks on remittances (positive or negative) that could enable the measurement of impact of remittances with and without remittances in the same households (Yan 2003, use the exchange rate shocks to remittances following the Asian crisis in measuring the impact in the Philippines).
4. The distances either to the migration border (especially in the case of Mexico, Lopez-Cordova, 2005) or to central city (in Mexico, this city is known to have high potential of migration or the distance to the U.S. border along the 1920 rail network - Alcaraz el al, 2012).

Annex 4.4. Estimations of the Impact of Remittances on School attendance: Probit and Bi-probit Models

	Probit models		Bi-Probit model		Bi-probit model	
	(1)	(2)	(3)		(4)	
Dependent variable	**School attendance**	**School attendance**	**School attendance**	**Remittances**	**School attendance**	**Remittances**
Remit	0.186	0.104	1.445***		1.503***	
	(0.129)	(0.131)	(0.477)		(0.377)	
Age	-0.340***	-0.347***	-0.334***	0.0101	-0.340***	0.00560
	(0.0179)	(0.0181)	(0.0181)	(0.0303)	(0.0181)	(0.0306)
Boy	0.165***	0.167***	0.163***	0.0354	0.164***	0.0596
	(0.0483)	(0.0485)	(0.0478)	(0.0888)	(0.0479)	(0.0888)
Father's education						
(ref. Illiterate)						
Read & Write	0.317***	0.271***	0.274***	0.404***	0.230***	0.334***
	(0.0698)	(0.0704)	(0.0704)	(0.111)	(0.0700)	(0.112)
Less than intermediate	0.264***	0.215***	0.256***	-0.0602	0.217***	-0.0979
	(0.0748)	(0.0756)	(0.0744)	(0.150)	(0.0747)	(0.150)
Intermediate	0.437***	0.341***	0.405***	0.286*	0.320***	0.114
	(0.0812)	(0.0832)	(0.0816)	(0.154)	(0.0825)	(0.161)
Above intermediate & higher	0.964***	0.826***	0.947***	0.0152	0.830***	-0.169
	(0.0980)	(0.101)	(0.0977)	(0.209)	(0.1000)	(0.216)
Mother's education						
(ref. Illiterate)						
Read & Write	0.0300	-0.0213	0.0431	-0.225	0.000721	-0.270
	(0.0927)	(0.0935)	(0.0920)	(0.168)	(0.0926)	(0.169)
Less than intermediate	0.357***	0.273***	0.370***	-0.337*	0.302***	-0.409**
	(0.0805)	(0.0823)	(0.0800)	(0.188)	(0.0817)	(0.189)
Intermediate	0.702***	0.554***	0.704***	-0.242	0.581***	-0.425**
	(0.0889)	(0.0927)	(0.0882)	(0.186)	(0.0918)	(0.192)
Above intermediate & higher	0.935***	0.684***	0.899***	0.112	0.682***	-0.316
	(0.120)	(0.127)	(0.121)	(0.231)	(0.126)	(0.256)
Num children aged 0-6	-0.190***	-0.188***	-0.202***	0.158***	-0.199***	0.167***
	(0.0368)	(0.0367)	(0.0361)	(0.0475)	(0.0358)	(0.0472)
Num children aged 7-17	0.0622***	0.0728***	0.0611***	0.000683	0.0696***	0.00771
	(0.0204)	(0.0206)	(0.0201)	(0.0350)	(0.0203)	(0.0355)
Num other children aged 18-22	0.000178	-0.00729	-0.00445	0.0338	-0.0119	0.0155
	(0.0320)	(0.0322)	(0.0317)	(0.0536)	(0.0318)	(0.0542)
Wealth index		0.0854***			0.0713***	0.121***
		(0.0141)			(0.0144)	(0.0234)
% of Migrants at shiakha level	-	-		0.0969***		0.0998***
				(0.0287)		(0.0286)
Governorates						
(ref. Cairo)						
Alexandria	-0.0853	-0.0234	-0.0906	0.0609	-0.0367	0.235
	(0.109)	(0.110)	(0.108)	(0.232)	(0.109)	(0.242)
Dakahlia (incl Damietta)	-0.115	0.0125	-0.168	0.408**	-0.0616	0.688***
	(0.112)	(0.114)	(0.112)	(0.191)	(0.114)	(0.208)
Sharkia	0.102	0.188	0.0719	0.323	0.145	0.561***
	(0.116)	(0.118)	(0.115)	(0.201)	(0.116)	(0.214)

Kalyoubia	-0.160	-0.0763	-0.144	-0.623	-0.0701	-0.439
	(0.132)	(0.133)	(0.132)	(0.396)	(0.133)	(0.426)
Kafr-Elsheikh	0.0678	0.167	0.0354	0.348*	0.119	0.584***
	(0.124)	(0.126)	(0.123)	(0.208)	(0.124)	(0.220)
Gharbia	-0.0831	0.0569	-0.102	0.270	0.0197	0.550**
	(0.123)	(0.125)	(0.122)	(0.213)	(0.123)	(0.228)
Menoufia	-0.110	-0.0131	-0.110	0.0192	-0.0297	0.210
	(0.156)	(0.157)	(0.154)	(0.292)	(0.156)	(0.308)
Behera	0.195	0.274**	0.195	-0.115	0.264**	0.0888
	(0.121)	(0.122)	(0.120)	(0.260)	(0.121)	(0.275)
Ismailia (incl Port-Said & Suez)	-0.159	-0.107	-0.138	-4.279	-0.0900	-4.610
	(0.118)	(0.119)	(0.118)	(390.1)	(0.118)	(771.7)
Giza	-0.0997	-0.0682	-0.0795	-0.476	-0.0470	-0.333
	(0.123)	(0.124)	(0.122)	(0.349)	(0.123)	(0.345)
Beni-Suef	-0.205	-0.101	-0.244*	0.456**	-0.157	0.742***
	(0.140)	(0.141)	(0.138)	(0.217)	(0.139)	(0.229)
Fayoum	-0.379**	-0.251	-0.403***	0.258	-0.290*	0.547**
	(0.158)	(0.160)	(0.155)	(0.236)	(0.156)	(0.248)
Menia	-0.202	-0.0955	-0.183	-0.595	-0.0920	-0.301
	(0.139)	(0.141)	(0.138)	(0.398)	(0.140)	(0.397)
Asyout	-0.0562	0.0495	-0.0570	-0.252	0.0318	0.0375
	(0.131)	(0.134)	(0.130)	(0.288)	(0.133)	(0.293)
Suhag	-0.115	-0.00511	-0.222	0.692***	-0.136	0.914***
	(0.136)	(0.138)	(0.138)	(0.208)	(0.138)	(0.219)
Qena	-0.0553	0.0559	-0.0446	-0.418	0.0535	-0.141
	(0.131)	(0.133)	(0.131)	(0.321)	(0.132)	(0.327)
Aswan & Luxor	-0.387***	-0.351***	-0.393***	0.337	-0.361***	0.503**
	(0.135)	(0.136)	(0.133)	(0.226)	(0.134)	(0.237)
Constant	5.794***	5.932***	5.695***	-2.514***	5.795***	-2.569***
	(0.366)	(0.369)	(0.367)	(0.646)	(0.369)	(0.653)
Marginal effect of remittance receipt	0.051	0.029	0.4215**		0.4340***	
	(0.0356)	(0.0358)	(0.2006)		(0.1653)	
Wald test of Rho=0 (Prob>Chi2)				0.0349		0.0058
Observations	3,754	3,754	3,754	3,754	3,754	3,754

*Note : Author's calculation from the ELMS 2006. Standard errors in parentheses. *** denotes significant at the 1 percent level, ** at the 5 percent level, * at the 10 percent level. Significance levels of the marginal effect are based on bootstrapped standard-errors with 200 replications.*

Annex 4.5. Estimations of the Impact of Remittances on child mortality: Probit models

	Probit Model	with Wealth index	with Final Say	with Wealth Index & Final say
	(1)	(2)	(3)	(4)
Dependent variable	**Child mortality**	**Child mortality**	**Child mortality**	**Child mortality**
Remit	-0.0322	-0.00517	0.0255	0.0509
	(0.186)	(0.187)	(0.187)	(0.189)
Boy	0.102	0.103	0.145*	0.145*
	(0.0762)	(0.0763)	(0.0802)	(0.0803)
Rank of child	0.0398	0.0351	0.0584*	0.0544
	(0.0329)	(0.0330)	(0.0340)	(0.0341)
Age of mother at child's birth	-0.139***	-0.137***	-0.125**	-0.122**
	(0.0476)	(0.0477)	(0.0500)	(0.0502)
Age of mother at child's birth, squared	0.00200**	0.00200**	0.00180**	0.00178**
	(0.000828)	(0.000829)	(0.000868)	(0.000870)
Mother has final say [1]			-0.218**	-0.212**
			(0.0874)	(0.0875)
Highest education level between mother & father				
(ref. Illiterate)				
Read & Write	0.0961	0.108	0.135	0.145
	(0.151)	(0.151)	(0.155)	(0.155)
Less than intermediate	-0.140	-0.118	-0.150	-0.132
	(0.125)	(0.126)	(0.134)	(0.135)
Intermediate	-0.204*	-0.153	-0.163	-0.115
	(0.110)	(0.115)	(0.115)	(0.121)
Above intermediate & higher	-0.264**	-0.169	-0.208	-0.119
	(0.129)	(0.143)	(0.134)	(0.149)
Mortality among older siblings	0.636***	0.633***	0.605***	0.600***
	(0.125)	(0.125)	(0.128)	(0.128)
More than 1 hour to nearest hospital	0.582*	0.550	0.713**	0.684*
	(0.346)	(0.348)	(0.355)	(0.357)
Wealth index score		-0.0369		-0.0355
		(0.0246)		(0.0259)
Governorates				
(ref. Cairo)				
Alexandria	0.0256	0.0281	-0.110	-0.103
	(0.235)	(0.235)	(0.254)	(0.253)
Dakahlia (incl Damietta)	0.0429	-0.000291	0.00638	-0.0351
	(0.213)	(0.216)	(0.215)	(0.217)
Sharkia	-0.125	-0.165	-0.177	-0.216
	(0.244)	(0.246)	(0.247)	(0.250)
Kalyoubia	-0.0264	-0.0598	-0.0341	-0.0687
	(0.235)	(0.237)	(0.237)	(0.239)
Kafr-Elsheikh	0.0582	0.0156	0.0263	-0.0147
	(0.236)	(0.237)	(0.237)	(0.239)
Gharbia	-0.0200	-0.0688	-0.187	-0.240
	(0.248)	(0.251)	(0.270)	(0.275)
Menoufia	-0.0751	-0.115	-0.0703	-0.108

	(0.308)	(0.310)	(0.308)	(0.310)
Behera	0.217	0.188	0.188	0.159
	(0.205)	(0.206)	(0.207)	(0.208)
Ismailia (incl Port-Said & Suez)	-0.0241	-0.0399	-0.0703	-0.0858
	(0.243)	(0.243)	(0.245)	(0.246)
Giza	0.153	0.134	-0.0115	-0.0309
	(0.213)	(0.214)	(0.228)	(0.229)
Beni-Suef	0.290	0.225	0.217	0.155
	(0.201)	(0.206)	(0.207)	(0.212)
Fayoum	0.346*	0.293	0.228	0.178
	(0.204)	(0.208)	(0.212)	(0.216)
Menia	0.0265	-0.0416	-0.0880	-0.155
	(0.211)	(0.216)	(0.220)	(0.226)
Asyout	0.186	0.126	0.0366	-0.0194
	(0.203)	(0.207)	(0.213)	(0.217)
Suhag	0.151	0.119	-0.00474	-0.0313
	(0.201)	(0.202)	(0.210)	(0.211)
Qena	0.0681	0.0282	-0.0218	-0.0584
	(0.227)	(0.229)	(0.232)	(0.234)
Aswan (incl Luxur)	0.275	0.256	-0.00436	-0.0236
	(0.211)	(0.213)	(0.237)	(0.238)
Constant	-0.00618	-0.0849	-0.105	-0.194
	(0.674)	(0.677)	(0.710)	(0.714)
Marginal effect of remittance receipt	-0.0017	-0.0003	0.0012	0.0025
	(0.0096)	(0.0097)	(0.0090)	(0.0091)
Observations	5,758	5,758	5,587	5,587

Notes: 1: mother has final say alone or with husband, for taking child to the doctor
*Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1; Marginal effect calculated with bootstrapped standrad-error using 200 replications.*

Annex 4.6. Estimations of the Impact of Remittances on Child Mortality: Bi-probit models

	bi-porbit		bi-porbit		bi-porbit		bi-porbit	
	(5)		(6)		(7)		(8)	
Dependent variable	**Child mortality**	**Remit**	**Child mortality**	**Remit**	**Child mortality**	**Remit**	**Child mortality**	**Remit**
Remit	1.010		0.0633		1.262		0.546	
	(1.205)		(1.338)		(1.058)		(1.473)	
Boy	0.104	-0.0665	0.104	-0.0591	0.145*	-0.0756	0.146*	-0.0694
	(0.0755)	(0.0614)	(0.0764)	(0.0624)	(0.0793)	(0.0620)	(0.0801)	(0.0631)
Rank of child	0.0437	-0.0892***	0.0354	-0.0787**	0.0631*	-0.0893***	0.0559	-0.0804**
	(0.0328)	(0.0304)	(0.0334)	(0.0311)	(0.0338)	(0.0306)	(0.0342)	(0.0313)
Age of mother at child's birth	-0.143***	0.146***	-0.137***	0.137***	-0.130***	0.143***	-0.125**	0.134***
	(0.0472)	(0.0506)	(0.0485)	(0.0513)	(0.0495)	(0.0515)	(0.0502)	(0.0521)
Age of mother at child's birth, squared	0.00207**	-0.00248***	0.00201**	-0.00244***	0.00188**	-0.00242***	0.00183**	-0.00236**
	(0.000822)	(0.000909)	(0.000846)	(0.000919)	(0.000860)	(0.000925)	(0.000873)	(0.000934)
Mother has final say[1]					-0.218**	0.0713	-0.213**	0.0547
					(0.0863)	(0.0736)	(0.0872)	(0.0752)
Highest education level between mother & father								
(ref. Illiterate)								
Read & Write	0.120	-0.428**	0.111	-0.408**	0.163	-0.435***	0.161	-0.412**
	(0.151)	(0.168)	(0.159)	(0.169)	(0.155)	(0.168)	(0.159)	(0.169)
Less than intermediate	-0.116	-0.285**	-0.115	-0.351***	-0.120	-0.303***	-0.115	-0.361***
	(0.126)	(0.115)	(0.135)	(0.119)	(0.134)	(0.116)	(0.141)	(0.119)
Intermediate	-0.188*	-0.143	-0.151	-0.300***	-0.143	-0.165*	-0.101	-0.319***
	(0.110)	(0.0885)	(0.123)	(0.0929)	(0.115)	(0.0899)	(0.126)	(0.0945)
Above intermediate & higher	-0.243*	-0.243**	-0.165	-0.554***	-0.181	-0.267***	-0.0962	-0.572***
	(0.129)	(0.100)	(0.158)	(0.113)	(0.134)	(0.102)	(0.158)	(0.114)
Mortality among older siblings	0.623***	-0.000154	0.632***	0.0423	0.588***	-0.0176	0.595***	0.0309
	(0.125)	(0.142)	(0.125)	(0.144)	(0.128)	(0.144)	(0.129)	(0.146)
More than 1 hour to nearest hospital	0.557	0.504	0.547	0.636*	0.680*	0.533	0.665*	0.665*
	(0.344)	(0.369)	(0.352)	(0.377)	(0.352)	(0.378)	(0.359)	(0.387)
Wealth score			-0.0377	0.126***			-0.0398	0.125***
			(0.0285)	(0.0189)			(0.0275)	(0.0191)
% of Migrants at shiakha level		0.125***		0.130***		0.125***		0.131***
		(0.0180)		(0.0180)		(0.0184)		(0.0186)
Governorates								
(ref. Cairo)								
Alexandria	0.0238	0.378	0.0277	0.495*	-0.111	0.372	-0.104	0.491*
	(0.235)	(0.251)	(0.235)	(0.258)	(0.254)	(0.252)	(0.253)	(0.259)
Dakahlia (incl Damietta)	0.0154	0.876***	-0.00516	1.110***	-0.0199	0.855***	-0.0590	1.085***

	(0.212)	(0.205)	(0.233)	(0.216)	(0.213)	(0.207)	(0.221)	(0.218)
Sharkia	-0.150	0.765***	-0.170	1.008***	-0.204	0.784***	-0.239	1.023***
	(0.243)	(0.215)	(0.259)	(0.225)	(0.245)	(0.216)	(0.252)	(0.226)
Kalyoubia	-0.0372	0.792***	-0.0628	1.032***	-0.0442	0.797***	-0.0833	1.037***
	(0.234)	(0.222)	(0.242)	(0.233)	(0.236)	(0.223)	(0.239)	(0.233)
Kafr-Elsheikh	0.0329	0.902***	0.0107	1.159***	8.49e-05	0.898***	-0.0394	1.154***
	(0.234)	(0.214)	(0.253)	(0.226)	(0.235)	(0.214)	(0.242)	(0.226)
Gharbia	-0.0371	0.824***	-0.0727	1.068***	-0.204	0.842***	-0.260	1.078***
	(0.246)	(0.221)	(0.261)	(0.232)	(0.269)	(0.222)	(0.277)	(0.233)
Menoufia	-0.0902	0.804***	-0.119	1.051***	-0.0853	0.814***	-0.126	1.054***
	(0.307)	(0.242)	(0.317)	(0.251)	(0.306)	(0.243)	(0.310)	(0.252)
Behera	0.211	0.575**	0.186	0.781***	0.182	0.602**	0.149	0.804***
	(0.204)	(0.233)	(0.209)	(0.244)	(0.206)	(0.235)	(0.208)	(0.245)
Ismailia (incl Port-Said & Suez)	-0.0256	0.0829	-0.0406	0.178	-0.0718	0.0888	-0.0891	0.184
	(0.243)	(0.286)	(0.243)	(0.296)	(0.245)	(0.287)	(0.246)	(0.297)
Giza	0.151	0.462*	0.133	0.592**	-0.0124	0.465*	-0.0354	0.601**
	(0.213)	(0.256)	(0.215)	(0.261)	(0.227)	(0.257)	(0.229)	(0.263)
Beni-Suef	0.262	1.127***	0.219	1.406***	0.190	1.154***	0.126	1.436***
	(0.199)	(0.215)	(0.231)	(0.228)	(0.204)	(0.215)	(0.217)	(0.228)
Fayoum	0.333	0.558**	0.290	0.793***	0.217	0.569**	0.163	0.795***
	(0.203)	(0.234)	(0.215)	(0.244)	(0.210)	(0.236)	(0.217)	(0.245)
Menia	0.0193	0.510**	-0.0445	0.837***	-0.0950	0.536**	-0.169	0.855***
	(0.210)	(0.233)	(0.222)	(0.244)	(0.219)	(0.234)	(0.227)	(0.245)
Asyout	0.160	0.544**	0.122	0.844***	0.00612	0.577**	-0.0438	0.869***
	(0.203)	(0.230)	(0.220)	(0.243)	(0.213)	(0.231)	(0.223)	(0.244)
Suhag	0.0702	1.336***	0.110	1.530***	-0.0911	1.356***	-0.0855	1.543***
	(0.204)	(0.201)	(0.268)	(0.211)	(0.209)	(0.203)	(0.239)	(0.213)
Qena	0.0526	0.512**	0.0252	0.730***	-0.0364	0.510**	-0.0739	0.721***
	(0.226)	(0.249)	(0.236)	(0.258)	(0.231)	(0.255)	(0.235)	(0.264)
Aswan (incl Luxur)	0.269	0.457*	0.255	0.643**	-0.00973	0.484*	-0.0299	0.663**
	(0.211)	(0.258)	(0.214)	(0.262)	(0.237)	(0.260)	(0.238)	(0.264)
Constant	0.0159	-4.273***	-0.0818	-4.183***	-0.0735	-4.277***	-0.180	-4.180***
	(0.669)	(0.715)	(0.679)	(0.727)	(0.703)	(0.728)	(0.713)	(0.738)
Wald test of Rho=0 (Prob>Chi2)		0.3926		0.9585		0.2638		0.729
Marginal effects	0.123		0.0034		0.175		0.042	
	(0.193)		(0.1502)		(0.197)		(0.160)	
Observations	5,758		5,758		5,587		5,587	

Notes: 1: mother has final say alone or with husband, for taking child to the doctor
Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1; Marginal effect calculated with bootstrapped standard-error using 200 replications.

Annex 4.7. Estimation of the mother's 'final say' and impact of remittances receipts- Probit Models

	Probit Models		Bi-Probit model		Bi-Probit model	
	(1)	(2)	(3)		(4)	
Dependent variable	**Final say**	**Final say**	**Final say**	**Remittances**	**Final say**	**Remittances**
Remit	0.0247	-0.00945	-0.826*		-0.789*	
	(0.100)	(0.101)	(0.426)		(0.422)	
Age of mother	0.0121***	0.00974***	0.0120***	8.66e-05	0.00917***	-0.00789
	(0.00335)	(0.00342)	(0.00333)	(0.00544)	(0.00342)	(0.00569)
Num of children	-0.0581***	-0.0540***	-0.0624***	-0.0807***	-0.0572***	-0.0665**
	(0.0181)	(0.0182)	(0.0181)	(0.0309)	(0.0181)	(0.0318)
Highest education level between mother & father						
(ref. Illiterate)	0.0818	0.0585				
Read & Write	(0.0883)	(0.0886)	0.0671	-0.134	0.0413	-0.182
	0.268***	0.232***	(0.0881)	(0.149)	(0.0886)	(0.152)
Less than intermediate	(0.0710)	(0.0717)	0.249***	-0.175	0.208***	-0.276**
	0.248***	0.175***	(0.0712)	(0.121)	(0.0724)	(0.124)
Intermediate	(0.0610)	(0.0646)	0.234***	-0.0716	0.150**	-0.275***
	0.350***	0.222***	(0.0611)	(0.0972)	(0.0654)	(0.103)
Above intermediate & higher	(0.0658)	(0.0751)	0.328***	-0.169	0.183**	-0.545***
			(0.0664)	(0.107)	(0.0771)	(0.124)
Wealth index		0.0434***			0.0498***	0.127***
		(0.0124)			(0.0126)	(0.0193)
% of Migrants at shiakha level				0.110***		0.115***
				(0.0197)		(0.0200)
Governorates						
(ref. Cairo)						
Alexandria	-0.226*	-0.209*	-0.222*	0.108	-0.204*	0.249
	(0.122)	(0.122)	(0.122)	(0.234)	(0.122)	(0.242)
Dakahlia (incl Damietta)	-0.627***	-0.572***	-0.600***	0.467**	-0.539***	0.699***
	(0.107)	(0.109)	(0.107)	(0.189)	(0.109)	(0.201)
Sharkia	-0.716***	-0.659***	-0.667***	0.668***	-0.605***	0.913***
	(0.114)	(0.116)	(0.115)	(0.193)	(0.117)	(0.205)
Kalyoubia	-0.115	-0.0643	-0.103	0.508**	-0.0445	0.739***
	(0.134)	(0.135)	(0.133)	(0.209)	(0.134)	(0.220)
Kafr-Elsheikh	-0.302**	-0.239*	-0.272**	0.604***	-0.202	0.859***
	(0.127)	(0.128)	(0.127)	(0.199)	(0.128)	(0.212)
Gharbia	-0.724***	-0.657***	-0.705***	0.398*	-0.630***	0.661***
	(0.117)	(0.118)	(0.116)	(0.213)	(0.118)	(0.226)
Menoufia	-0.310**	-0.254*	-0.280*	0.692***	-0.218	0.935***
	(0.145)	(0.146)	(0.144)	(0.214)	(0.145)	(0.225)
Behera	-0.697***	-0.649***	-0.687***	0.311	-0.633***	0.522**
	(0.118)	(0.119)	(0.117)	(0.224)	(0.119)	(0.235)
Ismailia (incl Port-Said & Suez)	-0.553***	-0.513***	-0.549***	0.000346	-0.505***	0.130
	(0.117)	(0.118)	(0.116)	(0.247)	(0.117)	(0.258)
Giza	-0.504***	-0.473***	-0.500***	0.125	-0.466***	0.262
	(0.119)	(0.120)	(0.119)	(0.252)	(0.119)	(0.259)
Beni-Suef	-0.317**	-0.236*	-0.278**	0.822***	-0.190	1.119***
	(0.129)	(0.131)	(0.128)	(0.196)	(0.131)	(0.209)
Fayoum	-0.807***	-0.745***	-0.783***	0.352	-0.715***	0.581**

	(0.123)	(0.125)	(0.123)	(0.222)	(0.125)	(0.234)
Menia	-0.549***	-0.466***	-0.541***	0.176	-0.447***	0.484**
	(0.118)	(0.121)	(0.118)	(0.231)	(0.120)	(0.243)
Asyout	-0.779***	-0.696***	-0.746***	0.446**	-0.654***	0.746***
	(0.121)	(0.124)	(0.121)	(0.217)	(0.124)	(0.231)
Suhag	-1.080***	-1.035***	-0.969***	1.074***	-0.928***	1.274***
	(0.114)	(0.115)	(0.125)	(0.185)	(0.126)	(0.196)
Qena	-1.158***	-1.094***	-1.134***	0.349	-1.064***	0.599**
	(0.119)	(0.121)	(0.119)	(0.231)	(0.121)	(0.242)
Aswan (incl Luxur)	-1.180***	-1.155***	-1.163***	0.286	-1.137***	0.481*
	(0.118)	(0.118)	(0.118)	(0.246)	(0.118)	(0.251)
Constant	0.911***	1.001***	0.945***	-2.077***	1.048***	-1.920***
	(0.135)	(0.137)	(0.135)	(0.237)	(0.138)	(0.244)
Marginal effect of remittance receipt	0.0068	-0.0026	-0.2773**		-0.262*	
	(0.02775)	(0.0278)	(0.1383)		(0.1403)	
Wald test of Rho=0 (Prob>Chi2)				0.0572		0.0746
Observations	4,970	4,970	4,970	4,970	4,970	4,970

*Note : Author's calculation based on ELMPS (2006)). Standard errors in parentheses. *** denotes significant at the 1 percent level, ** at the 5 percent level, * at the 10 percent level. Significance levels of the marginal effect are based on bootstrapped standard-errors with 200 replications.*

General Conclusion

"*The fundamental question is not whether remittances do or do not promote economic development, but rather, why international migration appears to be associated with positive development outcomes in some migrant sending areas but not in others*". Taylor, 1999

This study addresses the migration and development nexus. The growing debate around this relation has topped again the priorities of the agendas of policy makers, researchers and the public. This is mainly due to the recent increase in the flows of migrants across the world and the dramatic increase of remittances. These facts have raised questions about the impact of this migration and these flows of remittances on the home countries' development.

In our study we were interested in the relation and interaction between migration and development especially in relation to the sending countries. The objective of our study was to join the debate about this complex relation in search for new evidence related to the nature of this relation. More precisely, the study aimed at finding evidence on the developmental causes of migration and on the impact of this migration on the development process of the sending countries.

In achieving this objective we have adopted the following methodologies: (1) Review of the theoretical literature on the relation between migration and development; (2) Review of the empirical evidence on the developmental causes of migration and on the impact of migration on development; and (3) Undertake a methodological estimation of models that would give evidence to these concepts at both the macro and micro levels.

The theoretical literature review on migration theories and its link to development has found reasons to believe that a main cause of migration is in the economic and social differentials between countries. Linking these theories to development was challenging, as we noted the waves of optimism and pessimism that surround the perception of this relation. These theories, despite their contributions have left many questions unanswered. This what brought the 'migration transition' theories to the scene: an old concept that was 'revived' recently as a way to answer these questions. Our empirical evidence on the causes of migration is based on this theory.

Empirical evidence on the migration transition theory showed that the relation between migration and development is not linear but takes the shape of an inverted U curve. This is what we attempt to find in our own empirical estimation in chapter 2.

Estimating the developmental causes of migration, where the level of development was presented in two components: an economic component (GNP per capita) and a social component (the social part of the Human Development Index) and these were linked with the aspirations and capabilities of the individuals, gave the following results that could be considered a value added:

1. Migration and economic development have an inverted U shaped relation. This means that the more the level of economic development, the more migration until reaching a certain level where migration starts to slow-down. Moreover, this economic level of development is strongly linked to the financial capabilities of the individuals;
2. The relation between migration and the social development is more complex (index includes variables on education and health). This relation was found to have a skewed U curve. This means that: in *very low* social development levels, migration could occur

in some cases. This could be due to two main reasons: (i) this very low level of social development represents the low-skilled individuals (negative selectivity) that are seeking better opportunities (especially that their home countries are very low with their level of development); and (ii) this very low level of development could be the very reason for migration, seeking better quality of life elsewhere. As the level of social development slowly picks-up, migration falls sharply, as at this level of low development, the capabilities of the individuals are still low to enable them to migrate and their aspirations are still at a minimum. Once the level of social development starts to rise, aspirations and capabilities follow and individuals seek better opportunities. If these opportunities are not available at home (since the level of development is still relatively low) then individuals seek to migrate. These individuals represent the medium and high skill levels.

This empirical evidence presented in chapter 2 has opened new grounds for the analysis on the developmental causes of migration: bringing together the overall perspective of development with the individuals' choices through their aspirations and capabilities, which are defined according to the overall level of development, is innovative. This approach gave answers to some of the questions that standard theories could not answer. We argue that the results of this empirical analysis could make a contribution to the knowledge in understating the causes of migration and can be further improved.

The impact of migration on development is not incidental. There is strong evidence to suggest that migration seems to be associated with positive development outcomes. We argue throughout chapter 3 that the impact of migration and remittances on development is dominated by indirect channels. This explains why some empirical studies found ambiguous results when trying to establish direct links with development. We also argue that remittances constitute an integral part of this process.

The empirical literature on the impact of migration and remittances focused on the impact of these flows on the economic development. As an overall, the empirical evidence found that remittances can boost both growth and investment through the impact on financial development indicators and that there is little risk of over-flow of remittances (Dutch disease). Of course these results are attained under certain conditions and circumstances. On the social front, the empirical evidence related to the human capital is dominated by studies on the impact of migration on the country's economic performance through issues of brain drain and brain gain. Very few studies addressed this impact on the human capital at the sending countries (which we address in our empirical evidence). Finally, the empirical literature found some evidence on the important role of remittances in alleviating poverty, especially for the very poor. This was not the case when addressing the inequality issue, which contained more ambiguities, with some evidence towards accentuating inequality in case of medium and high levels of incomes.

Reading through this empirical evidence, we deduct that there are two main channels by which remittances can impact development. These are the investment and human capital. These two transmission channels constitute the main factors in the production function and have long-term contribution and spillover effects on the whole economy.

Our empirical evidence on the impact of migration on development focused on the way remittances impacts those two transmission channels, which, in return will impact the overall development. The results of our analysis confirmed the positive role of these flows in boosting the two factors towards development as follows:

1. *In terms of* ***investment***: our empirical evidence confirms the positive contribution of remittance flows towards investment. Both the direct and indirect impacts were emphasized in this relation. First, remittances contribute directly to the investment of the home countries, and second the indirect impact was presented in the way

remittances work as a substitute to the poorly functioning financial institutes. This confirms the role of these flows in easing the liquidity constraints and compensating the inability to access credit from the financial sector.

2. *In terms of* ***human capital*** *and on the* ***educational outcomes***: Our empirical work gave evidence of a positive and robust direct contribution of these remittance flows towards the educational outcomes, showing that these flows contribute to increase the mean years of schooling for the home countries (this was confirmed when the tertiary school enrolment variable was also tested). Moreover, the estimated models gave evidence of the indirect effect of these flows on the education through the way they substitute for the non-performing or low public expenditure on education. This is could be considered an innovative finding for our model;
3. *On the contribution of these flows towards the* ***health outcomes***: the empirical investigation gave evidence of a robust direct and indirect contribution in boosting the health status of the home countries. This was evidenced by the direct impact of remittance flows towards reducing the child mortality rates of less than 5 years old in the home countries (this improvement in the health status was confirmed when the life expectancy indicator was used). In addition, an indirect contribution for these flows was also found in two ways: complementing the private expenditure on health when the total expenditure is found not significantly contributing to improving the child mortality rate; and substituting for the public expenditure to fill in a shortage in health care improving the life expectancy.

These results, especially those related to the human capital, could be considered original in the way they addressed the indirect effects of remittances through the inefficient government expenditures on both the education and health services. In fact, the very little empirical evidence that included the role of public expenditure found ambiguous and insignificant results. This analysis also confirms the important role of remittances that was often referred in the literature as easing liquidity constraints and substituting for inefficiently performing contributors.

Having established the relation between migration and development on the macroeconomic front, and in order to complete the picture presented in this analysis, we addressed the migration issue on the microeconomic level.

While addressing migration and remittances at the micro level, we need to consider the important role of individuals and their households as well as their behaviour in response to migration and remittances

This entails impacts on the consumption behaviour of the households that is confirmed to increase with the receipt of these remittances as an additional source of income. The majority of these remittances are spent on consumption goods, which could be considered also a way to improve the household's economic and social level. Even though expenditures towards investment could be rather small, it has great potentials as a self-generating source of income that could also benefit the communities. The role of migration returnees is also highlighted in the empirical evidence with high propensities to become entrepreneurs. Confirming the results obtained at the macro level regarding the poverty and inequality, the empirical evidence at the micro level found that while remittances can benefit the very poor households, inequality can be accentuated since, in general it is not the very poor who are able to migrate.

The impact of migration and remittances on the human capital left behind is complex, due to its opposing implications. Empirical literature showed that there are many discrepancies in the results related to the human capital.

Given this, our empirical estimation attempts to make a contribution to this debate by addressing the case study of Egypt. This country represents an interesting case due to the large amounts of remittances that it received in the past few years placing it at the

top of the recipients' list of developing countries. This is coupled with a moderate migration rate and little risk of brain drain. As the economy is currently struggling due to economic and political instabilities, we argue that these remittances could present a window of opportunities if they are proved to boost the economy's development through its impact on human capital. This motivated us to undertake this analysis on the Egyptian case.

We estimate a model on the potential impact of remittances on the human capital outcomes of the households left behind in Egypt. These are represented by two indicators: Education (attending school at the age 18-22 years old) and health outcomes (mortality rate of less than 5 years old).

Our empirical analysis gives the following interesting results:

1. Being in a household that receives remittances increases the probability of a child to attend school at the age 18-22 years old by 43%. The education at this age would normally be a tertiary enrolment, which could reflect a high-skilled education;
2. This impact is not similarly direct in the case of the child mortality, where the empirical evidence could not establish a direct relation between being in a household that receives remittances and impacting the risk of child mortality (i.e. the result was insignificant). This was attributed to the dominance of internal (i.e. related to the households' characteristics) and external (i.e. related to the community) factors in this relation.
3. The empirical evidence showed that one of the internal factors that were observed in this relation, is the variable related, in part, to the mother's bargaining power (this was presented by her power to decide alone, or with her husband, to take the child to the doctor), which had a strong effect in reducing the risk of child mortality. This relation was further investigated with a model estimating the impact of remittances on this variable.
4. The model estimating the impact of remittances on women's power to take the child to the doctor gave negative relation. This means that being in a household that receive remittances reduced the power of the mother to take the decision (alone or with her husband) on the health of the child. Putting the two results obtained together gives evidence on the insignificant result obtained when attempting to directly link remittances to the risk of child morality.
5. Other external factors that were identified to impede the possible impact of remittances on child mortality rates included the quality and the coverage of the health service, the poor existent infrastructure and the low development level of some of the communities or areas.

These findings related to the impact of remittances on the human capital are considered important in highlighting the mechanism by which remittances impact the overall development. However, these impacts have to find the way to reach to development, in terms of policies and environment. These findings are original as they integrate both the education and the health outcomes, also the concept of the women bargaining power could open a new room for further investigations.

Linking the macro and micro results of our empirical estimations confirm the positive role of migration through remittance flows in boosting development of the home countries. These results, and specially those related to health are considered original for the case of Egypt. It is important to highlight here that the macroeconomic impacts of migration and remittances are not an aggregation of the impacts on the households at the micro level, due to the large spillover effects that exist between the two levels

We can conclude here that this study has given evidence of general potential gains that migration and remittances could bring on the development of the home countries. Developing countries, in particular, can expect large gains for their development (increasing investment and human capital) if their economies can provide the right

policies, environment and conditions that would better organise these flows. This means that policies related to both development and migration have to be set-up in coherence with each other.

Limitations of the current work and future research

The migration-development nexus is a large and complicated subject and in order to be able to address it, we needed to focus on one line of the analysis, which meant unfortunately, that we had to drop other important issues on the way. This is a first limitation of our work.

Also, the empirical estimations provided in the three chapters of the thesis contain some limitations that are related to data availability, especially data on migration, as underlined in second chapter. Some more technical estimation could be added to the model on the causes of migration, such as the use of instrumental variables and 2 stages least squares analysis. Moreover, some more attempts could be made to include more variables that reflect the aspirations and capabilities variables that link migration to development.

The macro empirical work related to the impact of remittances on development had focused on two channels: investment and human capital. This is a first step in an ongoing research to integrate the outputs of these three models in a model of growth (in its broad definition) to test their long-term impact on development (either a supply side or at the demand side). This would make it possible to use simulations and long-term projections.

The microeconomic empirical work for the case of Egypt is considered new in the way it identified links between remittances and human capital. Further improvements could be integrated to the model, in terms of inclusion of other variables, however one has to consider the serious data limitations that hinders any flexibility in the usage of data (this was clear when we had to reconstruct the instrumental variable due to the lack of data). In fact, we are aware that an update for the Egyptian household survey is underway. This new data could represent a new dimension for migration research and offer great opportunities to improve on our empirical analysis and include the time dimension.

We would like to conclude that behind the complexity that exist around migration and development: overall causes, interrelated impacts, complicated theories and endless methodologies, one has to remember that migration is about individuals that are leaving their homes, their lands and their families to seek, simply, a better life.

« Give me your tired, your poor,
Your huddled masses yearning to breathe free,
The wretched refuse of your teeming shore.
Send these, the homeless, tempest-tossed, to me:
I lift my lamp beside the golden door »
— The New Colossus Emma Lazarus (1883)[65]

[65] This poem was mounted on the inner wall of the pedestal of the Statue of Liberty of New York, USA in honor of the massive migration towards the US from Europe in the 19th century in search for better lives.

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