The Impact of Remittances on Growth

Evidence from North African Countries

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1. **Introduction**

In 2005, remittances to middle- and low-income countries had reached US$232 billion compared to an estimated US$31 billion in 1990. In 2007, they were up to US$251 billion. Understanding the dynamics of remittances – who sends them, the factors influencing why and how much is sent, how they impact the receiving economies – has become an increasingly important area of analysis, particularly in light of the global economic downturn. Up until recently, the impacts of remittances have mainly been studied at the microeconomic level. However, given the current scope of international migration, the ever growing amount of remittances worldwide, and the global economic crisis, establishing the link between development, growth and remittances has become a primary focus for the development community. Indeed, the size of remittance flows relative to other financial flows such as ODA or FDI, their resilience to economic downturns, along with their share to GDP in many developing countries, are garnering important academic attention at the macroeconomic level.

Remittances constitute financial flows that affect the receiving country’s economy and its development through diverse channels, including income, consumption, investment, government policies, potential parental absence, and removal of potential entrepreneurial individuals from the community. The greater the amount of remittances compared to the size of the economy and to other financial flows, the greater their impact on the macroeconomic environment of the receiving economies. Considering the significance of remittance flows to North African countries, evaluating and improving their various impacts on growth, poverty and inequality has become a necessity for the region’s policy makers.

So far, theoretical and empirical records on the impact of remittances on economic growth and development are unclear; the relationship between remittances and growth remains a subject of controversy. Remittances may reduce poverty while

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3 Sasin and McKenzie; 2007; “Migration Operational Vehicle: Operational Note 1; Migration, Poverty and Human Capital.”
concomitantly increasing inequality; enhance the possibilities for savings and investments yet increase consumption and thus inflation; improve a country’s creditworthiness and its access to global financial markets while creating a Dutch Disease effect that reduces the competitiveness of its exports. Finally, remittances create opportunities for entrepreneurship while deterring employment of remittance recipients.

The academic literature on growth and remittances has failed to find a robust positive impact of remittances on growth. Some research has found that remittances have a mild positive impact on long-term patterns of macroeconomic growth. Other studies however show that, since remittances have not been productively invested in significant volumes, they have not or only marginally contributed to larger economic growth. Some authors conclude the opposite. Remittances are also found to have a negative and robust relationship with income growth. As income growth increases, remittances decrease. Therefore, some authors demonstrate that remittances do not behave like capital flows and hence do not contribute to economic development. Research also shows that the growth generating capacity of remittances fluctuates for each country and over time: they can either advance or restrain economic growth. Based on those findings, remittances’ impacts at the macroeconomic level are still unclear.

Three reasons may explain why the findings of the academic literature are inconclusive. First, there are some fundamental measurement problems associated with evaluating macroeconomic impacts of remittances. Measurement is hindered by the lack of a suitable model for dealing with the complex and simultaneous channels through which remittances can impact growth. Not only is the causality difficult to disentangle (with remittances both impacting and being impacted by growth), but the actual direction of the relationship fluctuates. At the aggregate level, it would be difficult to disentangle these effects. Second, large sets of accurate data on the allocation of remittances are scarce, making it difficult to analyze their broad impact on consumption, savings and

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4 Mansoor A., Quillin Br. (eds), Migration and Remittances, Eastern Europe and the Former Soviet Union, p. 61; Pradhan G., Upadhyay M., Upadhyaya K., Remittances and Economic Growth in Developing Countries, p. 504.

investments. The data are also suspect. In fact, the way remittances are reported to be spent may not reveal the likely difference in patterns of expenditure allocation with and without remittances. Third, the impact of remittances on a country’s economy depends largely on the structural characteristic of the receiving economy and its capacity to absorb large financial inflows, the country-specific transmission mechanisms, and elasticities, primarily the marginal propensities to import, consume and invest. In addition to structural specificities of a particular country’s economy, the broader institutional and political environment, the quality of institutions and their development level, influence the way remittances impact a country’s economy.

In view of the economic significance of remittance flows to North African economies, this paper utilizes an econometric model aimed at empirically evaluating the growth impact of remittances on four receiving economies during the period from 1980 to 2007. The model focuses on assessing the role of financial development in determining the growth impact of remittance flows to the region. The paper is organized in four main sections. Section two looks at the scope of migration movements in the four North African countries and the importance of remittance flows to the region. It shows the historical, current and future importance of remittance flows to North African economies. The third section elaborates upon what is known about the economic impacts of remittances at large. It details the major potential macroeconomic impacts of remittances through a literature review on growth and remittances. It also looks at the various channels through which remittances can impact growth. Section four presents an econometric model evaluating the growth impact of remittances with and without the financial sector variable and the results. The fifth section summarizes the main results and concludes.

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7 Mansoor A., Quillin Br. (eds), *Migration and Remittances, Eastern Europe and the Former Soviet Union*, p. 8
2. **Migration and Remittances in North Africa**

   **a. The Scope of Migration Movements in North Africa**

   For more than half a century, international migration has played a central role in shaping social, economic, and cultural developments of the North African countries. Starting in the 1940s, the broader Middle East and North Africa region\(^8\) witnessed some of the largest population movements of any geographic region in the world—a result of extensive immigration, emigration and transit migration, labor migration, family reunification, as well as large and protracted situations of refugee migration. Labor migration constitutes one important element of these large people movements. It developed gradually as a major regional economic phenomenon following the discovery of oil in the Saudi kingdom. By the 1970s, the region experienced massive regional and international labor migration.

   More than half of North Africa’s migrants are in Europe. The regional composition of migrants is provided in Table 2.1. Emigration destination is distinguished by members of the OECD, including the EU15, North America, Oceania (i.e. New Zealand and Australia), the EU27 and other MENA countries (including GCC members). Migration to the OECD (South-North migration) is dominant in Algeria, Morocco and Tunisia. In all these cases, the share of EU27 host countries is important. Although Egypt’s migration rate to the EU27 is low, it is high in absolute terms, with about 200,000 migrants in the EU27.

   There are two predominant North Africa’s migration corridors that have been shaped by geographic proximity, cultural, colonial and historical ties, as well as trade, conflict, and migration policies. One corridor comprised the draw of workers from Egypt (along with the Levant, West Bank and Gaza, and Yemen), who primarily migrated to oil-rich Gulf countries, as the need for both skilled and unskilled labor swelled with oil

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\(^8\) The MENA region, for the purposes of this report, comprises Bahrain, Djibouti, Egypt, Iran, Iraq, Jordan, Kuwait, Lebanon, Libya, Malta, Morocco, Oman, Qatar, Saudi Arabia, Syria, Tunisia, the United Arab Emirates, West Bank and Gaza, and Yemen. Because of data limitations, the study of North Africa, for the purposes of this report, is generally limited to Morocco, Tunisia, Algeria, and Egypt.
production. The other major corridor comprised the labor migrants from North Africa’s Maghreb countries – Morocco, Algeria, and Tunisia, who overwhelmingly migrated to Western Europe. The main European receiving countries – France, Germany, Belgium, and the Netherlands – needed low-skilled labor during their post-war reconstruction industrial boom. Many migrants were recruited from outside Europe through guest-worker programs in Austria, France, and Germany.

### Table 2.1. – Location of North African emigrants in 2000

<table>
<thead>
<tr>
<th>Nationality</th>
<th>OECD %</th>
<th>EU15 %</th>
<th>NAM %</th>
<th>PAC %</th>
<th>EU27 %</th>
<th>MENA %</th>
<th>GCC %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Algeria</td>
<td>81.0%</td>
<td>79.0%</td>
<td>1.8%</td>
<td>0.1%</td>
<td>79.1%</td>
<td>9.2%</td>
<td>0.9%</td>
</tr>
<tr>
<td>Egypt</td>
<td>17.8%</td>
<td>8.7%</td>
<td>7.4%</td>
<td>1.6%</td>
<td>8.9%</td>
<td>75.8%</td>
<td>51.6%</td>
</tr>
<tr>
<td>Morocco</td>
<td>74.9%</td>
<td>71.9%</td>
<td>2.8%</td>
<td>0.1%</td>
<td>71.9%</td>
<td>16.5%</td>
<td>1.7%</td>
</tr>
<tr>
<td>Tunisia</td>
<td>77.7%</td>
<td>75.0%</td>
<td>2.3%</td>
<td>0.1%</td>
<td>75.1%</td>
<td>12.8%</td>
<td>2.6%</td>
</tr>
</tbody>
</table>

*Legend: NAM = US+Canada; PAC=Australia+New Zealand*  
*Source: Parsons et al (2007)*

Bilateral migration agreements and conventions were signed between the Maghreb and Europe, and large-scale labor migration occurred between the mid 1960s and 1970s. By the mid 1970s, however, with stagflation and unemployment growing in Europe, the migration agreements were terminated, and family reunification, family formation, and asylum became the only channels for legal migration from North Africa. The change in migration policy not only impacted the extent of labor migration, it also impacted its geographic destination, with migration from Maghreb countries increasingly shifting from Northern Europe to Southern European countries. Meanwhile, migration from Egypt started to slow by the 1980s, with the Iran-Iraq war, the continuous declines in oil prices and new policies towards hiring nationals to substitute for foreign workers in the Gulf.

The pattern of Maghreb migrants’ destination varies by country. With regard to the destination of North African migrants, while Algerian and Tunisian migrants are highly concentrated into a few destination countries (with more than 60% of their migrants located in a single country, France), emigrants from Morocco are more geographically dispersed (Table 2.2). France is the main destination of emigrants from
Algeria, Morocco and Tunisia, while Saudi Arabia is the major destination for Egyptian emigrants.

Table 2.2. – Emigration from North African countries in 2000

<table>
<thead>
<tr>
<th>Total migration</th>
<th>Main destination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stock</td>
<td>Emigration Rate</td>
</tr>
<tr>
<td>North Africa 4</td>
<td>7,441,150</td>
</tr>
<tr>
<td>Algeria</td>
<td>2,070,840</td>
</tr>
<tr>
<td>Egypt</td>
<td>2,173,711</td>
</tr>
<tr>
<td>Morocco</td>
<td>2,589,108</td>
</tr>
<tr>
<td>Tunisia</td>
<td>607,491</td>
</tr>
</tbody>
</table>

Source: Parsons et al (2007)

The current scope of migration from the combined North African countries (Morocco, Tunisia, Algeria, and Egypt) is impressive. North African countries have an emigration rate almost double the world average. North African countries had 7.4 million emigrants living abroad in 2000. With a resident population amounting to 135 million, this gives an emigration "rate" for North Africa of about 5.5%. Of the top-30 emigration countries in the world in 2005, three were North African.9 Morocco’s migration rate is the highest, with 2.7 million emigrants, amounting for about 9 percent of its total population; Egypt’s emigrants sum up to 2.4 million, accounting for more than 3 percent of Egypt’s population; and Algerians living abroad make up to 5.4 percent of its population with 1.8 million emigrants. Even Tunisia’s migration is far higher than world averages, with more than 620,000 migrants, accounting for more than 6 percent of the population (Figure 1.1). As of December 2007, it was estimated that more than one million Tunisians or one tenth of the whole population had emigrated,10 mainly to France and Italy.11

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11 Al-Ali, *Relationship between Migration within and from the Middle East and North Africa and Poor Policies*, p. 22
Migration flows have probably increased since 2000. While a comprehensive analysis of migrant stocks is not available past 2000, the combination of a high growth of an increasingly more educated labor force, and insufficient employment creation makes it likely that the flow of emigrants from North African countries has increased again, after falling in the 1980’s and 1990’s. In addition, environmental factors may also contribute to increased pressures to emigrate in North Africa, as all four are already worse off than the severe stress threshold in terms of renewable freshwater resources per capita. This can only get worse with future albeit modest population growth.

Estimates of the stock of Egyptian workers abroad confirm an increasing migration trend over this decade. According to CAPMAS there were approximately 4 million Egyptians living abroad, which represents about 4 percent of the total population of Egypt. According to the CAPMAS figures, there has been an almost 79 percent

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12 Fargues, *ibid.*, Figure 4
increase in the number of Egyptians living abroad in 2006 compared to the 1996 Census figures of 2.2 million (Figure 2.1).\footnote{Different sources often provide quite distinct migration figures. According to the 1996 Census the number of Egyptian migrants abroad was about 2.18 million, while the ILM provides an estimate of 2.715 million for the same year.}

**Figure 2.1. – Estimates of the Stock of Egyptian migrants abroad, 1970-2006**

![Graph showing the estimated stock of Egyptian migrants abroad from 1970 to 2006.](image)


Future migratory movements will most probably be impacted by the current regional demographic trends. Two-thirds of the MENA population is under the age of thirty, and the new generations of workers are increasingly more educated. The Arab labor force will have increased by 70 percent between 2000 and 2020. Simultaneously, labor market outcomes in the MENA region have consistently deteriorated over the past twenty years. Official unemployment figures approach 15 percent, and 90 percent of the unemployed are educated first-time job-seekers and women. In Algeria for example, unemployment rates have reached 29.8 percent. And some research finds that expected economic growth in the region will not be enough to absorb both the new entrants to the labor force and the unemployed. This burgeoning unemployment problem and a rapidly increasing labor force on the labor-sending side, associated with an aging population on the labor-receiving side, will generate a large body of potential migrants and hence facilitate increased Arab migration as a way to alleviate the pressures on the labor
markets. Therefore, as stated in the *Economic Developments and Prospects Series 2008 on Regional Integration for Global Competitiveness*, “as migration flows become larger, remittances may also be expected to increase, thus reversing a declining trend observed over the past decade or so in several MENA countries.”\(^{14}\) Considering the potential increase in remittance flows over the next decades, the region should have the necessary tools to mitigate the negative effects of major remittance inflows and improve its benefits on the economy as a whole.

### b. The Importance of Remittances to the North African Economies

North Africa’s large population movements have in turn generated sizeable transfers of money. As a region, MENA receives about 10 percent and remits about 20 percent of the world’s remittance flows,\(^{15}\) with North Africa accounting for [XXXXX] percent. Although formal remittance flows have doubled over the past 10 years,\(^{16}\) MENA total amount of remittances ranked 5\(^{th}\) out of 6 regions in 2007,\(^{17}\) with US$28.5 billion, compared to US$59.9 billion for LAC, and US$58.0 for EAP.\(^{18}\) However, these figures are misleading. In fact, when the ratios of remittances to the regions’ total population are compared, the relative importance of remittances to the MENA region appears to be much higher. The region as a whole ranks second in terms of per capita remittances and first in terms of the remittances as a percentage of regional GDP.

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\(^{14}\) EDP 2008, pp. XXI-XXII.

\(^{15}\) According to the IMF definition, remittances consist of the sum of the compensation of employees, workers’ remittances and migrants’ transfer. They are small private individuals’ income transfers, most of the time within families. In his paper on *Trends and Determinants of International Remittances in the Middle East and North Africa*, 2008, Richard Adams gives the following definition: “International remittances refer to the money and goods that are transmitted to households by migrant workers working outside of their home countries”. For a discussion of the definition of remittances, see Dilip Ratha, "Workers' Remittances: An Important and Stable Source of External Development Finance", in Global Development Finance 2003, 2003, World Bank.

\(^{16}\) Ozden C., Schiff M., “Overview” in *International Migration, Remittances and the Brain Drain* Drain, p. 1.

\(^{17}\) The six regions are East Asia and Pacific (EAP), Europe and Central Asia (ECA), Latin America and Caribbean (LAC), Middle East and North Africa (MENA), South Asia (SA), and Sub-Saharan Africa (AFR).

When compared to remittance-receiving countries worldwide, North African countries are large remittance-receiving countries. For example, in 2002, Morocco received a total of US$3.3 billion, which made it the fourth largest remittance-receiving country in the world. In 2007, three of the world’s largest remittance-receiving countries in absolute terms were in the MENA region: Egypt with US$ 5.9 billion, Morocco with US$5.7 billion, and Lebanon with US$5.5 billion. According to the Economic Developments and Prospects Series 2008 on Regional Integration for Global Competitiveness, both Morocco and Egypt witnessed a 25 percent increase of their inward remittance flows in 2007 compared to 2006.  

The scope and long-lasting history of out-migration and remittances have made them a structural feature of many economies in the region. The region’s economies have been characterized by high labor mobility resulting from the inter-dependency between oil-rich labor-poor and oil-poor labor-rich countries. Oil has engendered rapid economic and social development throughout the region, both in oil-producing economies and in labor-sending countries, through labor remittances and aid flows.

\[\text{Table 2.3. – Regional Distribution of International Remittances, 2006}\]

<table>
<thead>
<tr>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>East Asia and Pacific</td>
<td>1,900</td>
<td>52.8</td>
<td>27.7</td>
<td>1.5</td>
</tr>
<tr>
<td>Europe and Central Asia</td>
<td>460</td>
<td>35.1</td>
<td>76.3</td>
<td>1.4</td>
</tr>
<tr>
<td>Latin America and Caribbean</td>
<td>556</td>
<td>56.5</td>
<td>101.6</td>
<td>1.9</td>
</tr>
<tr>
<td>Middle East and North Africa</td>
<td>311</td>
<td>26.7</td>
<td>85.8</td>
<td>3.9</td>
</tr>
<tr>
<td>South Asia</td>
<td>1,493</td>
<td>39.8</td>
<td>26.6</td>
<td>3.5</td>
</tr>
<tr>
<td>Sub-Saharan Africa</td>
<td>770</td>
<td>10.3</td>
<td>13.3</td>
<td>1.6</td>
</tr>
</tbody>
</table>


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19 Al-Ali, Relationship between Migration within and from the MENA Region and Pro-poor Policies, p. 22; Sorensen, 2004, p. 4.
Figure 2.2. – Evolution of Worker’s Remittances in North Africa between 1980 and 2007 (in US$ Million)

Arab economies are characterized by a limited integration into the world economy. For example, MENA’s share of global trade flows is below 5 percent while the ratio of trade to the region’s GDP currently is roughly 65 percent, compared to 92 percent in 1980.\(^{21}\) Its share of global FDI flows is even lower.\(^{22}\) With 20 percent of the world’s remittance out-payment and approximately 10 percent of the world’s remittance in-payment, the region is more integrated through international migration than it is through trade and investment.\(^{23}\)


\(^{22}\) EDP 2008, p. 69.

\(^{23}\) EDP 2008, pp. XXI-XXII.
MENA’s remittances surpass other external flows such as ODA or FDI, making remittances the most important source of external financing within the MENA region. In 2006, the total amount of ODA to the MENA region amounted to US$16.7 billion\textsuperscript{24}, net FDI flows reached US$22.3 billion\textsuperscript{25}, while remittances totaled US$26.7 billion. This is particularly true in North African economies, where remittances far surpass other financial flows. The importance of remittances in North Africa is highest in Morocco, where inward remittance flows were five times higher than ODA, and more than one and half times the size of FDI in 2007. Algeria’s remittances constitute a very small part of GDP, yet were still higher than ODA and FDI combined.

Table 2.4. – Inward Remittance Flows, Per Capita Remittances, National ODA and FDI

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Algeria</td>
<td>2.906</td>
<td>85.9</td>
<td>2.2</td>
<td>209</td>
<td>1,664</td>
</tr>
<tr>
<td>Egypt, Arab Rep.</td>
<td>5.865</td>
<td>77.7</td>
<td>5.0</td>
<td>873</td>
<td>7,620</td>
</tr>
<tr>
<td>Morocco</td>
<td>5.700</td>
<td>185.0</td>
<td>9.5</td>
<td>1,046</td>
<td>3,800</td>
</tr>
<tr>
<td>Tunisia</td>
<td>1.669</td>
<td>163.6</td>
<td>5.0</td>
<td>432</td>
<td>1,620</td>
</tr>
</tbody>
</table>


\textsuperscript{25} http://www.fdi.net/spotlight/spotlight_detail.cfm?spid=11.
Remittances also constitute a major source of foreign exchange flows and hard currency. Some countries like Morocco are depending on remittances for their external balance of payment. In recent years, remittances as a percentage of merchandise exports have approached 41 percent in Morocco.

Table 2.5. – Sources of Foreign Exchange Flows Compared to Remittance Flows

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>Algeria</td>
<td>2,906</td>
<td>????????????</td>
<td>????????????</td>
</tr>
<tr>
<td>Egypt, Arab Rep.</td>
<td>5,865</td>
<td>????????????</td>
<td>????????????</td>
</tr>
<tr>
<td>Morocco</td>
<td>5,700</td>
<td>????????????</td>
<td>????????????</td>
</tr>
<tr>
<td>Tunisia</td>
<td>1,669</td>
<td>????????????</td>
<td>????????????</td>
</tr>
</tbody>
</table>


International and intraregional remittances account for between 10 to 30 percent of MENA’s total household income. The importance of remittances as a share of MENA countries’ GDP has expressed variability from country to country. In 1993 for example, the remittance’s share of Egypt’s GDP amounted to 10 percent. Today, the share of remittances in MENA countries’ GDP varies between 2 and 20 percent. In 2006, the remittances’ share of the four North African countries’ GDP ranged from 2.2 percent in Algeria to 9.5 percent in Morocco.

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26 Al-Ali, Relationship between Migration within and from the MENA Region and Pro-poor Policies, p. 22. See also Schramm Chr., What Do We Know about International Migration from the Middle East and North Africa? A Migration Literature Review, p. 4.
29 Richards and Waterbury, 1996, p. 378
Table 2.6. – Projected workers’ remittances, 2008-2011 (credit, $US, billions)

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Algeria</td>
<td>2.20</td>
<td>2.08</td>
<td>2.13</td>
<td>2.19</td>
<td>-5.4%</td>
</tr>
<tr>
<td>Egypt</td>
<td>9.48</td>
<td>9.14</td>
<td>9.48</td>
<td>9.82</td>
<td>-3.5%</td>
</tr>
<tr>
<td>Morocco</td>
<td>6.73</td>
<td>6.43</td>
<td>6.57</td>
<td>6.82</td>
<td>-4.5%</td>
</tr>
<tr>
<td>Tunisia</td>
<td>1.87</td>
<td>1.77</td>
<td>1.81</td>
<td>1.85</td>
<td>-5.4%</td>
</tr>
<tr>
<td>East Asia Pacific</td>
<td>78</td>
<td>74</td>
<td>76</td>
<td>80</td>
<td>-5.7%</td>
</tr>
<tr>
<td>Europe Central Asia</td>
<td>57</td>
<td>49</td>
<td>50</td>
<td>53</td>
<td>-14.9%</td>
</tr>
<tr>
<td>Latin America Caribbean</td>
<td>64</td>
<td>60</td>
<td>61</td>
<td>64</td>
<td>-6.9%</td>
</tr>
<tr>
<td>Middle East North Africa</td>
<td>34</td>
<td>32</td>
<td>33</td>
<td>35</td>
<td>-6.2%</td>
</tr>
<tr>
<td>North Africa 4</td>
<td>20</td>
<td>19</td>
<td>20</td>
<td>21</td>
<td>-4.2%</td>
</tr>
<tr>
<td>South Asia</td>
<td>74</td>
<td>71</td>
<td>74</td>
<td>78</td>
<td>-3.6%</td>
</tr>
<tr>
<td>Sub-Saharan Africa</td>
<td>20</td>
<td>18</td>
<td>19</td>
<td>20</td>
<td>-8.3%</td>
</tr>
<tr>
<td>World</td>
<td>433</td>
<td>400</td>
<td>413</td>
<td>435</td>
<td>-7.6%</td>
</tr>
</tbody>
</table>


c. The Limitation of Data on North African Migration and Remittances

Migration analysis has been hindered by a lack of data. A major constraint to migration analysis has been the lack of harmonized international data on migration stocks and flows by country of origin and education level. First, there is no such thing as an agreed-upon definition of international migration. International migrants are defined according to two main criteria: the country of birth criterion, used by the United Nations population database\(^1\), and according to which a migrant is a resident living in a country different from his country of birth; and the country of citizenship criterion, which defines a migrant as a resident that does not have the citizenship of the country he lives in. Both definitions are flawed: the country of birth definition implies that there is no additivity of migrants, and the country of citizenship criterion can be misleading when considering the impact of migration on a receiving country. Secondly, and equally important, there are no reliable and systematically computed data, and most data only account for stocks of migrants in receiving countries. In addition to overlapping and changing categories of migrants, few statistics measure migration flows, and circular migrants are not necessarily accounted for. Data are even scarcer when it comes to transit or irregular migration.
A newly developed dataset provides a first comprehensive look at North African migration. The most complete picture of North African migration comes from 2000, relying on a data set described in Parsons et al. (2007), consisting of a 226x226 matrix of origin-destination stocks by country and territories. The data are generated by disaggregating the information on migrant stock in each destination country or economy as given in its census. The reference period is the 2000 round of population censuses, so the data do not refer to precisely the same time period, and making our picture of North African migration somewhat dated. Moreover, the data set provides stocks of migrants, not flows, a serious limitation for migration analysis. Thus, one of the most important areas of interest to researchers: “What has happened to migration over the past decade?” is not possible with the current data.

Care has to be taken in reading the above-mentioned data on remittance flows. The paucity of remittance data for the MENA region significantly impacts the accuracy and the depth of any analysis. “Bilateral data are scarce, dated and often of weak quality. Global migration and remittance data exist as time series but do not distinguish intra-regional migration from other flows.” Most data on MENA remittance flows are drawn from the Balance of Payment Statistics Yearbook published by the International Monetary Fund. However, migration statistics are unreliable and databases are not harmonized. The absence of an international definition agreed upon by all central banks to report remittance flows renders cross-country comparison difficult. Moreover, the IMF definition of a migrant de facto excludes from its data collection remittances sent back home by short-term (less than a year) or seasonal migrants. Countries have also different ways of collecting data on remittances within the MENA region.

Official figures may underestimate the level of remittance monies returning to North Africa. Official figures only include remittances transfers taking place through formal channels. Many migrants, who do not trust banks, remit their money back home through informal and unrecorded means. Transfers taking place through informal channels are not recorded and could only be estimated based on household surveys or surveys of migrants at border-crossings. It appears that the problem of unofficial remittance flows is particularly acute in the MENA countries. In fact, the black market
premium in foreign exchange is very profitable in MENA, thus encouraging unofficial channels to remit. Consequently, remittance flows are systematically underestimated.

3. Remittances and Growth

a. Literature Review

The academic literature that attempts to empirically assess the impact of remittances on economic growth is growing and significant. So far, however, it has failed to find a robust positive impact of remittances on growth. According to both Al-Ali and Looney, remittances have benefited at the microeconomic level, but have not or only marginally contributed to larger economic growth. For Looney, the reason is that “remittances have not been channeled in significant volumes into productive investment.” However, Ali Mansoor and Bryce Quillin conclude the opposite. They find that remittances seem to have a mild positive impact on long-term patterns of macroeconomic growth. Taking a sample of 39 countries using a standard growth model, Pradhan et al. also conclude that remittances have a positive but limited impact on growth.

However, Chami et al. show that the relationship between growth and remittances is still unclear. In their paper on Are Immigrant Remittance Flows a Source of Capital for Development?, they find that remittances have a negative and robust relationship with income growth. Remittances are found to be counter-cyclical in nature: as income growth rises, remittances fall. Therefore, they demonstrate that remittances act like compensatory transfers and not like capital flows and hence do not contribute to economic development. Similarly, Poonam Gupta (2005) studied the macroeconomic determinants of remittances in India, one of the largest recipients of remittances in the world. She found that remittances are counter-cyclical in nature.

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31 Al Ali, Relationship between migration within and from the MENA and pro-poor policies, p. 16;  
32 Looney ??, Macroeconomic Impacts of Worker Remittances on Arab World Labor Exporting Countries, p. 32;  
33 Mansoor A., Quillin Br. (eds), Migration and Remittances, Eastern Europe and the Former Soviet Union, p. 61;  
34 Pradhan G., Upadhyay M., Upadhaya K., Remittances and Economic Growth in Developing Countries, p. 504.
As a result, based on their findings, Chami et al. conclude that the remittances’ impacts at the macroeconomic level are still unclear.\(^{35}\) Glytsos comes to the same conclusion in his article on the *Dynamic effects of Migrant Remittances on Growth*. Remittances can advance or restrain economic growth. The model he uses demonstrates that the growth generating capacity of remittances fluctuates for each country and over time depending on several other factors affecting the economy. He shows that remittances positively impacted economic growth in Egypt in the 1970s and negatively during the 1980s. He finds the recipients’ expectations to be a determinant of the use of remittances: positive expectations will lead people to use their remittances for productive investments. Nevertheless, Glytsos concludes that “the good cases are generally more than the bad cases.”\(^{36}\)

Remittances represent a stable source of income, compared to other financial flows, since they are compensatory and thus countercyclical. As noted in the IMF’s *World Economic Outlook 2005*, this countercyclical effect of remittances might reduce the probability of financial crises.\(^{37}\) In their article on *Do Workers’ Remittances Reduce the Probability of Current Account Reversals?*, Matteo Bugamelli and Francesco Paterno study the relationship between remittances and the occurrence of financial crises. They argue that, because remittances are both stable and countercyclical, they can help reduce the likelihood of current account reversals provoked by an increase in external debt or a decrease in the stock of international reserves.\(^{38}\) Hence, remittances increase financial stability in emerging markets and developing countries. It also appears that the higher the remittances’ share of GDP, the lower the probability of current account reversals. The authors find that “when workers’ remittances reach 3 or 4 percent of GDP, their contribution to financial stability becomes much stronger and neater.”\(^{39}\) If this is the case, remittances to the Maghreb countries do have a stabilizing effect on their economy. In


\(^{37}\) *The World Economic Outlook 2005*, p. 73.

\(^{38}\) Bugamelli M., Paterno Fr., *Do Workers’ Remittances Reduce the Probability of Current Account Reversals?*, p. 3-24.

\(^{39}\) Bugamelli M., Paterno Fr., *Do Workers’ Remittances Reduce the Probability of Current Account Reversals?*, p. 4.
fact, three out of four North African countries had a remittance’s share of GDP higher than 3 percent in 2006: in Egypt and Tunisia, it was up 5 percent, and up to 9.5 percent in Morocco. However, Glytsos also finds that economies heavily depending on remittances become vulnerable to remittance fluctuations and show “a common inability of protecting themselves against the bad turn of remittance flows.”

If it is true that remittances have significant positive and negative effects on growth. Focusing on how to increase the remittances’ positive effects on growth while reducing the net negative effects should receive the attention of the development community. Remittances are more likely to positively impact growth in “economies whose marginal propensity to invest and to import are high; they are unlikely to have any lasting impact on growth in countries whose marginal propensity to consume is high.”

b. Channels

There are various channels through which remittances may affect economic growth. Actually, most of the literature on growth and remittances tends to focus on the specific channels through which remittances affect the macroeconomic environment. Research tries to evaluate the extent to which each one of these channels can – separately – positively or negatively impact the overall economic growth.

Remittances and Investments in Education and Health

Unlike foreign aid, most international remittances go directly to households in developing countries. For this reason, one of the most important channels for remittances is at the level of household. From the standpoint of economic development, the basic question is: How do these households spend their remittance earnings? Do households spend their remittances on newly desired consumer goods for the family, or do they channel them into human and physical investments?

In the literature there are at least three views on how households spend or use their remittances and the impact of these monies on economic development. The first,

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and probably most widespread, view is that remittances are fungible and are spent at the margin like income from any other source. In other words, a dollar of remittance income is treated by the household just like a dollar of wage income, and the contribution of remittances to development is the same as that from any other source of income. The second view takes a more pessimistic position, arguing that the receipt of remittances can cause behavioral changes at the household level that may lower their development impact relative to the receipt of income from other sources. For example, a recent review of the literature by Chami, Fullenkamp and Jahjah (2003:10-11) reports that: (a) a “significant proportion, and often the majority,” of remittances are spent on “status-oriented” consumption; and (b) the ways in which remittances are typically invested – in housing, land and jewelry – are “not necessarily productive” to the economy as a whole. A third, and more recent, view of remittances is more positive, arguing that remittances can actually increase investments in human and physical capital. When invested in financing children’s education and health expenses, remittances contribute to higher long-term growth by facilitating human capital formation thus enhancing total output.\(^4\) For instance, a recent set of studies find that households receiving international remittances tend to invest – rather than consume – their remittance earnings in such goods as education, housing, and land. The rest of this section will detail the findings of these new studies by focusing on the relationship between remittances and household investment in education, housing, health, and land.

In general, the new studies find that households receiving international remittances tend to invest in education, especially in the schooling of young children and females. However, the level of remittance-inspired investment in the schooling of older children (15 to 18 years of age) is more debated. Some studies find that international migration and remittances actually reduce the level of educational investment in older children.

In North Africa, a recent study on Morocco finds that households receiving international remittances do tend to invest in education (Herrera et al, 2008). In this paper the authors compare average expenditure shares among remittance-receiving and

\(^4\) Maimbo S. M., Ratha D., Remittances, Development Impact and Future Prospects, p. 5.
non-receiving households. Results suggest that households receiving international remittances spend more on average on education and health, and less on food, than households with no remittances. The authors interpret these results as suggesting that households receiving remittances prefer to invest – rather than consume -- their remittance earnings in the education of their children.

A recent paper from Guatemala finds identical results (Adams and Cuecuecha, 2008). This study examines how the receipt of international remittances (from US) affects the marginal spending behavior of households on such consumption and investment goods as food, education and housing. Findings suggest that households receiving international remittances in Guatemala spend less at the margin on one key consumption good – food – compared to what they would have spent on food without remittances. Results also indicate that households receiving international remittances spend more at the margin on two investment goods – education and housing – compared to what they would have spent on these goods without remittances. With respect to education, households receiving international remittances spend 44 percent more at the margin on education than what they would have spent on this good without the receipt of remittances. These large, remittance-inspired increases in spending on education are important because they can help raise the level of human capital in a developing country.

A similar paper from El Salvador focuses on a slightly different topic, namely, how remittances affect the school attendance of children (Edwards and Ureta, 2003). This study is unique in that it compares how income from different sources – that is, income from remittances and income from other sources – affects the probability that children will drop out of school. Results suggest that remittance income has a much larger positive impact on school retention rates than income from other sources. For instance, in urban areas the average level of remittances in El Salvador lowers the hazard that a child will drop out of elementary school by 54 percent. In rural areas in El Salvador, international remittances have a smaller effect on school retention rates, but still the average level of remittances in rural areas lowers the hazard that a child will drop out of elementary school by 14 percent.
A recent study from rural Pakistan extends these findings on remittances and schooling to the education of female students (Mansuri, 2007). Female education is a particular problem in rural Pakistan because many households chose not to send their girls to school. However, the author of this study finds that international migration has a positive and significant impact on female schooling. In rural Pakistan school enrollment rates increase by 54 percent for girls in international migrant households as opposed to only 7 percent for boys in international migrant households.

Perhaps the most ambitious study in this area uses household-level data from the Philippines to analyze how exchange rate shocks during the 1997 Asian financial crisis affect the expenditure patterns of households receiving international remittances (Yang, 2008). Since the author has panel data from before and after the 1997 crisis, he is able to analyze how different types of exchange rate shocks – positive and negative – affect changes in the expenditure patterns of remittance-receiving households. The author finds that positive exchange rate shocks are associated with increased expenditures on education, more child schooling and less child labor. For example, a one-standard deviation increase in the size of the exchange rate shock leads to a 1.6 percentage point increase in the likelihood of a child being a student and a decline in the number of hours worked in the past week of 0.35 hours. According to the author, households receiving more international remittances as a result of positive exchange rate shocks are able to invest more in the education of children.

While all of the preceding studies find that international remittances have a positive impact on education, a handful of other studies find more mixed effects. These latter studies are all based on Mexico-to-US migration and remittance data, suggesting that perhaps the nature of this migration channel might be different from that of other countries.

For example, a recent paper using population census data in Mexico finds that international migration and remittances have both positive and negative effects on education (Lopez-Cordova, 2005). On the positive side, an increase in the share of households receiving international remittances in Mexico reduces illiteracy among
children 6 to 14 years of age. However, at the same time, a similar increase in the share of remittance-receiving households reduces school attendance in Mexico among teenagers 15 to 17 years of age. The author suggests that the latter finding may be caused by the following: as households receive remittances they tend to invest less in the schooling of older children because they assume that these children will become international migrants.

Another paper based on demographic survey data from Mexico also finds that Mexico-to-US migration has mixed effects on education (McKenzie, 2006). Specifically, the author finds that international migration (to US) lowers the education attainment of children of more educated parents. According to the author, this lower rate of educational attainment is probably caused by two factors: first, the absence of the parent during migration; and second, the lower returns to education facing Mexican children who intend to migrate. Since Mexicans migrating to the US experience low rates of return to education, parents do not tend to invest in the education of children planning to migrate.

A similar study using demographic data from Mexico actually finds that international migration has a negative impact on education (McKenzie and Rapoport, 2006). In this paper international migration has a significant negative effect on schooling attendance and attainment for 12 to 18 year-old boys and 16 to 18 year-old girls. Results show that living in an international migrant household in Mexico lowers the chances of boys completing junior high school by 22 percent and of girls completing high school by 15 percent. According to the authors, one reason for these lower rates of school attendance and attainment is that boys and girls from migrant households are more likely to become international migrants themselves.

With only a few exceptions, recent studies have also found that households receiving remittances tend to invest in health, especially in the health of infants and young children. However, some studies have found that with the absence of the parent during migration, certain child health outcomes may suffer. Specifically, children in migrant households may be less likely to be breastfed and to receive vaccinations.
In the North Africa region, the previously-cited study on Morocco found that households receiving remittances had better health and nutritional outcomes than households without remittances (Herrera et al, 2008). For example, for children between 2 and 5 years of age, the percentage of children suffering from shortness and stunting in remittance-receiving households was about half that among non-remittance receiving households. According to the authors, the reason for this finding is that with the advent of international remittances mothers are better able to feed and nourish their children.

A recent study based on a large household survey from Mexico found similar results for infant birth weights (Frank and Hummer, 2002). In this study infants born into international migrant households have more positive birth outcomes: while 9 percent of infants in international migrant households have low birth weights, 11 percent of those in nonmigrant households have this condition. These results are interesting because members of migrant households also have higher proportions of low income and education. According to the authors, the positive impact of international migration on infant birth weight is largely caused by remittances, because remittances help raise living standards and improve access to medical care.

A similar study using demographic data from Mexico examines the impact of international migration (Mexico-to-US) on child health (Hildebrandt and McKenzie, 2005). To correct for selectivity, the authors use historic migration networks by state in Mexico as instruments for current migration. The authors find it is important to control for the selectivity of migration because migrants tend to be negatively selected from the distribution in terms of child health status. Results suggest that international migration has positive effects on both infant mortality and child weight. For example, children born in international migrant households are 3 percent less likely to die in their first year than children in non-migrant households. Similarly, children born in an international migrant household are estimated to weigh 364 grams more, on average, than children in non-migrant households. The authors suggest that international migration improves child health in rural Mexico by raising the health knowledge of mothers, and by increasing the income of migrant households.
However, a recent study based on a small household survey from rural Mexico questions whether international migration (Mexico-to-US) has such a positive, uniform impact on child health (Kanaiaupuni and Donato, 1999). According to this study, infant mortality is higher in Mexican villages with medium- or high levels of migration intensity (where 20 to 47 percent of the population OR at least 48 percent of the population has migrated). The paper also finds that as international migration becomes more institutionalized, infant mortality rates tend to peak in the initial stages of migration (5 to 9 years), and then fall thereafter. In villages with high levels of migration, the authors find that high levels of remittance income help to reduce infant mortality. On balance, the paper concludes that while international migration has health costs to Mexican families in the short run, it yields positive health benefits over the long term.

A similar study using data from rural Mexico also finds that Mexico-to-US migration has mixed effects on child health (McKenzie, 2006). While children in migrant households are less likely to die in childhood than children from non-migrant households, children in migrant household are also 19 percent less likely to be breastfed, and 11 percent less likely to have received their vaccinations. According to the paper, these less favorable health outcomes are probably caused by the absence of the parent during migration.

While all of the preceding studies examine the impact of international migration and remittances on the health of non-migrants (infants and children), two unique studies attempt to analyze the impact of migration and remittances on migrants themselves.

An innovative study from North Africa uses data on return international migrants in Morocco, Tunisia, and Algeria to examine the impact of migration on the “subjective well-being” of return migrants (Gubert and Nordman, 2008b). While noting that it is difficult to disentangle the determinants of subjective well-being in return migrants, the authors report that being female has a negative impact on the level of satisfaction upon return while being married before migration has a positive impact. In other words, females were less likely to be satisfied upon return home to North Africa, while people married before migration (both male and female) were more likely to be satisfied. Also,
migrants with higher levels of education – secondary and university – were less likely to be satisfied upon return home. Interestingly, return migrants who were “poor” before migration were not more likely to report any financial improvement after their return home. The authors note that return migrants who were in poor finances before migration “seem to dread their return to home country.”

A similar study that has more data and uses more controls employs information from a migrant lottery system (Tonga to New Zealand) to examine the effects of international migration on the mental health of migrants (Stillman, McKenzie and Gibson, 2007). The paper addresses the problem of selectivity by using a migrant lottery (New Zealand allows a certain quota of Tongans to migrate each year) to identify the mental health of 3 groups of people: migrants who were selected in the lottery, and migrated; those who were selected in the lottery, but did not migrate; and those who did not apply to the lottery. Comparing the mental health of these three groups of people, results suggest that international migrants (Tonga-to-New Zealand) experience a gain in mental health, with the gains being larger for women and for those with lower levels of mental health in Tonga. For example, at the bottom of the mental health distribution, international migration increases mental health for people by 2.8 points versus only 1.0 points for those higher in the distribution

REMITTANCES AND BUSINESS INVESTMENT

The academic literature on remittances studies the extent to which remittances can be used as a channel to stimulate business investment. Most of the studies in this area find that remittances tend to stimulate business formation and investment through capital accumulation. As shown by Giuliano and Ruiz-Arranz, remittances provide an alternative way to finance investment, leading to increased investment and growth. By modeling the direct and indirect effects of remittances on incomes in seven Mediterranean

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countries, Glytsos finds that remittances increased investment in six of the seven.\(^{45}\) In addition, he finds that increase in remittance-induced investment mainly affected housing.\(^{46}\) By reducing credit constraints, remittances also finance entrepreneurship.\(^{47}\) In terms of savings, development theory demonstrates that the propensity to save a share of temporary income (such as remittances) is higher than the propensity to save a share of stable income. According to Glytsos there is ample empirical evidence showing that savings from remittances are higher than savings from a regular source of income.\(^{48}\)

One of the more positive studies uses household survey data from Mexico to analyze the impact of international migration (Mexico-to-US) on business formation (Massey and Parrado, 1998). Results suggest that there may be a difference between current migration and remittances. On the one hand, being a current migrant lowers the odds of business formation by a household by about 2.5 percent. However, over the years, remittances earned from international migration lead to business formation: every unit increase in the log of remittances that a household has received in past years increases the odds of business formation by 3 percent. According to the authors, on average, 21 percent of the businesses in their sample in Mexico are financed with international remittances. While 49 percent of these new businesses are in retail activities (street vendors, grocery stores, butcher shops), 15 percent are in manufacturing (small factories, tortilla mills).

A recent study in Albania arrives at similar findings (Kilic et al, 2007). This paper finds that international migration is positively linked to business ownership in Albania, and that the length of migration and the destination country are important factors. For example, while one additional year of migration stay in Greece increases the probability of business ownership in Albania by 7 percent, a similar one year of stay in Italy increases the probability by over 30 percent. The authors also find that while

\(^{45}\) Glytsos N., \ldots. In addition, Lucas states that remittances in Morocco and Egypt may have accelerated investment. See Lucas R., *International Migration and Economic Development: Lessons from Low-Income Countries*, p. 11.


\(^{47}\) Ratha and Mohapatra, *Increasing the Macroeconomic Impact of Remittances on Development*, p. 4.

international migration during the period 1990 to 2000 is positively linked to business ownership, more recent migration is not. The authors suggest that the reason for this is that business creation requires capital, and more recent migrants have not yet accumulated enough savings to establish a business.

Taking a slightly different approach to the issue, another recent study examines how international migration networks (to US) affect the level of capital investment and profits of micro-enterprises in Mexico (Woodruff and Zenteno, 2007). Most of the micro-enterprises included in this study are very small: 60 percent of them hire no employees at all. The study finds that a one-standard deviation increase in the rate of international migration (to US) is associated with a 35 to 40 percent increase in the level of capital invested in a micro-enterprise in Mexico. Results also suggest that international migration networks are correlated with higher capital-output ratios. According to the authors, these results show that international migration and international migration networks help to overcome the type of capital constraints that restrict micro-business activity in Mexico.

However, a recent study from the Dominican Republic comes to very different conclusions about the relationship between remittances and business formation (Amuedo-Dorantes and Pozo, 2006b). The authors of this study find that households receiving international remittances in the Dominican Republic are not more likely to own a family business than households not receiving remittances. The authors suggest that one reason for this outcome may be that remittances increase the reservation wage of household heads, making them more likely to invest in leisure and less likely to invest in business. The authors also point out that international remittances can be used for other purposes, such as improving housing, increasing health care and pursuing more education.

In the North Africa region, a new study of return migrants in Morocco, Tunisia, and Algeria examines a slightly different topic, namely, the impact of international migration on entrepreneurship (Gubert and Nordham, 2008a). The paper find that international migration increases the probability of becoming an entrepreneur: while 16.2 percent of the sample was entrepreneurs before migration, 33.9 percent became
entrepreneurs upon their return home. Controlling for selection and the length of migration, the authors find that return migrants who become entrepreneurs are more likely to be male, younger and to have medium education levels. While there is no clear correlation between the length of migration and entrepreneurship, most entrepreneurs establish their own enterprises using savings from migration.

A similar study from Egypt also analyzes the impact of international migration on entrepreneurship (McCormick and Wahba, 2001). This study finds that two factors -- time spent working abroad and total amount of money saved abroad -- increase the likelihood that a return migrant to Egypt will become an entrepreneur (employer or self-employed). However, these two factors work differently for literate as opposed to illiterate migrants. For the 70 percent of return migrants in the survey who are literate, the primary factor affecting the probability of becoming an entrepreneur is the length of time spent working abroad. By contrast, for the 30 percent of return migrants in the survey who are illiterate, the total amount of money saved abroad is the most important factor. According to authors, illiterate Egyptian migrants may not learn many new skills working abroad, and this is the reason that savings accumulated abroad are so critical.

A companion study using the same labor force data from Egypt expands on these findings by calling attention to the spatial aspects of migrant entrepreneurship (McCormick and Wahba, 2004). Specifically, this paper find that return migrants in Egypt are more likely to invest in enterprises (agricultural projects and non-farm enterprises) in urban, rather than rural, areas. While the proportion of urban migrants is not much higher than rural migrants in Egypt, total migrant investment going to urban areas is more than three times that going to rural areas. Most of this migrant investment is going into small-scale firms with fewer than 5 employees. Moreover, this migrant investment is more likely to take place in the capital city: being a return migrant, compared to being a non-migrant, increases the probability that an enterprise is located in Cairo by 36 percent. In other words, return migrants are more likely than non-migrants to invest in small-scale enterprises in urban areas, and particularly in Cairo, because the rates of return to investment are (presumably) higher in these areas.
REMITTANCES AND LABOR MARKET OUTCOMES

Another major channel for international remittances is the impact of these transfers on household labor supply and participation. In recent years a large number of studies have examined the effect of remittances on labor supply and participation. Indeed, remittances may work as a substitute for labor income. Most of these studies find that international migration and remittances tend to reduce household labor supply and participation, as non-migrant household members substitute increased income for more leisure. Glytsos shows that, in Morocco, remittances had a negative impact on agricultural production. Remittance-receiving families who could afford to rely on remittances only, would tend to abandon their agricultural activities.49 By reducing the work efforts of remittance recipients, remittances might negatively affect the economic activity and thus growth.50 The impact may be particularly negative if the lost labor is concentrated in important or productive sectors of the economy.

Many studies also find that the negative effects of migration and remittances on labor supply are influenced by gender and sector of employment. In other words, in remittance-receiving households labor force participation often falls more for women than men, as women leave formal sector employment to work either in the informal or the unpaid family sector. With the receipt of remittances, non-migrant men may also leave to work in the informal sector, although these effects seem to vary by urban vs. rural locale.

In the Middle East a recent study on Egypt examines the impact of international migration and remittances on the labor market outcomes of young males and females (aged 16-29) (Assaad and Binzel, 2008). Specifically, the authors analyze how the employment behavior of young males and females changes if they live in households with international migrants or international remittances. They find that migration and remittances have a gendered effect on labor market participation and employment. For young females, living in a migration or remittance-receiving household increases the likelihood of labor force participation. However, most of this increased female labor

force participation comes in the area of unpaid family labor. For instance, women living in a migrant household in Egypt have a 23 percent higher probability of working in unpaid family labor. According to the authors, one possible reason for this outcome is that men who migrated worked in a family business and, with migration, young women are needed to work in that family enterprise. By contrast, for young men, living in a migration or remittance-receiving household has no significant impact on labor force participation. However, with migration or the receipt of remittances, young men in Egypt reallocate their labor time. Young men in migrant households or households receiving remittances tend to reduce their unpaid family work and also tend to work less in wage and salary work. For example, young men living in migration households work about 20 hours per week less in unpaid family work and about 6 hours per week less in wage and salary work. With migration or the receipt of remittances, both young men and women change their employment behavior, with women spending more time in unpaid family labor and with men substituting work with more leisure.

In the North Africa region, a recent study in Morocco finds very similar results (Silva, 2008). In remittance-receiving households labor force participation falls for both men and women. This decline in labor force participation holds for both urban and rural areas. However, the author suggests that this decline is associated with a type of labor reallocation among sectors. In households receiving international remittances, both men and women are more likely to leave the formal sector and become self-employed. Rural males from remittance-receiving households are 5.6 percent more likely to become self-employed, and urban females are 6.6 percent more likely to become self-employed. According to the author, international remittances tend to raise the reservation wages of non-migrant household members, making them less enthusiastic about working in the formal sector.

An earlier study using household survey data from Nicaragua also finds that labor force participation falls for both men and women in international migrant households (Funkhouser, 1998). When compared to non-migrant households, international migrant households in Nicaragua reduce both their number of working members and their labor income. However, this does not mean that migrant households have less total income or
are more likely to be poor, because migrant households receive so much of their income from remittances. In Nicaragua households with an international migrant receive about half of their total labor income from remittances.

A similar study from the Philippines uses labor force data to examine the impact of international migration on the labor supply of non-migrants (Rodriguez and Tiongson, 2001). The study finds that having an international migrant reduces the labor participation rates of non-migrants, as non-migrants substitute increased income for more leisure. For example, having a migrant household member reduces, on average, the likelihood of labor participation for non-migrant men and women by 9.4 and 18.1 percentage points, respectively. In addition to the effects of migration, international remittances also reduce the labor supply of non-migrants. This income effect is, however, small: an additional 1,000 pesos in per capita remittances reduces the likelihood of labor participation for men and women by only 0.3 and 0.2 percentage points, respectively.

A recent study from El-Salvador finds that labor force participation falls for women – but not for men – in households receiving international remittances (Acosta, 2007). Analyzing a large, household survey from El Salvador, the paper finds that urban females in remittance-receiving households are 42 percent more likely to quit the labor market, while for rural females the corresponding decline is 44 percent. By contrast, there are no statistically significant declines in the likelihood of urban and rural males participating in the labor market. However, with respect to hours worked, both males and females in urban and rural areas reduce their number of weekly work hours upon the receipt of remittances.

A final study from Mexico examines the impact of international remittances on the male and female decision to work (Amuedo-Dorantes and Pozo, 2006a). The paper finds that the impact of remittances varies by gender and urban vs. rural areas. In urban areas, a 100-peso increase in international remittances is associated with a 15 percent decline in formal sector work by men, and with a 14 percent increase in informal sector work. According to the authors, one explanation for these outcomes is that with the
receipt of remittances men in migrant households prefer to leave the formal sector for the
greater flexibility of informal jobs. For females, the overall female labor supply tends to
decline with changes in remittance income, but only in rural areas. In rural areas a 100-
peso increase in international remittances is associated with a 4 percent decline in female
nonpaid employment, and a 7 percent decline in female informal sector work. The
authors suggest that females in rural Mexico are using remittances to get away from low-
paying types of employment in the informal sector.

An innovative study from the Philippines analyzes the effect of international
migration on the labor force participation of the non-migrant spouse (Cabegin, 2006).
The paper compares the migration effects when the non-migrant spouse is male versus
when that spouse is female. Results suggest that migration has important gender-
differentiated impacts on labor force participation. While women in migrant households
with a school-age child are 28 percent less likely than women in non-migrant households
to work full-time, men in migrant households with a school-age child are 18 percent more
likely than men in non-migrant households to work full-time. The paper also finds that
international remittances have a negative effect on labor participation for both sexes. An
increase in 10,000 pesos from remittance income reduces the likelihood of wives and
husbands in migrant households of holding a full-time job by 4 and 12 percent,
respectively.

While all of the preceding studies find that international migration and
remittances tend to reduce household labor supply and participation, one recent study
comes to very different conclusions. Using household survey data from Mexico, this
paper finds that “persistent” international remittances – that is, “regular” international
remittances -- have no significant effect on the labor force participation of non-migrants
(Edwards and Rodriguez-Oreggia, 2007). According to the authors, this finding is
consistent with the idea that migrant workers remit primarily to replace their lost income
contribution to the household due to emigration, and that this should therefore have no
impact on the labor participation of other household members. In only two sub-groups of
the population – urban women in low-migration areas and rural men in poor households – do the authors find any negative impact of remittances on labor force participation.

**REMITTANCES AND EXCHANGE RATE APPRECIATION**

Massive inward remittance flows can lead to a real exchange rate appreciation, known as the Dutch Disease effect. Despite the positive contribution of remittances to poverty and household welfare, most studies have found that remittances have a negative effect on exchange rate appreciation and export competitiveness.

Acosta *et al.* find that a rise in remittances leads to an increase in demand for non-tradable goods by increasing households’ incomes. Lopez *et al.* suggest that increased remittances lead to increased demand for both tradable and non-tradable goods, but non-tradable goods’ prices are determined in the domestic economy.\(^{51}\) As a result of the increased demand, relative prices of non-tradable goods rise. This, in turn, causes the real exchange rate to appreciate. As a consequence of higher prices, the non-tradable sector expands since producing non-tradable goods becomes more profitable. This expansion creates a reallocation of labor away from the tradable sector which, in turn, shrinks.\(^{52}\) The reduction of the tradable sector negatively impacts the international competitiveness of the remittance-receiving country. The loss of competitiveness further fosters the decline in production of other tradable goods. Bourdet and Falck come to the same conclusions when studying the case of Cape Verde.\(^{53}\) They note that the ratio of the remittance flows to the global economy will determine the magnitude of the Dutch Disease effect. The authors finally suggest that the Dutch Disease effect could be greatly reduced if remittances were invested rather than spent on consumption.

In theory, the actual effect that international remittances have on the real exchange rate depends on various factors. On the one hand, the pressure of remittances on the real exchange rate can increase if remittance-receiving households tend to substitute leisure for goods, that is, they use their remittances to consume more leisure and work less. Reduced labor supply by households implies rising wages, and rising


\(^{52}\) Acosta P. A., Larney E., Mandelman F., “Remittances and the Dutch Disease”, p. 22.

wages tend to intensify the effects of remittances on the real exchange rate. On the other hand, the pressure of remittances on the exchange rate tends to be reduced if: (a) there are productivity gains in the non-tradeable sector, that offset the effects of increased household demand for non-tradeable goods; and (b) governments implement policies that aim at stimulating labor demand by reducing labor costs.

In the Arab region, studies have tried to test these theoretical constructs against empirical reality analyzes the effects of government grants and international remittances on the real exchange rate (Saadi-Sadek and Petri, 2006). Results suggest that both government grants and international remittances lead to an appreciation in the real effective exchange rate. However, government grants lead to a much higher rate of appreciation in the real exchange rate than remittances: a 1 percent increase in government grants would lead to a 1 percent appreciation in the real effective exchange rate vs. an only 0.4 percent appreciation in the exchange rate for a similar increase in international remittances. According to the authors, international remittances lead to a lower rate of appreciation in the real exchange rate than government grants because remittances are spent more on tradable goods.

While all of the preceding studies find that international remittance lead to real exchange rate appreciation and a loss of competitiveness in tradable goods, one recent study (Rajan and Subramanian, 2005) finds that while foreign aid causes the real exchange rate to appreciate, international remittances have no such adverse effects for two main reasons. First, international remittances are more likely to be spent on unskilled labor (e.g., for building a new house), rather than hiring skilled doctors or managers and therefore may not increase the demand for scarce resources as much as economic theory suggests. Second, international migrants don’t remit if the exchange rate is overvalued. Thus, while international remittances may be like foreign aid in their tendency to cause exchange rate appreciation, remittances persist only in countries that avoid overvalued exchange rates.

**Remittances and Foreign Exchange Reserves**
Remittances are an important source of foreign exchange reserves for many developing countries and thus improve their balance of payments. They may help improve a country’s creditworthiness which in turn enhances its access to international capital markets. According to Ratha and Mohapatra, the ratio of debt to exports of goods and services would considerably rise if remittance flows were excluded from the denominator. For example, Lebanon’s debt to exports ratio is halved when remittances are included in the denominator. Likewise, as an important source of foreign exchange, and “given the persistent problems in the balance of trade in LDCs, the limited effect of foreign aid, and the difficulties of borrowing”, remittances can act as a substitute for these other sources of foreign exchange and thus have a positive impact on growth. In fact, the lack of foreign exchange in developing countries has been identified as a major constraint for development.

**Remittances and Multiplier Effects**

Remittances may generate multiplier effects -- especially in poor countries with high unemployment -- through expenditure linkages, if some of these funds are spent on domestically produced goods or services. While international remittances are primarily private transfers from a migrant working abroad to his/her household back home, the way in which these transfers are spent by the migrant household may have important second- and third-round effects on the broader economy. In many developing countries the lack of effective demand for goods and services imposes a serious constraint on economic growth. For this reason, remittance-inspired expenditures on such goods as housing may help stimulate the economy. For instance, remittance expenditures on housing can create new income and employment opportunities for skilled and unskilled low-income people working in construction. Such remittance-inspired expenditures may also open new business opportunities for merchants selling wood, concrete and other building supplies.

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Identifying the channels by which remittances exert multiplier growth effects on the rest of the economy thus represents an important topic in the literature.

One of the more ambitious studies in this area examines the direct and indirect effects of international remittances on production, imports and employment in Greece in 1971 (Glytsos, 1993). The paper finds that remittances generate a multiplier effect of 1.7 on total gross output, with the highest multiplier effects being in the apparel, machinery and construction industries. In other words, an international remittance of $1 million dollars would increase Greece’s gross output by $1.7 million dollars. According to the author, most of this expanded output would come from local inputs; that is, remittance-inspired growth would lead to only a slight rise in imported goods. Imports would make up only 22 percent of remittance-induced expanded output; on this basis, the author concludes that remittances leakages to imports would not have a major impact on the trade deficit.

In the Middle East a study using time series data from Egypt finds that the multiplier effects of international remittances are even higher (Kandil and Metwally, 1990). This paper finds that remittances generate a multiplier effect of 2.2 on gross national product (GNP); that is, an increase in international remittances of $1 million dollars would increase the Egyptian GNP by $2.2 million dollars. According to the authors, international remittances would have the highest multiplier effect on private consumption spending and the smallest effect on private investment spending.

A more recent study of the multiplier effects of remittances compares the growth impact of international remittances in two different regions of Greece: East Macedonia (with high migration and remittances) and Thessaly (with low migration and remittances). (Glytsos, 2005). Results suggest that international remittances changed the pattern of consumption and investment to a much greater extent in the high migration region as opposed to the low migration region. For example, remittances increased household expenditure on education and recreation by 54 percent in East Macedonia vs. 16 percent in Thessaly, and on durable consumer goods by 34 percent in East Macedonia vs. 10 percent in Thessaly. Over the same time period, average consumption on all items
increased by 20 percent in East Macedonia vs. 6 percent in Thessaly. On the basis of these figures, the author concludes that remittances more than doubled the average consumption of households in the high migration region, and shifted consumption in the high migration region more towards investment in human capital (education).

An earlier study of the multiplier effects of remittances focuses on measuring the direct and indirect effects of remittances in a single Mexican village (Taylor, 1995). This study finds that international remittances generate a multiplier effect of 1.6; that is, a remittance of $1 million dollars would raise the village’s value-added output by $1.6 million dollars. When disaggregated by income group, the author finds that most of the first- and second-round effects of international remittances would go to large- and small-landholding households. Since landless households are not well integrated into the village economy, they do not gain much from the growth effects of remittances.

A broader review of the multiplier effects of remittances follows up on these findings by emphasizing that the strength of these multiplier effects is influenced by the nature of the linkages between remittance-receiving areas and the larger national economy (Ghosh, 2006). When remittances are concentrated in limited areas and the market linkages are weak, the multiplier effects of international remittances are likely to be more circumscribed. However, in countries where remittances are relatively widespread, and remittance-receiving areas are well-integrated into outside markets, a good part of the benefits of remittances tends to be transmitted to other parts of the economy. In Egypt, for example, the widespread diffusion of international remittances in rural areas has sparked the growth of construction and ancillary industries in regional urban centers.

**REMITTANCES AND SAVINGS**

Inward remittances are believed to be a source for savings at the household level. Since remittances are primarily received by households, and they are so large in terms of household income, most studies find that these transfers help to increase household savings. In the North Africa region, one recent study finds that as household savings
from remittances increase, so does the likelihood of self-employment for return international migrants.

Since remittances have a positive impact on household savings, a handful of recent studies have examined the impact of these transfers on the development of the financial sector in remittance-receiving countries. Specifically, these studies have analyzed the impact of remittances on the level of deposits held by banks and the amount of credit extended by local banks. On the whole, these studies find that international remittances promote financial sector development in developing countries by leading to an increase in bank deposits and credit.

One of the broadest studies of international remittances and savings uses household data from Germany to examine differences in the savings rates between 3 groups of people: temporary international migrants, permanent international migrants and natives (Bauer and Sinning, 2005). Results show that temporary migrants save significantly more than permanent migrants and natives. The savings (and remittances) rate of temporary migrants is 0.9 percentage points more than permanent migrants and natives. Moreover, single parent temporary migrants save (and remit) significantly more than permanent migrants and natives. According to the authors, temporary international migrants, and single parent migrants, save more than natives because of differences in observable factors, such as age, education, permanent income and number of children.

An earlier study in Pakistan focuses on the relationship between international migration, savings and loans (Ilahi and Jafarey, 1999). The authors find that a negative association exists between loans, on the one hand, and migrant savings abroad, on the other hand. According to the authors, this finding suggests that an informal contract exists between the international migrant and his extended family. In this informal contract, the extended family finances the migrants’ trip abroad and the migrant repays his relatives through remittances earned from abroad. For this reason, international migrants with large outstanding loans at home have smaller savings abroad.

On a slightly different issue, a unique study using matched data on Nigerian migrants in the US and their origin families in Nigeria examines the motives underlying
the remittances and savings behavior of migrants (Osili, 2007). As might be expected, the author finds that remittances and savings are dominated by different motives. On the one hand, remittances are dominated by altruism, because the amount sent home is inversely related to family assets (landholdings). On the other hand, savings in the home country are dominated by investment motives, because savings are positively associated with family assets (landholdings). The author also finds that unskilled and less-educated international migrants have higher savings rates at home. According to the author, unskilled international migrants are more likely to save in their home country because they are more uncertain about their future income.

Finally, in the North Africa region, a recent study uses a survey of return migrants in Tunisia to examine how international remittances and savings affect the likelihood of self-employment on return home (Mesnard, 2004). The paper finds that the likelihood of self-employment on return increases significantly with savings from abroad. For each additional 1,000 Tunisian dinars in saving, the likelihood of being self-employed after return increases by 18 percent. However, education is also important: having no schooling positively affects the probability of being self-employed on return. In Tunisia uneducated return migrants are unable to find employment in either the public or private sector, and are thus relegated to employment in the informal sector.

**Remittances and Wages**

One of the often-neglected channels of international remittances is the impact of these transfers on wages and earnings in developing countries. The handful of studies that do exist on this issue suggest that migration and remittances increases wages and earnings for non-migrants in labor-sending countries. These results are perhaps strongest for workers with specific skills and higher levels of education, and weaker for workers in rural areas.

A recent study using population census data from Mexico and the United States examines the impact of international migration (Mexico-to-US) on wages in a labor-sending-country (Mexico) (Mishra, 2007). Results suggest that international migration has a positive and significant effect on wages. A 10 percent decrease in the number of
Mexican workers due to migration in a skill group (defined by schooling and experience) increases the average wage in that skill group in Mexico by 4 percent. However, the impact of migration on Mexican wages varies dramatically across schooling groups, with the greatest increase in wages being for high wage earners (those with 12-15 years of schooling). The author suggests that these migration-inspired higher wage increases for high wage earners may be one reason for the rising level of wage inequality in Mexico.

A more methodologically-oriented study finds similar results for the Philippines (Lanzona, 1998). In the Philippines more educated and experienced people have a higher propensity to pursue international migration. For this reason, the author of this study finds that it is important to correct for selection. Specifically, the author finds that wage returns to education and experience are between 18 and 44 percent lower in the standard OLS equations as compared to the sample selection-corrected procedures. These results suggest that international migrants in the Philippines are more productive than non-migrants. However, the author states that the exact reasons for the higher productivity of international migrants cannot be determined since the key variables – ability, motivation and wealth – underlying this higher productivity are all subsumed in the selectivity control term.

While the study in the Philippines finds that international migrants tend to be more productive than non-migrants, a similar study in Palestine comes to very different conclusions (Yashiv, 2003). This study of wages and international migration is unique, because it includes data on Palestinian workers who are both working at home (in Gaza and the West Bank) and working “abroad” (in Israel). It finds considerable self-selection among workers: Palestinians select where to work – at home or as international migrants – on the basis of very different return profiles for education and experience. More educated Palestinians tend to work at home, where the rates of return to education are positive and returns to experience are in the form of an inverted U-shaped curve. On the other hand, less-educated Palestinians tend to work “abroad” in Israel where the returns to education and experience are low and quite flat. These low-educated workers become international migrants because employers in Israel pay higher wages for low-skilled employment – in construction and agriculture -- than employers at home. According to
the authors, the key determinants of the migration process in Palestine are a substantial migration premium, which lures low-skilled migrants to work “abroad,” and very low returns to education and skill abroad, which keeps more skilled workers working at home.

In another study from the Middle East, a recent paper on Egypt examines how international migration affects the wages of return migrants (Wahba, 2007). The paper finds that international migrants enjoy a large wage premium upon their return to Egypt. On average, return migrants in Egypt earn about 38 percent more than non-migrants. The wage premium is even higher for uneducated returnees, who earn about 43 percent more than non-migrants. According to the author, both the length of time abroad and the type of overseas occupation contribute to the wage premium enjoyed by return migrants.

Perhaps the broadest study of international migration and wages comes from rural Mexico (Taylor and Dyer, 2006). This study uses a general equilibrium model to examine the effects of migration on wages and the broader rural economy. It finds that the direct effects of international migration are generally smaller than the indirect effects, and that the effects on rural wages are relatively modest. In the short-term, a 10 percent increase in returns from international migration leads to only a 5 percent increase in rural wages in Mexico, and much large marginal increases in investment in education (52 percent) and housing (24 percent). In the long-term, a similar 10 percent increase in the returns from international migration leads to only a slight, 1 percent increase in rural wages in Mexico, and similarly large marginal increases in investment in education (52 percent) and housing (15 percent).

c. Remittances and the Financial Sector

To evaluate the impact of remittances on growth, some research has looked at financial development as one of the explanatory variables impact on growth, since their impact on growth seems to vary depending upon the level of financial development of the country.
In a study assessing the impact of remittances on growth in selected countries in Central America, Mundaca (2005) estimated the impact of remittances on growth with different variables as proxies for financial development. When financial development was included as one of the explanatory variables, a 10 percent increase in remittances as a percentage of GDP increased GDP per capita by 3.49%. However, when financial development was not included, a 10 percent increase in remittances as a percentage of GDP increased GDP per capita by only 3.18%.58

In a similar study, Giuliano et al. (2006) found that remittances have a positive and significant impact on growth in countries where the financial sector is less developed. They hypothesize that remittances act as substitutes for financial sector variables and provide credit to the people who need it for investment purposes. However, they found a negative impact of remittances in financially developed economies. In financially developed economies, credit is easily available and people need not wait for remittances for investment purposes.

Finally, M. Ramirez and H. Sharma utilize recently developed panel unit root and panel cointegration tests to assess empirically the effects of remittance flows on the economic growth of 23 Latin American and Caribbean countries during the 1990-2005 period. The paper also assesses the role of the financial (banking) sector in determining the relative effectiveness of remittance flows to the region. Two models are estimated for the lower and upper income region. One of the estimations includes domestic credit provided by the banking sector to proxy for financial depth and an interaction term between remittances and the financial development variable.

The estimated models for upper income and lower income groups suggest that remittances have positive and significant impact on per capita GDP growth in selected Latin American & Caribbean countries. In the case of the lower income group, both domestic credit provided by the banking sector and remittances have a positive and significant effect on per capita GDP growth. In the upper income group, domestic credit provided by the banking sector has a negative impact on growth while remittances have a

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positive and significant impact on growth. Remittances and domestic credit provided by the banking sector act like substitutes, but remittances might be more efficient and hence have a positive effect.

4. REMITTANCES IMPACT ON GROWTH

Introduction:

There has been little systematic empirical study on the relationship between remittances and growth in MENA countries. The paper uses a sample of remittance-receiving countries in the Middle East and North Africa region, specifically the four North African countries: Algeria, Egypt, Morocco and Tunisia. This section attempts to shed some light on this relationship and also relates the interaction between remittances and financial development and its impact on growth. In general country’s capacity to use remittances and its effectiveness in doing so might be influenced by local financial sector conditions. Given the difficulty of borrowing in developing countries, the hypothesis that remittances can substitute for a lack of financial development and hence promote growth is explored in this section.

The relationship between remittances, financial development, and growth is a priori ambiguous. On one hand, well-functioning financial markets, by lowering costs of conducting transactions, may help direct remittances to projects that yield the highest returns and therefore enhance growth rates. On the other hand, remittances can compensate for a bad financial system: by loosening liquidity constraints, potential entrepreneurs could use remittances whenever the financial system does not help them start productive activities due to lack of collateral or because of high lending costs. Where credit markets are imperfect, individuals possessing little wealth must forgo potentially profitable investment opportunities. In this paper, we try to prove that where access to credit is limited, individuals might use remittances to release such credit constraints. This would be reflected in higher growth. A study by Ramirez and Sharma (year ??) suggested that remittances have a positive and significant effect on economic
growth in Latin America, and that the impact is more pronounced when financial development is included in the model.

Based on the literature that assesses the role played by the financial sector development on the remittance impact on growth, this section tries to answer three questions: what are the macroeconomic impacts of remittances on growth? Does financial development influence the growth effect of remittances? Or can remittances substitute for lack of financial development/credit constraints? The hypothesis behind the model is that remittances are used to ease credit constraints. Given the difficulties associated with borrowing and getting insurance in developing countries, particularly in rural areas, the main hypothesis is that voluminous migrant remittances can substitute for a lack of financial development. They are believed to be channeled towards productive investment, and hence promote economic growth. In other words are remittances and financial development complementarily/substitutability in promoting growth?

Data:

This section describes the data on remittances, financial development, and economic growth, as well as the control variables used in the growth regressions. The data are obtained from the World Bank’s World Development Indicators (WDI), and from various recent publications. The estimated model utilizes data from a sample of four developing countries with annual data for the period of 1980-2007 with 112 obs. The estimated model uses M2/GDP, Loan/GDP, Credit/GDP, Deposit/GDP variables as a measure of financial development. All those variables are related to the banking sector.\textsuperscript{59}

The set of control variables include the following: openness to international trade, defined as the ratio of the sum of exports plus imports of goods to GDP, gross fixed capital formation to GDP, money supply (M2) to GDP, credit provided by the banking sector, and total labor force.\textsuperscript{60} All control variables are specified in natural logs.

\textsuperscript{59} For the estimation purposes, Credit/GDP ratio was used a a proxy for financial development in these countries.

\textsuperscript{60} The ratio of (M2/GDP) equals currency plus demand and interest bearing liabilities of banks and nonfinancial intermediaries divided by GDP. It is considered the broadest measure of financial
Table 4.1 provides descriptive statistics of the variables of interest.

**Table 4.1. – Summary Statistics of Variables**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Median</th>
<th>Maximum</th>
<th>Minimum</th>
<th>Std. Dev.</th>
<th>Number of Observation</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP Growth</td>
<td>1.9</td>
<td>2.2</td>
<td>10.4</td>
<td>-8.1</td>
<td>3.3</td>
<td>108</td>
</tr>
<tr>
<td>Credit/GDP</td>
<td>73.1</td>
<td>71.7</td>
<td>120.0</td>
<td>-3.5</td>
<td>23.5</td>
<td>108</td>
</tr>
<tr>
<td>Fixed capital/GDP</td>
<td>24.8</td>
<td>24.4</td>
<td>34.5</td>
<td>16.3</td>
<td>4.3</td>
<td>108</td>
</tr>
<tr>
<td>Remittances/GDP</td>
<td>5.0</td>
<td>4.7</td>
<td>14.6</td>
<td>0.5</td>
<td>3.0</td>
<td>108</td>
</tr>
<tr>
<td>Openness/GDP</td>
<td>63.4</td>
<td>59.0</td>
<td>110.7</td>
<td>32.7</td>
<td>17.7</td>
<td>108</td>
</tr>
<tr>
<td>RemCredit</td>
<td>398.0</td>
<td>348.0</td>
<td>1480.8</td>
<td>-5.4</td>
<td>313.4</td>
<td>108</td>
</tr>
<tr>
<td>RemMoney</td>
<td>324.7</td>
<td>270.9</td>
<td>1132.6</td>
<td>36.6</td>
<td>256.8</td>
<td>108</td>
</tr>
<tr>
<td>M2/GDP</td>
<td>60.8</td>
<td>57.1</td>
<td>97.5</td>
<td>31.0</td>
<td>17.1</td>
<td>108</td>
</tr>
</tbody>
</table>

Table 4.2 shows bivariate correlations among the variables of interest. Growth is positively correlated with domestic credit to banking sector, remittances/GDP, openness/GDP, and the measures of financial development and is positive. Remittances are also positively correlated with openness/GDP, and other measures of financial development. (However causality in either direction cannot be concluded)

**Table 4.2. – Correlation matrix of variables**

intermediation and includes three types of financial institutions: the central bank, deposit money banks, and other financial institutions. The sum of demand, time, saving, and foreign currency deposits to GDP (Deposit/GDP). It measures the ability of banks to attract financial savings and provide a liquid store of value. Claims on the private sector divided by GDP (LOAN/GDP) measures the extent to which the private sector relies on banks to finance consumption, working capital, and investment. Finally, credit provided by the banking sector to GDP (CREDIT/GDP), which measures how much intermediation is performed by the banking system, including credit to the public and private sectors.
Empirical Analysis

Estimation Methodology

To test this hypothesis, the paper analyzes the impact of remittances on economic growth in two models, one without accounting for the financial sector variable and the second model where the interaction of remittances and financial development variables is taken into account. Standard financial market indicators were used in growth regressions as proxies for financial development.

The regression to be estimated is as following:

\[ \text{Growth}_i = \alpha_0 + \alpha_1 \text{Growth}_{i,t-1} + \alpha_2 \text{Remittances}_i + \alpha_3 \times X_i + m_i + n_i + u_{it} \]

Where \( \text{Growth}_i \) is the change in the real per capita GDP in constant dollar, \( X_i \) is the control variables, \( M_i \) is the time specific effect, \( n_i \) is the country specific fixed effects, \( u_{it} \) is the error term, where remittances refer to log of remittances over GDP. We are interested in testing whether the marginal impact of remittances on growth, \( \alpha_2 \) and thus \( \alpha_3 \) are statistically significant.

To explore the relationship between remittances, financial development and growth, the estimated model utilizes a panel (cross-country, time series) dataset consisting of four developing countries with annual data for 28 years. Two models are estimated. First the model is estimated without the interaction of financial development
variables. However in the second model, remittances are allowed to interact with one of the financial development variables. This makes it possible to determine the impact of remittances on growth through the financial development variables.

In the second regression, the role of remittances on growth through financial markets is examined. The hypothesis is whether the recipient country’s financial depth could influence the impact of remittances on growth. To this end, the remittance variable is allowed to interact with an indicator of financial depth and test for the significance of the interacted coefficient. A negative coefficient would indicate that remittances are more effective in countries with shallower financial systems; in other words, evidence of substitutability between remittances and financial instruments. On the other hand, a positive interaction would imply that the growth effects of remittances are enhanced in deeper financial systems, supporting complementarily of remittances and other financial flows.

The method used is Panel system Generalized Methods of Moments regressions (GMM) to control for endogeneity and serial correlation following Arellano and Bover (1995) taking into account time specific effects. Use of GMM estimator overcomes the problem of endogeneity of the columns of X as well as the correlation between the new error term and the lagged difference of the dependent variable. Taking advantage of the panel nature of the data, GMM estimators are based on differencing repressors to control for unobserved effects.

In all regressions, two lags of all endogenous variables are used as instruments for all strictly non exogenous variables, including the remittances and financial depth indicators. In addition, autocorrelation tests and the Hansen test of over identifying restrictions are performed to assess the validity of the instruments employed.

Table 4.3. – Estimated Results (Dependent variable is GDP per capita growth)

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The model shows that all coefficients are significant at 5 percent, except for the labor force in the second model that is significant at 10 percent. The results suggest that remittance flows have a positive and significant impact on economic growth in both models. However the impact of remittances on growth is more pronounced when the financial development variable is included, which is the case in the second model.

In terms of magnitude, one percentage point increase (decrease) in remittances as a percentage of GDP, ceteris paribus, increases (decreases) GDP growth by 0.05 (0.01) percentage points in the second (first) model. The coefficient sign of the interaction term (remittances *domestic credit) is negative implying that remittances can act as a substitute for the financial sector variable. By offering a response to the needs for credit and insurance that the market has failed to provide. In other words remittances have contributed to promote growth in countries with shallower financial systems. These models estimate the overall effect of remittances on growth in a panel system. It is important to note that the results for individual countries might be different.

### 5. Conclusions
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7. ANNEXES