

International Migration, Remittances and Household Poverty Status in Egypt

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1 Introduction

International migration has become a vital aspect of labor markets within the Middle East and North Africa (MENA) region. In Egypt, according to recent estimates, more than 4 percent of the Egyptian population is currently living abroad. Also, Egypt has been ranked among the top ten countries receiving remittances worldwide. Recently, remittances flow amounted to over 9 billion US dollars, which constitutes more than 8 percent of Egypt's GDP.

This has motivated many researchers to investigate the trends of Egyptian international migration and the main characteristics of overseas migrants. Nevertheless, the impact of migration and remittances on household and individual wellbeing has been insufficiently investigated in Egypt. The main objective of this paper is to contribute to filling this gap in the empirical literature. The paper depends on data from two rich nationwide labor force sample surveys: the 1998 Egypt Labor market Survey (ELMS 98) and the 2006 Egypt Labor Market Panel Survey (ELMPS 06). In addition to investigating the recent patterns of migration and remittances from the ELMPS 06 data and comparing the characteristics of the migrants to their non-migrants counterparts, this paper primarily focuses on assessing the impact of migration and remittances on the poverty status of the Egyptian households.

The remainder of the paper is organized into seven sections. Section 2 gives a brief background on the trends of migration and remittances worldwide and the MENA region. It also discusses the historical development of migration and remittances flow in Egypt. Section 3 reviews the existing literature on the impact of migration and remittances on the households' socioeconomic outcomes and development. Section 4 discusses some methodological concerns regarding migration estimates in Egypt. Additionally, this section highlights the empirical challenges faced when measuring the impact of migration. Section 5 describes the data used in this paper. Section 6 presents descriptive results on migration and remittances. Estimation results are discussed in Section 7. Conclusions and policy considerations are provided in Section 8.

2 Background

2.1 Worldwide and Regional Migration

The United Nations Population Division estimated total migrants worldwide to be around 175 million in 2000 and almost 192 million in 2005. This is equivalent to almost 3 percent of the world population. In the MENA region, there were about 14 million living abroad in 2005, which represented about 5 percent of the region population. Countries in the MENA regions are very diversified with regards to their migration patterns. Gulf States are the main labor import economies in the region. They receive migrants not only from the region but also from other parts of the world (e.g. from India, Pakistan and the Philippines). The Maghreb countries (e.g. Morocco, Tunisia and Algeria) mainly exports labor to Europe. The migrants from the Maghreb countries are often unskilled labor searching for job opportunities that allow them to settle permanently in Europe. In contrast, migrants from Egypt, Yemen and Mashreq countries (e.g. Lebanon, Syria and Jordan) are often of high skill and are seeking job opportunities mainly in the Gulf countries for a temporary period. Though, this latter group is considered the main labor-exporting economies to other Arab countries, they also export workers to Western countries (such as the United States, countries in Europe and Australia). Moreover, Jordan and Lebanon not only exports workers to other Arab countries but they also import workers (Sasin 2008; World Bank 2007).

International migrants often remit money back home making remittance flows an important implication of migration. International remittances sent home by migrant workers have had an immense effect on developing countries worldwide. With almost 200 million people currently living outside their countries of birth, worldwide remittances are estimated to have exceeded \$318 billion in 2007, of which about \$240 billion went to developing countries (Ozden & Schiff, 2007). Migrants from the MENA region alone transferred about \$28 billion back home.¹

2.2 Migration in Egypt: Historical Developments

¹ These remittances figures are likely to be significantly underestimated, since many migrants still choose to transfer money using informal channels.

Egyptian international migration trends have always been directly affected by the labor market conditions and prevailing political and economic situation not only in Egypt but also in the receiving countries. Egyptians interest in migration started in mid 1950s as a result of the political, demographic and economic pressure. However, the real expansion in the incidence of migration occurred after the 1973 war. During the period 1970-1976, according to the Central Agency for Public Mobilization and Statistics (CAPMAS) estimates, the number of international migrants had increased from 70,000 to 1.4 million.² This takeoff in the migration level was due to several internal and external factors. There was a huge demand of manpower in the Gulf countries due to the oil boom and the resulting ambitious development programs. At the same time, on the internal front, Egypt was experiencing high population growth and high unemployment rates which increased the incentives of new graduates to migrate. This was accompanied by the introduction of several legislations by the Egyptian government that promoted migration and eased its procedures (Zohry 2003).³

However, in the 1980s, international migration started to slow down. In the early 1980s, the Iran-Iraq war caused oil revenues to decrease and forced many Egyptian migrants to return home. Towards the end of the 1980s, additional factors contributed to this flow of return migrants. Those factors include the continuous drop in oil prices and the introduction of new policies towards hiring national labor instead of foreign labor. The final push was caused by the Iraq-Kuwait war in 1990. At that time, almost all Egyptian migrants in Iraq and Kuwait returned to Egypt. This slowdown in international migration substantially impacted the Egyptian domestic economy by raising unemployment rates and ceasing a large portion of remittances (Fergany 2001; Zohry 2003).

After the second Gulf war, the migration rate witnessed an upward trend. Based on the ILO-International Labor Migration Data Base (ILM), the number of Egyptian migrants increased from about 1.9 in 1992 million to 2.9 million in 1997, which is around the figures observed before the war. Nevertheless, once again, by the beginning of 1998, the migration rate witnessed a downturn trend that was partly triggered by the collapse of the East Asian financial markets in

² The 1976 figure is based on that year Census.

³ See Zohry (2003) for a detailed review of the legislations issued during this period.

1997 which caused a slowdown in the whole world economy. During this period, according to the ILM figures, the total number of Egyptian migrants abroad decreased from 2.8 million in 1998 to 2.7 million in 2000 (Nassar 2005).

Recently, there has been a reversal in this downturn trend of Egyptian migrants. In 2006, there were approximately 4 million Egyptians living abroad, which represents about 4 percent of the total population of Egypt. Thus, according to the CAPMAS figures, there has been an almost 79 percent increase in the number of Egyptians living abroad in 2006 compared to the 1996 Census figures of 2.2 million (see CAPMAS 2008).⁴

2.3 Remittances Trends

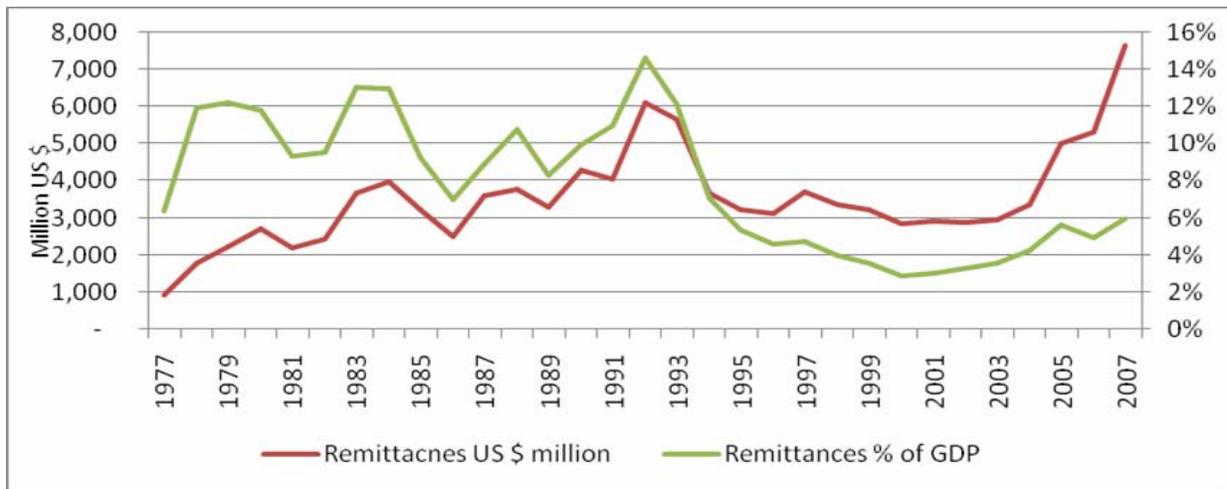
Remittances flows have been considered one of the major sources of foreign currency in Egypt. According to the World Bank (2008), Egypt has been ranked among the top ten countries receiving remittances worldwide. Figure 1 presents the trend of remittance flows during the period 1977- 2006. Remittances experienced an increasing trend since mid 1970s to mid 1980s. As discussed above, this was mainly due to the increase of oil prices in 1974 and 1979 that was accompanied by an increasing demand for Egyptian workers to oil-producing countries in the region. In early 1980s, remittances amounted to over 2 billion US dollars, which was equivalent to Egypt's combined revenue from cotton exports, Suez Canal, transit fees and tourism (Nassar 2005). By the end of 1984, remittances amounted to almost 4 billion US dollars. However, by mid 1980s remittances was negatively affected by the adverse effects of the first Gulf war. As shown in Figure 1, remittances declined from 4 billion US dollars in 1984 to less than 3.3 billion US dollars in 1989.

In 1992/93, after the second Gulf war, remittances to Egypt peaked to over 6.1 billion US dollars which constituted more than 14 percent of the Gross Domestic Product (GDP). Following this peak, remittances passed through another phase of decline that lasted for almost a decade. This second phase of decline is attributed to the fall of oil prices followed by the 1997 collapse of the

⁴ As will be discussed below, different sources often provide quite distinct migration figures. According to the 1996 Census the number of migrants abroad was about 2.18 million, while the ILM provides an estimate of 2.715 million for the same year.

East Asian Financial Markets. Remittance flow declined back to less than 3 billion US dollars during the period 2000-2003. Nevertheless, in 2004 remittance flow started taking off once again. It amounted to almost 7.7 billion US dollars, constituting about 6 percent of Egypt GDP, in 2007. Currently remittances are estimated to be over 9 billion US dollars (Nassar 2005; World Bank 2008).

Figure 2 Remittances trends in Egypt (Nominal and as percent of GDP)



Sources: The Remittance data is based on World Bank staff estimates using the International Monetary Fund's Balance of Payments Statistics Yearbook 2008. While the GDP data is based on the World Bank World Development Indicators (WDI) database.

3 Literature Review

The potential country-level poverty-reduction impact of migration and remittances has been widely discussed in the developing world, but until now empirical evidence on the effect of migration and remittances on the individual- and household- level has been scarce, especially in Egypt.

On the macro-level, there has been a lack of evidence supporting the widely held notion that countries which have the highest poverty rates produce the greatest number of migrants. Adams and Page (2003) assert that, in the MENA region, there exists an inverted U-shaped curve between the level of a country's per capita income and international migration. Developing

countries, which have either high or low per capita GDP, produce the least amount of international migrants. Instead it is middle-income developing countries which produce the highest level of international migrants.

On the remittances front, remittances effects on a country's growth, investment and employment levels remain ambiguous. However, there is no doubt that remittances flow contributes to the country's macroeconomic stability; for instance, through compensating trade deficits, providing foreign exchange and improving national savings (Sasin, 2008; World Bank, 2006). Adams and Page (2003, 2005) find that, in the MENA region countries, on average a 10-percentage point increase in the share of remittances in GDP reduces the poverty headcount by 5.7 percent and the severity of poverty by 2 percent. Moreover, the total amount of money remitted generally exceeds the amount of development aid reaching the region. The authors suggest that this is evident that international remittances have a primary macro-economic role within the MENA region, by comprising major foreign exchange inflows.

On the household-level, there has also been a debate in the literature regarding the effect of migration and remittances on the household poverty status. Early studies, from 1970s to early 1990s, have often reached largely pessimistic views regarding those effects. This group of research emphasized the cycle of household dependency caused by remittances flows and how remittances lead to a disruption of traditional household economics without providing a sustainable source of income. The additional household income from remittances was believed to be mainly spent on consumption or non-productive investments (Sasin 2008). Also, many studies highlighted that remittance-income leads to substituting work with leisure or to raising reservation wage of non-migrants; thus, causing a reduction in labor force participation. Hence, overall there has been a belief that only short-term gains might be realized from migration and remittances flow (see Collayer 2004; Ballard 2001; Funkhauser 1992; Killingsworth 1983).

Later on, with the exponential growth of the volumes of remittances worldwide, more recent studies started to highlight the evidence supporting the positive impact of migration and remittances on living standards and human capital (see Gunter and van der Hoeven 2004, Rapport and Docquier 2006; Worldbank 2008). Acosta et al. (2007) argue that remittance-

income has considerable and affirmative effects on welfare, through its ability to increase investments in human and physical capital. Additionally, remittances have the effect of encouraging entrepreneurs to overtake greater risks and advance their growth tactics. Hence, in the long term, remittances can help a country reach its capital accumulating potential. In the Caribbean Basin, the countries along the Gulf of Mexico including Latin America and the northern coast of South America, Itzigsohn (1995) finds that remittances are often used as a source of subsistence in deteriorating labor market conditions and have had a substantial impact on household poverty reduction. According to Edwards and Ureta (2001), in El Salvador, remittances primarily assist households by providing surplus income and making consumption easier. Thus, households are able to save more, and accumulate both liquid and non-liquid assets. Remittances also assist in providing collateral for loans and liquidity, should a crisis occur. Remittances provide better access to education, health services and improved nutrition. The authors conclude that remittances provide an overall greater potential for increasing productivity. Woodruff and Zenteno (2001) highlight that approximately 20 percent of capital invested in urban Mexican micro enterprises comes from remittances from the United States.

In Egypt, although numerous studies have investigated the characteristics of current and return migrants (see Zohry and Harrel-Bond, 2003; Wahba, 2007; Nassar, 2005), only a few empirically investigate the effects of migration and remittances on household and individual wellbeing. This is mainly due to data restrictions. Moreover, in this limited literature, the debate about migration and remittances effects has also followed the above negative-positive dynamics. In the past it has been believed that remittances are generally spent on personal consumption items, and are rarely used for investment or entrepreneurship, however closer evaluation of spending patterns among poorer remittance-receiving families in rural Egypt have indicated that received money was not “squandered on newly desired consumer goods” (Adams, 1991a: 720). In fact, according to Adams (1991b), migrants are more likely to invest their money than non-migrant. These results are based on a survey of 1,000 households conducted by the author in 1986/87 in three villages in Minya Governorate. The data shows that remittances account for 14.7 percent of the total household income. Including remittances as part of the household income leads to a 9.8 percent decrease in the number of households living in poverty. Eurostat (2000) finds that although 74 percent of households receiving remittances use the money on daily household

expenses, 7.3 percent use this money to renovate, build or buy a home and 3.9 percent use remittances for the education of a family member. Wahba (2004) and McCormick and Wahba (2001) find that overseas migration facilitates the accumulation of both financial capital and new skills, which increase the likelihood of migrants, relative to non-migrants, to engage in entrepreneurship upon returning home. Additionally, a study focusing on Egypt, Morocco and Turkey finds that remittances have several effects on recipients' behavior. Remittances recipients tend to lower their labor force participation and savings and limit their job search efforts, but at the same time they tend to invest in riskier investment projects (Van Dalen et al. 2005).

4 Methodological Concerns

4.1 Measuring Migration

There has always been a lack of agreement on the annual stock of Egyptian migrants. Different sources often provide quite distinct estimates for the same period. For instance, according to the World Bank there were about 2.4 million Egyptian migrants in 2005⁵, while the ILO figure is around 2.7 million for the same year. Furthermore, estimates provided by Egyptian formal entities vary among themselves and are often much larger than the figures of the international organizations. For instance, in 2006, CAPMAS estimates the number of Egyptian abroad (based on the 2006 Census) to be about 3.9 million, while the Ministry of Foreign Affairs provides an estimate of 4.7 million for the same year.

Migration figures basically vary depending on the definition of migration applied and the methodology used to estimate the migration stock. The definition could vary depending on whether it accounts for both temporary and permanent migrants, whether it includes second generation migrants and whether it accounts for informal/undocumented migration. At the same time, different estimation techniques could also provide quite distinct figures of migration stock. The Egyptian Ministry of Manpower and Migration estimates are often based on annual numbers

⁵ Based on estimates provided by the Development Prospects Group of the World Bank. For more information, see www.worldbank.org/prospects.

of labor licenses issued per year by the Ministry of Foreign Affairs. On the other hand, international sources generally estimate migration using data on foreign born population from the national censuses of the receiving countries. Moreover, to predict migration level for a missing year, some sources use interpolation or extrapolation when information on migration stock is available for at least two points in time, while others derive migration estimates based on informal guesses of the growth rates of migration from a reference year.

Similarly, there is no consensus on the true amount of international remittance flows to Egypt. Local and international sources are only able to report the officially recorded remittances; however, the true size of remittances, including unrecorded flows through formal and informal channels, is often believed to be larger.

4.2 Self-selection and Endogeneity of Migration and Remittances

Several methodological concerns arise when empirically measuring the impact of migration or remittances on household outcomes; such as the household living standard or poverty status. First, a key empirical problem is self-selection, which is due to the fact that the pool of either migrants or remittances recipient households is not a random sample. As pointed out by Hoddinott (1994), migrants' families systematically differ from that of the non-migrants in several observable (e.g. age, education, marital status) and unobservable preferences and characteristics (e.g. income shocks, ability, talent, risk aversion). For instance, if family migration can be viewed as a particular type of investment, selection problem would arise when migrant families have more entrepreneurial spirit, less risk aversion or when they have different time preferences in the way they evaluate current costs and future benefits. If this is the case, migrant families might also be the families investing more, and thus more able to exit from poverty or to develop risk management strategies to avoid falling into poverty. Hence, for an accurate econometric estimation, one needs to correct for this self-selection into migration and remitting. The standard solution in this context is to use panel data to control for time-invariant unobserved heterogeneity among households. In cross sectional study, one often recurs to two-

stage Heckman-selectivity correction techniques introduced by Heckman (1979) or to matching techniques (such as propensity score matching defined by Rosenbaum and Rubin (1983)).⁶

Second, endogeneity problem may occur due to three factors: simultaneity or reverse causality bias, measurement errors, and omitted variable bias. These factors challenge the consistency of the model by rendering the migration and remittances variables correlated with unobserved determinants of household poverty status. Reverse causality is a big challenge when investigating the effect of migration on poverty status, since household decisions (such as migration, remittances, consumption, labor supply) are often made simultaneously. For instance, people falling into poverty can change systematically their migration behavior, thus causing a statistically significant correlation to be observed between poverty status and migration, but which should not be interpreted as a causal impact of migration on poverty.

If an explanatory variable is measured with error, its coefficient will be biased downwards. The higher the proportion of the variability due to measurement errors the greater would be the bias. As mentioned above, both migration and remittances are often not free from measurements errors when estimated from household survey data. For example, the presence of migrant from outside the household, who contributes to household wealth through remittances or through information but is not listed among household members, can bias the migration coefficient downwards. Measurement error in remittance amounts are often more frequent because they are highly vulnerable to recall bias. On the other hand, omitted variables may arise when a migrant is self-selected into migration on the basis of unobservable factors. For example, a sudden economic distress could stimulate migration and at the same time increase poverty; hence, a positive correlation between migration and poverty may be mistakenly inferred in such occasions (Acosta 2006; Sasin, 2008).

In addition to exploring the time dimension of the data, when a household panel survey is available, instrumental variables (IV) technique is another often used remedy for both the endogeneity and selection bias problems. However, IV requires a set of instrumental variables

⁶ See Ham, Li and Reagan (2004) for an application of propensity score matching to investigate the effect of migration on wage growth.

that are correlated with migration and remittances decisions but uncorrelated with household living standards, which are often scarce. In the literature historical migration rates have been occasionally used to instrument for migration and remittances receipts. It has often been argued that longer lags between the year of the historical migration levels and the year of the household survey are more preferable. Those long lags help to ensure that the instrument is capturing historical characteristics that influence migration behavior and not current economic conditions. Sasin (2008) uses the share of return migrants in the population at the province-level from the 1994 census as instruments, when modeling the effect of household receiving remittances on poverty status in 2001. Acosta (2006) controls for potential endogeneity of receiving remittances using migration networks at both the village level (measured by percent of households with current international migrants in the village) and household migration history (measured by number of international migrants in the household who returned two or more years ago). Hanson and Woodruff (2003) allows for household-level variation by using the interaction between historical state migration pattern in Mexico and household structure (such as age, education) as instruments for whether a household has external migrants. Lopez-Cordova (2005) use historical migration rates in addition to the distance to the US border to instrument for remittances recipient. Alternatively, Amuedo-Dorantes and Pozo (2006) instrument for receiving remittances using the number of Western union offices per capita in the previous year interacted with the household education structure (share of household members with secondary education and with the share of household members with post secondary education). Yang (2008) instruments remittances using exchange rate shocks experienced by overseas Filipinos in dozens of countries which had experienced sudden, heterogeneous changes in exchange rates during the 1997 Asian financial crisis.

5 Data

The analysis of this paper mainly relies on data from the Egypt Labor Market Panel survey of 2006 (ELMPS 06), which is one of the first true nationwide longitudinal surveys to be carried out in Egypt. It attempted to track households and individuals first interviewed in 1998 as part of the Egypt Labor Market Survey of 1998 (ELMS 98) and re-interview them in 2006. Both the ELMPS 06 and ELMS 98 were conducted by the Economic Research Forum (ERF) in

cooperation with CAPMAS. The ELMS 98 was carried out on a nationally-representative sample of 4,816 households. The ELMPS 06 tracks the labor Market and demographic characteristics of the households and individuals interviewed in 1998, and any new households that might have formed as a result of splits from the original households. The ELMPS 06 sample consists of a total of 8,349 households distributed as follows: (i) 3,684 households from the original ELMS 98 survey, (ii) 2,167 new households that emerged from these households as a result of splits, and (iii) a refresher sample of 2,498 households. Of the 23,997 individuals interviewed in 1998, 17,357 (72 %) were successfully re-interviewed in 2006, forming a panel that can be used for longitudinal analysis. The 2006 sample contains an additional 19,743 “new” individuals. Of these 2,663 individuals joined the original 1998 households, 4,880 joined the split households, and 12,200 were part of the refresher sample of households.⁷

Our analysis of the attrition process that occurred in the panel tracked from 1998 to 2006 revealed that there are two distinct attrition processes at play. The first is if the entire household could not be located in 2006 and the second is when an individual who split from one of the households that were successfully tracked could not be found. The rate of the first type of attrition was about 23.6 percent (1,138 households) at the household level. More than 54 percent (615 households) of this first stage attrition cases resulted from the loss of identifying records of the households between 1998 and 2006, but, luckily, the process by which they were lost was almost entirely random (see Barsoum, 2008). The remaining attrition cases were due to the total relocation of the household, the death of all household members, or, in a few cases, to refusal to participate in the survey. On the other hand, the second attrition process results from the inability to locate individuals who split from their original households, conditional on finding the original households in the first stage. The rate of this second type of attrition was about 15.4 percent. Of the 18,856 members of the 1998 households found in 2006, 14,661 were still in their original households, 790 had died, 220 had left the country, and 3,185 had split off to form separate households within Egypt. Of those splits, we successfully located 2,694 individuals, implying that the remaining 491 of the splits could not be located.

⁷ The data description and attrition analysis presented here is based on Assaad (2007) and Assaad & Roushdy (2008).

An examination of the household and individual correlates in 1998 of those two attrition processes revealed that some household characteristics in 1998 were in fact systematically associated with the first type of attrition, but no individual characteristics in 1998 were associated with the second type of attrition (see Assaad and Roushdy (2008) for a detailed comparison of individuals/households who left versus those who stayed in the sample). We expect that very few cases of those missing households were due to migration of the whole household members, since migration in Egypt is often of a short term nature by a single member in the household. However, on the other hand, we expect that migrant households would tend to be richer, since the whole family can afford leaving together. Hence, not correcting for this household-level attrition, when using the panel data, might lead to a downward biased estimate of the effect of migration on poverty. Accordingly, weights based on the probability of non-response were constructed to adjust the cross-sectional and panel samples from the ELMPS 06 for these attrition processes. Only the variables that were found to impact the probability of the first type of attrition in a significant way were used to predict the weights that correct for attrition. Those weights are applied whenever panel data is used in the analysis of this paper.

The ELMPS 06 and ELMS 98 provide detailed information on household housing conditions, ownership of durables, access to basic services and the neighborhood infrastructure. It also contains a great deal of information on the household members' education, employment status, time allocation, job mobility, earnings, migration and household enterprises. With regard to migration questions, each round of the Egypt Labor Market Surveys (ELMSs) contains information on internal and international migration history (e.g., place of birth, year leaving place of birth, and the place and date of the previous two moves if different from the current place of residence). ELMS 98 includes only one (yes/no) question on whether the household receives remittances from relative(s) living abroad. However, in ELMPS 06, a new module on current migrants and remittances was added and it includes questions on whether the household receives remittances from household members living abroad, the amount and type of these remittances, and which household member receives remittances. ELMPS 06 also includes information on the place and reason of migration for individuals who were in the household in 1998 but were not found in 2006 because they migrated between the 1998 and 2006.

Before going to the analysis, we need to highlight that although the two ELMSs are considered very rich sources of information on labor market dynamics and individual and household characteristics, the ELMSs samples were not designed to measure migration. Accordingly, the number of migrants appearing in each of the ELMSs is considerably small. The ELMPS 06 sample contains about 603 return migrants (who migrated and returned before the 2006 survey interview) and 396 current migrants (who were still living abroad during the 2006 interview). While in the ELMS 98 there are only about 471 return migrants and no information is collected for current migrants. Hence, we do not expect to obtain accurate trends of migration and remittances flow from the ELMSs data that would coincide with official estimated figures. However, to the best of our knowledge, the ELMPS 06 is the only recent national household survey that collects information on incidents of international migration and remittances.

In this paper we mainly focus on the ELMPS 06 sample in the cross-sectional analysis, since it provides richer information, relative to the ELMS 98, on international migration and remittances. In few occasions we exploit the panel dimension of the data to investigate the impact of migration and remittances on household poverty.

6 Migration and Remittances from the ELMPS

In the following sub-sections we investigate the recent patterns of migration and remittances based on the ELMPS 06 data and compare the characteristics of the migrants to their non-migrants counterparts. We also investigate the interlinkage between the household poverty status and the likelihood of migration. From this point forward, a *migrant* will be defined as an individual who migrated in the last five years whether he/she had returned or not. Also, a household will be referred to as a *migrant household* if at least one of its members had migrated in the five years preceding the 2006 interview regardless of whether this member had returned or not. Under these definitions, the total number of migrants appearing in the ELMPS 06 sample is about 488 individuals from about 437 households.

Additionally, in this paper we measure household poverty status using a household wealth index; since the ELMSs questionnaires do not include a household consumption and income module,

and thus cannot provide direct measures of household income poverty. Following Filmer and Pritchett (2001), a proxy for household wealth has been constructed, for each of the ELMS 98 and the ELPMS 06 household samples, using factor analysis based on household asset ownership and housing characteristics information.⁸ Asset scores were constructed separately for urban and rural areas, since the relationship between household assets and household wealth may significantly differ across the urban and rural areas. The wealth status of the household is determined by a series of dummy variables that indicate whether the household is in the bottom, next to bottom or top three quintiles of wealth distribution.

We depend on the national poverty levels of Egypt to define *poor* versus *non-poor* households. In Egypt, in 2005, poverty level is estimated to be around 20 percent, based on the official per capita region-specific poverty lines estimated by El-Laithy (2006) using data from the 2004/2005 Household Income and Expenditure Consumption Survey (HIECS 04). Those poverty lines account for the regional differences in relative food and non-food prices, expenditure patterns, and activity levels.⁹ Accordingly, following the national poverty levels, in this paper we choose to define households in the bottom quintile of the wealth distribution as poor in the ELMPS 06. Additionally, for the sake of comparability, the same 20th percentile threshold is used to identify the poor in 1998. Finally, we need to note here that the asset index, as a proxy for household wealth, is considered a long-term measure of the economic status of the household rather than its current poverty or consumption status. Hence, we expect this long-term measure of household poverty to be less affected by current incidents of migration, in comparison to the short-term consumption measures. Nevertheless, migration affects this long term measure of poverty through allowing the household to accumulate durables over the long-run.

6.1 Profile of Migration

This section discusses the recent trends of Egyptian international migration observed in the ELMPS 06 sample. It also presents the characteristics of return and current overseas

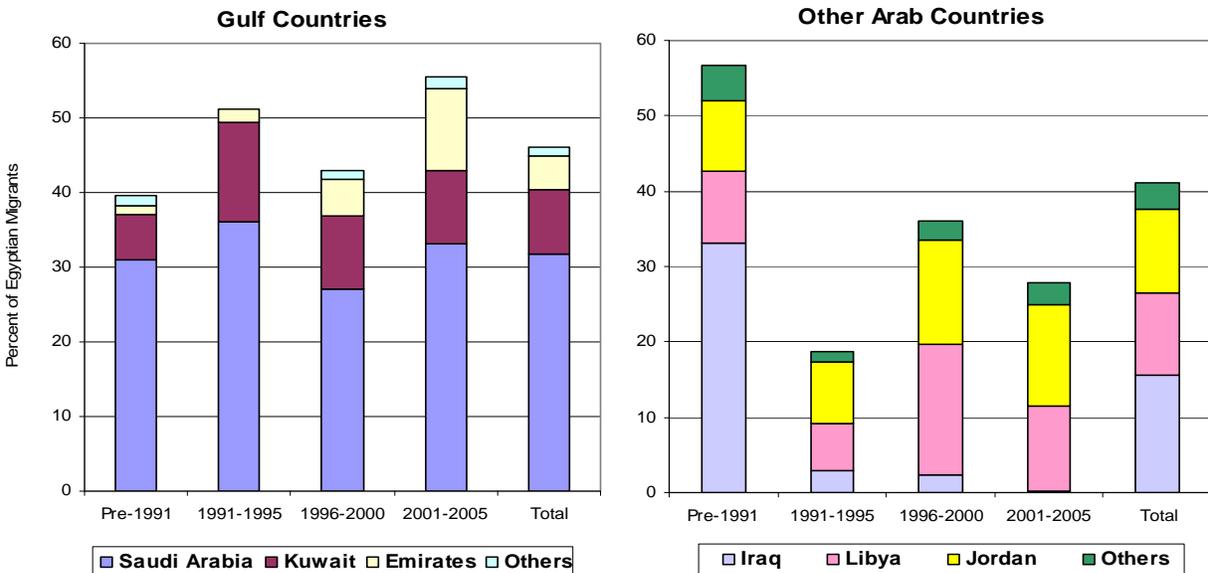
⁸ The variables used to construct the asset score include a number of housing quality variables such as the number of rooms, the materials of the roof, walls, and floors, connections to piped water, telephone, electrical and sewerage systems, and ownership of 23 durable consumer goods. See Filmer and Pritchett (2001) for the methodology used to construct the asset scores.

⁹ See El-Laithy and Lokshin (2002), for a detailed description of the poverty lines estimation methodology.

migrants and investigates whether any of these characteristics has evolved over time.

Figure 2 shows the percent distribution of total migrants by year of departure and country of destination. A more detailed distribution is presented in Table 1.

Figure 2 Distribution of Migrants by Year of Departure and Country of Destination



The figure shows that the ELMPS 06 data confirms with the historical pattern of Egyptian migration discussed above. The Gulf region has always been the main destination of Egyptian migrants, followed by other Arab countries. Overall, up to the year 2006, 46 percent of Egyptian migrants have been to the Gulf Countries, 41 percent to other Arab countries and only 3 percent has been to the rest of the world. Prior to the second Gulf war, Iraq was the main destination of Egyptian migrants followed by Saudi Arabia. However, as mentioned above, the war caused Egyptian migrants to return from Iraq. According to the ELMPS 06 sample, by 2006, there was only about 0.7 percent of Egyptian migrants in Iraq. In contrast, Kuwait experienced a huge increase in its share of Egyptian migrants directly after its war with Iraq, but was followed by a steady decline. Recent trends show that, in 2006, more than 10 percent of total Egyptians migrants were living in Kuwait (Table 1). Saudi Arabia continued to be the main destination of both current and return migrants since the 1990s, although it experienced a decline in its share during the mid 1990s which could be due to the reduction of oil prices. The United Arab

Emirates started from a very small share of Egyptian migrants, but has been significantly increasing over the years (from around 1 percent before the 1990s to more than 8 percent in 2006). The share of the other Gulf countries has always been very small (less than 1 percent) through the years. Among the Arab non-Gulf countries, after the Iraq war, Jordan and Libya continued to be the two main destinations of migrants. Both countries have been experiencing a small but steady increase in their share of Egyptian migrants.

Table 2 and 3 present some background characteristics of current and return migrants by year of departure. Table 2 shows that, overall, most current and return migrants have either vocational (31 percent) or university and above (23 percent) education; yet, a significant percentage of migrants have no education (19 percent). Table 2 shows that the demand of Egyptian labor abroad has been moving towards those with intermediate degrees. There has been a sizable increase in the share of migrants with vocational high school degrees over the years, accompanied by a slight decline in the share of migrants with university and above education. This might be in part due to the changes that occurred to the education composition in Egypt, in the last two decades. As reported in Assaad (2007), over the period 1988-2006, there has been a dramatic growth in the proportion of vocational high school graduates in the working age population, mostly at the expense of the proportion of illiterates and literates without any diploma (see Figure A1 in the appendix). The table also shows that craft and trade related jobs have been the most common occupation of both current and return migrants (32 percent) while abroad, followed by professionals (12 percent) and service related jobs (12 percent). Despite that the share of Egyptian migrants working in agriculture is quite small; it has been significantly increasing through the years (from 3 percent prior to 1991 to 16 percent during the period 2000-2006).

Table 3 shows that migrants have been increasingly from the rural parts of Egypt. Also, it is clear from the table that there has been a considerable change in the regional distribution of migrants through the years. The percent of migrants from Greater Cairo and Rural Lower Egypt has considerably declined (from 21 percent before 1991 to 8 percent during the period 2000-2005), while the share of migrants from Rural Upper Egypt has substantially increased (from about 15 percent to 38 percent). Given that geographic mobility within Egypt has been quite

limited over the last two decades (Table A1)¹⁰, this significant shift in the regional share of migrants might be due to considerable developments occurring to the migration networks of people living in the poorer parts of the country where fewer employment opportunities are available.

6.2 Who Migrates: Characteristics of Migrants and Non-Migrants

This section focuses on investigating the topology of migrants compared to their non-migrants counterparts. It also explores whether the poor migrate and whether they go to different destinations than that of the better-off. Since most of the migrants in the ELMPS 06 sample are males in the working age population (15-64)¹¹, in the following we compare migrants to the non-migrants working males in the same age group.

Table 4 shows that the average length of stay of the migrants group, until the year 2006, has been around 6 years.¹² In comparison to non-migrants working males, migrants tend to be more educated. More than 61 percent of the migrants (compared to 53 percent among the non-migrants) have secondary or higher education. Also, even though the percent of migrants with university and above education has been declining over the years (Table 2), their share is still higher among the migrants (of the last five years) compared to their non-migrants counterparts. Hence, this suggests that there might exist a sort of selectivity into migration by education. As expected, individuals working in the public sector are less likely to migrate. Less than 8 percent of the migrants used to work in the public sector before leaving Egypt, compared to more than 27 percent of the non-migrants group.

Moreover, Table 4 highlights that migrants are more likely to belong to households falling on the highest level of the wealth distribution. Almost 46 percent of the migrants (versus 36 percent for non-migrants) belong to households in the top two quintiles of the wealth distribution, while only

¹⁰ For a detailed analysis of geographic mobility in Egypt, see Assaad and Arntz (2005).

¹¹ We do not have information on the gender and age of current migrants in the ELMPS 06. However, the data shows that about 80 percent of the return migrants are males and almost 71 percent of them are males in the age group (15-64).

¹² It is also worth mentioning here that we do not have a way to distinguish between temporary versus permanent migrant in the ELMSs data. However, since permanent migrants generally tend to migrate with their entire family, we expect that households of permanent migrants are very unlikely to appear in our household surveys sample.

12 percent (versus more than 20 percent for non-migrants) belong to households in the lowest quintiles. To further investigate the interlinkage between household poverty, incidence of migration and migrants characteristics, in Table 5 we additionally classify the migrants and non-migrants by their household current poverty status. As one would expect, regardless of the migration status, members of the non-poor households are more educated, more likely to work in the public sector, and more likely to belong to the professional and technical occupation groups. In contrast, members of the poor households are more likely to work in the agriculture and craft and related trade jobs. However, even after controlling for household wealth, the share of university and above education is still higher among migrants. The table also shows that the non-poor mainly migrate to the Gulf countries (67 percent), whilst the poor migrates to other Arab countries (74 percent). Hence, one can deduce that the Gulf countries seem to be more selective about the quality of their migrants. Nonetheless, this might particularly be a consequence of the different environmental nature, which in turn affects the distribution of economic activities, in those two sets of countries. The broad agricultural nature of the non-Gulf countries (such as Libya and Jordan), relative to the Gulf countries, increases their demand of agriculture workers who tend to be poor and uneducated.

Although the poverty effects deduced from Table 4 and 5 fit expectations, one should be careful when interpreting such results, since as discussed in Section 3 this type of analysis mixes causes and consequences of migration. The panel nature of the ELMPS could be of great help in this regard. If we focus only on household members who migrated after the 1998 interview, we could be able to control for changes that might have occurred to the household living standard as a consequence of migration. Although this would leave us with even a smaller sample of migrants, it would be interesting to investigate whether the poverty results observed above still hold when controlling for the effects of migration. Around 120 migrants of the ELMPS 06 migrants sample fit this selection criterion (i.e. were living in Egypt during the ELMS 98 survey, but appeared as migrants in the ELMPS 06 interview).

Table 6 demonstrates that, controlling for changes that might occur to household living standard as a consequence of migration, there was no statistically significant difference between the likelihood of poor and non-poor households in generating a migrant member after 1998. On the

other hand, Table 7 demonstrates the changes in household wealth quintiles, between 1998 and 2006, after the migration of a household member. For comparison, in Table 8, we also demonstrate the changes that occurred in household wealth quintiles, between 1998 and 2006, for households with no migrant member after 1998. One should caution here that measurement errors, which should not necessarily be correlated across the two surveys interviews, could significantly bias the result specifically at the boundaries of the wealth distribution. Nevertheless, if we focus only on the three middle wealth quintiles, we will find that—although the results are rather mixed in both tables—the percent of the households which experienced deteriorations in their wealth are considerably fewer than those that advanced for households with a migrant after 1998 (Table 7) relative to their counterparts (Table 8). Hence, this panel analysis suggests that although there is no evidence that the household poverty status—before migration—significantly affects the likelihood of migration, migration is more likely to enhance the household wealth.

6.3 Remittances Patterns

As mentioned above, an important consequence of international migration in Egypt is its association with remittances flows, which are often considered a vital source of income for households with members working abroad. In the ELMPS 06 sample, about 3.5 percent of the households had received international transfers during the 12 months preceding the 2006 interview.¹³ Table 9 compares the characteristics of the remittances recipient and non-recipient households. As expected, since the above analysis shows that most migrants are from rural areas and belong to currently richer households (Table 3 and 4), the table shows that households located in rural areas and households currently falling in the top two quintiles of the wealth distribution are more likely to receive remittances. More than 61 percent of the households receiving remittances (compared to less than 42 percent of the non-recipient households) belong

¹³ This percent constitutes about 66 percent of the households that have at least one current member living abroad. Specifically, in the ELMPS 06 sample there exist about 37 households (which are about 12 percent of households receiving remittances) that received international remittances in 2006 from non-household members. Also, in our sample four of the households, which reported receiving remittances, did not report the amount of remittances received. Those four households are removed from the set of households receiving remittances in the regression analysis of the next section.

to the top two quintiles of the wealth distribution.¹⁴ However, there is no clear pattern of discrepancy between remittances recipient and non-recipient households in terms of their household size, housing conditions and large assets holding. Remittances recipient households are more likely to have computer and satellite dish but are less likely to have a car, be connected to public sanitary network or to get public/private waste disposal collection. As expected, since most migrants are males, female headed households are more likely to receive remittances. The heads of households receiving remittances are on average four years younger than the non-recipient heads. Overall, there is no substantial discrepancy between the education composition of household heads of remittances recipient versus non-recipient households. More than 37 percent of the heads of the households receiving remittances are illiterate (compared to about 34 percent in the non-recipient households); yet about 45 percent of the heads in the recipient households have secondary or higher education (compared to around 41 percent in the non-recipient households). The heads of households receiving remittances are less likely to be wage workers and more likely to be inactive or unpaid family workers. These results are expected, since Egyptian migrants are often married males from rural areas who tend to work abroad in order to send support to their dependents left behind in Egypt.

To sum up, the results discussed in this section provide evidence that migrant and non-migrant households (remittances recipient and non-recipient households, respectively) differ in terms of a number of demographic and socio-economic characteristics. Hence, households might not be randomly selected into being migrant households or remittances recipient households. This is further investigated in the next section.

7 Econometric Analysis

7.1 Determinants of Migration and Remittances

¹⁴ Once again one should be careful when interpreting these results, since similar to migration, one cannot distinguish between causes and consequences of receiving remittances. As mentioned above, the correlation between remittances and measures of household living standard should be taken with caution, since the latter is very likely to be affected by remittances flows (Acosta 2006). However, we choose to use the assets index in this paper, rather than using per capita consumption, since current household consumption is obviously determined by current remittances flows while assets accumulation is generally a long term process.

Before investigating the effect of migration and remittances on household poverty status, we are interested in exploring the household characteristics that might motivate the decision to migrate and remit. In this section, a probit specification is used to model the likelihood of migration (receiving remittances) at the household level. The dependent variable takes the value 1 if the household, h , is a migrant household (remittances recipient household) and zero otherwise. The explanatory variables consist of a set of the household and household head characteristics. It is worth mentioning here that we need to restrict the analysis to variables which are less likely to be caused by the migration decision *per se*. For instance, one should try to avoid variables such as: the number of children in the household below age 5, household wealth, residence and current household head characteristics. Such variables are arguably endogenous to migration decision. The number of newly born/young children is obviously affected by the spouse absence from the household. Household wealth and residence often change after migration. Also, the household head and his/her characteristics change if the original head is the migrant member. In the regression analysis of this section we try to avoid such variables. Instead of using current household head's characteristics in the regression analysis, we introduce a *migration-neutral* head as a substitute. If the current head is a male, we use the household head's spouse characteristics—regardless of whether the household has a migrant or not. If the head is not married we use the characteristics of the oldest female (above age 15) living in the household. Only when the head is a male living alone, we use his own characteristics. We are aware that, the characteristics of the *migration-neutral* head would have less explanatory power in comparison to that of the current household head, since under this definition the substitute head might have a marginal role in household decisions.¹⁵ However, contrary to the current household head, we believe that the characteristics of this *migration-neutral* head are arguably exogenous to migration decision, since our sample shows that women generally do not migrate alone. Also, in Egypt, generally there exists a correlation between the characteristics of the household members; and hence we expect the characteristics of the *migration-neutral* head to be similar to that of the current household head.

¹⁵ A better alternative for the *migration-neutral* head is to use the characteristics of the household head before migration. Unfortunately, this information is not available in the data.

In the regression analysis, the household composition is captured by five variables: number of children age 6-15¹⁶, number of unmarried males age 16-30, number of unmarried females age 16-30, number of elderly aged 64+, average years of schooling of males above age 18, and average years of schooling of females above age 18 in the household. The substitute head's characteristics include: age, marital status and education. The substitute head education is measured by the three dummies variables (illiterate or no degree is the omitted category): primary or preparatory degree, secondary degree, and above secondary degree. Marital status is captured by the two dummies (not married is the omitted category): married, and divorced or widowed.

Moreover, since migration is a chain phenomenon, it is often expected that households belonging to traditionally migrant sender communities are more likely to have better social networks abroad which can potentially help in the migration process of other household members. Accordingly, in this analysis we include the following two variables to proxy for migration networks: the percent of households with at least one current migrant in the village/shiakha of the household and its interaction with the average years of schooling of adult members of the household. The percent of households with at least one current migrant in the village/shiakha of the household is obtained from the 2006 Census.¹⁷ As discussed in Section 3, such proxies have been frequently suggested in the literature. We believe that, in Egypt, these variables are good proxies of the size of the household's migration network abroad. We also expect that the adult members of the households, specifically those who are more educated, would make better use of the information available through their networks.

7.1.1 Results

Table 10 shows the regression results of the migration and remittances decisions. In this paper we report marginal effects as well as Huber-White adjusted standard errors to account for

¹⁶ As discussed in the previous section, migration in Egypt is often of a short term nature; hence, the number of children above age 6 (relative to the number of children less than age 5) are less likely to be affected by the spouse absence from the household.

¹⁷ As has been suggested in the literature (Section 4.2), it would have been better to use the lagged/historical migration levels instead of the same year of the household survey, but, unfortunately, migration information was not collected in censuses prior to that conducted in 2006.

heteroskedasticity in all tables.¹⁸ In both tables, column 1 and 3 control for the household composition and the substitute head's characteristics, while column 2 and 4 investigate the effect of the network variables.¹⁹

The table shows that, in both specifications, households with larger numbers of males and females (age 15-29) are more likely to have a migrant member and receive remittances. Also, in all models, adult males' average years of schooling decreases the likelihood of migration and receiving remittances, while the females' average years of schooling only increases the likelihood of receiving remittances. These results should be taken with caution, since these might be the results of migration *per se*. As mentioned earlier, if migration selects on education and gender, adult males with higher education levels would be the ones who are more likely to migrate—which in turn would lead to poorer endowment of human capital among males who stay in the household. Incidents of migration and remittances are less common among households with widowed or divorced substitute heads. The household substitute head education is only significant in the migration regression. A household whose substitute head has above secondary education, relative to illiterate heads, has a higher likelihood of having a migrant member by about 4 percentage points in specification 1 and by about 3 percentage points in specification 2.

Controlling for the network variables improves the fit of the migration and remittances models. In both models, the migration network variables increase the likelihood of being a migrant and a remittances recipient household. Belonging to a village/shiakha that is traditionally migrant-sending increases the likelihood of migration and receiving remittances. More specifically, an percent increase in the fraction of migrants in the village/shiakha increases the probability of migration by 58 percentage points (column 2) and the probability of receiving remittances by 24 percentage points (column 4). While, the interaction term of the percent of migrants and average years of schooling further increase the likelihood of migration by 7.6 percent and the likelihood of receiving remittances by 4 percent. This fits with our expectation that the more educated

¹⁸ Marginal effects are based on marginal change for continuous variables and change from 0 to 1 for dummy variables. Coefficients are available upon request.

¹⁹ Unfortunately, the ELMPS data does not provide the remittances senders characteristics or the type of relationship of the sender to his/her home family. Thus, it is important to note here that in the absence of such variables, it is difficult to interpret these results as different motives for sending remittances (see Acosta 2006 for a discussion).

members of the household are those who are more likely to make use of the migration information available through their network.

It is not surprising that the results of the regressions explaining the likelihood of receiving remittances are remarkably similar to those of the regressions explaining the likelihood of being a migrant household, since both dependent variables are highly correlated ($R^2 = 0.686$). In fact, as mentioned above, 66 percent of the households with at least one current migrant member receive remittances; although the data does not show whether remittances are actually received from those migrant family members. On the other hand, 86 percent of households receiving remittances have at least one current member abroad.

7.2 Impact of migration and remittances on household poverty

This section investigates the effect of migration and receiving remittances on household poverty status. The variable used to investigate the effect of remittances in the regression analysis is whether the household receives transfers from abroad, instead of the amount of remittances in order to avoid possibilities of recall bias.²⁰

The outcome variable of interest in this analysis is whether the household is poor or not. The following probit regression is estimated to explain the poverty status of the household:

$$\Pr(Poor_h = 1 | X'_h, I_h) = \Phi(X'_h\beta + I_h\gamma + e_h)$$

The outcome is a binary variable which takes the value 1 if the household h belongs to the lowest quintile of the wealth distribution and zero otherwise. X_h is a vector of the household and the household head characteristics. The set of household and household head characteristics included in this poverty equation consists of: the household region of residence, number of children age 0-5, number of children age 6-15, number of unmarried male age 16-30, number of unmarried females age 16-30, number of elderly age 64+, average years of schooling of males age 18+,

²⁰ Since international transfers are generally considered another source of income, they traditionally tend to be underreported in household surveys in comparison to macroeconomics balance of payment figures. For a detailed discussion of this issue, see Freund and Spatafora (2005) and Acosta et al. (2006).

average years of schooling of females age 18+ in the household, and the substitute head age, age square, marital status, and education. Four interaction terms are also included: the interaction of migration (remittances) with a rural dummy of the household residence, and with the household head education dummies. Those interaction terms would allow us to investigate whether poverty alleviation impact of migration and remittances are higher for migrants from urban household versus those from rural households and whether this impact differs depending on the education status of the household. I_h is an indicator of whether the household has a migrant member (receive remittances, respectively) and e_h is the error term.

As discussed in Section 3, migration and remittances may be endogenous to household poverty. Also households may not be randomly selected into being migrant households or remittances recipient households. The literature has often depended on instrumental variables (IV) techniques to overcome such endogeneity and selection bias problems. However, since both poverty and migration (receiving remittances, respectively) are binary variables, the model estimation strategy is not a trivial choice. Newey (1987) argues that using a two-stage least square (2SLS) in case of a binary dependent outcome and a binary endogenous variable might lead to inconsistent estimates, and instead suggests the use of Amemiya's generalized least square (GLS) estimator (provided under the IVprobit command in STATA packages) in such occasions. Nevertheless, later on, Angrist (1991) provided certain conditions under which a two-stage linear model (2SLS) can perform well with binary endogenous variables models (Acosta, 2006).

In this analysis, as a robustness check, we estimate a simple one equation probit, a 2SLS and a GLS models. We also estimate a bivariate probit (two equation probit) model using the biprobit command in STATA but implement it as an IV estimation. This specification allows us to account for the binary nature of poverty and migration and, at the same time, deal with self-selection and endogeneity of migration (remittances) by allowing the error terms in both the poverty and migration (remittances) equations to be correlated.

In the first-stage of each of the two-equation model estimations, we estimate the full model specification of the migration (remittances) equation presented in column 2 (4) of Table 10.²¹ We use the two migration social network variables discussed above (the percent of households with at least one current migrant in the village/shiakha of the household and its interaction with the average years of schooling of adult members of the household) to instrument for migration and remittances. We believe that these instruments are good proxies of the local migration network, since households belonging to traditionally migrant sender communities are more likely to have better social networks abroad, which can potentially help in the migration process of other members. However, it is not easy to defend that the number of migrants at the community level impacts household living standard only through affecting migration; since, for instance, among the most important determinants of migration are labor market opportunities which affect both migration and poverty. One possible improvement, to reduce the effect of this potential problem, is to include others controls at the household community-level in the poverty equation. Accordingly, we include the following five variables to control for labor market structure at the cluster-level: the percent of unemployed adult males age 18-64, percent of males age 18-64 working in agriculture, percent of males age 18-64 working in the public sector, percent of males age 18-64 working in private wage work, and the percent of males age 18-64 with secondary or higher education.

Moreover, for each specification of the bivariate and the ivprobit (corrected) models, we test the exogeneity of migration (remittances) to household poverty. The null hypothesis here is that the correlation between the error terms of the poverty and migration (remittances) equations, ρ , is zero. If we cannot reject this null hypothesis, then we cannot reject that migration is exogenous to household poverty (i.e., migration (remittances) is uncorrelated to the error term of the poverty equation). In such case, the results of the single equation probit model would be more efficient than those of the bivariate probit model. On the other hand, if the error terms are strongly correlated (i.e., we cannot reject that the unobservables that affect the poverty status also influence the decision to migrate), we expect the size of coefficient of the migration

²¹ We also investigated other specifications and found that similar results are obtained for the poverty equation, when using any of those specifications.

(remittances) variable to be substantially larger in the corrected models than in the uncorrected single equation model.

Additionally, the 2SLS estimation allows us to perform both an over-identification test and a weak instruments test. The Sargen's test for over-identification of the instrumental variables tests the null hypothesis that both instruments are valid; i.e. could be excluded from the poverty equation. A statistically significant Sargen's test statistic indicates that the instruments may not be valid. On the other hand, to test for the weakness of instruments a test based on the Cragg Donald minimum eigenvalue statistic created by Cragg and Donald (1993) can be used. The value of this statistic is compared to critical values provided by Stock and Yogo (2005). It provides measures of goodness of fit of the first-stage equation (migration and remittances). It also uses an F-statistic to test the null hypothesis that the coefficients on the instruments are equal zero in the first-stage equation. The F-statistic is often compared, in the literature, to the threshold of 10 which is suggested by Staiger and Stock (1997). An F-statistics below the threshold of 10 suggests the existence of a weak-instrument problem.

7.2.1 Results

Table 11 and 12 present the regression results of the effect of migration and receiving remittances on household poverty. Once again both tables report the marginal effects and the Huber-White standard errors. Column 2, 4, and 6 add the rural and education interaction terms to investigate whether those interactions have additional significant effects on household poverty. Column 1 and 2 present the uncorrected single equation probit results, column 3 and 4 present the biprobit results, while column 5 and 6 present the 2SLS results. The GLS estimates are not reported in the tables as they yield similar results to that of the biprobit model. At the bottom of the tables, the goodness of fit measures, the p-value of Sargen's test for over-identification of the instruments and the statistics of the weak instrument test are reported.

The first stage results of the migration (remittances) equation closely resemble the results presented in column 2 (4) of Table 10. Both instrumental variables are individually strongly significant (at 1% level of significant). Also, based on all the 2SLS models specifications of

both the migration and remittances effects on poverty, Sargen's test for over-identification of the instruments does not reject the null hypothesis that both instruments are valid (p-values are substantially higher than the 10% level). Additionally, the weak identification test provides an F-statistic that is substantially higher than the threshold rule of thumb of 10. All the R^2 statistics of the first-stage regression are also relatively high, so they do not imply a weak-instrument problem. Hence, we can reject the null hypothesis that our two instruments are weak.

On the other hand, for each of the biprobit specifications in Table 11 and 12, the value of the correlation between the error terms of the poverty and migration (remittances) equations, ρ , and its significance level are reported. In the remittances and migration analysis, both the biprobit and ivprobit (GLS) model specifications lead to a p-value larger than 0.1 for the Wald-test of significance of ρ (except for the biprobit specifications in the migration table the p-value is 0.07).²² Hence, we cannot reject the null-hypotheses that $\rho=0$ at 5% significance level. In other words, we cannot reject that the error term of the migration (remittances) equation is uncorrelated to the error term of the poverty equation. Accordingly, in this case we expect the coefficient results of both the corrected and uncorrected models to be considerably close.

As shown in Table 11, the coefficient of interest, the effects of migration on household poverty in both the corrected and uncorrected probit models are very close. Migration significantly decreases the likelihood of household poverty by about 8 percentage points in the uncorrected models (column 1 and 2) and by 9 percent points in the corrected models (column 3 and 4). Similarly, both the corrected and uncorrected models specification (Table 12) show that receiving remittances has the same effect on reducing poverty (around 8 percentage points) as that of migration. Hence, this analysis suggests that, in Egypt, migration and receiving remittances have fairly moderate effects on household poverty. It is worth mentioning here that similar results have been highlighted in a recent study within the MENA region. In Morocco, Sasin (2008) finds that migration (as proxied by remittances receipt) decreases the likelihood of poverty by about 7 percentage points.

²² The results of the ivprobit (GLS) estimation lead to p-values over 0.8 in all models.

The effects of the community-level variables and the household and household substitute head characteristics on poverty are very similar in all models of Table 11 and 12. In all model specifications, the household neighborhood labor market structure has an interesting impact on the household own poverty status. Households residing in neighborhoods with high percentage of agriculture and private wage work are more likely to be poor than their counterparts. However, the neighborhood unemployment level of adult males has a negative impact on household poverty status. This might be due to the relatively higher reservation wage of adult males living in rich households/neighborhoods, since they can afford to stay unemployed longer than their poor counterparts. On the household own characteristics front, the number of females age 15-29 and the average years of schooling of both males and females above age 18 significantly but weakly (by less than 2 percent points) decrease the likelihood of falling in poverty. Also, as expected, poverty is significantly higher among households residing in Lower and Upper Egypt in comparison to Greater Cairo. Poverty declines with the household substitute head age. Also, poverty is substantially lower among households with heads who are married and has secondary or above education.

The rural interaction terms do not show any additional significant effect in all the probit and biprobit estimations of Table 11 and 12. In other words, there is no evidence that the impact of migration or remittances on poverty alleviation differs based on the household rural or urban residence. Also, the interaction between the household substitute head and migration (remittances) has some significant effects only in the biprobit full specification model. Column 4 in Table 11 (Table 12), shows that, being a migrant (remittances recipient) household with an above secondary education substitute head decreases the likelihood of falling in poverty by 8.5 (8.4) percentage point.

In contrast, the rural and the education interactions are strongly significant in the 2SLS specifications. However, in table 11, the migration indicator and rural interaction term have opposite signs in each of the 2SLS specifications. In model 5, the migration coefficient is negative while the rural interaction term has an adverse effect on migration. Hence, this model shows that being a migrant household in a rural area decreases the likelihood of poverty by $1.849 - 2.071 = 0.222$ percent. On the other hand, including the interaction term of the household

head education in the model (column 6) causes the migration and the rural interaction coefficients to switch signs. Nevertheless, column 6 shows that being a migrant household in a rural area with a substitute household head with some primary education decreases poverty by at least 1.4 percent (2.318-1.9560-1.7570), by 1.1 percent if the head has a secondary education, and by 1.8 percent if the household head has above secondary education. Similar results are observed in Table 12 for remittances effects.

To sum up, there is weak evidence (based on only the 2SLS estimation) that the impact of migration and remittances is urban/rural specific. However, there is stronger evidence that poverty alleviation impact of migration and remittances increases with the household education status.

In an additional set of regressions (not presented here), we were also interested in investigating the effect of the migrant's own characteristics (specifically, education status, country and occupation) on the poverty alleviation potential of remittances. We performed the same analysis presented in Table 11 and 12, but we had to limit the sample to those households with at least one current migrant member. This left us with only 362 households of which only 47 households were poor and 238 households were receiving remittances. The results did not show any additional significant effects of the migrant own characteristics. We suspect that this might be mainly due to the small sample size of current migrants.

As mentioned above, beside instrumental variables estimation techniques, another often used remedy to correct for both the potential endogeneity and the selection bias problem of migration and remitting is to use panel data to control for time-invariant unobserved heterogeneity among households. In the following we exploit the panel nature of the ELMPS to further investigate the effect of migration and remittances on poverty. In Table 13, we estimate a one equation random effect probit model of the poverty status of the household (using the xtprobit command in STATA) where the main explanatory variable is whether the household had at least one return migrant (column 1) in the last five years. The reason for only focusing on return migrants is that the 1998 round contains no information on current migrants (see Section 5). For robustness checking, we also estimate both a linear fixed effects (fe) model and a linear random effects

model (re) (using the xtreg command in STATA). In this linear specification, we use the value of the wealth index instead of the dummy variable of whether the household is poor (column 2 and 3). The same analysis is conducted in columns 4-6 to investigate the effect of remittances on household poverty and wealth. The table shows that, once again, in all model specifications (except for the migration fixed effect specification) migration and remittances significantly decrease the likelihood of falling in poverty.

8. Conclusions and Policy Considerations

International migration has always been an important feature of the Egyptian economy. Based on recent estimates, more than 4 percent of the total population of Egypt are currently living abroad and sending over 9 billion US dollars of remittances back home. In this paper, we investigate the recent patterns of migration and remittances from the ELMPS 06 data and compare the characteristics of the migrants to their non-migrants counterparts. We also investigate the interlinkage between the household poverty status and the likelihood of migration and receiving remittances.

The analysis shows that the ELMPS 06 data conforms to the observed historical patterns of Egyptian migration. International migration trends have always been affected by the international labor market conditions and the prevailing political and economic situation in Egypt and in the migrants-receiving countries. The data also shows that more than 61 percent of the migrants within the last five years had secondary or higher education. Craft and trade related jobs have been the most common occupation of current and return migrants followed by professionals and service related jobs. Also, migrants are more likely to be from the rural parts of Egypt.

Moreover, the analysis of this paper highlights that migration and remittances are more likely to enhance household wealth. Nevertheless, the regression results show that the impact of migration and remittances on poverty is moderate in the case of Egypt. The analysis suggests that having a migrant member in the household or receiving remittances decreases the likelihood of household poverty by about 8 percentage points. These are non-negligible effects, but their

magnitudes emphasize the fact that migration is not a panacea for poverty reduction in Egypt. Nevertheless, we expect that migration does play an important role in providing a wider set of opportunities for young Egyptian men to accumulate some savings prior to marriage and to gain some skills that could be useful when returning to Egypt. These benefits provide additional welfare effects that might not be captured by the short-term impact of migration on household poverty status. The investigation of those additional effects is left for future work whenever appropriate data is available.

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Table 1. Return and current migrants by country of destination and year of departure

Destination	Year of departure														
	Pre-1991			1991-1995			1996-2000			2001-2005			Total		
	Returned	Current	All	Returned	Current	All	Returned	Current	All	Returned	Current	All	Returned	Current	All
Gulf Countries	38.4	53.3	39.5	56.6	40.6	51.1	42.1	43.6	42.9	49.1	56.4	55.5	42.4	51.8	46.1
Saudi Arabia	29.3	50.7	30.9	37.9	32.7	36.1	32.4	22.6	27.0	34.2	32.9	33.1	31.5	32.2	31.8
Kuwait	6.4	2.6	6.1	17.6	5.2	13.4	5.3	13.5	9.8	2.6	10.9	9.8	7.7	10.3	8.7
Emirates	1.3	0.0	1.2	1.0	2.7	1.6	3.1	6.6	5.0	9.8	11.2	11.0	2.0	8.3	4.5
Qatar	1.0	0.0	0.9	0.0	0.0	0.0	0.0	0.9	0.5	2.6	1.4	1.5	0.8	1.0	0.9
Oman	0.5	0.0	0.4	0.0	0.0	0.0	1.3	0.0	0.6	0.0	0.0	0.0	0.5	0.0	0.3
Other Arab Countries	58.7	32.9	56.7	17.8	20.5	18.7	46.3	27.5	36.0	48.2	24.7	27.8	51.2	25.8	41.2
Iraq	35.4	5.7	33.1	3.2	2.2	2.9	5.2	0.0	2.4	1.0	0.0	0.1	25.2	0.7	15.5
Libya	9.3	11.8	9.5	8.8	1.4	6.3	25.0	11.2	17.4	24.4	9.3	11.4	12.2	9.2	11.0
Jordan	9.1	12.3	9.3	4.8	14.9	8.3	14.1	13.6	13.8	16.2	13.0	13.4	9.7	13.4	11.1
Lebanon	0.4	0.0	0.4	0.0	2.0	0.7	2.0	2.7	2.4	5.1	0.0	0.7	0.8	0.9	0.8
Yemen	2.4	0.0	2.2	1.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.0	1.1
Syria	0.6	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.2
Algeria	0.3	3.1	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.2
Sudan	1.3	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0	1.4	2.4	2.2	1.0	1.4	1.1
Rest of the world	0.7	3.2	0.9	2.6	1.9	2.3	4.9	1.7	3.2	2.7	7.7	7.0	1.7	5.3	3.1
DK ¹	2.2	10.7	2.8	23.1	37.0	27.8	6.7	27.3	17.9	0.0	11.2	9.7	4.7	17.0	9.6
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
<i>Number of Migrants</i>	<i>416</i>	<i>22</i>	<i>438</i>	<i>87</i>	<i>41</i>	<i>128</i>	<i>70</i>	<i>92</i>	<i>162</i>	<i>30</i>	<i>233</i>	<i>263</i>	<i>603</i>	<i>396</i>	<i>999</i>

¹ Missing information

Table 2. Background characteristics of returned and current migrants by year of departure

Background Characteristics	Year of departure														
	Pre-1991			1991-1995			1996-2000			2001-2005			Total		
	Returned	Current	All	Returned	Current	All	Returned	Current	All	Returned	Current	All	Returned	Current	All
<u>Education</u>															
Illiterate	15.8	30.3	16.7	8.1	33.8	16.9	21.5	25.9	24.0	17.9	19.5	19.3	15.6	23.4	18.7
literate with no diploma	7.8	0.0	7.4	7.2	0.0	4.7	0.9	0.0	0.4	0.0	0.0	0.0	6.4	0.0	3.9
elementary school	7.2	14.7	7.7	3.0	8.9	5.0	5.9	4.0	4.8	9.4	7.1	7.4	6.6	7.1	6.8
middle school	3.6	0.0	3.4	8.7	4.2	7.2	6.5	9.9	8.4	5.3	5.8	5.8	4.8	6.2	5.4
General high school	5.8	0.0	5.4	12.6	5.0	10.0	7.9	0.0	3.5	1.2	2.7	2.5	6.8	2.1	4.9
Vocational high school	27.7	17.1	27.1	30.6	21.9	27.6	38.0	25.4	31.0	43.3	40.1	40.5	30.3	32.9	31.3
post-secondary institute	6.0	17.4	6.7	6.5	6.7	6.6	2.5	7.8	5.4	1.6	2.5	2.4	5.4	5.3	5.4
University & above	26.0	20.6	25.6	23.2	19.6	22.0	16.8	22.3	19.8	21.2	21.8	21.7	24.1	21.6	23.1
DK ¹	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.7	2.6	0.0	0.6	0.5	0.0	1.5	0.6
<u>Occupation²</u>															
Leg.,Senior offic.&man.	2.2	0.0	2.1	3.6	2.7	3.2	0.9	2.7	1.9	1.0	0.4	0.5	2.1	1.2	1.8
professionals	10.3	19.1	10.8	7.7	9.0	8.2	8.3	17.5	13.3	15.5	15.6	15.6	10.1	15.5	12.2
Technic.& assoc.,prof	5.5	14.9	6.1	5.7	14.7	9.3	2.7	0.0	1.2	0.0	1.4	1.2	4.8	3.6	4.4
Clerks	2.8	0.0	2.6	1.4	2.6	1.9	2.0	0.0	0.9	4.5	2.5	2.8	2.6	1.8	2.3
Serv.& shop/market sa	11.5	21.1	12.1	6.5	6.7	6.6	7.8	15.4	11.9	0.0	14.7	12.6	9.8	14.4	11.6
Skill. agr. & fish. w	3.3	4.6	3.4	9.8	0.0	5.9	21.6	6.5	13.4	6.4	17.0	15.5	6.6	11.6	8.5
Craft & related trad.	25.3	34.4	25.8	26.2	55.6	38.1	20.0	47.3	34.8	32.6	40.8	39.6	25.2	43.6	32.4
Plant & machine opera	5.1	0.0	4.8	2.8	8.8	5.2	2.5	7.7	5.3	2.3	4.7	4.3	4.4	5.6	4.8
Elementary occupation	1.7	6.0	1.9	0.0	0.0	0.0	4.9	3.0	3.9	0.0	2.9	2.5	1.8	2.8	2.2
DK ²	32.2	0.0	0.0	36.3	0.0	21.6	29.2	0.0	13.3	37.7	0.0	5.4	32.6	0.0	19.9
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
<i>Number of migrants</i>	<i>416</i>	<i>22</i>	<i>438</i>	<i>87</i>	<i>41</i>	<i>128</i>	<i>70</i>	<i>92</i>	<i>162</i>	<i>30</i>	<i>233</i>	<i>263</i>	<i>603</i>	<i>396</i>	<i>999</i>

¹ Missing information

² Occupation while abroad for both current and return migrants.

Table 3. Current place of residence of return migrants and household of current migrants by year of departure

Location before migration	Year of departure														
	Pre-1991			1991-1995			1996-2000			2001-2005			Total		
	Returned	Current	All	Returned	Current	All	Returned	Current	All	Returned	Current	All	Returned	Current	All
<u>Urban/Rural</u>															
Urban	50.5	37.2	49.6	43.9	27.2	37.9	31.9	30.0	30.8	28.6	30.0	29.9	46.3	30.2	39.7
Rural	49.5	62.8	50.4	56.1	72.8	62.1	68.1	70.0	69.2	71.4	70.0	70.1	53.7	69.8	60.3
<u>Region</u>															
Greater Cairo	21	21	21	20	7	15	10	13	12		8	8	19	10	15
Alexandria and Suez	9	3	9	3	6	4	6	3	4		5	4	7	4	6
Urban Lower Egypt	13	10	13	12	7	10	7	12	10	16	11	12	12	11	12
Urban Upper Egypt	7	3	7	9	8	8	9	2	5	12	6	7	8	5	7
Rural Lower Egypt	35	39	36	37	40	38	58	30	42	33	32	32	38	33	36
Rural Upper Egypt	14	23	15	19	33	24	10	40	28	38	38	38	15	37	24
<i>Number of migrants</i>	<i>416</i>	<i>22</i>	<i>438</i>	<i>87</i>	<i>41</i>	<i>128</i>	<i>70</i>	<i>92</i>	<i>162</i>	<i>30</i>	<i>233</i>	<i>263</i>	<i>603</i>	<i>396</i>	<i>999</i>

Table 4. Characteristics of migrants and non-migrants, 2006

Characteristics	Non-Migrants (working males 15-64)	Migrants	Total
Average length of stay until 2006		6.2	
Education			
Illiterate	21.2	25.4	21.5
literate with no diploma	7.9	0.8	7.5
Elementary school	11.7	6.4	11.4
Middle school	5.9	6.2	5.9
General high school	1.0	2.1	1.0
Vocational high school	31.3	32.3	31.4
Post-secondary institute	4.7	5.1	4.7
University & above	16.2	21.8	16.5
Occupations^a			
Legislators, Senior officials/managers	8.4	0.9	8.0
Professionals	11.8	13.8	11.9
Technicians & assoc.,prof	7.7	3.0	7.4
Clerks	3.2	1.9	3.1
Service & shop/market workers	15.2	11.8	15.0
Skilled agriculture & fishishing	21.5	13.2	21.0
Craft & related trade	20.2	35.2	21.1
Plant & machine operators	8.5	4.3	8.3
Elementary occupation	3.6	2.1	3.5
DK ^b	--	13.7	0.8
Employment Sector^c			
Government	21.9	6.4	21.0
Public enterprise	5.5	1.5	5.3
Private	71.1	78.8	71.6
Joint-venture	1.2	1.0	1.2
Foreign	0.1	1.3	0.1
Other	0.2	0.0	0.2
DK	--	11.0	0.6
Quintiles of wealth^d			
Lowest Quintile	20.5	12.1	20.0
Second Quintile	22.6	20.3	22.5
Third Quintile	20.8	21.8	20.9
Forth Quintile	18.5	22.3	18.8
Highest Quintile	17.5	23.6	17.9
<i>Number of individuals</i>	8,715	488	9,203

^a Current occupation in Egypt for non-migrants and the return migrants, but the current occupation overseas for current migrants.

^b Missing Information

^c Current sector for non-migrants and the sector before leaving Egypt for the current and return migrants.

^d Current household wealth for both migrants and non-migrants.

Table 5. Characteristics of migrants and non-migrants by their households current poverty status^a

	Non-Migrant			Migrants		
	Non-poor	Poor	Total	Non-poor	Poor	Total
Average length of stay (years) until 2006				6.6	3.5	6.2
Education						
Illiterate	15.7	42.7	21.2	23.5	39.5	25.4
literate without any elementary school	7.6	9.4	7.9	0.9	0.0	0.8
middle school	10.9	15.0	11.7	5.5	12.5	6.4
General high school	5.9	5.6	5.9	6.0	7.4	6.2
Vocational high school	1.1	0.3	1.0	2.4	0.0	2.1
post-secondary institute	33.3	23.8	31.3	31.7	36.6	32.3
university & above	5.7	1.0	4.7	5.7	0.8	5.1
19.8	2.2	16.2	24.3	3.2	21.8	
Occupation^b						
Leg.,Senior offic.& m	9.9	2.6	8.4	1.0	0.0	0.9
Professionals	14.4	1.4	11.8	15.2	3.2	13.8
Technic.& assoc.,prof	9.1	2.1	7.7	3.4	0.0	3.0
Clerks	3.7	1.2	3.2	2.2	0.0	1.9
Serv.& shop/market sa	15.7	13.3	15.2	12.7	5.5	11.8
Skill. agr. & fish. W	15.7	43.8	21.5	11.4	26.6	13.2
Craft & related trad.	19.6	22.8	20.2	33.0	51.1	35.2
Plant & machine opera	8.9	6.9	8.5	4.9	0.0	4.3
Elementary occupation	3.0	6.0	3.6	1.8	4.1	2.1
DN ^c	0.0	0.0	0.0	14.3	9.5	13.7
Employment Sector^d						
Government	24.9	10.2	21.9	7.3	0.0	6.4
public enterprise	6.6	1.3	5.5	1.7	0.0	1.5
Private	66.7	88.2	71.1	77.5	88.5	78.8
jopint-venture	1.4	0.3	1.2	0.9	1.7	1.0
Foreign	0.3	0.0	0.3	1.4	0.0	1.3
DN ^c	0	0	0	11.2	9.8	11.0
Country of destination						
Gulf countries				66.8	25.7	61.8
Other Arab countries				27.5	74.3	33.3
Rest of the world				5.6	0.0	5.0
<i>Total</i>	<i>7087</i>	<i>1625</i>	<i>8712</i>	<i>433</i>	<i>55</i>	<i>488</i>

^a Based on current household wealth index.

^b Current occupation in Egypt for non-migrants and the return migrants, but the current occupation overseas for current migrants.

^c Missing Information

^d Current sector for non-migrants and the sector before leaving Egypt for the current and return migrants.

Table 6. Extent of migration among household members after 1998 by household poverty status in 1998

Household Poverty Status in 1998	No migrant after 1998	Migrant(s) after 1998	Total %	Number of Households
Non poor	96.4	3.6	79.1	2,915
Poor	97.6	2.4	20.9	770
Number of Households	3,564	120	3,685	3,685
t-test (p-value)*	0.6037			

* t-test of significance of difference between the likelihood of poor and non-poor households to have a migrant member after 1998.

Table 7. Changes in households wealth quintiles after migration in 1998

Wealth quintiles before migration (1998)	Wealth quintile in 2006					Number of Households
	1st	2nd	3rd	4th	5 th	
1st	50.5	31.4	7.6	10.5	0.0	23
2nd	18.3	34.1	34.7	4.8	8.1	18
3rd	0.0	28.1	48.6	6.9	16.5	25
4th	0.0	9.1	14.8	20.3	55.8	25
5th	2.3	3.8	15.7	21.6	56.5	29
Total %	9.6	18.1	24.5	14.3	33.6	120

Table 8. Changes in households wealth quintiles for households with no migrant member after 1998

Wealth quintile In 1998	Wealth quintile in 2006					Number of Households
	1st	2nd	3rd	4th	5 th	
1st	64.4	22.1	7.4	3.9	2.2	788
2nd	28.3	30.1	21.8	14.0	5.9	674
3rd	15.2	24.0	28.1	18.4	14.4	724
4th	4.5	12.1	32.3	25.4	25.8	598
5th	1.3	3.4	12.6	20.8	62.0	780
Total %	23.0	18.2	20.1	16.4	22.4	3,564

Table 9. Characteristics of the household by remittances recipient status

Characteristics of Household	Household does not receive remittances	Household receives remittances	Total
<u>Household characteristics</u>			
Region			
Greater Cairo	21.0	8.5	20.6
Alexandria and Suez	9.3	5.2	9.1
Urban Lower Egypt	11.5	12.7	11.6
Urban Upper Egypt	7.7	4.6	7.6
Rural Lower Egypt	29.5	38.2	29.8
Rural Upper Egypt	21.0	30.8	21.4
Location			
Urban	49.5	31.0	48.8
Rural	50.5	69.0	51.2
Average household size	4.486	4.499	4.456
Household wealth			
Lowest Quintile	20.1	8.1	19.7
Second Quintile	19.9	14.0	19.7
Third Quintile	20.2	16.6	20.1
Forth Quintile	19.9	26.2	20.1
Highest Quintile	19.9	35.2	20.4
Dwelling Ownership			
Owned	66.5	66.9	66.6
Rented	21.5	12.3	21.1
Others	12.0	20.9	12.4
Water Source			
Piped water inside the Household	96.0	97.0	96.0
Waste Disposal			
Collected	52.2	43.6	51.9
Access to Sanitary			
Public Network	62.0	51.9	61.6
Own Car			
Private	6.0	3.6	5.9
Commercial	1.5	0.8	1.4
Own Computer			
Yes	8.9	12.5	9.0
Own Sat. Dish			
Yes	17.6	21.6	17.8
<u>Household head characteristics</u>			
Male	84.3	40.6	82.7
Female	15.7	59.4	17.3

Average Age	47.1	43.3	47.0
Education			
Illiterate	33.9	37.3	34.1
literate without any elementary school	9.2	8.3	9.1
middle school	10.7	5.8	10.5
Secondary & post-secondary	5.0	3.6	4.9
university & above	26.2	35.7	26.6
	15.0	9.3	14.8
Employment Status			
Inactive	22.3	47.2	23.2
Wage worker	48.1	17.5	47.0
Employer	17.6	16.6	17.6
Self Employed	9.2	5.3	9.0
Unpaid family worker	2.8	13.4	3.2
<i>Number of Households</i>	8072	279	8351

Table 10. Determinants of migration and receiving remittances - Household level, 2006

VARIABLES	Migration		Remittances	
	(1)	(2)	(3)	(4)
No Children 6_14	0.003 (0.002)	0.002 (0.002)	0.002 (0.001)	0.001 (0.001)
No. Males 15-29	0.009*** (0.003)	0.008*** (0.002)	0.003* (0.002)	0.003* (0.002)
No. Females 15-29	0.008*** (0.003)	0.006** (0.003)	0.003* (0.002)	0.002 (0.002)
No. Elderly 64+	0.001 (0.006)	0.002 (0.005)	-0.001 (0.004)	0.000 (0.003)
Avg. Male 18+ Years of schooling	-0.006*** (0.000)	-0.005*** (0.000)	-0.004*** (0.000)	-0.004*** (0.000)
Avg. Female 18+ Years of schooling	0.001 (0.001)	0.001 (0.001)	0.002*** (0.001)	0.002*** (0.000)
<u>Household substitute head characteristics</u>				
Age	-0.001 (0.001)	-0.000 (0.001)	-0.000 (0.001)	-0.000 (0.001)
Age square	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
Married(d) ¹	-0.008 (0.016)	-0.006 (0.014)	-0.008 (0.011)	-0.008 (0.010)
Divorced or Widowed(d) ¹	-0.033*** (0.009)	-0.029*** (0.008)	-0.025*** (0.004)	-0.021*** (0.003)
Primary or preparatory degree(d) ²	0.002 (0.010)	0.002 (0.009)	-0.008 (0.005)	-0.006 (0.004)
Secondary degree(d) ²	0.023* (0.013)	0.017 (0.012)	-0.002 (0.007)	-0.004 (0.006)
Above secondary degree(d) ²	0.037** (0.017)	0.028* (0.015)	-0.002 (0.008)	-0.005 (0.006)
% of HHs with Migrants in Shiakha/village from Census 2006		0.584*** (0.132)		0.242*** (0.080)
% of HHs with Migrants in Shiakha/village x Avg. Yrs of schooling of 18+		0.076*** (0.015)		0.041*** (0.009)
<i>Observations</i>	8345	8345	8345	8345
<i>Pseudo R-squared</i>	0.0621	0.117	0.124	0.170

Notes: Marginal effects are reported and robust standard errors in parentheses

(d) for discrete change of dummy variable from 0 to 1

*** p<0.01, ** p<0.05, * p<0.1

¹ reference category: never married

² reference category: no educational certificate

Table 11. The impact of migration on poverty status of the household

VARIABLES	(1) Probit	(2) Probit	(3) Biprobit	(4) Biprobit	(5) 2SLS	(6) 2SLS
International migrant in HH	-0.075*** (0.011)	-0.077*** (0.011)	-0.091*** (0.010)	-0.087*** (0.009)	-1.769*** (0.568)	1.554** (0.637)
<u>Community controls</u>						
% unemployed males age 18-64	-0.136* (0.075)	-0.138* (0.075)	-0.135* (0.075)	-0.130* (0.071)	-0.170 (0.132)	-0.131 (0.080)
% males age 18-64 working in agriculture	0.195*** (0.024)	0.195*** (0.024)	0.200*** (0.025)	0.191*** (0.024)	0.402*** (0.044)	0.342*** (0.041)
% males age 18-64 working in public sector	0.024 (0.030)	0.024 (0.030)	0.021 (0.030)	0.020 (0.029)	-0.017 (0.042)	0.027 (0.035)
% males age 18-64 working in private wage work	0.121*** (0.026)	0.121*** (0.026)	0.121*** (0.026)	0.115*** (0.025)	0.114*** (0.037)	0.133*** (0.031)
% males age 18-64 with secondary + education	-0.002 (0.021)	-0.002 (0.021)	-0.000 (0.022)	-0.000 (0.021)	0.097** (0.038)	0.002 (0.028)
<u>Household characteristics</u>						
No Children 0-5	-0.002 (0.004)	-0.002 (0.004)	-0.002 (0.004)	-0.002 (0.004)	-0.002 (0.006)	-0.009 (0.006)
No Children 6_14	0.004 (0.003)	0.004 (0.003)	0.005 (0.003)	0.004 (0.003)	0.014*** (0.005)	0.006 (0.005)
No. Males 15-29	-0.005 (0.003)	-0.005 (0.003)	-0.004 (0.003)	-0.004 (0.003)	0.002 (0.007)	-0.014*** (0.006)
No. Females 15-29	-0.010** (0.004)	-0.010** (0.004)	-0.009** (0.004)	-0.009** (0.004)	-0.016** (0.007)	-0.011* (0.006)
No. Elderly 64+	-0.004 (0.007)	-0.004 (0.007)	-0.004 (0.007)	-0.004 (0.007)	-0.013 (0.014)	-0.013 (0.012)
Avg. Male 18+ Years of schooling	-0.007*** (0.001)	-0.007*** (0.001)	-0.007*** (0.001)	-0.007*** (0.001)	-0.017*** (0.002)	-0.010*** (0.001)
Avg. Female 18+ Years of schooling	-0.009*** (0.001)	-0.009*** (0.001)	-0.009*** (0.001)	-0.008*** (0.001)	-0.012*** (0.002)	-0.015*** (0.002)
Alexandria and Suez(d) ²	0.002 (0.017)	0.003 (0.017)	0.002 (0.017)	0.003 (0.016)	0.005 (0.015)	-0.008 (0.012)
Urban Lower Egypt(d) ²	0.070*** (0.020)	0.070*** (0.020)	0.072*** (0.020)	0.069*** (0.019)	0.071*** (0.023)	0.004 (0.015)
Urban Upper Egypt(d) ²	0.179*** (0.024)	0.178*** (0.024)	0.179*** (0.024)	0.172*** (0.023)	0.118*** (0.018)	0.076*** (0.016)
Rural Lower Egypt(d) ²	0.105*** (0.019)	0.105*** (0.019)	0.106*** (0.019)	0.101*** (0.019)	-0.007 (0.022)	0.081*** (0.021)
Rural Lower Egypt(d) ²	0.248*** (0.027)	0.247*** (0.027)	0.250*** (0.027)	0.241*** (0.027)	0.164*** (0.025)	0.252*** (0.024)
Rural x Migrant HH	0.031 (0.049)	0.036 (0.050)	0.038 (0.050)	0.042 (0.049)	1.562*** (0.564)	-1.362*** (0.489)
<u>Household substitute head characteristics</u>						
Age	-0.003** (0.001)	-0.003** (0.001)	-0.003** (0.001)	-0.003** (0.001)	-0.003 (0.002)	-0.006*** (0.002)
Age square	0.000** (0.000)	0.000** (0.000)	0.000** (0.000)	0.000** (0.000)	0.000 (0.000)	0.000*** (0.000)

Married(d) ¹	-0.110***	-0.108***	-0.112***	-0.106***	-0.080**	-0.071**
	(0.032)	(0.032)	(0.032)	(0.031)	(0.040)	(0.034)
Divorced or Widowed(d) ¹	-0.050***	-0.049***	-0.053***	-0.050***	-0.083**	-0.045
	(0.015)	(0.015)	(0.015)	(0.014)	(0.042)	(0.038)
Primary or preparatory degree(d) ³	-0.005	-0.007	-0.005	-0.007	-0.011	0.028
	(0.012)	(0.012)	(0.012)	(0.011)	(0.020)	(0.027)
Secondary degree(d) ³	-0.023*	-0.023*	-0.022*	-0.021*	0.017	0.051*
	(0.013)	(0.013)	(0.013)	(0.013)	(0.023)	(0.030)
Above secondary degree(d) ³	-0.097***	-0.097***	-0.096***	-0.091***	0.050*	0.066**
	(0.008)	(0.008)	(0.009)	(0.008)	(0.030)	(0.033)
Primary or Prep degree x Migrant HH		0.059		0.061		-1.012**
		(0.077)		(0.073)		(0.434)
Secondary degree x Migrant HH ⁴		-0.006		0.009		-0.950**
		(0.041)		(0.045)		(0.378)
Above secondary degree x Migrant HH				-0.085***		-1.404**
				(0.006)		(0.559)
Observations	8338	8338	8338	8338	8338	8338
Pseudo R-squared	0.317	0.317				
<i>rho</i>			0.236*	0.245*		
Wald-test Of rho=0 (p-value)			0.067	0.069		
Sargen's test of over-identification (p-value)					0.991	0.227
Test of weak Instruments						
min eigenvalue statistic					11.820***	21.637***
R ²					0.5721	0.7749
Adjusted R ²					0.5707	0.7741
F-test					13.919***	16.555***

Notes: Marginal effects are reported and robust standard errors in parentheses

(d) for discrete change of dummy variable from 0 to 1

*** p<0.01, ** p<0.05, * p<0.1

¹ reference category: never married

² reference category: Greater Cairo Region

³ reference category: no educational certificate

⁴ The interaction term "Above secondary degree x Migrant HH" predicted failure perfectly in 64 observations in the probit estimation. Hence, to avoid STATA dropping those cases, the interaction of secondary degree and above secondary degree has been combined in the probit specification of column (2).

Table 12. The impact of remittances on poverty status of the household

VARIABLES	(1) Probit	(2) Probit	(3) Biprobit	(4) Biprobit	(5) 2SLS	(6) 2SLS
Household receive remittances	-0.083*** (0.008)	-0.086*** (0.008)	-0.088*** (0.008)	-0.088*** (0.007)	-2.071*** (0.672)	2.318** (0.914)
<u>Community controls</u>						
% unemployed males age 18-64	-0.134* (0.075)	-0.137* (0.076)	-0.134* (0.075)	-0.132* (0.073)	-0.209** (0.085)	-0.114 (0.084)
% males age 18-64 working in agriculture	0.194*** (0.024)	0.197*** (0.025)	0.196*** (0.025)	0.192*** (0.024)	0.411*** (0.045)	0.329*** (0.043)
% males age 18-64 working in public sector	0.031 (0.030)	0.032 (0.030)	0.030 (0.030)	0.029 (0.029)	0.031 (0.039)	0.022 (0.035)
% males age 18-64 working in private wage work	0.126*** (0.026)	0.128*** (0.027)	0.126*** (0.026)	0.123*** (0.026)	0.160*** (0.036)	0.121*** (0.033)
% males age 18-64 with secondary + education	-0.003 (0.021)	-0.003 (0.022)	-0.002 (0.021)	-0.002 (0.021)	0.093** (0.038)	-0.012 (0.031)
<u>Household characteristics</u>						
No Children 0-5	-0.003 (0.004)	-0.003 (0.004)	-0.003 (0.004)	-0.002 (0.004)	-0.004 (0.006)	-0.008 (0.006)
No Children 6_14	0.005 (0.003)	0.005 (0.003)	0.005 (0.003)	0.005 (0.003)	0.013** (0.005)	0.006 (0.006)
No. Males 15-29	-0.005 (0.003)	-0.005 (0.003)	-0.005 (0.003)	-0.005 (0.003)	-0.004 (0.006)	-0.012** (0.005)
No. Females 15-29	-0.010** (0.004)	-0.010** (0.004)	-0.010** (0.004)	-0.010** (0.004)	-0.016** (0.006)	-0.013** (0.006)
No. Elderly 64+	-0.004 (0.007)	-0.004 (0.007)	-0.004 (0.007)	-0.004 (0.007)	-0.024* (0.012)	-0.015 (0.012)
Avg Male 18+ Years of schooling	-0.007*** (0.001)	-0.007*** (0.001)	-0.007*** (0.001)	-0.007*** (0.001)	-0.018*** (0.003)	-0.009*** (0.001)
Avg Female 18+ Years of schooling	-0.009*** (0.001)	-0.009*** (0.001)	-0.009*** (0.001)	-0.008*** (0.001)	-0.010*** (0.002)	-0.015*** (0.002)
Alexandria and Suez(d) ¹	0.004 (0.017)	0.004 (0.017)	0.003 (0.017)	0.003 (0.017)	0.010 (0.014)	-0.017 (0.014)
Urban Lower Egypt(d) ¹	0.070*** (0.020)	0.071*** (0.020)	0.071*** (0.020)	0.069*** (0.019)	0.073*** (0.022)	-0.003 (0.017)
Urban Upper Egypt(d) ¹	0.177*** (0.024)	0.179*** (0.024)	0.177*** (0.024)	0.174*** (0.024)	0.107*** (0.016)	0.082*** (0.015)
Rural Lower Egypt(d) ¹	0.104*** (0.019)	0.105*** (0.019)	0.104*** (0.019)	0.102*** (0.019)	0.002 (0.019)	0.070*** (0.019)
Rural Lower Egypt(d) ¹	0.245*** (0.027)	0.247*** (0.027)	0.245*** (0.027)	0.241*** (0.027)	0.173*** (0.022)	0.242*** (0.023)
Rural x HH receive remittances	0.107 (0.096)	0.117 (0.100)	0.113 (0.097)	0.124 (0.098)	1.849*** (0.664)	-1.956*** (0.713)
<u>Household substitute head characteristics</u>						
Age	-0.003** (0.001)	-0.003** (0.001)	-0.003** (0.001)	-0.003** (0.001)	-0.003 (0.002)	-0.006*** (0.002)
Age square	0.000** (0.000)	0.000** (0.000)	0.000** (0.000)	0.000** (0.000)	0.000* (0.000)	0.000*** (0.000)

Married(d) ²	-0.112***	-0.113***	-0.113***	-0.111***	-0.085**	-0.055
	(0.032)	(0.032)	(0.032)	(0.032)	(0.039)	(0.038)
Divorced or Widowed(d) ²	-0.050***	-0.051***	-0.052***	-0.051***	-0.102**	-0.026
	(0.015)	(0.015)	(0.015)	(0.014)	(0.043)	(0.042)
Primary or preparatory degree(d) ³	-0.007	-0.008	-0.008	-0.008	-0.014	0.025
	(0.011)	(0.012)	(0.011)	(0.011)	(0.019)	(0.026)
Secondary degree(d) ³	-0.024*	-0.026**	-0.024*	-0.025**	0.009	0.048
	(0.013)	(0.013)	(0.013)	(0.012)	(0.021)	(0.030)
Above secondary degree(d) ³	-0.097***	-0.098***	-0.097***	-0.095***	0.025	0.062*
	(0.008)	(0.008)	(0.008)	(0.008)	(0.024)	(0.033)
Primary/Prep degree x HH receive remittances		0.040		0.044		-1.757**
		(0.090)		(0.089)		(0.709)
Secondary degree x HH receive remittances ⁴		0.044		0.065		-1.441***
		(0.064)		(0.074)		(0.559)
Above secondary degree x HH receive remittances				-0.084***		-2.144***
				(0.005)		(0.820)
Observations	8338	8303	8338	8338	8338	8338
Pseudo R-squared	0.316	0.315				
<i>rho</i>			0.108	0.178		
Wald-test Of rho=0 (p-value)			0.510	0.293		
Sargen's test of over-identification (p-value)					0.4739	0.3164
Test of weak instruments						
min eigenvalue statistic					13.838***	18.209***
R ²					0.5730	0.7903
Adjusted R ²					0.5716	0.7896
F-test					14.381***	10.964***

Notes: Marginal effects are reported and robust standard errors in parentheses

(d) for discrete change of dummy variable from 0 to 1

*** p<0.01, ** p<0.05, * p<0.1

¹ reference category: Greater Cairo Region

² reference category: never married

³ reference category: no educational certificate

⁴ The interaction term “Above secondary degree x Migrant HH” predicted failure perfectly in 64 observations in the probit estimation. Hence, to avoid STATA dropping those cases, the interaction of secondary degree and above secondary degree has been combined in the probit specification of column (2).

Table 13. Panel analysis of the impact of migration and remittances on household poverty and wealth

Variable	(1)	(2)	(3)	(4)	(5)	(6)
	Probit re	Linear re	Linear fe	Probit re	Linear re	Linear fe
Return migrant in the last 5~a	-0.817***	0.122**	0.033			
HH receive remittances				-0.352*	0.205***	0.144**
Constant	-2.074***	0.016	0.018***	-2.080***	0.012	0.014**
<i>Observations</i>	7368	7368	7368	7368	7368	7368
R-squared within model		7.8e-05	7.8e-05		.00186	.00186
R-squared overall model		.0023	.0023		.00339	.00339
R-squared between model		.00483	.00483		.00451	.00451

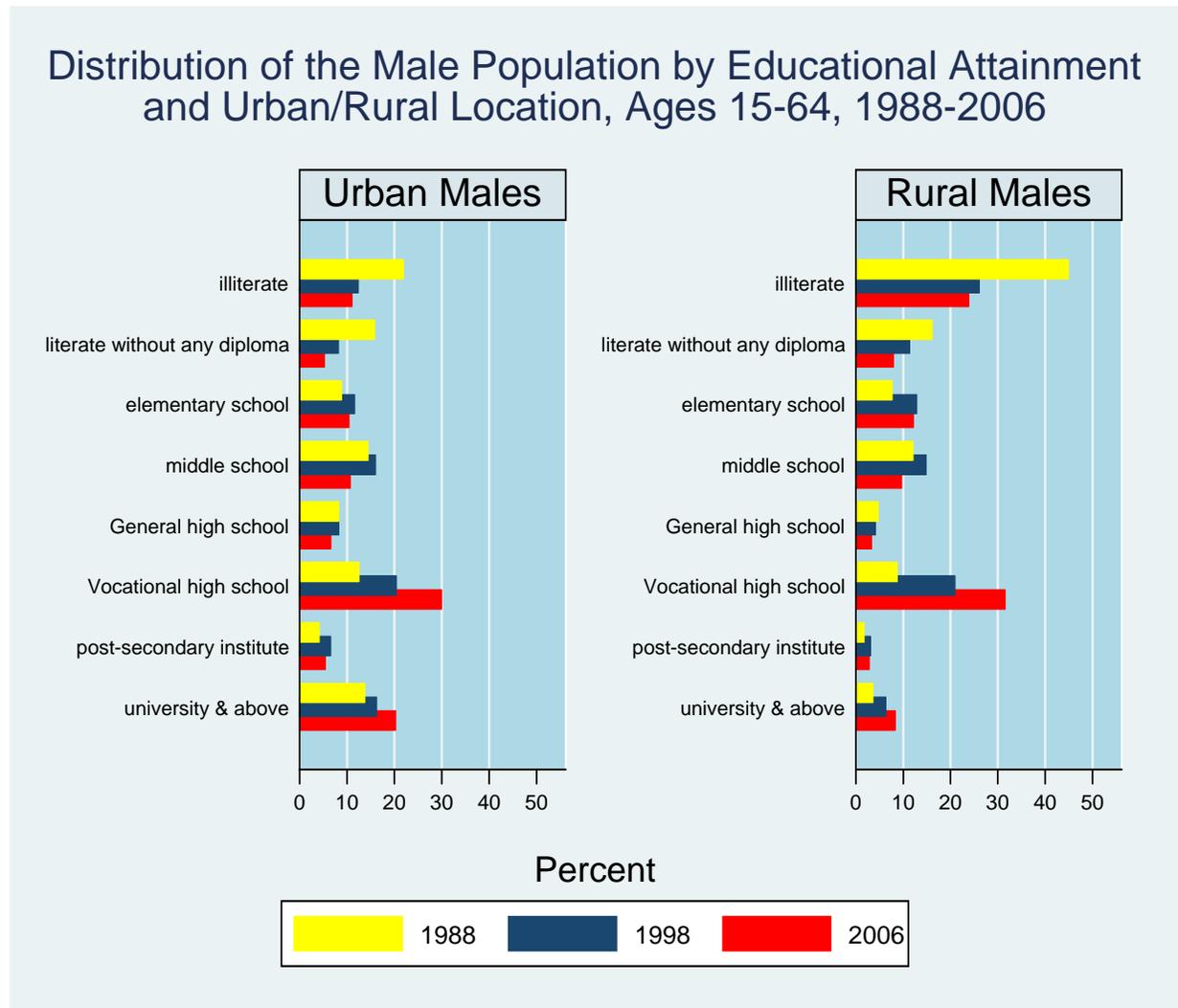
Appendix

Table A1. Percent distribution of total population in Egypt by location

Location	Census year		
	1986	1996	2006
<u>Urban/Rural</u>			
Urban	44.0	42.6	43.1
Rural	56.0	57.4	56.9
<u>Region*</u>			
Greater Cairo	12.7	11.6	12.2
Alexandria and Suez	7.7	7.2	7.2
Urban Lower Egypt	12.1	12.2	12.3
Urban Upper Egypt	11.4	11.4	11.0
Rural Lower Egypt	31.7	32.0	31.5
Rural Upper Egypt	24.5	25.6	25.8
Total population	48254000	59313000	72798031

*The regional distribution ignores population living in the Frontiers Governorates

Figure A1. Education distribution of Males age 15-64 in Egypt, based on the ELMSs



Source: Assaad (2007)