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The Impact of International Migration and Remittances on the Labor-Supply Behavior of Those Left behind: Evidence from Egypt*

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November 19, 2009

Abstract

We analyze in this paper the impact of male-dominated migration and remittance income on the participation and hours worked decisions of adults left behind, including the hours spent by women in subsistence and domestic work. We differentiate between a 'pure' migration ("M") effect and the joint effect of migration and remittance income ("MR") and evaluate these effects for men and women separately. Additionally, we examine the labor supply behavior of wives whose husband migrated. We draw on the 2006 cross section using an instrumental variable approach as well as on the 1998/2006 panel of the Egypt Labor Market Panel Survey (ELMPS06).

In line with the literature, women in MR households (albeit not in M households) tend to reduce their wage and salary work. We find evidence for both intra-household specialization and an increase in women's (and wives') total work load. Men are generally less affected. Our results suggest that it is important to differentiate between these two effects and between the different forms of market and non-market work as well as to consider the relationship between remitter and recipient.

Keywords: migration, remittances, labor supply, time allocation, gender

JEL Codes: 015, J22, F22, R23

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1 Introduction

In recent years, researchers have become interested in the impact of international migration and remittance income on various individual and household level outcomes, such as child health and schooling, income and labor supply. In this paper, we analyze the impact of male-dominated international migration and remittance income on the labor-supply behavior of adult family members left behind. In contrast to most of the studies in this field, we are able to differentiate between a “pure” migration effect and the joint effect of migration and remittance income. In the latter case, we also look at the effect of the actual value of remittance income received on labor supply. Furthermore, the data allow us to examine the special case of a male migrant leaving a wife behind. We evaluate the effect of migration (and remittance income) in terms of individuals’ participation decision (in general as well as for wage and salary work, self-employment, and unpaid family work) and in terms of individuals’ decision about the hours spent in a particular activity. For women, we additionally use information about whether they engage in any subsistence and domestic work and if so, the time allocated to these activities. Hence, we can observe whether migration (and remittance income) is associated with an increase in the total work load of women left behind and specifically the wives of migrants. For part of the analysis, we draw on both the 1998 and the 2006 wave of the Egypt Labor Market Panel Survey (ELMPS06). Otherwise, and for comparison, we use the cross-section of 2006 and instrument for migration (and remittance income).

The motivations for migration and for sending remittances are manifold (see Rapoport and Docquier, 2006). Based on evidence from field studies, the motivations of predominantly male migration from Egypt include raising capital to finance marriage or to start or expand a family business (Hoodfar, 1997). From a theoretical perspective, if remittance income is indeed used as cheap credit, allowing households to invest in starting or expanding household enterprises, it should be associated with an increase in the employment likelihood of those left behind. On the other hand, remittances constitute a form of non-labor income. Similar to other forms of non-labor income, remittances increase an individuals’ reservation wage, which, in turn, decreases their likelihood to enter or stay in the labor market (Killingsworth, 1983). Hence, from a theoretical perspective, the sign of the effect of migration accompanied by remittances is indeterminate. The preponderance of evidence from studies on other migrant sending countries seems to point to a decline in labor force participation, especially for women (e.g., Amuedo-Dorantes and Pozo, 2006; Acosta, 2006; Rodriguez and Tiongson, 2001). The evidence on the effect on the number of hours worked is more mixed. Whereas remittances positively affect

household income, migration itself leads to an increase in the dependency ratio and most likely to a reallocation of labor within the household which may affect males and females differently. Against the background that in many developing countries it is predominantly males who migrate, Mendola and Carletto (2009) and Lokshin and Glinskaya (2008) emphasize the potential consequences of migration on women’s bargaining position in the household. They find a negative impact of migration on women’s participation in wage work in Nepal (Lokshin and Glinskaya, 2008) and in Albania (Mendola and Carletto, 2009). Yet, Mendola and Carletto (2009) also find that past migration increases female self-employment and reduces unpaid work suggesting that overall migration may lead to women’s empowerment.

According to the World Bank (2007), inward remittance flows constituted 5% of GDP in Egypt and Egypt was the number one recipient of remittances in the Middle East and North Africa Region in absolute terms. In Egypt, migration is highly male-dominated (96% of all return labor migrants are male, (ELMPS06)) and, above all, a temporary phenomenon (see also Bauer and Gang, 1998). The average age of outmigration is 26 and the average age of return is 34 (ELMPS06). Countries of destination are predominantly Arab countries, with 64% of migrants going to the Arab Gulf and 31% to other Arab countries like Jordan and Libya (ELMPS06).

Our study is closely linked to studies on the impact of migration on labor supply by Amuedo-Dorantes and Pozo (2006), Lokshin and Glinskaya (2008) and Mendola and Carletto (2009) but makes some additional contributions. First, these studies usually rely on information about either migration or remittance income and therefore need to assume that international migration and remittances are highly correlated. Given that a relatively high share of households in our dataset report a current migrant but no remittance income, we are able to separate the ‘pure’ effect of migration (“M”) from the joint effect of migration and remittance income (“MR”).¹ With regard to the latter, we also compare the effect of simply being in an MR household with the impact of remittances when remittances are specified as a continuous variable as in Amuedo-Dorantes and Pozo (2006). Second, most studies lack information about the relationship between the migrant, or the remitter, and those left behind (an exception is the study by Cabegin, 2006). In our case we can derive this information from the ELMPS 06 data set. A majority of remittance recipients in our data (68%) are wives who receive remittances from their migrant

¹We observe only few households who receive remittance income but who do not report having a household member working abroad. Besides, if remittance income does not entail the migration of a household member, remittance income is likely to have a similar effect as other types of non-labor income.

husband. This allows us to compare estimation results for all women left behind to those for wives of migrants. The assumption, commonly made in the literature, that the migration and remittance decisions have been made jointly prior to migration and that there are no commitment problems once the household member is abroad is likely to be less restrictive in the case of spouses. Furthermore, in the case of wives, we can exclude the possibility that the purpose of migration was to accelerate the accumulation of capital for marriage. Third, an advantage of the ELMPS06 data is that it includes information not only about market work but also about subsistence and domestic work, with the latter being the case only for women and children under 18. We can thus observe whether women's total work load has increased and whether the degree of intra-household specialization changes. Fourth, few previous studies have been able to draw on panel data. We start by following the common approach in the literature, namely to use instrumental variables (IVs) to address the endogeneity of migration using cross-sectional data from 2006. We then provide alternative estimates that make use of the panel data in order to control for unobservables related to self-selection into migration. Finally, to our knowledge, this is the first empirical study on the impact of international migration and remittances on domestic labor market outcomes in an Arab country in the Middle East and North Africa region.

There are two major limitations of this study. First, in some regressions, the number of individuals affected by migration (and remittance income) is small, especially if we use panel data. Second, we lack information about current migrants in the 1998 wave of the panel so that we need to draw on retrospective data in the 2006 wave to identify migration status in 1998. This method is likely to understate the number of current migrants in 1998.

Results show that the distinction of whether or not a household with migrants is receiving remittance income is important. It also makes a difference whether the receipt of remittances is modeled as a binary variable or as a continuous variable, especially in the case of men left behind. Using information about the relationship between remitter and recipient proves to be important as well: estimates of the joint effect of migration and remittances on all women left behind tend to be lower compared to those for wives and, in a few cases, they are of opposite sign. In line with earlier studies, we find a decrease in the likelihood of women and wives participating in wage and salary work. However, we also find an increase in self-employment as well as in unpaid family, subsistence, and domestic work. Hence, rather than reducing women's economic activity, migration and remittance income seems to affect the type of work women engage in. Results furthermore suggest that migration

and remittances increase intra-household specialization in some households while in others women's total working hours increase.

The paper is organized as follows: Section 2 provides information about the data and the empirical strategy, including how we deal with self-selection and endogeneity. In Section 3, we present descriptive statistics and discuss the estimation results of the various econometric approaches, namely panel, IV and non-IV estimates, for women, wives and men aged 22-44. We conclude in Section 4.

2 Data and Empirical Strategy

2.1 Data

We are using the Egypt Labor Market Panel Survey of 2006 (ELMPS06). The survey was administered to a nationally representative sample of 8,349 households of which 3,684 were among the original 4,816 households interviewed in the Egypt Labor Market Survey of 1998 (ELMS 98). An additional 2,167 new households emerged from these 3,684 households as a result of splits, and a refresher sample of 2,498 households was added in 2006.²

2.1.1 Variables Related to Current Migrants and Remittance Income

With regard to international migration and remittances, the 2006 wave includes information about current migrants (including some characteristics, such as education and employment) as well as on remittance income, in particular the value of remittances received during the past 12 months, both in kind and in cash. We do not have any information about the migrant's gender. However, migration in Egypt is known to be almost exclusively male: out of all return labor migrants in the 2006 wave, 96% are male migrants (compare Bauer and Gang, 1998). The average age of departure is 26 and the average age of return is 34 (ELMPS06). In contrast, the 1998 questionnaire only includes a question about whether the household received overseas remittances. We hence lack information about the value of remittances received in 1998. The 1998 wave also did not include a section on current migrants. In order to determine whether a household had current international migrants in 1998, we make use of the migration and of the employment history section in the 2006 questionnaire in order to determine whether household members were abroad in 1998. For current migrants in 2006 we trace whether the migrant was already

²The data collection methodology is discussed in detail in Barsoum (2009) and the sample attrition properties are discussed in Assaad and Roushdy (2009).

a migrant at the time of the 1998 survey. The number of households affected by migration and/or remittances is provided in Table 1. Note that due to splits, the number of households increases from the 1998 to the 2006 wave. Also note that we only consider those households in 1998 and 2006 that are part of the panel. We take care of the attrition in the panel through appropriate weights that correct for the attrition rate (see Assaad and Roushdy, 2009).

Table 1 about here.

There are relatively few households in 1998 that are affected by both migration and remittances which is a little surprising. This could be due to recall errors. When we evaluate the joint impact of migration and remittances, we therefore assume that in 1998, households who were receiving overseas remittances also had a current migrant. When analyzing the ‘pure’ migration effect, however, our results are likely to be lower bound estimates since some ‘treated’ households (i.e., households with current international migrants) will be coded as non-treated in 1998, i.e. some households will be counted as having added a migrant since 1998 while they have not.

A general difficulty is the small number of households with migrants. Depending on the number of individuals aged 22 to 44 living in migrant or remittance-receiving households, the number of treated individuals may be slightly higher (or lower) compared to the number of treated households. In the 2006 wave of the ELMPS 06, all members of the household who are currently abroad are documented. Only few households have more than one migrant; out of the 361 households with international migrants in the 2006 wave, only 29 households mention a second and only 5 mention a third household member working abroad. There are three advantages of using the 2006 wave only: first, we have a larger sample due to new household members in split households and due to the refresher sample. Second, we do not have to rely on recall data as we do for the 1998 wave. Additionally, as we will explain below, the 2006 questionnaire contains more detailed information about women’s domestic and subsistence work as well as about the value of remittances sent. However, relying exclusively on the 2006 wave means that we must rely on instrumental variables (IVs) rather than difference-in-difference estimation to identify the effect of migration. This poses its own set of estimation problems, such as the choice of instruments. Table 2 reports the number of households with current international migrants and/or remittance income for the entire 2006 cross section.

Table 2 about here.

As is clear from Tables 1 and 2, we have too few observations to analyze the ‘pure’ effect of remittance income on remaining household members’ labor supply, in addition to the ‘pure’ effect of migration and the joint effect of migration and remittance income. Yet, the ‘pure’ remittance effect should be very similar to the effect of other non-labor income sources.

2.1.2 Employment-related Variables

Most of the questions about labor force participation and employment are the same in both waves of the ELMPS. We differentiate between several employment states: labor force participation, unemployment, employment in wage and salary work, self-employment³ and unpaid family work. While unemployment relates only to individuals in the labor force, the employment categories, such as wage and salary work, relate to the entire population. Labor force participation refers to participation in any market work (i.e. excluding subsistence work) or being unemployed, using the standard definition of unemployment (one that requires individuals to have actively searched for work in the previous three months). For women, we additionally consider domestic and subsistence work. The numbers of hours worked generally refers to the hours an individual spent in a particular activity in the past 7 days. One major difference is that in the 1998 questionnaire, (un)employment refers to a particular week in 1998 (the week ending 31 October) whereas in 2006 the reference week is the week prior to the date of the interview. As there seems to be some measurement error with regard to wage and salary workers when using the reference week definition for 1998, we use the employment status in the main job in the 3-months reference period (which is also fixed in 1998, i.e. the last three months ending 31 October 1998). For information about the type of employment, we rely in both waves on the status in the 3 months reference period. A second major difference between the two waves concerns the questions about subsistence and domestic work for women. In the 2006 questionnaire, the interviewer asked the individual about the hours spent in each of the following activities, namely agricultural activities, raising poultry/livestock, and producing ghee/butter/cheese for domestic consumption for subsistence work and the time spent on cooking, washing dishes, doing laundry and ironing, cleaning the house, collecting water, collecting firewood or other fuel, shopping for food, clothing, and household items, helping in caring for the sick or the elderly, and taking care of children for domestic work. The 1998 questionnaire does not ask the individual about the hours spent in each of these activities but in total.

³We have lumped together employer and self-employed because of the small number of employers among workers.

As a result, in 1998, hours spent in domestic and subsistence work is much lower. Therefore, when we draw on the panel, we restrict our analysis to whether or not a woman is engaged in subsistence work but do not additionally look at the number of hours worked in such work. However, with domestic work being nearly universal for adult women, it is impossible to detect any effect of migration and remittances using the panel data. Table 3 sums up the information available in the cross-section of 2006 and in the panel 1998-2006.

Table 3 about here.

2.1.3 Definition of Treated and Non-treated Individuals

We restrict our analysis to prime-age individuals in the recent wave (aged 22-44 in 2005 and, respectively, aged 15-37 in 1998) which leaves us with a sample of 3,032 women and 3,230 men in the panel dataset and a sample of 5,782 women and 6,125 men in the 2006 cross section. Note that since interviews began at the end of 2005 and ended beginning of 2006, individual characteristics – such as age – refer to the end of 2005. Furthermore, we examine the specific case that the woman left behind is the migrant’s wife. Here, the control group is made up of married women whose husband is living in the household at the time of the survey. For comparison, we use the same age group as before, i.e. women aged 22 to 44 as of 2005. A total of 4,731 married women who live together with their husband remain in the 2006 cross section. Unfortunately, we cannot draw on the panel for two reasons: first, fewer than 60 women who received remittances from their husband are left in the panel sample. Second, the sample size becomes even smaller if we restrict the sample to women who were married in both waves. However, should estimation results for the panel and the cross-section be similar for all women 22-44 in 2006, we can assume that the results for wives based on the 2006 cross section are robust as well.

2.2 Empirical Analysis

As has been discussed extensively in the literature, the decisions to migrate and to remit are likely to be endogenous (e.g., Amuedo-Dorantes and Pozo, 2006; Calero et al., 2009): there is the problem of self-selection, i.e. migrant and non-migrant households may significantly differ along unobservable characteristics. Furthermore, the decision by the household to send one of its members abroad and/or the decision by the migrant to send remittances back home might be interrelated with the labor-supply behavior of the remaining household members. The most common way to tackle the problem of endogeneity has been through an instrumental variable (IV)

approach (e.g., Mendola and Carletto, 2009; Amuedo-Dorantes and Pozo, 2006), which we follow for the 2006 cross section. In the simplest, i.e. linear, specification, we estimate the following model:

$$Y_i = \alpha_0 + \alpha_1 R_i + \alpha_2 Z_i + \varepsilon_i$$

$$Z_i = \beta_0 + \beta_1 R_i + \beta_2 IV_i + \delta_i$$

for all $i = 1, 2, \dots, n$ individuals. Y stands for the outcome variable (e.g., labor force participation) which is assumed to depend on a set of individual and household characteristics (R). The estimated coefficient of Z will give us the effect we are interested in. Z is (i) a dummy for living in a household with a migrant but without remittance income (“M households”), (ii) a dummy for living in a household with both a current international migrant and remittance income (“MR households”), and (iii) a left-censored variable for the actual value of remittances received in households with a current migrant. Depending on whether the instrumented variable is a dichotomous variable or not and depending on the outcome variable – whether we look at individuals’ participation or hours worked decision – we draw on the stata commands bprobit, ivprobit, ivtobit and cmp. We use the cmp command (Roodman, 2009) to implement an IV tobit estimation when the instrumented variable is dichotomous in order to obtain efficient estimates. This is of advantage especially in those cases in which the sample size of the treated individuals is small. In order to have a more clear-cut counter-factual, we exclude from the analysis in (i) households affected by both migration and remittance income and by remittance income only while we exclude in (ii) and (iii) households with migrants or remittance income but not both. Additionally, we examine the effect of migration and remittances on the migrant’s wife. Here, the counterfactual are wives whose husband is currently living in the household.

To account for the endogeneity of the migration and remittance decision, i.e. that Z and ε may be correlated, we instrument for the migration (and remittance income) variable and allow the error terms in both equations (ε and δ) to be correlated. As instrument we use the percentage of migrants at the village (neighborhood) level based on the 2006 population census data. If information is missing at that level, we use the percentage of migrants at the district (*qism/markaz*) level. Similar instruments have been previously used in the literature (e.g., Lokshin and Glinskaya, 2008).⁴ The identifying assumption is that the share of migrants at the district level is strongly correlated with local migrant networks, which increase a household’s probability to

⁴Alternatively, for instance, Amuedo-Dorantes and Pozo (2006) instrument remittances via per capita count of Western Union offices in the state in the previous year.

send a household member abroad, while these networks do not directly affect individuals' labor-supply decision. Since the census data refer to a slightly later point in time than the ELMPS06, we essentially need to be convinced that labor-supply decisions in late 2005 and beginning of 2006 had no immediate effect on migration rates. This is plausible given the time lag between the decision to migrate and actual migration (e.g., Hoodfar, 1997). Nevertheless, migration rates at the village or district level may be closely linked to local labor market conditions. Therefore, we include a number of employment-related village/neighborhood level variables, also from the 2006 population census, as additional controls in both the first stage and the main equation. These are the share of men (aged 15-64) working in the private sector, the share of men (aged 15-64) working in agriculture, the share of men (aged 15-64) unemployed, the share of men (aged 18-64) with secondary degree and the share of men (aged 18-64) with above secondary degree. For all estimations using the 2006 cross section, we control for clustering at the level at which our instrument is defined, i.e. at the village/neighborhood level. For all the potentially endogenous migration and remittance variables and all the relevant groups being analyzed (all women, wives and men aged 22-44 in 2006), the instrument is significant at the 0.1% level in all regressions.⁵

When we evaluate the joint impact of migration and remittance income, we need to further assume that the decision to migrate and to remit has been taken jointly by the household and that there are no commitment problems on the side of the migrant, i.e., we assume that the migrant will indeed send back home the agreed amount or a certain share of his earnings. This should be a less restrictive assumption when we examine the effect of migration and remittances on migrants' wives.

In addition to the IV approach, we make use of the panel design.⁶ We estimate a random-effects probit model if the outcome is a binary variable (participation decision) and a left-censored random-effects tobit model if the outcome variable is the number of hours worked. As household composition changes from 1998 to 2006

⁵In another specification, following Amuedo-Dorantes and Pozo (2006), we included interactions of household level characteristics - in particular the share of household members with secondary degree and with above secondary degree - with our main IV, i.e., the share of migrants at the village level. However, the interaction terms turned out to be insignificant so we eventually dropped them. Consequently, having just one IV at hand, we cannot make use of an over-identification test.

⁶Very few papers (e.g., Acosta, 2006) have used propensity score matching instead or in addition to an IV approach. The problem is, however, that propensity score matching strongly relies on the assumption that individuals can be matched based on observable characteristics whereas in the case of migration unobservables are likely to play an important role. Nevertheless, Acosta report similar results - in terms of the sign of the effect and its significance - for propensity score matching and IV estimates when looking at adult labor supply.

especially if the household experienced a split resulting, for instance, from marriage, we can only partially control for unobservable characteristics at the household level. As part of the sensitivity analysis, we estimated the models keeping the household level characteristics constant at the 1998 level. Results are robust to this modification (see Section 3.3). As explained in the previous section, we are able to run panel regressions for all males and females left behind but not for the wives of migrants. The set of explanatory variables is the same as in the cross section regressions. In order to be able to compare results, we report throughout the regression coefficients, not the marginal effects.

3 Empirical Results

3.1 Descriptive Statistics

Summary statistics for the outcome and the explanatory variables, separately for each of the three groups of individuals we are concerned with, are provided in Tables 4-8 in the Appendix. One important note to make is that the number of men living in M and MR households is similarly low, or even lower, than the number of women living in these households. This is related to the fact that it is mostly men who migrate leaving fewer adult males behind in the migrant households. Hence, when interpreting the results for males, we need to bear in mind that we are looking at a sub-sample of the 'treated' households. Furthermore, the number of treated men and women is very small in the panel sample, in particular if we look at the hours worked decision for certain types of employment. We therefore focus on the participation decisions in both the panel and cross-sectional analyses, but restrict the analysis of hours worked to the cross-sectional analysis of 2006 data.

3.2 Estimation Results

In order to compare panel and cross-sectional results, we report throughout the estimated coefficients, not the marginal effects.⁷ We test the exogeneity of the instrumented variable to the outcome variable. This test is either the Wald test of exogeneity (in the case of the ivprobit and ivtobit commands) or it is based on the correlation between the disturbance terms of the first stage and the main equation (for models estimated with the biprobit and the cmp command). Regarding the latter, the null hypothesis is that the correlation is zero, meaning that migration

⁷Due to weights, sample sizes displayed in the summary statistics tend to be smaller compared to the sample sizes reported with the estimation results.

(and remittance income) is uncorrelated with the error term in the labor supply equation, i.e. they are exogenous to our outcome of interest. If we cannot reject the null hypothesis, there is no need for an IV estimation and estimates of a probit and, respectively, a tobit model will be more efficient. Indeed, we cannot reject the null hypothesis in many models and therefore report both IV and non-IV results.

For the various participation decisions of men and women, we can compare results from the panel and the cross-sectional (IV and non-IV) estimations. Results are widely consistent. With one exception for men and women, significant effects based on the panel and/or the cross section match at least in terms of the sign if not also in terms of significance. This suggests that we can trust our cross-sectional estimates, which is particularly important for the estimations for the wives' sample for which we are unable to undertake panel estimates.

3.2.1 The Impact of Migration and Remittances on Female Employment

Estimation results are displayed in Tables 9-11. Independent of the econometric model, results suggest that women replace the migrant's labor in the family business and in subsistence agriculture. Not only do women in M households show a higher probability for taking up these activities, they also allocate more time to unpaid family and subsistence work. Women in these households also have a lower probability to be unemployed. This could result from labor becoming a scarce resource in the household following the migration of an adult household member. Results provide further evidence that it matters whether migration brings about remittance income or not. Women living in MR households show a higher likelihood to be self-employed supporting the hypothesis that remittance income is used as cheap credit. Results regarding subsistence work are less robust. Whereas women in M households spend significantly more time on subsistence work, women in MR households spend more time on domestic chores. As overall time spent on market activities is not significantly affected, this suggests that women's total work load increases in both types of households. On the other hand, there is evidence that women living in M and MR households are less likely to engage in wage and salary work which hints at intra-household specialization in some of the affected households.

Instrumenting for the value of remittances received, we find that remittance income significantly increases labor force participation and unpaid family work while it decreases the probability of wage and salary work. For most outcome variables, the sign does not change when we instrument for the value of remittances received rather than for whether or not the woman lives in a MR household. However, as we would expect, the size of the effect is generally smaller.

3.2.2 The Impact of Having a Husband Working Abroad

Tables 12 and 13 provide results for married women aged 22-44 in 2006. Here, we make use of information about the relationship between the migrant and the recipient. This allows us to distinguish more precisely between treatment and non-treatment group. Hence, if essentially the labor supply of the wives of migrants is affected, results in the previous section should provide lower bound estimates for the MR effect on wives. Indeed, comparing estimates for women and wives aged 22-44, the size of the MR effect is generally larger for wives, which is robust to whether our instrumented variable is a dummy for living in a MR household or the value of remittances received by the MR household. Note, however, that sample sizes of the treatment group become very small in the case of wives. We therefore focus on the wives' participation decision rather than on their hours of work. Wives whose husband is working abroad are more likely to be unemployed, less likely to engage in market work and instead more likely to be self-employed. This supports both hypotheses, i.e. that women's reservation wage increases but also that (in some households) remittances are used in a productive way. Similar to females in general, there is some evidence that wives with a migrant husband spend more time on domestic work. This finding is somewhat surprising given that Egypt is a very traditional society in which women tend to be fully responsible for these chores. One explanation could be related to women's low earnings in the market. If remittance income increases total household income, women (and their husbands) may prefer to spend more time with their children than working many hours for low wage. This would also explain why time spent on domestic chores is not affected by migration only.

On the other hand, instrumenting for the average monthly remittance income received, provides a slightly different picture: every additional 100 L.E. that the household receives monthly is associated with a significant decline in domestic work while time spent on the labor market is not affected albeit wage and salary work is negatively affected at the 5% significance level.

3.2.3 The Impact of Migration and Remittances on Male Employment

For men, migration is associated with a decrease in labor force participation, a decrease in self-employment and an increase in unemployment supporting the reservation wage argument, see Tables 14-16. Note that the sample size of the treatment group is small so that we concentrate on men's participation decision only and not on their decisions on hours of work. Interestingly, based on the panel estimates, employment decisions of men living in MR households do not significantly differ

from men in non-MR households suggesting that men’s labor supply is inelastic or that the income and substitution effects cancel out. Non-IV results suggest that wage and salary work decreases and family work increases. As in the case of women, the income effect of remittances appears to reduce the supply of wage labor, but the savings remittances make available are invested in family business that increase demand for unpaid family labor.

In contrast to earlier results for women, results for men depend more strongly on the choice of the instrumented variable for MR households. Instrumenting for the value of remittances received rather than the incidence of migration and remittances leads to a negative effect on labor force participation and a positive effect on self-employment. Moreover, when the value of remittances is the instrumented variable, we cannot always reject exogeneity, but when the incidence of migration and remittances is the instrumented variable, exogeneity is always rejected. Hence, our results for males are very sensitive to the choice of the migration/remittance variable to use.

3.3 Sensitivity Analysis

We changed the following specifications for a subset of models in order to see how robust our estimation results are:

- age group of 20-44 and 22-49 instead of 22-44,
- excluding variables on the number of children living in the household as having children might be correlated with migration and remittances,
- excluding households with return labor migrants from the analysis; this is possible since only few M and, respectively, MR households report having a return labor migrant,
- for the panel, we keep household level variables constant at the 1998 level, i.e. we ignore whether the household experienced any splits.

Results are reported in Tables 17 and 18. The general pattern is reassuring: most estimated coefficients are robust to the various modifications. In particular, with a few exceptions discussed below, the sign of the effect does not depend on the specification. The effect of migration on men’s labor force participation is sensitive to the age specification in the IV specification but we cannot reject the null hypothesis that migration is exogenous and the non-IV results are similar. With regard to the panel estimates, the impact of migration on women’s labor force participation and

unemployment (not shown in the table) are sensitive to whether households with return labor migrants are excluded; other outcome variables are not affected. Similarly, including older women (aged 45-49) in the sample affects only the joint impact of migration and remittance income on the labor force participation decision but not on the other outcomes, such as unemployment and wage and salary work (neither regarding the sign of the effect, nor its significance). Results of these additional specifications are not reported in the tables.

4 Conclusions

Our first conclusion from this analysis is that distinguishing between a “pure” migration effect and the joint effect of migration and remittances is likely to be important. Similarly, results may differ depending on whether remittance income is specified as a binary or a continuous variable for the value of remittances received. Having information about the relationship between the remitter and the recipient is crucial too. It allows for a better definition of treatment and non-treatment group. Panel estimates are generally consistent with the IV estimates, and, respectively, with the non-IV estimates when the exogeneity of migration cannot be rejected.

In Egypt, migration is male-dominated and happens at relatively young age. Consequently, few M and MR households comprise of further prime-age male household members. Those who do are likely to differ not only in observable but also in unobservable ways from households that do not, so that our estimates for males are likely to be biased. Our findings furthermore suggest that women’s non-market work tends to increase following migration and remittance income. We find some evidence for intra-household specialization, as well as for an increase in the total workload of women. We also find that - contrary to other studies in the literature - women’s self-employment increases and so does unpaid family, subsistence and domestic work. While self-employment might be valued positively if it entails that income accrues directly to women, unpaid family work and non-market activities typically do not entail any monetary income. It is therefore hard to say whether women’s increased work load in these activities will be associated with benefits in terms of more bargaining power in household decision making.

More generally, the increase in women’s labor force participation in response to migration (and remittance income) may suggest that women would take up a job provided that working conditions are perceived as appropriate. Women in the Middle East and North Africa region face many restrictions when it comes to labor market participation, for instance on job mobility, commuting time and means, work

time and on the type of job (World Bank 2004). Moreover, it is usually important for women that their job still gives them enough time to fulfill their domestic chores. As a result, labor force participation is very low in the region limiting the regions economic development. In Egypt, for instance, it merely reached 26.9% in 2006 (Assaad, 2007). Hence, policies that help improve working conditions and public transportation and that help narrow the wage gap between men and women will enable and encourage women to take up a job and perhaps remain employed even after marriage.

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In 1998		Households receiving remittances		Total
		no	yes	
households with at least one	no	3,530	96	3,626
current international migrant	yes	35	23	58
Total		3,565	119	3,684

In 2006		Households receiving remittances		Total
		no	yes	
households with at least one	no	5,598	17	5,615
current international migrant	yes	73	125	198
Total		5,671	142	5,813

Table 1: Households receiving international remittances and/or households with at least one current international migrant (panel data, not weighted).

		Households receiving remittances		Total
		no	yes	
households with at least one	no	7,955	35	7,990
current international migrant	yes	121	240	361
Total		8,076	275	8,351

Table 2: Households receiving international remittances and/or households with at least one current international migrant (2006 cross section, not weighted).

	Panel 1998 / 2006		Cross section 2006	
	participation decision	hours worked	participation decision	hours worked
labor force participation	x	x	x	x
unemployment	x	x	x	x
wage and salary work	x	x	x	x
self-employed or employer	x	x	x	x
unpaid family work	x	x	x	x
subsistence work (for women only)	x		x	x
domestic work (for women only)				x

Table 3: Available Employment Information in Panel and Cross Section data of the ELMPS06.

Appendix

Note: Bold coefficients refer to estimations in which the sample size of the treated group is sufficiently large. With regard to the cross section, bold estimates label those that are more efficient, i.e. non-IV coefficients in case the migration (and remittance) decision is exogenous and IV-estimates in case it is endogenous.

Table 4. Summary Statistics for Employment-related Outcome Variables (Panel 1998/2006).

Descriptive statistics (mean, standard deviation and the number of observations), separately for men and women aged 22-44, for the outcome variables related to the labor market, differentiated by individuals living in a household with migrants but without remittance income ("M households") and individuals living in a household with migrants and remittance income ("MR households"), based on the market labor force participation definition and the standard definition of unemployment (active search criterion).

	M households			Panel: 1998 wave MR households			total			M households			Panel: 2006 wave MR households			total		
	mean	sd	N	mean	sd	N	mean	sd	N	mean	sd	N	mean	sd	N	mean	sd	N
Women aged 22-44																		
- in the labor force	0.34	0.48	23	0.32	0.47	94	0.30	0.46	2745	0.34	0.48	44	0.39	0.49	73	0.34	0.47	2,745
- unemployed ¹	0.57	0.53	8	0.47	0.51	24	0.35	0.48	671	0.23	0.44	14	0.34	0.48	28	0.22	0.41	923
- wage & salary work ²	0	0	23	0.11	0.31	94	0.12	0.32	2745	0.08	0.27	44	0.06	0.25	73	0.17	0.37	2,745
- self-empl./employer ²	0	0	23	0.03	0.16	94	0.02	0.12	2745	0.02	0.15	44	0.09	0.29	73	0.04	0.20	2,745
- unpaid for family ²	0.15	0.36	23	0	0	94	0.03	0.17	2745	0.17	0.38	44	0.11	0.32	73	0.06	0.24	2,745
- subsistence work	0.42	0.51	23	0.47	0.50	94	0.27	0.45	2745	0.46	0.50	44	0.45	0.50	73	0.30	0.46	2,745
<u>hours worked in:</u> ³																		
- market work	48	.	3	45.91	22.08	13	41.05	16.59	399	34.59	13.49	12	27.66	14.76	19	39.55	14.93	737
- wage & salary work	-		0	52.48	19.07	10	41.81	12.77	294	51.25	4.98	4	39.10	7.29	5	42.75	11.89	455
- self-empl./employer	-		0	18	.	2	42.69	22.28	41	42	.	1	28.26	17.35	7	39.77	18.82	112
- unpaid for family	48	.	3	-		0	36.43	25.36	63	25.53	6.54	7	20.57	12.42	8	30.90	15.95	171
- subsistence work	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
- domestic work	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Men aged 22-44																		
- in the labor force	0.60	0.50	36	0.54	0.50	68	0.65	0.48	2855	0.83	0.38	47	0.92	0.28	36	0.92	0.27	2,855
- unemployed ¹	0.22	0.43	23	0.11	0.32	37	0.09	0.29	1844	0.08	0.27	37	0.03	0.16	33	0.06	0.24	2,630
- wage & salary work ²	0.41	0.50	36	0.30	0.46	68	0.43	0.50	2855	0.48	0.51	47	0.45	0.51	36	0.62	0.49	2,855
- self-empl./employer ²	0.03	0.17	36	0.13	0.34	68	0.08	0.28	2855	0.19	0.39	47	0.10	0.30	36	0.19	0.39	2,855
- unpaid for family ²	0.03	0.18	36	0.05	0.22	68	0.07	0.26	2855	0.09	0.29	47	0.35	0.48	36	0.06	0.24	2,855
<u>hours worked in:</u> ³																		
- market work	57.56	19.22	12	42.71	16.48	27	51.32	16.24	1270	48.44	14.99	37	56.09	18.05	32	51.65	15.15	2,484
- wage & salary work	57.31	19.93	11	46.38	14.95	15	50.58	15.41	871	48.80	12.63	23	57.15	23.25	16	50.60	14.15	1,767
- self-empl./employer	60.15	43.27	1	30.58	10.18	9	52.93	17.96	222	56.59	17.18	9	54.68	3.30	4	55.42	16.56	539
- unpaid for family	-		0	57.43	19.88	3	52.91	17.69	177	30	0	5	55.12	12.87	13	50.62	18.22	178

Data are weighted.

¹ out of those in the labor force; ² out of those currently working, including wage and salary work, employer, self-employed, and working unpaid for the family; ³ for those working in the respective category.

Table 5. Summary Statistics for Employment-related Outcome Variables (2006 Cross Section)

Descriptive statistics (mean, standard deviation and the number of observations), separately for men and women aged 22-44, for the outcome variables related to the labor market, differentiated by individuals living in a household with migrants but without remittance income ("M households") and individuals living in a household with migrants and remittance income ("MR households"), based on the market labor force participation definition and the standard definition of unemployment (active search criterion).

	M households			Cross section 2006 MR households			total		
	mean	sd	N	mean	sd	N	mean	sd	N
Women aged 22-44									
- in the labor force	0.40	0.49	101	0.38	0.49	232	0.34	0.47	5,950
- unemployed ¹	0.24	0.43	39	0.31	0.47	85	0.22	0.42	2,002
- wage & salary work ²	0.05	0.21	101	0.09	0.29	232	0.16	0.37	5,950
- self-empl./employer ²	0.05	0.21	101	0.08	0.27	232	0.04	0.19	5,950
- unpaid for family ²	0.21	0.41	101	0.09	0.29	232	0.07	0.26	5,950
- subsistence work	0.53	0.50	101	0.39	0.49	232	0.31	0.46	5,950
<u>hours worked in:</u> ³									
- market work	33.11	16.24	31	30.34	12.61	61	39.40	15.11	1,584
- wage & salary work	40.02	17.14	5	38.85	9.03	22	42.89	11.42	944
- self-empl./employer	40.46	23.54	5	26.98	14.61	18	38.87	19.03	220
- unpaid for family	30.06	14.22	22	24.35	9.11	21	31.68	17.03	418
- subsistence work	13.43	10.02	53	11.12	9.49	91	10.43	8.81	1,825
- domestic work	49.67	41.14	100	53.05	36.52	230	51.62	38.05	5,851
Married women aged 22-44									
- in the labor force				0.36	0.48	134	0.30	0.46	4,651
- unemployed ¹				0.37	0.49	46	0.17	0.38	1,350
- wage & salary work ²				0.08	0.28	134	0.14	0.34	4,651
- self-empl./employer ²				0.11	0.32	134	0.04	0.19	4,651
- unpaid for family ²				0.04	0.19	134	0.08	0.26	4,651
- subsistence work				0.34	0.48	134	0.33	0.47	4,651
<u>hours worked in:</u> ³									
- market work				29.08	13.40	32	37.45	14.04	1,140
- wage & salary work				37.48	4.74	11	40.91	9.15	624
- self-empl./employer				24.88	15.34	15	36.71	17.67	168
- unpaid for family				23.31	12.72	5	31.45	16.88	347
- subsistence work				10.05	9.62	45	10.60	8.82	1,519
- domestic work				57.91	32.40	134	57.13	38.43	4,641
Men aged 22-44									
- in the labor force	0.87	0.34	88	0.83	0.38	76	0.94	0.24	6,108
- unemployed ¹	0.09	0.28	76	0.09	0.28	62	0.05	0.22	5,721
- wage & salary work ²	0.48	0.50	88	0.42	0.50	76	0.64	0.48	6,108
- self-empl./employer ²	0.17	0.38	88	0.14	0.35	76	0.21	0.40	6,108
- unpaid for family ²	0.15	0.36	88	0.22	0.42	76	0.06	0.23	6,108
<u>hours worked in:</u> ³									
- market work	48.64	15.52	69	50.90	16.40	58	51.93	15.16	5,459
- wage & salary work	48.42	15.13	42	49.78	17.64	30	51.09	14.06	3,864
- self-empl./employer	53.36	15.53	15	49.35	12.92	11	54.95	17.40	1,254
- unpaid for family	43.88	16.45	13	53.87	16.57	17	50.43	16.85	340

Data are weighted.

¹ out of those in the labor force; ² out of those currently working, including wage and salary work, employer, self-employed, and working unpaid for the family; ³ for those working in the respective category.

Table 6. Summary Statistics for Explanatory Variables including the IV (Women Aged 22-44).

Descriptive statistics (mean, standard deviation and the number of observations) for the 1998 and 2006 wave of the panel dataset and the 2006 cross section.

	Panel: 1998 wave (N=2,745)				Panel: 2006 wave (N=2,745)				Cross-section 2006 (N=5,950)			
	mean	sd	min	max	mean	sd	min	max	mean	sd	min	max
migration- / remittance-related variables:												
M household	0.01 (N=2,740)	0.09	0	1	0.02 (N=2,740)	0.13	0	1	0.02 (N=5841)	0.13	0	1
MR household	0.03	0.18	0	1	0.03	0.16	0	1	0.04	0.19	0	1
average monthly remittance-income (in 100 LE) ²	-	-	-	-	-	-	-	-	5.95 (N=227)	6.16	0.13	35
individual characteristics:												
age (as of 2005)	31.71	6.87	22	44	31.71	6.87	22	44	31.03	6.77	22	44
ever-married	0.56	0.50	0	1	0.82	0.38	0	1	0.85	0.35	0	1
currently studying	0.19	0.39	0	1	0.01	0.12	0	1	0.01	0.11	0	1
no educational certificate ¹	0.38	0.49	0	1	0.38	0.49	0	1	0.37	0.48	0	1
primary or preparatory degree	0.12	0.33	0	1	0.12	0.33	0	1	0.11	0.32	0	1
general or technical secondary degree	0.30	0.46	0	1	0.30	0.46	0	1	0.31	0.46	0	1
above secondary degree	0.20	0.40	0	1	0.20	0.40	0	1	0.21	0.41	0	1
household characteristics:												
number of children aged 0-5 in the household	0.93	1.07	0	6	0.85	0.96	0	6	0.97	1.03	0	6
number of children aged 6-14 in the household	1.37	1.38	0	9	1.06	1.17	0	7	0.94	1.15	0	7
presence of elderly in the household	0.19	0.39	0	1	0.13	0.34	0	1	0.15	0.36	0	1
urban	0.42	0.49	0	1	0.41	0.50	0	1	0.45	0.50	0	1
village level characteristics												
share of men with secondary degree	0.19	0.06	0.03	0.58	0.37	0.08	0.14	0.62	0.37	0.07	0.12	0.63
share of men with above secondary degree	0.09	0.08	0	0.57	0.18	0.12	0.04	0.77	0.18	0.12	0.03	0.77
share of men working in the private sector	0.70	0.13	0.02	0.96	0.69	0.13	0.23	0.93	0.69	0.12	0.23	0.95
share of men working in agriculture	0.34	0.27	0	0.89	0.26	0.23	0.00	0.75	0.25	0.23	0.00	0.91
male unemployment rate	0.07	0.03	0	0.21	0.08	0.05	0	0.28	0.08	0.05	0	0.28
instrumental variable (based on 2006 census):												
IV: percentage of migrants at the village level	-	-	-	-	-	-	-	-	0.02	0.02	0	0.13

¹ reference category. ² if the household is receiving remittances. The exchange rate between LE and US \$ was 5.5 LE/\$ at the end of October 2008.

Note: Age and education variables do not change between the two waves. Data are weighted.

Table 7. Summary Statistics for Explanatory Variables including the IV (Wives Aged 22-44).
Descriptive statistics (mean, standard deviation and the number of observations) for the 2006 cross section.

	Cross-section 2006 (N=4,651)			
	mean	sd	min	max
migration- / remittance-related variables:				
wives with their husband working abroad	0.03	0.17	0	1
average monthly remittance-income (in 100 LE) ²	4.98	4.19	0.13	23.33
(N=129)				
individual characteristics:				
age (as of 2005)	31.55	6.65	22	44
no educational certificate ¹	0.38	0.49	0	1
primary or preparatory degree	0.12	0.32	0	1
general or technical secondary degree	0.32	0.47	0	1
above secondary degree	0.18	0.39	0	1
household characteristics:				
number of children aged 0-5 in the household	1.11	1.01	0	6
number of children aged 6-14 in the household	1.03	1.19	0	7
presence of elderly in the household	0.12	0.32	0	1
urban	0.43	0.50	0	1
village level characteristics				
share of men with secondary degree	0.37	0.07	0.12	0.63
share of men with above secondary degree	0.18	0.12	0.03	0.77
share of men working in the private sector	0.69	0.12	0.23	0.95
share of men working in agriculture	0.25	0.23	0.00	0.91
male unemployment rate	0.08	0.05	0	0.26
instrumental variable (based on 2006 census):				
IV: percentage of migrants at the village level	0.02	0.02	0	0.13

¹ reference category. ² if the household is receiving remittances. The exchange rate between LE and US \$ was 5.5 LE/\$ at the end of October 2008.

Note: Age and education variables do not change between the two waves. Data are weighted.

Table 8. Summary Statistics for Explanatory Variables including the IV (Men Aged 22-44).

Descriptive statistics (mean, standard deviation and the number of observations) for the 1998 and 2006 wave of the panel dataset and the 2006 cross section.

	Panel: 1998 wave (N=2,855)				Panel: 2006 wave (N=3,005)				Cross-section 2006 (N=6,108)			
	mean	sd	min	max	mean	sd	min	max	mean	sd	min	max
migration- / remittance-related variables:												
M household	0.01	0.11	0	1	0.02	0.13	0	1	0.01	0.12	0	1
MR household	0.02	0.15	0	1	0.01	0.11	0	1	0.01	0.11	0	1
	(N=2806)				(N=2806)				(N=6,075)			
average monthly remittance-income (in 100 LE) ²	-	-	-	-	-	-	-	-	7.62	6.86	0.5	35
									(N=76)			
individual characteristics:												
age	30.78	6.59	22	44	30.78	6.59	22	44	31.10	6.46	22	44
ever-married	0.28	0.45	0	1	0.59	0.49	0	1	0.67	0.47	0	1
currently studying	0.28	0.45	0	1	0.03	0.17	0	1	0.02	0.15	0	1
no educational certificate ¹	0.21	0.41	0	1	0.22	0.41	0	1	0.22	0.42	0	1
primary or preparatory degree	0.15	0.36	0	1	0.15	0.36	0	1	0.16	0.36	0	1
general or technical secondary degree	0.36	0.48	0	1	0.36	0.48	0	1	0.36	0.48	0	1
above secondary degree	0.27	0.44	0	1	0.27	0.44	0	1	0.27	0.44	0	1
household characteristics:												
number of children aged 0-5 in the household	0.72	1.05	0	6	0.85	1.02	0	6	0.93	1.02	0	6
number of children aged 6-14 in the household	1.04	1.21	0	9	0.79	1.09	0	7	0.70	1.08	0	7
presence of elderly in the household	0.20	0.40	0	1	0.17	0.38	0	1	0.15	0.36	0	1
urban	0.44	0.50	0	1	0.43	0.50	0	1	0.45	0.50	0	1
village level characteristics												
share of men with secondary degree	0.19	0.06	0.06	0.58	0.37	0.08	0.14	0.76	0.37	0.07	0.12	0.76
share of men with above secondary degree	0.09	0.09	0.01	0.57	0.18	0.12	0.04	0.76	0.18	0.12	0.03	0.77
share of men working in the private sector	0.70	0.13	0.27	0.96	0.69	0.12	0.24	0.93	0.69	0.12	0.23	0.95
share of men working in agriculture	0.33	0.27	0	0.86	0.25	0.23	0.00	0.74	0.25	0.23	0.00	0.91
male unemployment rate	0.07	0.03	0	0.21	0.08	0.05	0.00	0.24	0.08	0.05	0	0.26
instrumental variable (based on 2006 census):												
IV: percentage of migrants at the village level	-	-	-	-	-	-	-	-	0.02	0.02		0.13

¹ reference category. ² if the household is receiving remittances. The exchange rate between LE and US \$ was 5.5 LE/\$ at the end of October 2008.

Note: Age and education variables do not change between the two waves. Data are weighted.

**Table 9. “Pure” Migration Effect on Women's Employment Participation and Hours Worked Decision
(Women Aged 22-44).**

estimates for M effect		participation decision						
		labor force participation	unem- ployed	wage and salary work	self-employed	family work	subsistence work	
panel estimate		0.095 (0.282)	0.046 (0.647)	-0.941* (0.539)	-0.332 (0.569)	0.873*** (0.259)	0.355* (0.190)	
	p	0.000	0.000	0.000	0.000	0.000	0.000	
	N	5754	906	5754	5754	5754	5754	
IV estimate		0.908	-1.740***	-0.911	-	1.842***	2.484***	
2006 cross section		(0.842)	(0.443)	(0.695)		(0.656)	(0.156)	
	p	0.000	0.000	0.000		0.000	0.000	
	N	5848	1979	5848		5848	5848	
endogeneity of MR?		no	yes**	no		yes*	yes***	
non-IV estimate		0.131	-0.272	-0.694***	0.117 ^A	0.574*** ^A	0.330**	
2006 cross section		(0.151)	(0.286)	(0.234)	(0.219)	(0.167)	(0.131)	
	p	0.000	0.000	0.000	0.000	0.000	0.000	
	N	5848	1979	5848	5769	5769	5848	
		hours worked decision						
		any market work		wage and salary work	self-employed	family work	subsistence work	domestic work
panel estimate		12.929 (8.545)		-14.301 (13.404)	-24.534 (40.873)	45.166*** (13.158)	-	-
	p	0.000		0.000	0.000	0.000		
	N	5754		5754	5754	5754		
IV estimate		51.648 (50.730)		-68.119** (27.993)	-145.303** ^A (56.513)	121.060*** ^A (36.280)	22.439*** (5.189)	-4.820 (12.886)
2006 cross section		0.000		0.000	0.000	0.000	0.000	0.000
	p	0.000		0.000	0.000	0.000	0.000	0.000
	N	5848		5848	5848	5848	5848	5848
endogeneity of MR?		no		no	no	yes**	yes***	no
non-IV estimate		4.348		-36.607***	9.613 ^A	29.158*** ^A	4.783***	2.531
2006 cross section		(6.864)		(12.319)	(17.703)	(8.177)	(1.539)	(5.889)
	p	0.000		0.000	0.000	0.000	0.000	0.000
	N	5848		5848	5848	5848	5848	5848

Control variables: dummies for educational attainment (no degree, primary or preparatory degree, secondary degree, university degree), age in 2006, ever-married, studying, number of children aged 0-5, number of children aged 6-14, presence of elderly in the household, and village level variables, i.e. share of men with secondary degree, share of men with above secondary degree, share of men working in the private sector, share of men working in agriculture, male unemployment rate.

^A: we dropped “studying” due to too few observations.

* p<0.10, ** p<0.05, *** p<0.01

Note: N differs slightly from the N reported in the summary statistics as N is not weighted.

Table 10. Joint Effect of Migration and Remittance Income on Women's Employment Participation and Hours Worked Decision (Women Aged 22-44).

estimates for MR effect		participation decision						
		labor force participation	unemployed	wage and salary work	self-employed	family work	subsistence work	
panel estimate		0.095 (0.193)	0.520 (0.361)	-0.519 (0.333)	0.531** (0.229)	-0.169 (0.238)	0.406*** (0.118)	
	p	0.000	0.000	0.000	0.000	0.000	0.000	
	N	5774	912	5774	5774	5774	5774	
IV estimate		0.680*	0.832	-0.562	-0.103	0.985**	-0.178	
2006 cross section		(0.373)	(1.533)	(0.562)	(1.206)	(0.417)	(0.590)	
	p	0.000	0.000	0.000	0.000	0.000	0.000	
	N	5945	2010	5945	5945	5945	5945	
endogeneity of MR?		no	no	no	no	yes**	no	
non-IV estimate		0.080	0.278	-0.289*	0.484***^A	0.019 ^A	0.012	
2006 cross section		(0.131)	(0.193)	(0.165)	(0.144)	(0.170)	(0.117)	
	p	0.000	0.000	0.000	0.000	0.000	0.000	
	N	5945	2010	5945	5866	5866	5945	
		hours worked decision						
		any market work		wage and salary work	self-employed	family work	subsistence work	domestic work
panel estimate		2.340 (5.929)		-3.853 (7.286)	32.277** (16.300)	-8.526 (12.643)	-	-
	p	0.000		0.000	0.000	0.000		
	N	5774		5774	5774	5774		
IV estimate		22.876		-58.679	211.689*** ^A	61.451*** ^A	1.829	56.670***
2006 cross section		(25.248)		(39.054)	(33.487)	(22.704)	(4.731)	(4.736)
	p	0.000		0.000	0.000	0.000	0.000	0.000
	N	5945		5945	5945	5945	5945	5945
endogeneity of MR?		no		no	yes***	yes***	no	yes***
non-IV estimate		-2.534		-15.505*	33.267*** ^A	-1.391 ^A	0.410	-0.561
2006 cross section		(5.622)		(8.926)	(10.248)	(8.942)	(1.291)	(3.076)
	p	0.000		0.000	0.000	0.000	0.000	0.000
	N	5945		5945	5945	5945	5945	5945

Control variables: dummies for educational attainment (no degree, primary or preparatory degree, secondary degree, university degree), age in 2006, ever-married, studying, number of children aged 0-5, number of children aged 6-14, presence of elderly in the household, and village level variables, i.e. share of men with secondary degree, share of men with above secondary degree, share of men working in the private sector, share of men working in agriculture, male unemployment rate.

^A: we dropped "studying" due to too few observations.

* p<0.10, ** p<0.05, *** p<0.01

Note: N differs slightly from the N reported in the summary statistics as N is not weighted. For the cross section estimation, we control for clustering at the village level.

Table 11. The Effect of the Value of Remittances received (in 100 L.E.) on Women's Participation and Hours Worked Decision (Women Aged 22-44).

estimates for the effect of the average monthly remittance income received (in 100 LE)		participation decision						
		labor force participation	unem- ployed	wage and salary work	self- employed	family work	subsistence work	
IV estimate		0.338***	0.285*	-0.083	-0.249 ^A	0.480***^A	0.066	
2006 cross section		(0.126)	(0.161)	(0.193)	(0.211)	(0.106)	(0.231)	
	p	0.000	0.000	0.000	0.000	0.000	0.000	
	N	5940	2009	5940	5861	5861	5940	
endogeneity of MR?		yes**	no	no	no	yes***	no	
non-IV estimate		0.006	-0.006	-0.042**	0.024*^A	0.036*** ^A	0.009	
2006 cross section		(0.012)	(0.025)	(0.020)	(0.014)	(0.012)	(0.013)	
	p	0.000	0.000	0.000	0.000	0.000	0.000	
	N	5940	2009	5940	5861	5861	5940	
		hours worked decision						
		any market work		wage and salary work	self- employed	family work	subsistence work	domestic work
IV estimate		7.329		-13.073	-25.383	-	2.621	2.102
2006 cross section		(9.298)		(11.035)	(23.221)		(2.302)	(8.274)
	p	0.000		0.000	0.000		0.000	0.000
	N	5940		5940	5940		5940	5940
endogeneity of MR?		no		no	no		no	no
non-IV estimate		0.169		-2.208**	1.592 ^A	1.670*** ^A	0.307**	-0.580***
2006 cross section		(0.490)		(1.060)	(1.041)	(0.560)	(0.134)	(0.221)
	p	0.000		0.000	0.000	0.000	0.000	0.000
	N	5940		5940	5940	5940	5940	5940

Control variables: dummies for educational attainment (no degree, primary or preparatory degree, secondary degree, university degree), age in 2006, ever-married, studying, number of children aged 0-5, number of children aged 6-14, presence of elderly in the household, and village level variables, i.e. share of men with secondary degree, share of men with above secondary degree, share of men working in the private sector, share of men working in agriculture, male unemployment rate.

^A: we dropped "studying" due to too few observations.

* p<0.10, ** p<0.05, *** p<0.01

Note: N differs slightly from the N reported in the summary statistics as N is not weighted.

Table 12. Joint Effect of Migration and Remittance Income on Wives' Employment Participation and Hours Worked Decision (Wives Aged 22-44).

estimates for MR effect		participation decision						
		labor force participation	unemployed	wage and salary work	self-employed	family work	subsistence work	
IV estimate		0.718	2.033*	0.725	-0.395	0.435	-0.509	
2006 cross section		(0.492)	(1.148)	(1.354)	(0.628)	(0.582)	(1.263)	
	p	0.000	0.000	0.000	0.000	0.000	0.000	
	N	4635	1327	4635	4635	4635	4635	
endogeneity of MR?		no	no	no	no	no	no	
non-IV estimate		0.177	0.639**	-0.396**	0.791***	-0.342	-0.028	
2006 cross section		(0.153)	(0.251)	(0.200)	(0.166)	(0.269)	(0.128)	
	p	0.000	0.000	0.000	0.000	0.000	0.000	
	N	4635	1327	4635	4635	4635	4635	
		hours worked decision						
		any market work		wage and salary work	self-employed	family work	subsistence work	domestic work
IV estimate		-102.082***		-41.459	253.197***	30.378	-0.671	69.442***
2006 cross section		(5.465)		(47.292)	(42.792)	(34.647)	(6.326)	(4.730)
	p	0.000		0.000	0.000	0.000	0.000	0.000
	N	4635		4635	4635	4635	4635	4635
endogeneity of MR?		yes***		no	yes***	no	no	yes***
non-IV estimate		-2.835		-19.757**	52.204***	-19.618	-0.667	-0.482
2006 cross section		(5.964)		(9.788)	(10.222)	(14.085)	(1.430)	(3.439)
	p	0.000		0.000	0.000	0.000	0.000	0.000
	N	4635		4635	4635	4635	4635	4635

Control variables: dummies for educational attainment (no degree, primary or preparatory degree, secondary degree, university degree), age in 2006, number of children aged 0-5, number of children aged 6-14, presence of elderly in the household, and village level variables, i.e. share of men with secondary degree, share of men with above secondary degree, share of men working in the private sector, share of men working in agriculture, male unemployment rate.

* p<0.10, ** p<0.05, *** p<0.01

Note: N differs slightly from the N reported in the summary statistics as N is not weighted. We control for clustering at the village level.

Table 13. The Effect of the Value of Remittances received (in 100 L.E.) on Wives' Participation and Hours Worked Decision (Wives Aged 22-44).

estimates for the effect of the average monthly remittance income received (in 100 LE)			participation decision				
	labor force participation	unem- ployed	wage and salary work	self- employed	family work	subsistence work	
IV estimate	0.768***	0.912***	0.249	-0.450	0.817***	-0.004	
2006 cross section	(0.137)	(0.224)	(0.520)	(0.448)	(0.115)	(0.536)	
p	0.000	0.000	0.000	0.000	0.000	0.000	
N	4632	1326	4632	4632	4632	4632	
endogeneity of MR?	yes***	yes*	no	no	yes***	no	
non-IV estimate	-0.011	0.089**	-0.062**	0.072***	-0.041	-0.009	
2006 cross section	(0.022)	(0.039)	(0.029)	(0.021)	(0.056)	(0.022)	
p	0.000	0.000	0.000	0.000	0.000	0.000	
N	4632	1326	4632	4632	4632	4632	
			hours worked decision				
	any market work		wage and salary work	self- employed	family work	subsistence work	domestic work
IV estimate	29.512		-9.646	-44.458	84.266**	5.863	6.392
2006 cross section	(27.287)		(30.962)	(54.355)	(42.434)	(5.459)	(20.898)
p	0.000		0.000	0.000	0.000	0.000	0.000
N	4632		4632	4632	4632	4632	4632
endogeneity of MR?	no		no	no	yes**	no	no
non-IV estimate	-1.206		-3.053**	4.678***	-2.379	-0.213	-0.224
2006 cross section	(0.892)		(1.403)	(1.302)	(2.914)	(0.244)	(0.513)
p	0.000		0.000	0.000	0.000	0.000	0.000
N	4632		4632	4632	4632	4632	4632

Control variables: dummies for educational attainment (no degree, primary or preparatory degree, secondary degree, university degree), age in 2006, number of children aged 0-5, number of children aged 6-14, presence of elderly in the household, and village level variables, i.e. share of men with secondary degree, share of men with above secondary degree, share of men working in the private sector, share of men working in agriculture, male unemployment rate.

* p<0.10, ** p<0.05, *** p<0.01

Note: N differs slightly from the N reported in the summary statistics as N is not weighted.

Table 14. “Pure” Migration Effect on Men's Employment Participation and Hours Worked Decision (Men Aged 22-44).

estimates for M effect		participation decision				
		labor force participation	unemployed	wage and salary work	self-employed	family work
panel estimate		-0.564***	0.805**	-0.318	-0.093	-0.213
		(0.213)	(0.379)	(0.202)	(0.289)	(0.293)
	p	0.000	0.000	0.000	0.000	0.000
	N	6202	3864	6202	6202	6202
IV estimate		0.655	1.740*	-0.920	-1.525***	-0.646
2006 cross section		(3.440)	(1.050)	(0.693)	(0.418)	(0.771)
	p	0.000	0.000	0.000	0.000	0.000
	N	6197	5803	6197	6197	6197
endogeneity of M?		no	no	no	yes*	no
non-IV estimate		-0.281	0.114^A	-0.218	-0.035	0.149
2006 cross section		(0.196)	(0.238)	(0.140)	(0.183)	(0.259)
	p	0.000	0.000	0.000	0.000	0.000
	N	6197	5777	6197	6197	6197
		hours worked decision				
		any market work		wage and salary work	self-employed	family work
panel estimate		-8.226**		-2.471	-2.474	-28.228
		(3.679)		(5.504)	(14.499)	(20.339)
	p	0.000		0.000	0.000	0.000
	N	6202		6202	6202	6202
IV estimate		-10.051		-89.797***	-	-
2006 cross section		(6.599)		(7.512)		
	p	0.000		0.000		
	N	6197		6197		
endogeneity of M?		no		yes***		
non-IV estimate		-5.201		-8.409*	-2.272	11.717
2006 cross section		(3.216)		(4.995)	(13.442)	(20.709)
	p	0.000		0.000	0.000	0.000
	N	6197		6197	6197	6197

Control variables: dummies for educational attainment (no degree, primary or preparatory degree, secondary degree, university degree), age in 2006, ever-married, studying, number of children aged 0-5, number of children aged 6-14, presence of elderly in the household, and village level variables, i.e. share of men with secondary degree, share of men with above secondary degree, share of men working in the private sector, share of men working in agriculture, male unemployment rate.

^A: we dropped “studying” due to too few observations.

* p<0.10, ** p<0.05, *** p<0.01

Note: N differs slightly from the N reported in the summary statistics as N is not weighted.

Table 15. Joint Effect of Migration and Remittance Income on Men's Employment Participation and Hours Worked Decision (Men Aged 22-44).

estimates for MR effect		participation decision				
		labor force participation	unemployed	wage and salary work	self-employed	family work
panel estimate		0.330	0.116	0.011	0.295	0.376
		(0.237)	(0.385)	(0.211)	(0.272)	(0.263)
	p	0.000	0.000	0.000	0.000	0.000
	N	6086	3794	6086	6086	6086
IV estimate		0.014	0.756	0.020	-0.267	-0.186
2006 cross section		(0.558)	(1.116)	(1.249)	(0.868)	(0.476)
	p	0.000	0.000	0.000	0.000	0.000
	N	6157	5767	6157	6157	6157
endogeneity of MR?		no	no	no	no	no
non-IV estimate		-0.470	0.232	-0.419**	-0.056	0.457**
2006 cross section		(0.291)	(0.341)	(0.193)	(0.225)	(0.228)
	p	0.000	0.000	0.000	0.000	0.000
	N	6157	5741	6157	6157	6157
		hours worked decision				
		any market work		wage and salary work	self-employed	family work
panel estimate		6.332*		0.537	9.684	23.248
		(3.556)		(5.744)	(14.019)	(15.454)
	p	0.000		0.000	0.000	0.000
	N	6086		6086	6086	6086
IV estimate		-8.038		-19.756	-33.459	-
2006 cross section		(6.945)		(17.932)	(143.442)	
	p	0.000		0.000	0.000	
	N	6157		6157	6157	
endogeneity of MR?		no		no	no	
non-IV estimate		-4.815		-16.474**	-4.650	38.644**
2006 cross section		(4.797)		(7.288)	(16.580)	(19.455)
	p	0.000		0.000	0.000	0.000
	N	6157		6157	6157	6157

Control variables: dummies for educational attainment (no degree, primary or preparatory degree, secondary degree, university degree), age in 2006, ever-married, studying, number of children aged 0-5, number of children aged 6-14, presence of elderly in the household, and village level variables, i.e. share of men with secondary degree, share of men with above secondary degree, share of men working in the private sector, share of men working in agriculture, male unemployment rate.

* p<0.10, ** p<0.05, *** p<0.01

Note: N differs slightly from the N reported in the summary statistics as N is not weighted.

Table 16. The Effect of the Value of Remittances received (in 100 L.E.) on Men's Participation and Hours Worked Decision (Men Aged 22-44).

estimates for the effect of the average monthly remittance income received (in 100 LE)		labor force participation	unemployed	participation decision wage and salary work	self- employed	family work
IV estimate		-0.576**	0.545	-0.629***	0.529**	0.358
2006 cross section		(0.256)	(0.498)	(0.205)	(0.210)	(0.307)
	p	0.000	0.000	0.000	0.000	0.000
	N	6157	5741	6157	6157	6157
	endogeneity of MR?	yes*	no	yes***	yes**	no
non-IV estimate		-0.055**	0.015	-0.068***	0.012	0.034*
2006 cross section		(0.022)	(0.035)	(0.022)	(0.020)	(0.018)
	p	0.000	0.000	0.000	0.000	0.000
	N	6157	5741	6157	6157	6157
		hours worked decision				
		any market work		wage and salary work	self- employed	family work
IV estimate		-22.576**		-39.786**	34.928	20.630
2006 cross section		(10.261)		(17.795)	(21.372)	(34.645)
	p	0.000		0.000	0.000	0.000
	N	6157		6157	6157	6157
	endogeneity of MR?	yes**		yes**	no	no
non-IV estimate		-0.667		-2.459***	0.794	2.787*
2006 cross section		(0.522)		(0.844)	(1.395)	(1.637)
	p	0.000		0.000	0.000	0.000
	N	6157		6157	6157	6157

Control variables: dummies for educational attainment (no degree, primary or preparatory degree, secondary degree, university degree), age in 2006, ever-married, studying, number of children aged 0-5, number of children aged 6-14, presence of elderly in the household, and village level variables, i.e. share of men with secondary degree, share of men with above secondary degree, share of men working in the private sector, share of men working in agriculture, male unemployment rate.

* p<0.10, ** p<0.05, *** p<0.01

Note: N differs slightly from the N reported in the summary statistics as N is not weighted.

Table 17. Sensitivity Checks for a Subset of All Estimated Models (Cross Section 2006).

	M effect				MR effect			
	labor force participation		hours worked (any market work)		labor force participation		hours worked (any market work)	
	IV	non-IV	IV	non-IV	IV	non-IV	IV	non-IV
Women								
original specification	0.908 (0.842)	0.131 (0.151)	51.648 (50.730)	4.348 (6.864)	0.680* (0.373)	0.080 (0.131)	22.876 (25.248)	-2.534 (5.622)
age 20-44	0.937 (0.697)	0.241 (0.156)	52.763 (50.842)	7.055 (7.187)	0.708** (0.361)	0.099 (0.126)	28.812 (24.924)	-2.773 (5.518)
age 22-49	0.901 (0.910)	0.121 (0.146)	44.395 (44.417)	3.647 (6.625)	0.724* (0.374)	0.018 (0.123)	23.760 (21.028)	-5.717 (5.256)
no child hh level variables	0.705 (0.862)	0.159 (0.156)	40.194 (42.177)	5.486 (7.099)	0.798** (0.366)	0.087 (0.131)	28.698 (23.307)	-2.034 (5.660)
excluding households with return labor migrants	0.642 (0.841)	0.076 (0.158)	43.691 (49.889)	2.672 (7.604)	0.710** (0.350)	0.089 (0.131)	24.554 (23.663)	-2.475 (5.637)
Wives								
original specification					0.718 (0.492)	0.177 (0.153)	-102.082*** (5.465)	-2.835 (5.964)
age 20-44					0.782 (0.497)	0.208 (0.148)	-102.795*** (5.419)	-2.711 (5.789)
age 22-49					0.760 (0.481)	0.120 (0.141)	-3.906 (65.462)	-5.319 (5.628)
no child hh level variables					0.743 (0.470)	0.168 (0.150)	-103.024*** (5.332)	-3.149 (6.012)
excluding households with return labor migrants					0.728 (0.478)	0.182 (0.152)	-104.544*** (5.645)	-3.037 (6.056)
Men								
original specification	0.655 (3.440)	-0.281 (0.196)	-10.051 (6.599)	-5.201 (3.216)	0.014 (0.558)	-0.470 (0.291)	-8.038 (6.945)	-4.815 (4.797)
age 20-44	-0.523 (1.318)	-0.056 (0.169)	-8.235 (5.965)	-2.259 (2.774)	-0.143 (0.649)	-0.445* (0.228)	-9.385 (6.833)	-5.486 (4.747)
age 22-49	-1.843* (0.942)	-0.270 (0.185)	-12.234 (8.246)	-4.817 (3.022)	-0.192 (0.646)	-0.446 (0.276)	-6.153 (7.095)	-3.828 (4.210)
no child hh level variables	-	-0.299 (0.197)	-10.559* (6.206)	-5.404* (3.261)	-0.152 (0.661)	-0.509* (0.285)	-8.348 (7.069)	-4.873 (4.809)
excluding households with return labor migrants	-0.210 (36.959)	-0.318 (0.211)	-34.580*** (12.422)	-4.698 (3.081)	0.109 (0.555)	-0.494* (0.296)	-7.689 (6.789)	-4.962 (4.811)

Table 18. Sensitivity Checks for a Subset of All Estimated Models (Panel 1998/2006).

	M effect		MR effect	
	labor force participation	hours worked (any market work)	labor force participation	hours worked (any market work)
women				
original specification	0.095 (0.282)	12.929 (8.545)	0.095 (0.193)	2.340 (5.929)
age 20-44	0.097 (0.282)	12.844 (8.570)	0.085 (0.192)	1.798 (5.926)
age 22-49	0.044 (0.282)	12.071 (8.039)	-0.001 (0.190)	-0.892 (5.514)
no child hh level variables	0.102 (0.283)	13.174 (8.536)	0.104 (0.194)	2.657 (5.915)
excluding households with return labor migrants	-0.220 (0.309)	0.616 (9.676)	0.101 (0.191)	2.587 (6.042)
household level characteristics fixed to 1998 level	0.063 (0.282)	12.069 (8.523)	0.087 (0.193)	1.979 (5.926)
men				
original specification	-0.564*** (0.213)	-8.226** (3.679)	0.330 (0.237)	6.332* (3.556)
age 20-44	-0.387* (0.205)	-7.028* (3.620)	0.052 (0.207)	3.877 (3.503)
age 22-49	-0.587*** (0.221)	-7.815** (3.500)	0.355 (0.246)	5.442* (3.256)
no child hh level variables	-0.560*** (0.211)	-8.371** (3.668)	0.299 (0.235)	5.829* (3.527)
excluding households with return labor migrants	-0.589** (0.242)	-6.270 (4.002)	0.366 (0.247)	6.348* (3.581)
household level characteristics fixed to 1998 level	-0.527** (0.210)	-7.872** (3.673)	0.338 (0.235)	6.501* (3.535)