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William Collier
Matloob Piracha
Teresa Randazzo

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of Labor

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William Collier
University of Kent

Matloob Piracha
University of Kent
and IZA

Teresa Randazzo
University of Kent

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IZA

P.O. Box 7240
53072 Bonn
Germany

Phone: +49-228-3894-0
Fax: +49-228-3894-180
E-mail: iza@iza.org

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ABSTRACT

Remittances and Return Migration*

This paper utilises survey data of return migrants to analyse the determinants of remittances sent while the migrants were abroad. We approach our research question from the perspective of three sending countries in the Maghreb, namely Algeria, Morocco and Tunisia. We investigate the remittance behaviour using the migrants' conditions before migration as well as during the migration experience. Using a two-part model, we show that the decision to remit and the amount remitted depend on a combination of different migrant characteristics as well as the duration and form of migration. We also consider if the remittance behaviour is dependent on the type of return: decided or compelled. We show that those who decided to return have a higher probability to remit for investment purposes and remit more as the time spent abroad increases.

JEL Classification: F22, F24

Keywords: remittances, return migration, Maghreb countries

Corresponding author:

Matloob Piracha
School of Economics
Keynes College
University of Kent
Kent CT2 7NP
United Kingdom
E-mail: M.E.Piracha@kent.ac.uk

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1. Introduction

The economic implications of migration for sending and receiving countries vary widely. Receiving countries may experience an infusion of cheap labour into the economy with consequent impacts on wage and job availability. For sending countries, emigration seems to have even a larger impact. On the one hand home countries may suffer from "brain drain" while on the other hand benefits of emigration may be identified via unemployment alleviation, human capital accumulation (as a result of return migration), and, arguably most importantly, the inflow of remittances.

Recent data reveal that remittance flows to developing countries have more than tripled over the past decade. Following a fall to $305 billion in 2009, the World Bank estimates that remittances increased by approximately 6 percent to $325 billion in 2010, returning to the level of 2008. These transfers of income are expected to increase further in the coming years.[1] Furthermore, the World Bank underlines that the volume of these private transfers could possibly be at least 50 percent more than what the available data suggest.

Remittances can take different forms but what is most important is that they are the key mechanism that enables individuals to transfer a part of the gains from migration from the destination to the origin country. The motivations that generate these flows of income may vary from supporting the family at home to buying a property or realizing other investment projects.[2] Moreover, in the case of temporary migration, remittances may generate entrepreneurial opportunities upon return and help overcome the credit constraints that individuals may face in the origin country.

The growing importance of these income transfers has produced numerous studies which have not only investigated the impact of remittances on growth and development in the origin countries but also the possible motivations to remit. Nevertheless, there is still no consensus as to what motivates migrants to remit, especially when migration can take different forms (e.g. temporary, permanent, circular). For instance, there might be a reduction in the remittance flows of those who intend to stay in the destination country permanently as their family moves with them or joins them and as the links with the home country diminish over time. However, if the motive to remit is to secure a share in future bequest by the parent then these flows can last for a very long time (Lucas and Stark 1985, Hoddinott 1994, de la Brière *et al.* 2002). Nevertheless, migrants who intend to return to the home country are more

[1] The World Bank (2010).

[2] Remittances may also represent an additional income source used to alleviate family poverty, to finance children's education, to afford better health care and/or to offer a safety resource for the family in times of financial hardship.

likely to remit regularly, and possibly, though not necessarily, for different objectives than those who migrate permanently.[3] Dustmann and Mestres (2010), for example, argue that temporary migrants are likely to remit more as their family members stay in the home country instead of joining them in the destination country. In addition, remittances may be affected by the insurance motive as temporary migrants consider the readjustment cost upon return and seek (extended) family assistance in this regard. Finally, they find that the more likely a migrant is to return, the higher the probability of remitting for investment purposes.

Most papers that discuss temporary migration do so using intentions to return as a proof of actual return. Indeed, intentions do not necessarily convert into actions (see Lu, 1999). However, if migrants have actually returned to the home country, then it is reasonable to argue that their remittances while in the destination country were based on their 'true' intentions, at that time, to return. Accordingly, our analysis in this paper focuses on return migrants and considers how different individual and household characteristics as well as different forms of temporary migration − return after only one migration episode versus repeated migration (circular migrants) − affect the remittance behaviour of return-migrants, while living abroad. Since in our setup the return is actually realised, we argue that the remittance behaviour captured in our analysis more closely relates not only to the characteristics of the migrants but also its interaction with different forms of migration. In addition, we highlight differences in remitting behaviour by type of return: decided or compelled. Migrants who decided or chose to return home may exhibit different remittance behaviour to those who were forced to interrupt the migration experience. We investigate if any significant difference between the two groups of returnees exists in the determinants of remittances.

Our empirical analysis is based on a cross-sectional data set collected in 2006 in the context of the *Migration de Retour au Maghreb* (MIREM) project. This unique data set provides a rich source of information concerning migrant behaviour for three Maghreb countries: Algeria, Morocco and Tunisia. These have traditionally been migrant sending countries with a long history of out migration and healthy remittance flows,[4] and yet there is limited research on this region within the migration literature. To our knowledge, this paper is the first empirical study on remittance motivations using this data set.

[3] See Rapoport and Docquier (2006) for an excellent review of the theoretical literature regarding the motivations for remittances.

[4] In 2010, for instance, Moroccan remittances were estimated to be around $6.4 billion and around $2.0 billion for each of Algeria and Tunisia (The World Bank, 2011).

Our strategy consists in separating the probability and level of remittances. Our results show that differences in remittances across return migrants to the Maghreb region can be explained by a combination of household and migrant observed characteristics. Furthermore, we find that some important factors which affect the decision to remit do not explain the amount remitted and vice versa. For example, education and labour force status affect the probability to remit but they are not significant in explaining the amount remitted. By contrast, time spent abroad does not affect the decision to remit but does exert a positive effect on the level of remittances. Also, entering illegally in the host country and investment upon return both positively affect the probability and level of remittances. In regards to the type of return, we find that some factors, e.g., having children before migration, form of entry (legal or illegal) and investment upon return, affect decided and compelled returnees in different ways. We provide some intuition for our results.

The remainder of the paper is organized as follows. Section 2 summarizes how migration has evolved in the Maghreb region. Section 3 provides a description of the data set used in the paper. Sections 4 and 5, respectively, discuss the empirical methodology and estimation results. Concluding remarks are presented in Section 6.

2. Migration Trend and Remittance Flows in the Maghreb

Western Europe represents the main destination region of the Maghreb migration flows followed by the oil producing Arab countries. For historical reasons, France has attracted majority of the Maghreb community abroad followed by Spain and Italy. The OECD reports that France received a flow of 22,315 Algerians, 19,214 Moroccan and 7,854 Tunisians in 2008 while Spain received a higher flow of migrants from Morocco (93,623) in the same period.[5]

Since the post-colonial period, migration in the Euro-Mediterranean region has been characterized by different phases depending on historical and political events, both at the national and international level. Following a period of guest-worker programmes (1963-1972) signed between the Maghreb and some European countries (France, Germany, Belgium and the Netherlands), the 1973 Oil Crisis and subsequent economic recession in Western Europe represent a turning point for Maghreb-European Migration, marking the end of the recruitment phase in Europe and the beginning of restrictive migration policies that

[5] Inflows of foreign population are derived from population registers or residence permit data. The illegal migration is not taken into account and therefore the information provided from the OECD International Migration Dataset gives us only a partial view.

continue to persist today. Notwithstanding these restrictive policies, two key events that characterised yet another phase of migration flows from the region to Europe were the first Gulf War of 1991 and the air and arms embargo imposed on Libya between 1992 and 2000. Although a comprehensive analysis of migration stock is not available after 2000, the flow of emigrants from North Africa is likely to have increased in the last 10 years with continued labour force growth (2.8 percent a year for the region[6]) and high unemployment in the presence of limited labour demand playing their part as the main push factors.

In general, poverty, unemployment and political instability in the region can be identified as the main causes of the decision to emigrate. Migration of unskilled and semi-skilled workers with rural origin has dominated the flow to Europe. However, skilled emigrants from North Africa have grown significantly over the past two decades. Information regarding the total number of expatriates, as well as the proportion of high-skilled provided by origin countries, do not always correspond to the statistics available in the receiving countries.[7] More recently, Docquier *et al.* (2009) have developed a dataset that highlights worldwide migrants' skill levels in the OECD.[8] Looking at the skilled migration rate of the Maghreb region in 2000, Morocco has almost 20 percent of its skilled workforce living abroad, Tunisia around 13 percent and Algeria almost 10 percent.[9] It is not clear if this phenomenon reflects a change in migration selectivity or is simply the consequence of a general improvement in the level of education in origin countries. The World Bank (2010) highlights that the reasons behind the departure of educated individuals do not depend solely on wage differentials between Maghreb and Europe. Labour market conditions including relative unemployment, industry structure and career opportunities for the highly skilled are also considered to be important.

North African population movements have generated a consistent flow of transfers to origin countries. The entire MENA region receives 10 percent of the world's remittances with North Africa accounting for a large proportion. Indeed, remittances in this region surpass other financial flows such as FDI. For example, remittances to Morocco accounted for 9 percent of the share of the GDP in 2007. Remittances to Algeria and Tunisia constitute a much smaller share of GDP (2.1% and 1.7% in 2007) though such flows remain higher than

[6] Includes Morocco, Tunisia, Libya, Algeria and Egypt.
[7] It may depend on the choice of different criteria of computation and it requires a consistent effort to harmonize data between sending and receiving countries
[8] The dataset is based on the aggregation of harmonized immigration data collected in OECD host countries for two periods, 1990 and 2000. Only individuals of age 25+ are considered as at that age education is assumed to be completed.
[9] The skilled migration rate is calculated as a proportion of the total educated labour force in the source country.

both ODA and FDI.[10] More recently, remittance flows to the Maghreb have been affected by the global financial crisis. The World Bank (2010) reports that remittances may have declined by 10 percent between 2008 and 2009. Given that on a per capita basis, as well as a share of GDP, dependence on remittances in North Africa is greater than any other region in the world, the impact of this decline may be significant. Nevertheless, remittance flows are forecast to increase again in the coming years.

3. Data

The dataset used in the paper is extracted from the survey carried out by the MIREM project on return migrants to three countries in the Maghreb region, namely Algeria, Tunisia and Morocco.[11] The survey was conducted across a few specific regions in each of these countries, as reported in Table 1. Return migrants are defined as "*any person returning to his/her country of origin, in the course of the last ten years, having been an international migrant (whether short-term or long-term) in another country. Return may be permanent or temporary. It may be independently decided by the migrant or forced by unexpected circumstances*". Given the restricted geographical coverage of the survey and the focus on return migrants only, observed trends in the data may not be considered as evidence of wider national trends in the return migration cycle. Nonetheless, the data provide a unique opportunity to consider the microeconomic behaviour of return migrants across the Maghreb region.

The main objective of the MIREM project is to provide a better understanding of the challenges linked to return migration (as the reintegration path) and its impact on economic development. These outcomes are achieved by utilising questionnaire responses that identify migrant profiles at three different migratory stages: pre-migration conditions in the country of origin; migrant experiences in the country of immigration; and finally their conditions in the country after return. Capturing such information enables the identification of those factors inherent in understanding the migration cycle. Importantly, it also enables us to distinguish between those migrants who chose to return home and those who were compelled.

The MIREM survey is composed of 992 return migrant interviews with approximately 330 individuals in each country interviewed simultaneously between

[10] World Development Indicators (2009).
[11] The "Collective Action to Support the Reintegration of Return Migrants in their Country of Origin", MIREM project, was created in December 2005, with the financial support from the European Union and the European University Institute.

September 2006 and January 2007 using a common questionnaire.[12] We restrict our analysis to individuals who at the moment of departure were aged between 16 and 55. This sample includes students, housewives and retirees since a small percentage of such respondents were observed to engage in remittance behaviour.[13] However, individuals with missing relevant information are excluded. These restrictions result in a final sample of 785 return migrants.

As discussed, the survey provides a rich source of information regarding migrant conditions prior to migration as well as various aspects of migrants' experiences (employment status, education and training received, legal or illegal status etc.) abroad and upon their return home. The survey also provides information regarding both the frequency and level of remittances. The frequency of remittances is reported in Table 2 while Table 3 reports the distribution of remittance payments per annum by origin country.

Table 2 reveals that approximately 69 percent of all return migrants in the sample sent remittances regularly or at least "occasionally" (less than once a year) to their home country. The majority of remitters sent transfers monthly though notable differences exist among the three countries: 31.4% and 26.1% respectively to Tunisia and Morocco compared to 4.3% in the case of Algeria. Algerian returnees report the highest percentage in the category of no-transfers (45.5%).

Of those who remitted, around 67 percent reported transferring money to family members in the home country. Supporting the family for survival reasons is stated as the main purpose for sending remittances (87% of those who remitted). Financing children's education is also reported as being important.

The selected sample is predominantly male (89%) with a mean age of 26 years at the time of departure. Before migration, 33% were married and 71% of those who were married had children. Since family status is an important element in determining the remittance decision, we have constructed a variable to account for those who married at home and did not change status abroad as well as those who married in the destination country. Summary statistics are presented in Table 4.

Survey information regarding migrants' level of education is provided both before and during the migration experience. Most return-migrants were relatively well educated prior to migration with 38% having completed secondary school certificate and a further 26% having completed tertiary education. Approximately 15% of respondents reported having no

[12] See www.mirem.eu/datasets/survey/methodological-approach

[13] The fact that some individuals in the inactive category are able to remit leads to some considerations: perhaps retirees were remitting from their retirement allowance or from non-wage income; for students and housewife the source of their transfers may come from some part-time jobs, perhaps in the informal sector.

qualification at the time of migration. Conversely, 24% obtained additional qualifications in the host country, thereby improving their level of education whilst abroad. To capture these dynamics, we construct a variable reporting the last level of education before return, taking into account the level of education before migration for those who did not study in the host country as well as the "new" qualification obtained for those who did. It is important to observe that the proportion of return migrants who studied abroad increased the higher the level of education pre-migration i.e. those relatively better educated before migration were more likely to invest in education while abroad. We also found an inverse relationship between educational attainment and the duration of migration. On average, we observe a negative correlation between the level of education and the period of time spent abroad (see Figure 1).

A potential weakness of the MIREM survey is that it has no direct information regarding migrant earnings, which is, of course, an essential condition of remitting. To overcome this limitation, we consider an indirect measure to evaluate individuals' financial status using information in the survey questionnaire regarding their subjective financial "level".[14] Using this measure, approximately 61% of the sample declared themselves to be in a satisfactory or better financial situation. Furthermore, there is no evidence to suggest differences between Algerians, Moroccans and Tunisians using such a measure. Additional data relating to land ownership or being the owner of a house or apartment confirm this conclusion.

One of the main contributions of the MIREM database is to provide information on the labour force status of migrants at various points of the migration cycle. In our analysis of remittance behaviour we focus solely on the last activity in the host country. This is primarily because the question capturing the decision to remit refers to the last period of migration experience and we do not have any information on the exact time migrants start to remit. We assume that the remittance behaviour before returning home is partially determined by the most recent activity in the host country.

The survey groups labour market activities in 12 professional categories. We aggregate across these groups and reclassify migrants into one of four labour market states: inactive, unemployed, wage earners and the self-employed. The distribution of these labour market states is reported in Figure 2 and Figure 3. The wage earner category includes

[14] Another possibility would be to consider the type and number of goods they owned before migration. We decided to exclude this possibility firstly because we have only very general information on the types of goods and secondly because it is not clear if these goods belong to the migrant or to the household as a whole. It is also possible that young migrants declare not to have any goods even if they come from wealthy families.

individuals with indefinite contracts, fixed term contracts, part-time and seasonal workers; and represents 64.7 percent of the selected sample. The self-employed account for 16.6 percent of the sample and includes business owners employing at least one person, regular and irregular independent workers, and those individual who report themselves as family workers.[15] The inactive and unemployed account for 18.7 percent of the sample.[16,17]

Some of the migrants (18%) in the sample report migrating more than once, either to the same or a different host country. Accordingly, we classify these respondents as circular migrants. Table 5 shows France to be the primary destination country for migrants in our sample, perhaps reflecting past colonization and/or the influence of French institutions and governance following independence. However, given our analysis is conducted from the perspective of the origin country (our sample comprises return migrants only), we do not consider the host country in explaining remittance behaviour.[18]

Most of the migrants, during their time abroad, declared to be regularly in touch with their family members at home through telephone, letters and e-mails and for 57% of them the family had been the main source of information in the returning process. Our sample shows that migrants had strong ties with the family in the origin country during the period spent abroad and we will investigate the effect of close family relationship on remittance behaviour. Furthermore, a significant proportion (31.7%) of our return migrants have invested in at least one project upon return. This suggests that migration could be interpreted as a strategy to alleviate credit market imperfections and invest in a project on return using the savings accumulated abroad. We expect a positive link between the amounts of remittances sent home and the investment decision upon return. Finally, individuals evaluate positively the experience abroad: 79.5% of the interviewees claimed to have taken advantages from the experience overseas and 38% of the return migrants think to repeat the migration experience.

[15] It may argue that family workers should be considered in the wage earner category because they are employed by the family. Based on the special link that characterises relationships in a family we conclude that the interest of the worker coincides with the one of the family, therefore the decision to include them in the self-employed category.

[16] The unemployed are part of the workforce and therefore need to be separated from the inactive category composed of students, housewives and retired.

[17] Students account for approximately 6% of the selected sample, the majority of which are Algerian. Algerians are also the largest group reporting a status of unemployed prior to returning home. Retirees are more evenly distributed across the three countries and account for fewer than 5% of the sample.

[18] We base this decision on the fact that we do not have sufficient information on the macroeconomic conditions that migrants face across different host countries at different point in time. We are aware of the fact that remittance behaviour may be affected by self-selection linked to destination country conditions. For a host country perspective of migration and remittances, see Miotti *et al* (2010).

4. Methodology

The decision to spend a period of the life cycle outside the country of birth may be a strategy to improve the quality of life (such as higher income, better job) upon return. Temporary migrants, or those intending to return, are generally believed to have a stronger relationship with relatives and friends left behind and overall with the home country in comparison to permanent migrants. This link may be reflected in a higher probability to remit. Given that our sample is composed of return (hence temporary) migrants only, our main interest is to see how the decision and level of remittances is affected by individual characteristics and experience overseas.

In modelling the determinants of the migrants' transfers, it is important to consider the nature of the dependent variable. Since we observe only part of the population that remit a positive amount, remittances are bounded at zero and hence censored. In this instance, ordinary least squares (OLS) estimation will not yield consistent parameter estimates since the censored sample is not representative of the population. The conventional approach in this regard is to consider censored regression models such as Tobit. These models postulate a latent remittance outcome for nonparticipants (i.e. those who do not remit) whereby the associated log-likelihood function consists of two parts: One that corresponds to the classical regression for the uncensored observations; and another which corresponds to the relevant probabilities that an observation is censored.

In the current context, the above approach has two main drawbacks. First, the model is only applicable where zero values are due to non-observability, that is, the data capture true censoring. This may not be the case since observed zeros most likely represent the decisions of individuals, that is, we might expect remittances to be zero for some people.[19] Second, the model is restrictive in that it assumes the same mechanism underlies both the probability and the intensity to remit. Economic theory suggests that the decision to remit may depend on factors other than those that determine the level of remittances. Accordingly, an alternative framework with which to consider remittance behaviour is to utilise a two-part model which incorporates an explicit two-stage process that permits different mechanisms to generate the alternative outcomes:

[19] For example, in the context of a utility maximisation problem, the optimal choice for some individuals will be a corner solution such that y=0.

$$\textit{Remittance decision}: \quad d_i^* = z_i'\beta_1 + \varepsilon_i \quad \textit{with} \quad d_i = \begin{cases} 0 \;\; if \;\; d_i^* \leq 0 \\ 1 \; if \;\; d_i^* > 0 \end{cases} \tag{1}$$

$$\textit{Remittance level}: \quad (r_i | d_i^* > 0) = x_i'\beta_2 + \upsilon_i \tag{2}$$

Equation (1) represents the remittance decision of return migrants. The variable d_i^* is a latent variable which determines the discrete outcome d_i, the decision to remit. The discrete outcome is observed with $d_i = 1 \; if \; d_i^* > 0$ and $d_i = 0 \; if \; d_i^* \leq 0$. The z_i' is a vector of non-stochastic regressors and β a vector of unknown parameters. Assuming the errors, ε_i, are standard normal, consistent estimates of β can be obtained using maximum likelihood estimation (MLE).

Equation (2) represents the remittance level r_i conditional on the decision to remit, where r_i is a continuous non-negative random variable bounded at zero. Again, x_i' is a vector of regressors that may include those contained in z_i' or additional ones. The errors υ are again considered to be independent normal.

Remittances in the MIREM data are reported as interval data ranging from less than €200 to more than €1000. Interval data presents a problem when utilised as a dependent variable. Assigning the midpoint to observations in any given group and utilising OLS is one recognised method to deal with this type of data. However, allocating values to open-ended groups is an *ad hoc* procedure that is known not to produce consistent parameter estimates. Accordingly, we adopt an alternative strategy and utilise the approach of Stewart (1983) which recognises that the upper and lower bounds of observed intervals provide important information for the consistent estimation of an econometric model.

We assume that the errors, υ_i, in Equation 2 are independently identically normally distributed random variables with zero mean and variance σ^2. This yields the distribution of the unobserved dependent variable as:

$$r_i \sim \mathrm{N}(\mathrm{x_i'}\beta, \sigma^2) \tag{3}$$

The dependent variable is observed to fall into a certain range on the real line. Let R_{k-1} and R_k be the lower and upper boundaries of the k^{th} range

$$R_{k-1} < r_i \leq R_k \quad (4)$$

In our data, the lower bound of remittances is closed at zero and the upper one is open ended. In logarithmic form both extreme ranges are open ended such that $R_0 = -\infty$ and $R_k = +\infty$, where k is the number of groups. The log likelihood of this model is thus:

$$\log L = \sum_{k=1}^{K} \sum_{i \epsilon k} \log \left\{ \phi \left[\frac{(R_k - X_i'\beta)}{\sigma} \right] - \phi \left[\frac{(R_{k-1} - X_i'\beta)}{\sigma} \right] \right\} = \sum_i \log\{\phi_k - \phi_{k-1}\} \quad (5)$$

where $\Phi(\ )$ is the cumulative distribution of the standard normal. Consistent estimates of β and σ are obtained by Maximum Likelihood Estimation (MLE). The sign of the regression parameters β can be interpreted as determining whether or not the level of remittances increases with the regressor.

A closely related strategy to that proposed above is to consider an ordered probit framework. The ordered probit is a generalised probit model with multinomial outcomes. Given our remittance data is coded in intervals, it is relatively straightforward to consider each interval as a natural ordering of alternative outcomes. Further, interval regression and ordered probit estimation can be shown to be closely related. Accordingly, for comparison purposes, we report the results of both interval and ordered probit regressions in the next section.

5. Results

The advantage of the two-part model is that it allows the determinants of probability and level of remittances to be investigated separately under the assumption that these two decisions are generated by different probability mechanisms. We have found that the amount remitted is affected by variables that do not impact the probability to remit. We would not be able to arrive at the same conclusion if we assumed a joint mechanism as in the case of the Tobit model discussed earlier. Under the two-part model framework, we discuss separately the determinants of the probability and level of remittances.[20]

[20] Note that the two-part model attains its flexibility by assuming that the two parts – the decision to remit and the amount remitted – are independent. If we permit the possibility of dependence between the disturbance terms then a Heckman Sample Selection Model may be more appropriate. However, such models involve important identification issues. In particular, in order to identify the participation decision from the level decision it is necessary that we can identify an exogenous variable(s) which affects the decision of whether or not to remit but does not affect the decision of how much to remit. The availability of valid exclusion restrictions permits the hypothesis of independence of the disturbances in Equations (1) and (2) to be tested

5.1 The Decision to Remit

The results of the two-part model are reported in Table 6. Column (1) reports the marginal effects of a simple probit model on the decision to remit. The results reveal that gender has no impact on the decision to remit. By contrast, there are clear origin country effects with migrants from Morocco and Tunisia being 17% and 18%, respectively, more likely to remit than those from Algeria. A similar finding is reported by Miotti *et al* (2010) who investigate the remittance behaviour in the Southern Mediterranean countries from the perspective of a receiving country, France. This may suggest that, independently from the host country, there are some factors related to the home country that make Algerian behaviour different from the other two countries.[21] Contrary to expectations, marital status is not found to influence the decision to remit. However, having children prior to departure increases the probability of remitting by 16 percent.[22] As the existing literature suggests, we expect a negative impact of the household size abroad on the probability to remit but in our case it is insignificant in explaining remittance behaviour. We may argue that the effect of the household size abroad is cancelled by the fact that the sample is composed of return migrants who do not plan to settle in the destination country.

Since we do not have any information on the income and earning levels of our migrants before and during migration, we have used personal evaluation about the financial situation before migration.[23] Individuals who classified themselves in a "satisfactory" financial situation are 12 percent more likely to remit than individuals who declare to be in a "good" position prior to emigration. The perception of a "bad" financial situation before migration does not impact the probability of remitting. This leads us to conclude that the pure altruistic hypothesis does not hold in this case.

As expected, entering the host country without regular documents increases the probability to remit by 11 percent. This finding is consistent with Amuedo-Dorantes and Pozo (2006) who argue that since migrants are risk-averse individuals, those who face a higher income risk will tend to have a greater willingness to remit. Illegal migrants are also

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directly and corrects for any selection bias arising from correlation between the two disturbances. We utilise a number of exogenous variables as exclusion restrictions to test formally between the two-part and Heckman alternatives but find no evidence of selectivity bias. We conclude the two-part model to be the appropriate empirical framework to study remittance behaviour using the MIREM data. For conciseness, these results are excluded from the discussion in this section. However, they are available from the authors upon request.

[21] For example, Algeria is wealthier than Morocco and Tunisia and this may lead to a less incentive to remit.

[22] As discussed earlier, remittances may serve to finance children's education or to provide additional support to meet young family members' needs.

[23] The use of subjective variables may lead to some criticisms but as Miotti *et al.* (2010) argue individuals should be in a better position to evaluate their financial situation. The migrant's perception of the income level before departure can help understand their remittance behaviour.

more likely to have a greater connection with family members at home and utilise remittances as a form of insurance against the uncertainty attached to their legal status (see Piracha and Zhu, 2012). Accordingly, we also expect a positive effect of illegal status on the level of remittances.

Family ties are considered to play a positive and significant role in explaining the decision to remit. In line with this argument, we find that keeping links through letters, e-mail and phone calls with the family members left behind impacts positively on the probability to remit. In comparison to the migrants who have no contact with the home country during the period abroad, migrants with annual, monthly and weekly contacts have respectively 20, 28 and 27 percent higher probability of remitting.

The probability of remitting decreases with the educational attainments of the migrants. The arguments generally put forward for this result is that skilled migrants tend to stay in the host country relatively longer-term and have a high probability of settling in the host country with their family (see Faini, 2006). Since our analysis is based on return migrants only, a better explanation for this observed negative effect of education on the decision to remit might be that better educated migrants may enjoy more favourable conditions in the home country, thus reducing the need for remittances. The better educated may also be affected less by social pressure to remit (Dustmann and Mestres, 2010). Interestingly, we do not find any impact for the duration of migration on the probability to remit. A possible explanation may be that the effects of duration are mitigated by the temporary aspect of return migration.

Looking at the effect of migrants' labour force status on the probability to remit, we find that wage earners and the self-employed are more likely to remit than individuals who are not in the labour force (students, housewives and retired). Although we do not observe migrants earnings or incomes, we may suppose that migrants with higher earnings are likely to remit more. It is also reasonable to consider the self-employed and wage earners to have higher incomes than inactive or unemployed migrants who may draw from past accumulated savings or some form of part-time earnings. Our finding is in line with Mahuteau *et al.* (2010) who find that being self-employed or a wage earner positively affects the probability of remitting.

Different forms of migration are also found to impact upon the decision to remit.[24] For instance, circular migrants, i.e. migrants who move frequently between origin and host countries, are 10 percent more likely to remit than migrants who return after one migration episode. This difference may be explained by the fact that circular migrants are most probably seasonal or short term contract workers who temporarily, but repeatedly, go abroad to work and enjoy their savings at home.

Investment in at least one project after returning home is often considered as one of the key determinants underlying the decision to remit. As hypothesized, those who invested upon returning home are 12 percent more likely to remit than those who did not. This is in line with Mesnard's (2004) study on temporary migration and capital market imperfection. Migration may respond to the need to overcome credit constraints faced in the home country and the intention to realise some projects after return leads to a higher probability to remit.

5.2 The amount remitted

Columns (2) and (3) of Table 6 report the determinants of the amount transferred conditional on the decision to remit. Column (2) reports results for the interval regression whilst Column (3) reports those of the ordered probit.[25]

As expected, the table reveals the significance and magnitude of parameter estimates for both estimation strategies to be very similar. Notably, we can discern that most of the determinants affecting the probability to remit are insignificant in explaining the level of transfers, thereby supporting the decision to adopt a two-part strategy. We do not consider the decision regarding the level of remittance transfers to be affected by either the frequency of contact with household members during the period abroad or the form of migration. Indeed, where the return is intended, given the 'temporary' nature of the migration activity, the frequency of contact with family should not significantly impact upon how much to remit, even though the frequency of such contact may potentially affect the willingness to pay. Indeed, the distinction between circular and return migrants does not influence the level of remittances because what matters here is the temporary nature of migration and not its form.

[24] Return migrants are those who migrated once and then returned to the home country for permanent resettlement. Circular migrants, on the other hand, are frequent (twice or more) movers between home and the destination countries.

[25] Given the similarity of the results reported in Columns (2) and (3), and our stated preference for the interval regression framework, we do not discuss the ordered probit coefficients here. Similarly, neither do we report the threshold parameters or category-specific marginal effects obtained from the ordered probit model. These results are available from the authors upon request.

Gender does not impact the probability of remitting; however, in the case of the amount, female migrants transfer 51% less than their male counterparts. The finding that women remit less than men is widely observed in the study on remittances. It may depend on disparities that still exist in the labour market between the two genders in terms of opportunities and earning levels, but also on the patriarchal nature of the society where only sons are supposed to support the family.

Surprisingly, having children before departure has a negative effect on the amount of remittances, contrary to being married before departure. Married migrants who did not change status during the period abroad are 46 percent more likely to remit than unmarried migrants. Remittances may be used to support the partner at home and any possible project that the married couple has in mind. As the existing literature suggests, the household size in the host country reduces the amount remitted. Even in the case of return migration, as the number of family members in the host country rises, the amount of money migrants remit decreases.

Illegal status does not only affect positively the probability to remit but also the value transferred. Under uncertain migration conditions individuals remit a greater fraction of their earnings. The insurance hypothesis is strongly supported by our findings: undocumented migrants remit 72% more than those who enter the host country under legal conditions.

Time spent abroad has a positive effect on the amount transferred. Many studies support the contrary; they find that remittances decline with the length of residence in the host country as a result of a greater "social distance" between migrant and home country that leads the altruistic concern to decline through time. This argument can be supported in the case of permanent migration that tends to weaken the ties with the origin country. However, as argued by Stark (1991) and supported by Mahuteau *et al*. (2010) there is a potential for an increase in remittance flows as the duration of staying abroad increases. We support this argument in the case of temporary migration. It is possible to think that as time passes the fixed cost of settlement (home, car, etc) decreases and the experience and skills gained may lead migrants to earn more. These may be the factors that increase the ability to send more to the family left behind, under the assumption that temporary migrants maintain strong ties with the household during the period spent abroad.

The perception of financial situation before migration, as well as labour force status and level of education, do not have any significant effect on the decision of how much is transferred. We have tried to aggregate and disaggregate the labour force status variable in different ways, for example classifying the different occupations according to the type of

contract (long term, short term etc) but no significant results have been found.[26] In an attempt to overcome this constraint, we introduced a variable that interact education with the time spent in the host country. The interaction term is significant at the 5% level and suggests that as the length of stay abroad increases the level of remittances, for better educated individuals, decreases. Better educated migrants are not only less likely to remit but as the time spent abroad increases the amount remitted also falls. Again, this may depend on less family pressure because better educated migrants are more likely to come from wealthy households and under the investment hypothesis, it can be argued that after the repayment of the loan to support migration cost and education, individuals remit less.

As expected, having invested in at least one project after return has a positive impact on the probability of remitting; and on the value transferred. It is likely that the realisation of the project after return has been planned at the time of migration or while abroad, which means temporary migration may be a strategy aimed at accumulating enough savings abroad to devote to the project at home. With an investment plan in mind, a migrant shows a higher propensity to remit money.

5.3 Remittance behaviour by type of return

The type of return (decided vs. compelled) is considered important in understanding and identifying the patterns of reintegration in the origin country (Cassarino, 2008). At the level of our selected sample, 601 migrants report that they decided/ chose to return home while the remaining 184 where compelled to do so. Differences exist in terms of age, level of education, duration of the migration experience as well as the occupational status between the two groups of return migrants. For example, on average the age (37) of the compelled returnees is less than the ones who decided to return (49) as well as the average duration of the migration experience (8.4 years for the compelled returnees vs. 18 years for those who decided to return). We investigate if these differences are relevant in the case of remittance behaviour. Given the difference in size between the two types of returnees, we perform a Wald test to identify whether the coefficients estimated for those who decide to return are equal to the coefficients estimated for those who were compelled. The test does not reject the null hypothesis of equality across the two groups.

Table 7 presents participation and level of remittances by type of return. Investment upon return positively impacts the decision to remit in the case of decided return but they are

[26] Rodriguez (1996) also finds no evidence of any impact of education on the level of remittances in the case of the Philippines.

insignificant when the return is forced. This could possibly be due to the fact that those who planned the return either migrated specifically to earn enough to start a business upon return – especially in the presence of credit constraints at home – or planned it while in the host country with the intention to settle down back in the home country and looked for a local income stream. Given that forced returnees have a higher probability to be irregular migrants, we expected a positive impact of irregular entrance in the host country on the probability to remit. The variable of irregular entrance is found positive for both types of returnees but looking at the effect on the probability to remit it is significant only for the decided returnees. In addition, having children before migration is insignificant when the return is forced. These are surprising results. One explanation that could be provided for this relates to the migration assets, experience and history. More precisely, those who were compelled to return were initially planning to migrate with the intention to stay in the host country permanently, and the risk was taken based on the experience of "assets", i.e., others from the extended family or local community who migrated under similar conditions and were able to settle permanently. With the hope of replicating their assets' fortunes, migrants who entered illegally might have planned to bring their family once they had established themselves economically in the destination country, which resulted in lower remittance flows from them.

In terms of the form of migration, circular migrants have 21 percentage points higher probability to remit if they are compelled to return while it has no impact on the decided returnees. Circular migrants are much more likely to be the one who migrate to enhance their earnings with no intention of settling in any country other the home country, which means most of the earning are probably sent home. Contrary to the case of decided return, the perception of a bad financial situation before migration affects positively the decision to remit for those who are compelled to return home. It can justify the hypothesis of the altruism motive: migrants intending to settle in the host country may remit to support the family at home which has financial constraints. No effect of any of the labour status categories is significant to explain the decision to remit for the compelled returnees. It may depend on the fact that all compelled returnees had the intention to stay abroad and therefore, both wage earners and self-employed migrants were using their savings to integrate in the host country.

Differences between the two groups of return migrants also persist in the variables affecting the amount remitted (as in the case of gender and marital status). The most interesting result is given by the variable capturing the duration of the migration experience. As expected, time spent abroad has a positive impact on the amount remitted for those who decided to return home but it is found insignificant for those who were forced to return. It

may be explained with the evidence that on average we find 10 years of difference in the length of the period abroad for the two types of returnees. As argued in the previous section, fixed cost of migration decreases as the time spent abroad increases and experience and skill gained may lead the migrants to earn more and to generate a higher flow of money to the origin country. Because the duration of the experience abroad is shorter for those forced to return, they may not have had enough time to lower the initial costs and "gain" from the experience overseas.

6. Conclusion

The aim of this paper was to highlight the variables that determine the decision and the amount transferred by return-migrants of the Maghreb region, while they were abroad. Since the data consists of those who have actually returned to the home country, as opposed to the usual "intentions to return" data, the analysis carried out in the paper gives us a better perspective in terms of the determinants of remittances. The approach chosen to analyse remittances consists in separating the decision and level of the transfers. For this purpose we used a two-part model which distinguished the participation equation (censoring mechanism) from the model for the outcome, conditional on the outcome being observed. A probit model was used in order to investigate on the decision to participate. Then, because the information on the amount of remittances was recorded in interval data, interval regression was deemed the appropriate method to apply in the second part of the model. Our findings support the decision to consider probability and level of remittances as generated by two different mechanisms as some variables seem to have a significant effect only on the probability and others only on the level of remittances.

The variables included in our model are the ones suggested by the empirical literature. The MIREM dataset gives us the possibility to distinguish the form of temporary migration in circular and permanent return. As expected, we have found that circular migrants have a higher probability to remit than those who return permanently after one migration episode. Also, the introduction of an interaction term between duration of staying abroad and level of education before return suggests that better educated migrants remit less as the time spent in the host country increases. A key variable is investment upon return. The effect of investing in at least one project after return is significant and positive on both probability and level of remittances. We have used this post return variable as affecting decision and level of remittances because we assume that the investment decision had been planned at the time of migration and may be argued that it not only affects remittance behaviour but also drives

migration: individuals may embrace the experience overseas to overcome capital market constraints in the home country and realize their projects.

Also, analysing remittances by type of return – decided or compelled – can help fully understand the determinants of monetary transfers to the home country during the period spent abroad. Return is a process that requires time and preparation. Varying degrees of willingness to return as well as the capacity to mobilize resources to the origin countries are key elements in understanding the potential contribution of return migrants to the economic development of sending countries.

Although the potential impact of returnees on development is known, the proportion of migrants that return home is quite small. Also, the ability of returnees to invest in the home country and contribute to its development depends on the conditions of return. This highlights the importance of programmes to support the reintegration process of return migrants in the home country not only through simplified administrative procedures but also through programmes and facilities in the business sector that help overcome lack of information as well as constraints on entrepreneurship opportunities.

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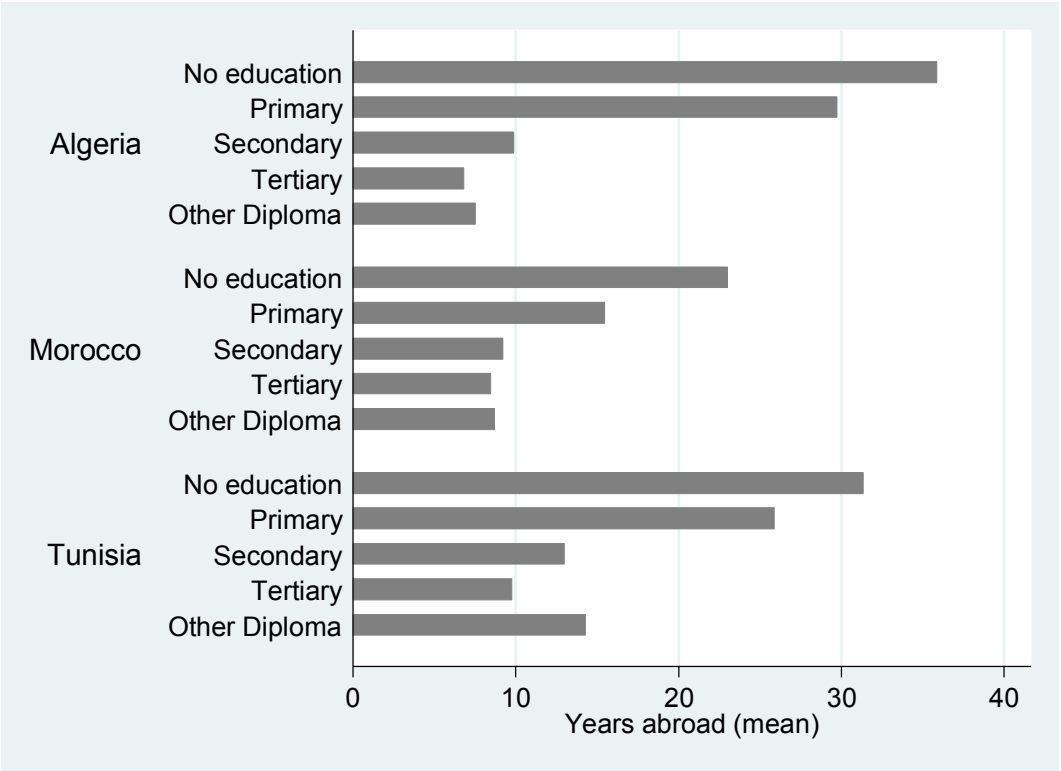

Figure 1 – Period abroad by origin country and last level of education

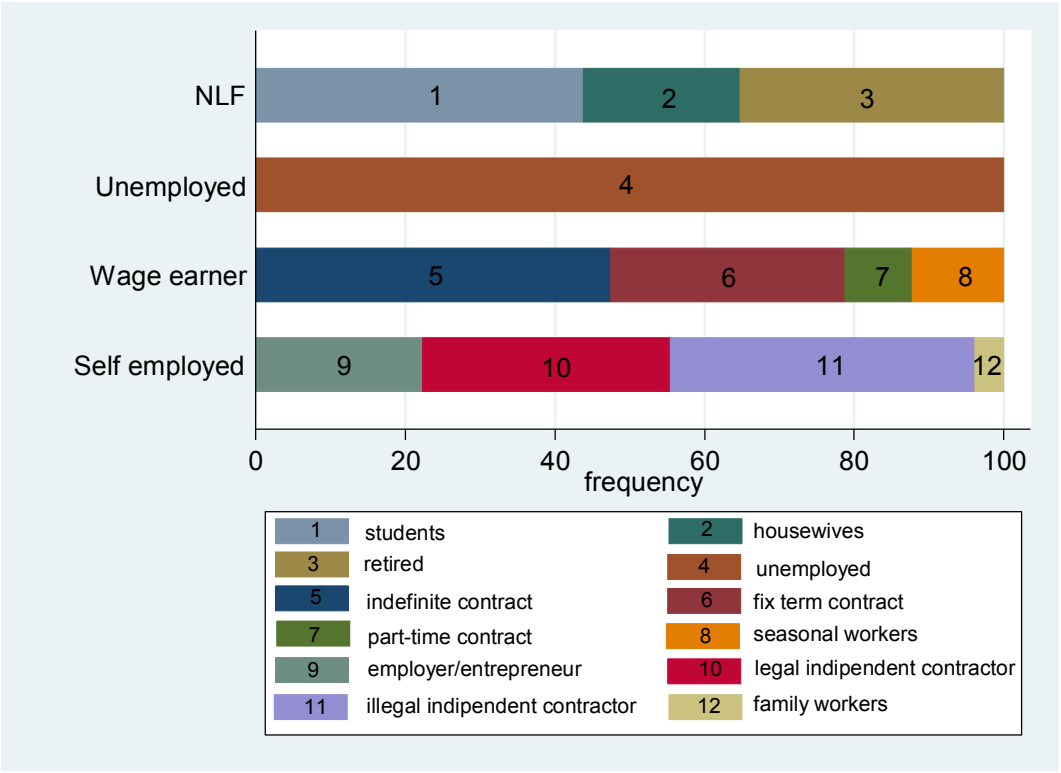

Figure 2 – Composition of the labour force status

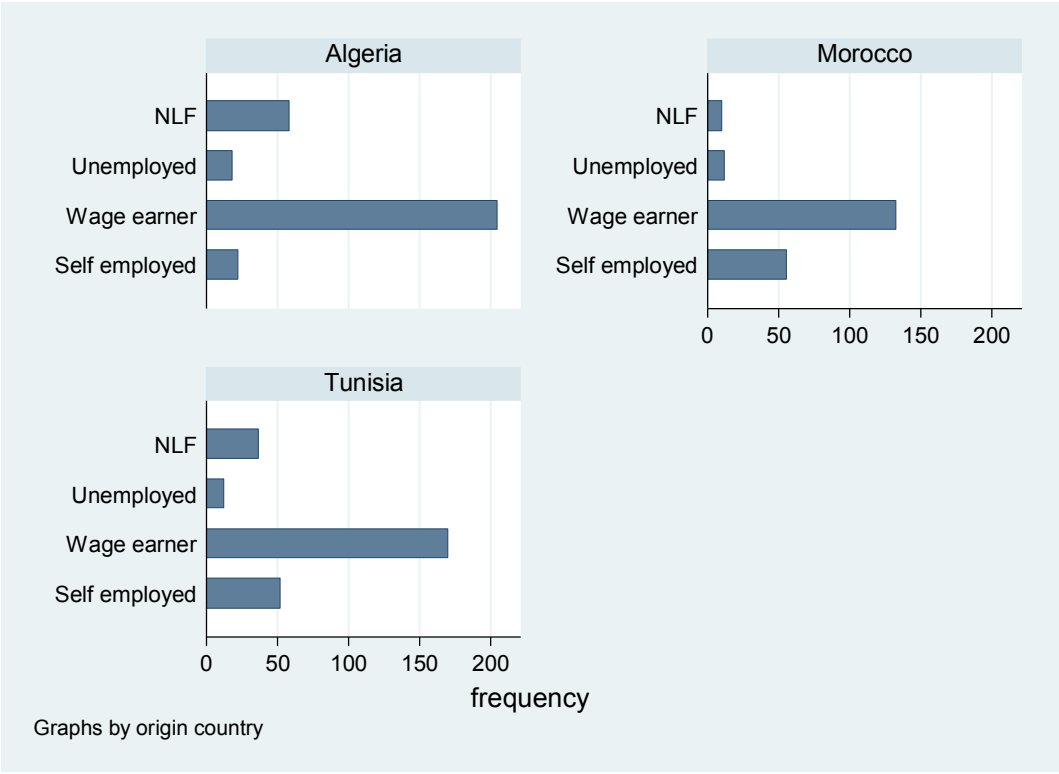

Figure 3 – Last activity in the host country by origin country

Table 1 - Geographical stratification

Algeria			**Morocco**			**Tunisia**		
Wilayas	n	%	*Regions*	n	%	*Governorates*	n	%
Algiers	104	31,3	Tadla-Azilal	111	33,6	Tunis	122	37
Setif	82	24,7	Casablanca	99	30	Ariana	40	12,1
Bejaia	75	22,6	Chaouia-Ourdigha	57	17,3	Sfax	40	12,1
Tlemcen	71	21,4	Rabat-Salè-Zemmour-Zaër	50	15,2	Sousse	40	12,1
						Nabeul	28	8,5
			Other regions	13	3,9	Medenine	25	7,6
						Mahdia	20	6,1
						La Manouba	15	4,5
Total	**332**	**100**	**Total**	**330**	**100**	**Total**	**330**	**100**

Source: MIREM

Table 2 - Remittance frequency

Frequency	Algeria		Morocco		Tunisia		All	
	n	%	n	%	n	%	n	%
Every month	13	4,29	55	26,07	85	31,37	153	19,49
Every three months	34	11,22	37	17,54	56	20,66	127	16,18
Every six months	37	12,21	13	6,16	6	2,21	56	7,13
Every year	49	16,17	23	11	5	1,85	77	9,81
Occasionally	38	10,56	37	17,54	59	21,77	128	16,31
Never	138	45,54	46	21,8	60	22,14	244	31,08
Total	**303**	**38,6**	**211**	**26,88**	**271**	**34,52**	**785**	**100**

Table 3 – Remittance amount per year

Country	**sending nothing**		**Less than €200**		**€200 - €500**		**€501-€1000**		**More than €1000**	
	n	%	n	%	n	%	n	%	n	%
Algeria	138	45,54	23	7,59	43	14,19	35	11,55	64	21,12
Morocco	46	21,8	28	13,27	46	21,8	38	18,01	53	25,12
Tunisia	60	22,14	33	12,18	73	26,94	35	12,92	70	25,83
All	**244**	**31,08**	**84**	**10,71**	**162**	**20,64**	**108**	**13,76**	**187**	**23,82**

Table 4 - Summary Statistics (selected sample)

	Algeria	*Morocco*	*Tunisia*	*All*
Female	13.2	8.06	11.44	11.25
Marital status				
Any other status	37.95	47.87	30.63	38.09
Married before migration*	34.32	21.33	31.37	29.81
Married abroad	27.72	30.81	38.01	32.1
Children before Migration	28.05	18.48	23.62	23.95
Financial situation before migration				
Very Good/Good	18.81	19.43	15.86	17.96
Satisfactory	34.98	53.55	44.28	43.18
Bad/Very Bad	46.2	27.01	39.85	38.85
Enter irregularly the host country	3.96	29.38	9.96	12.87
Household size abroad	2.98	3.74	3.47	3.35
Contact with HH members at home				
occasionally/never	17.82	7.11	10.7	12.48
at least once a year	10.56	3.79	4.8	6.75
at least once a month	37.95	36.97	31.37	35.41
every week	33.66	52.13	53.14	45.35
Last LF status overseas				
Inactive	19.14	4.74	13.63	13.38
Unemployed	5.94	5.69	4.43	5.35
Wage earner	67.66	63.03	62.73	64.71
Self employed	7.26	26.54	19.19	16.56
Final Education before return				
None	22.44	9.48	9.59	14.52
Primary school	16.5	18.96	23.25	19.49
Secondary	23.43	32.23	37.64	30.7
Tertiary	31.68	25.12	24.72	27.52
Other types of Diploma	5.94	14.22	4.8	7.77
Number of years abroad	17.9	11.43	17.03	15.86
Circular/Repeat Migrants	14.85	18.01	22.88	18.47
Investment upon return	17.82	40.28	40.59	31.72
Number of observations	303	211	271	785

*This category includes those who were married and did not change their status while abroad.

Table 5 - Main destination country

Destination Country	*Algeria*		*Morocco*		*Tunisia*		*All*	
	n	%	n	%	n	%	n	%
France	228	75,25	60	28,44	134	49,45	422	53,76
Italy	10	3,3	102	48,34	36	13,28	148	18,85
Other EU	36	11,88	43	20,38	36	13,28	115	14,65
MENA region	16	5,28	2	0,95	57	21,03	75	9,55
Rest of the world	13	4,29	2	0,95	7	2,58	22	2,8
No reply	0	0	2	0,95	1	0,37	3	0,38

Table 6: Two-Part Model

	Participation	**Level**	
VARIABLES	(1)	(2)	(3)
Origin Country (Ref: Algeria)			
Morocco	0.174***	-0.154	-0.149
	(4.510)	(-1.033)	(-1.053)
Tunisia	0.181***	-0.138	-0.132
	(4.932)	(-1.052)	(-1.065)
Gender (female=1)	-0.0117	-0.514**	-0.496**
	(-0.204)	(-2.523)	(-2.575)
Marital Status (Ref: any other status)			
Married bef. migration	-0.0588	0.461**	0.438**
	(-0.899)	(2.327)	(2.337)
Married abroad	-0.00946	0.228*	0.217*
	(-0.205)	(1.650)	(1.658)
Children bef. migration	0.158***	-0.328*	-0.313*
	(3.065)	(-1.725)	(-1.747)
Financial situation bef.migrat. (Ref: good/very good)			
Satisfactory	0.119***	0.127	0.121
	(2.649)	(0.803)	(0.808)
Bad/very bad	0.0848	-0.123	-0.115
	(1.644)	(-0.715)	(-0.709)
Enter irregularly	0.116**	0.728***	0.687***
	(2.329)	(4.465)	(4.456)
HH abroad	0.000223	-0.0810***	-0.0765***
	(0.0272)	(-3.363)	(-3.362)
Contact with the HH at home (Ref: Never/occasionally)			
At least once a year	0.205***	-	-
	(5.512)		
At least once month	0.286***	-	-
	(6.619)		
At least once a week	0.276***	-	-
	(5.379)		
Last LF status overseas (Ref: Inactive)			
Unemployed	0.0872	-0.531	-0.518
	(1.234)	(-1.579)	(-1.628)
Wage earner	0.343***	-0.0585	-0.0594
	(5.686)	(-0.289)	(-0.310)
Self-employed	0.217***	-0.174	-0.162
	(5.183)	(-0.739)	(-0.729)
Final Education before return (Ref: No education)			
Primary	-0.0281	-0.0473	-0.0436
	(-0.268)	(-0.193)	(-0.188)
Secondary	-0.317**	0.321	0.309
	(-2.140)	(0.966)	(0.984)
Tertiary	-0.483***	0.403	0.383
	(-3.095)	(1.048)	(1.054)
Other diploma	-0.360*	0.368	0.350
	(-1.751)	(0.824)	(0.827)
Number of years abroad	0.00344	0.0376***	0.0353***
	(0.666)	(2.696)	(2.682)
N.years *Education	-0.000580	-0.0111**	-0.0105**
	(-0.327)	(-2.100)	(-2.101)
Circular migrants	0.102***	-	-
	(2.641)		
Investment upon return	0.123***	0.396***	0.370***
	(3.313)	(3.469)	(3.422)
Constant	-	6.628***	-0.0436
		(12.71)	(-0.188)
μ2	-	-	-0.337
			(-0.683)
μ3	-	-	0.221
			(0.447)
lnsigma		0.0571	
		(1.136)	
Observations	785	541	541

Notes: z-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0. Participation equation: 1. Hosmer-Lemeshow gof test does not reject the hypothesis of no misspecification $\chi^2(8)=6.00$; 2. Goodness-of-fit test based on classification reports that the percentage of the correct specified values is 78.45.

Table 7: Two-Part Model by Type of Return

	Decided		Compelled	
	(1)	(2)	(1)	(2)
VARIABLES	Participation	Level	Participation	Level
Origin Country (Ref: Algeria)				
Morocco	0.191***	-0.0271	0.216**	-0.417
	(4.778)	(-0.152)	(2.507)	(-1.415)
Tunisia	0.206***	-0.0896	0.210***	-0.375
	(5.052)	(-0.596)	(2.693)	(-1.344)
Gender (female=1)	-0.0142	-0.474**	-0.0512	-0.539
	(-0.215)	(-2.000)	(-0.426)	(-1.421)
Marital Status (Ref: any other status)				
Married bef. migration	-0.0181	0.393*	-0.191	0.480
	(-0.248)	(1.684)	(-1.216)	(1.324)
Married abroad	0.00831	0.0319	-0.0416	0.796***
	(0.166)	(0.196)	(-0.335)	(2.758)
Children bef. migration	0.145**	-0.332	0.115	-0.210
	(2.425)	(-1.512)	(0.875)	(-0.538)
Financial situation bef.migrat. (Ref: good/very good)				
Satisfactory	0.162***	0.0917	-0.000969	0.491
	(3.357)	(0.516)	(-0.00889)	(1.443)
Bad/very bad	0.0501	-0.0410	0.208*	0.00261
	(0.836)	(-0.205)	(1.956)	(0.00774)
Enter irregularly	0.217***	0.837***	-0.0289	0.671**
	(6.000)	(4.077)	(-0.233)	(2.397)
HH abroad	-0.00721	-0.107***	0.0220	-0.0285
	(-0.730)	(-3.500)	(1.348)	(-0.718)
Contact with the HH at home (Ref: Never/occasionally)				
At least once a year	0.196***	-	0.221***	-
	(5.094)		(3.568)	
At least once month	0.242***	-	0.390***	-
	(4.792)		(4.147)	
At least once a week	0.217***	-	0.459***	-
	(3.612)		(4.315)	
Last LF status overseas (Ref: Inactive)				
Unemployed	0.188***	-0.653	-0.152	0.183
	(4.232)	(-1.431)	(-0.681)	(0.263)
Wage earner	0.399***	-0.152	0.162	0.575
	(5.717)	(-0.682)	(1.023)	(0.950)
Self-employed	0.196***	-0.141	0.166	0.255
	(4.273)	(-0.535)	(1.321)	(0.400)
Final Education before return (Ref: No education)				
Primary	-0.00644	0.0670	0.0508	-1.030
	(-0.0576)	(0.248)	(0.223)	(-1.608)
Secondary	-0.338*	0.364	-0.382*	-0.405
	(-1.805)	(0.939)	(-1.649)	(-0.572)
Tertiary	-0.519***	0.456	-0.675***	-0.389
	(-2.782)	(1.030)	(-2.774)	(-0.474)
Other diploma	-0.430*	0.233	-0.466	-0.139
	(-1.741)	(0.447)	(-1.223)	(-0.147)
Number of years abroad	0.00372	0.0371**	-0.0304	0.0317
	(0.614)	(2.317)	(-1.630)	(0.761)
N.years *Education	-0.00126	-0.0109*	0.0131**	-0.00744
	(-0.614)	(-1.811)	(2.212)	(-0.534)
Circular migrants	0.0646	-	0.217***	-
	(1.386)		(3.480)	
Investment upon return	0.112***	0.250*	0.139	0.711***
	(2.662)	(1.886)	(1.643)	(2.962)
Constant		6.761***		6.392***
		(11.27)		(5.662)
Lnsigma		0.0580		-0.0786
		(1.010)		(-0.757)
Observations	601	418	184	123

Notes: z-statistics in parentheses, *** p<0.01, ** p<0.05, * p<0.1