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**MAGHREB RURAL-URBAN MIGRATION:
THE MOVEMENT TO MOROCCO'S TOWNS**

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and Christophe Muller**

Working Paper No. 1082

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Abstract

Using data from national-level households survey, this study seeks to fill a gap in the migration literature by analyzing the determinant of rural migration in the case of Morocco. In contrast to the evidence in the international migration literature, our results support the negative selection into internal migration. Specifically, the probability of being a household without migrants decreases with educational level of the household and asset holdings compared to non-migrant households. This suggests that rural migration can benefit home communities and family members left behind by increasing household income and thus easing liquidity constraints, thereby promoting investment in physical and human capital. These results are in line with that related to the propensity to remit and the amount remitted that seemingly decrease with the individual level of education of household.

JEL Classification: F2, O1, R2

Keywords: Internal Migration; Educational Level; Household Income

ملخص

باستخدام البيانات المستقاة من مسح الأسر المعيشية على المستوى الوطني، تسعى هذه الدراسة إلى سد ثغرة في أدبيات الهجرة عن طريق تحليل محدد الهجرة الريفية في حالة المغرب. وعلى النقيض من الأدلة الواردة في أدبيات الهجرة الدولية، تدعم نتائجنا الانتقاء السلبي للهجرة الداخلية. وعلى وجه التحديد، فإن احتمال وجود أسرة بدون مهاجرين ينخفض مع المستوى التعليمي للأسرة المعيشية وامتلاك الأصول مقارنة بالأسر غير المهاجرة. ويشير ذلك إلى أن الهجرة الريفية يمكن أن تعود بالفائدة على المجتمعات المحلية وأفراد الأسرة الذين تركوها وراءهم لزيادة دخل الأسر المعيشية وبالتالي تخفيف القيود على السيولة، مما يعزز الاستثمار في رأس المال المادي والبشري. وتتفق هذه النتائج مع النتائج المتعلقة بالميل إلى التحويل والمبلغ المحول الذي يبدو أنه ينخفض مع المستوى الفردي لتعليم الأسرة المعيشية.

1. Introduction

For several decades, the fight against poverty has become a major policy concern for national governments and international institutions. Not surprisingly, then, the Millennium Declaration of the United Nations has placed, since 2000, the fight against poverty at the center of development policies. Typically, in developing countries, most of the world's poorest people live in rural areas. According to the Food and Agriculture Organization (FAO)'s estimations¹, in 1990, 54% of those living in rural areas lived on less than \$1.25 a day and were viewed as extremely poor. By 2010, this share has dropped to 35%. The majority of the rural poor are family farmers or landless agricultural workers highly dependent, consequently, on agriculture. Therefore, rural poverty can be alleviated if the agricultural economy is thriving. This is particularly important since agricultural growth can spur growth in non-agricultural sectors which results in increased employment and reduced poverty (World Bank report, 1997). In Indonesia, for example, agricultural growth was found to be responsible for a 50% reduction in rural poverty and a 36% drop in urban poverty. Developing countries have witnessed marked declines in their rural population shares over the past three decades, despite significantly higher rates of natural population growth in rural than in urban areas (Taylor and Martin, 2001) that has led to increasing migration from rural areas to towns. Deepening inequality in income and opportunities within different groups in society and increasing in the number of people enduring poverty have also exacerbated the pressure on people to migrate. As result, in many developing countries, internal rural-urban migration has become a major social and economic phenomenon. These countries have often undergone heavier urban unemployment and poverty as the cities haven't the capacity to absorb the highest number of migrants from rural areas and to provide them with an acceptable level of public services. On the other hand, rural-urban migration can be a source of migrants' remittances for rural households contributing positively to rural development by stimulating productive investments, and improving consumption and human capital outcomes. However, these contributions are not based on rigorous economic analysis and accurate justification, and the impact of remittances flows to rural areas remains, up to now, largely unknown.

The existing studies on migration determinants have focused on the investigation of the push and pull factors that operate in the decision of rural people to migrate to urban areas. These factors can be economic, demographic, socio-cultural, and environmental. For many researchers, the poor economic conditions and the lack of employment opportunities in rural areas are perceived as the major push factors that drift the rural population to the urban areas. In fact, in many developing countries, employment levels in rural areas seem lower, and even if people have jobs their earnings tend to be modest and volatile. Other motivations for rural-urban migration including availability of public services in urban areas are cited in the literature. In fact, as mentioned by Lucas (1997), "movement of families or parts of families to gain access to (better) schooling, health care, or other publicly provided services has often been of peripheral concern" in explaining rural migration, although there has been in recent decades a heightened awareness of the benefits to some forms of rural development programmes.

The determinants of rural-urban migration in Morocco, and the level of this migration are the focus of this study; it investigates the factors that cause internal migration. Many changes in Moroccan society have occurred over the last three to four decades. Undoubtedly, there is a sharp transformation in the relationship between the population and its territory. Overall, traditional links that rural dwellers have maintained for a long time with the land have undergone profound changes due to extended drought, fragmentation of farms, mechanization, etc. Further, in rural areas many people aspire to urban "non-manual labor" employment by moving to towns. Access to basic human needs -education, potable water, and health care- are

¹ See <http://www.fao.org/about/what-we-do/so3/en/>

also far less available in many Moroccan rural areas. Even though natural population growth rate in rural areas is larger than that in urban areas, the total urban population of the country was increased from 13.3 million in 1994 to 19.8 million in 2014 registering a growth rate of 48.9%, while the total rural population was increased from 12.6 million to 13.4 million growing by 5.8% (HCP data). These events and changes have exerted a significant impact on the rural migration and the labor migration. They also have contributed to the long transition from traditional rural communities to modern urban society. In fact, within 25 years, Morocco is likely to be shifted from a predominantly rural to a predominantly urban society. This study puts particular emphasis on the origins and dynamics of these changes that have happened in the past decades and offers relevant policy implications.

In the current Moroccan context, a more complete understanding of what factors are associated with a high risk of rural migration event is needed so as to ensure effective decision-making and to undertake appropriate policy actions. This constitutes a prominent motivating reason for immediate research funding. New data from the migration section of the last Moroccan Living Standard Measurement Survey is used for the first time in this research for analyzing the principal determinants of rural migration. It attempts to discuss policy-level responses essentially from a rural push perspective, based on the idea that rural and agricultural development is a necessary component of a development policy everywhere. The present study aims at significantly contributing to understanding the economic and social impacts of alternative policies in the current Moroccan context. To do so, a useful review of the key policies interventions and policy-yielding models of migration was proposed (e.g., Stark and Fan, 2007).

The paper proceeds as follows. The next section gives a survey of the existing literature on the determinants of migration and outlines the different theoretical models analyzing the push versus pull factors of rural migration. Section III depicts the rural-to-urban migration by delving into the Moroccan experience. Section IV describes the data used for the analysis, while Section V presents the empirical strategy. The estimation results are reported in Section VI. The last section concludes and provides some policy implications.

2. Literature Review

There is a growing consensus on various aspects of the migration question, from simple human capital models with known alternative opportunities, through treatment of uncertainty, to asymmetric information and strategic behavior (Lucas, 1997). Also, the consequences of migration are closely tied to migration determinants and remittances from migrants represent one of the most important mechanisms through which determinants and impacts of migration are linked.

There is agreement that such migration can be explained by pull factors, such as the labor market opportunities in urban areas, as well as push factors such as the decline of agricultural commodity prices and the lack of rural credit. However, while the “pull” of relatively high urban job opportunities would be the primary economic factor that explains rural migration, the decision to migrate is also enhanced by a greater expected urban wage. It is important, nevertheless, to keep in mind that, in developing countries, migration tends to continue and even accelerate despite the increased urban unemployment (Taylor and Martin, 2001). The earlier model developed by Todaro (1969) is the key explanation of rural migration in the presence of labor market imperfections, including urban unemployment. It explains rural migration basing on an expected-income maximization objective rather than current income differential between rural and urban areas. In fact, individuals are assumed to migrate if their discounted future stream of urban-rural expected income differentials exceeds migration costs (Taylor and Martin, 2001). One of the main issues raised by the Todaro’s model is that the creation of more job opportunities in urban areas, by encouraging more rural migration,

prompted more urban unemployment. This is referred to as the Todaro paradox. In such context, rural migration can intensify the already serious urban unemployment problems and its rate greatly surpasses the capacity of both industry and urban social services to effectively absorb this labor (Todaro, 1980).

It seems likely that other imperfections in other markets like capital market compound the movements of people. In the presence of such imperfections, the New Economics of Labor Migration (NELM) emphasized the potential role of family strategies in shaping the nature and extent of migration, and thus argued that migration isn't the result of an individual decision-making process; it is rather a collective decision made at the household level aiming at maximizing revenue and especially mitigating untoward economic risks (Taylor and Martin, 2001; Azam and Gubert, 2005). More generally, migrants from developing countries or community often replace missing or imperfect markets (of credit, insurance or employment) in the country or community of origin (Taylor et al., 1996). Migration is then considered as a form of investment made by families through the financing of children education, travel or settlement in destination areas and used to generate remittances². In Botswana, Stark and Lucas (1985) have found that pure altruism is not the main motive for remitting and that rural household placing some its members in town in order to insure against investing in risky assets at home. However, the decision to migrate is also selective and of course because migration is a process with costs (Adams, 2006 among others), only those expecting have a positive net expected return on migration are able to afford the move. In fact, the human capital migration theory incorporated into NELM model points out the endogenous nature of migration decision which underscores the potential existence of the selectivity bias (Lanzona, 1998). The more educated and experienced individuals are more likely to migrate. More precisely, rural schooling decisions are undertaken in response to the possibility of employment in urban areas anticipating that the rates of return to education in the city improved systematically with higher levels of education (Kochar, 2004). For instance, it seems that migrants are drawn from the lower end of the education spectrum in Mexico and Central America and from the upper end for the Caribbean and South America (Niimi and Lopez, 2008). Further, younger people gain more in wages from migrating, and contacts with family or friends in urban areas prior to migration (i.e., migration networks) may also gather information about jobs in destination areas which lightens the possible risk of temporary unemployment (Taylor and Martin, 2001). Studies on Ghana rural migration, for example, have showed that migrants tend to be young, better educated, and they also have better personal contacts in destination areas than the non-migrants from the same area (Tsegai, 2005).

The migration theories presented above within a micro basis, permits to better understand the internal migration choice and effects. Nevertheless, the empirical literature does not provide structural tests of these theoretical models but only incomplete findings that can partially support or invalidate intuitions. For example, there is too little empirical research on the relationship between the rural-urban income gap and the migration decision (except a few studies including Amare et al., 2012). Further, the data sets used are often not national level data, but samples taken from one or several regions (Hu, 2013). In addition, the empirical literature reports no more than a few isolated examples of countries cases studies (like China³). Replication or rejection of results in other contexts should be a high research priority. Importantly, it may prove fruitful to determine whether previous evidences can be generalized to some developing countries that experience substantial outmigration and to explore the

² Theoretical literature on the determinants of international remittances offers some interesting models to consider (see Rapoport and Docquier (2005) for more details).

³ See Zhao (2005) for an excellent review of the literature addressing the rural-urban migration issues in China.

determinants of internal migration and its implications. In the case of Morocco, for example, the empirical literature still offers no evidence.

Last but not least, migration represents a potentially important source of income and savings, through remittances sent to rural areas. In fact, the existing studies on the remittances impacts have mainly focused on international migration and remittances, while a relatively limited strand of literature has examined the impact of internal migration and remittances on welfare of those left behind in the rural areas (Taylor and Martin, 2001; Hu, 2013). A well-developed literature revealed that cash transfers sent by international migrants to family and friends may improve human welfare. For example, they can exert significant impacts on poverty alleviation in some communities of origin since they can reduce the exposure to uninsured income risk that underlies transient poverty (Acosta et al., 2007; Esquivel and Huerta-Pineda, 2006). However, in the sphere of education, while remittances can apparently help to increase educational attainment of children in receiving households by lifting liquidity constraints, migration of a family member may have a deleterious impact on children's educational success in a given local area (Antman, 2012, Bouoiyour and Miftah, 2015a). For example, the division of household labor will be done at the expense of the non-migrant members so reducing the time allotted to their education.

3. The Contextual Setting

An analysis of the rural migration trends coupled with the existing conditions that influence it allow some insight about the driving forces behind rural-to-urban migration in Morocco. Migration from rural to urban areas in Morocco poses a major challenge to achieving the Millennium Development Goals. Of particular concern is the fact that the Moroccan economy has continuously increased income and developmental inequalities between and within areas. It is very likely that short-term migration will continue to increase due to various factors. First, the rural employment is constrained by the scarcity of cultivated land, the low agricultural productivity (especially in rain-fed areas) and the concentration of the rural economy almost exclusively on agriculture. For instance, the size of land holdings is very small: 70% farmers have no more than 2.1 ha of land⁴. Second, Morocco has a water scarcity and drought challenges. In the last 30 years, on average, drought occurs in Morocco every 3 years, generating excessive volatility in agricultural production. Further, only 15% of the country's lands are irrigated, while the rest are rain-fed crops⁵. Third, Morocco underwent the urbanization problem. The challenges of urbanization are ubiquitous; they are heavily related to job creation, better housing, social mixing, access to basic services, etc. The High Planning Commission projects a raise in urban population by 2050, attaining 68.5% of Moroccan population. Fourth, the climate change may change the frequency and intensity of drought and thus increase the rural poverty which induces rural-urban migration. Finally, in term of poverty, relative poverty has certainly fallen sharply over the past decade, from 15.3% to 8.8% between 2001 and 2008, in particular from 7.6% to 4.7% for urban areas and from 25.1% to 14.2% for rural areas. Table 1 displays that the majority of the country's poor people still live in rural areas.

Today, the rural poverty in Morocco can be viewed as a result of the measures conducted towards structural adjustment program (in 1983). During Morocco's first period of structural adjustment, substantial cuts in government spending on social services (the subsidy to the basic necessities) and on public employment and investment (education and healthcare spending) were registered. These have caused an impoverishment of a large part of the Moroccan population and have exacerbated social inequalities and health inequity. However, from the early 1990s, the Moroccan authorities have implemented a social development strategy aimed

⁴ UN Secretary-General Ban Ki-moon's Message for 2013 World Day to Combat Desertification on 17 June 2013.

⁵ Idem.

at meeting priority needs of the most vulnerable population groups in the areas of education, health care, public housing and employment as well as developing local social welfare programs, by creating the Agency for the Promotion and Economic and Social Development of the Northern Prefectures and Provinces (1995), the National Agency for the Promotion of Employment and Skills (2000) and the Social Development Agency (2001)⁶. Furthermore, proactive reforms of health and education have been undertaken by Morocco with for example the promulgation of the National Charter for Education and Training (1999) and the introduction of the compulsory basic health insurance (2005). These drastic efforts have led to good progress in child education, decline of extreme poverty and more access to healthcare. Further, the creation of provincial universities has recently contributed to urban development in secondary towns. It is important to point out though that additional efforts are needed to improve educational outcomes, to reduce the still-high youth unemployment and the inequality in the distribution of income and to easily access to health care, particularly across regions (IMF, 2013).

In terms of rural-urban migration, the data suggest that rural-to-urban forms the population movement dominate of Morocco's internal migration⁷. Urban population has constituted 29.2% of Morocco's population in 1960 and surpassed 50% in the early 90s (see Table 2). This trend remains strong as the urbanization rate will stand at 62% of the overall Moroccan population in 2020.

This trend can be mainly explained by the natural population growth in urban areas, the reclassification of rural localities in urban units, but also by rural to urban migration that has historically been a wider part of the urbanization process and continues to be significant.

4. Data and Descriptive Statistics

There is actually remarkably little evidence about the determinants of migration from rural areas, in particular developing country such Morocco. This study sets out to fill this knowledge gap from applied perspectives. We are fortunate to be able to count on the data from the last Moroccan Living Standard Measurement Survey (LSMS) implemented by the High Commission for Planning (HCP) in 2006-2007. The sampling procedure generates a large country survey dataset on more than 36,000 individuals and a weighting sample of 7,062 households. The LSMS provides information on demographic and socio-economic characteristics of all household members (the demographic composition of the household and detailed information on consumption, subjective poverty, education, health, housing, etc.) including the migrant family members. Respondents were asked the information on actual migration of their family members including a number of characteristics of the internal and international migrants (such as age, gender, education level, and reasons of migration). In this study, such information is used to construct an indicator variable that differentiates between migrants and non-migrant households, a dummy variable equals to 1 if a household has a migrant member who is actually residing in urban Morocco and 0 if not. A household member who lives outside the village/commune is considered as a migrant member in a household.

The LSMS migration module provides personal characteristics of 2,450 Moroccan migrants who have migrate to urban areas. A seventh of the sample households have at least one member left in urban areas. These migrants migrate to six provinces (metropolitan areas) in particular: Casablanca, Agadir, Marrakech, Fes, Rabat and Tangier (see Table 3). We mention that these provinces attract half of the rural migrants.

⁶ The Moroccan government has also undertaken development projects and programs in rural areas aimed at creating platforms offering basic infrastructures and services in regional Morocco, such as the global rural electrification program and the rural community drinking water supply program.

⁷ In general, there are three main mobility strategies in rural areas namely rural-rural, rural-urban and international migration.

The reasons of migration into cities by sex are presented in Table 4. People migrate principally to 1) improve their economic status by finding a work, 2) enhance their education (an economic motive also), (3) join family and friends who have previously migrated to urban areas, and 4) marry. A majority of migrants in our sample migrated primarily for economic reasons (56.36%). Further, 8.14% of migrants moved for education, and 29.26% moved because of marriage, whereas a smaller proportion (4.63%) moved to join their families in urban areas. The results show big variations between the sexes, and a greater proportion of male migrants have migrated to urban areas for seek employment, while a greater number of female migrants have migrated joining their husbands. With respect to migrant characteristics, one can see that they are mostly men (60.37%), generally single (53.4%) and most of them have a job in urban areas (60.6%).

The majority of migrant-sending households are headed by men (80.15%), most of them have no education or, at the most, have a primary level of education. Some summary statistics for the sample are reported in Table 5.

Looking at the differences between migrant and non-migrant household, a few interesting observations arise. First, we find that migrants were likely to originate from less educated families. Further, there is a sharp difference in the level of spending between the migrant and non-migrant households. In particular, the migrant households are likely to be characterized by low levels of consumption compared to non-migrant households.

5. Methodology

As noted in the literature section, the decision to migrate involves ‘push factors’ which force migrants out of rural areas and ‘pull factors’ which attract migrants to urban areas, but in this study, we focus on the first ones. We thus consider a number of socio-economic and demographic characteristics as explanatory variables of migration decision⁸. The set of explanatory variables includes age, age squared, gender, and marital status of household head, household size, educational level of household (secondary and higher educational level), proportions of dependent persons (children below age 15 and persons above 60 years old). The possibility of funding of migration to town by households can have a significant influence the likelihood of other members migrating there. In fact, the migration decision is very dependent on monetary expenses of moving. This is why we use the variable funding of migration as a proxy for migration costs given that rural people of many Moroccan regions may be discouraged by moving costs in their decisions to move to urban areas. Since the migration decision cannot be examined by means of some household characteristics - such as the income level – that are endogenously determined together with the migration decision, we use a proxy of this income namely the ownership of a productive asset. Note that the interviewers indicate even migrants contributing to any productive asset of households. The survey data show that the ownership of the key productive assets is not attributed to migration which is culturally an appropriate criterion of wealth.

A set of local variables are also incorporated in the equation to be estimated, namely access to safe water at the communal level of rural areas and hospital capacity, which can also significantly explain the rural migration. They are measured by the percentage of households having access to safe water in each origin commune. Hospital capacity represents the capital investments and labor that permit the delivery of medical services. The first characteristic is available in the 2004 General Population and Housing Census⁹, while various health reports contain data related to the second indicator. Most economists reported that migration is a response to spatial differences in the returns to labor supply. To test this model, we include the

⁸ A useful review of estimation techniques for models concerning migration decisions is available in Taylor and Martin (2001)’s study.

⁹ Available at: http://rgph2014.hcp.ma/Resultat-du-Recensement-general-de-la-population-et-de-l-habitat-2004_a59.html

communal unemployment rates (2006-2007) in our model, reflecting the hypothesis that greater rate tends to encourage larger number of rural migrants due to agglomeration economies. We do not use urban unemployment because as noted by Todaro's model, the urban employment rates, while posited to influence rural migration, are, in turn, affected by such migration. The same problem can be found with the rural unemployment; to avoid this, we assess how strongly rural migration is associated with poorly economic conditions and alternatively consider the poverty rate at communal level as explanatory variable.

The decision to migrate of individuals or households can generally be modelled either with a linear probability, a probit or a logit model. Our migration equation specifies a migration variable (binary variable) as function of a set of regressors, denoted as:

$$M_i = \alpha_1 X_i + \alpha_2 C_i + u_i \quad (1)$$

where M_i indicates the migration of a member of household i , X_i is the vector of explanatory variables described above, C_i denotes the regional indicators. and u_i is the error term. The equation Eq. (1) constitutes the basis for our estimations of the determinants of Moroccan city ward migration.

In this research, the results of the survey are also used to examine the urban-rural ties that are often manifested in migrants' remittances and therefore the remittances determinants. To this end, the LSMS data report which migrants send money back home and their total cash remittances. Based on this question, a dummy variable indicating whether household receives remittances from migrants staying in urban areas is constructed for our empirical analysis. This analysis must take into account the fact that migration is selective upon certain characteristics. Individual and household characteristics (such as educational attainment) can be associated with access to migration and thus to remittances. As pointed out by Foster and Rosenzweig (2007), "the selectivity of the process in terms of the human capital of those who leave the agricultural sector is even less studied for developing countries. That is, it is unclear when the reduction in agricultural activities is accompanied by rural to urban migration and when it is not. The significance of this issue is perhaps most clearly seen in terms of the debates about the necessity of agricultural productivity growth for achieving sustained economic growth". Consequently, estimating remittance models can be hindered by this problem of selection as emigration itself is a highly selective process and the returns from those migrants sent home should also generate some selectivity in observation. In such case, the analysis of the determinants of internal remittances using the ordinary least squares (OLS) method would be inconsistent. To control for that possibility, Heckman (1979)'s correction can be used. The zero censored Tobit model can also be employed to account for the significant proportion of individuals that have not sent any remittances in the year prior to the survey (i.e., censored outcomes). Note that Heckman model can be sensitive to identification exclusions or realistic variables that affect the decision to remit money, but not the amount, which are difficult to conceive (Amuedo-Dorantes and Pozo, 2006). The Tobit model assumes, however, that the size and the nature of the factors that affect the decision to remit will be the same to those that affect the decision about how much.

The Tobit model is expressed as follows: $Y_i^* = \beta_1 X_i + \beta_2 C_i + \varepsilon_i \quad (2)$

$$Y_i = \begin{cases} Y_i^* & \text{if } Y_i^* > 0 ; \\ 0 & \text{otherwise} \end{cases}$$

where Y_i^* is a latent variable that is observed only when its value is greater than zero. X_i is a vector including all observable explanatory variables described below. Heckman model suggests estimating two equations. The first equation models the decision to provide positive

remittances based on the entire LSMS migration module. It allows the construction of an additional regressor -“a sample selection term”- to be introduced into the equation of remittances. The Heckman model is defined as follows:

- Selection equation (i.e., propensity to remit):

$$Z_i^* = \delta_1 X_i + \delta_2 C_i + \omega E_i + \eta_i \quad (3a)$$

$$\text{and } Z_i = \begin{cases} 1 & \text{if } Z_i^* > 0 ; \\ 0 & \text{otherwise} \end{cases}$$

- Remittance equation (outcome equation):

$$Y_i = \vartheta_1 X_i + \vartheta_2 C_i + \varepsilon_i \quad (3b)$$

where the dependent variable Z_i^* is a latent variable that is positive when the remitted amount is observed and 0 otherwise. Y_i is the logarithm of the total remittances sent by the migrant. η_i and ε_i follow the normal distributions $N(0,1)$ and $N(0,\sigma_\varepsilon)$, respectively, and $\text{Cov}(\eta_i, \varepsilon_i) = \rho$. E_i is exclusion restriction or instrumental variable that "belongs" to the first equation (selection equation) but not to the outcome equation. We consider in our model an instrumental variable that has been used for international remittances by Agarwal and Horowitz (2002), indicating whether the migration has lasted for less than one year in the urban areas. The authors suggest that there is likely a lag in the remittance flow initiation associated with settling in the destination areas. This variable is not significantly different from zero when it included in remittance equation which means that it did not affect the amount remitted significantly.

The vector X_i incorporates controls for household-related characteristics including gender, age (its squared) and marital status of household head, household educational level and size, and the proportions of dependent persons; C_i denotes the regional indicators.

The probability of inheriting people at origin can be proxied by the age of the household head and its square. Explanatory variables contain other variable that was commonly used in the literature on remittances (controls variables), namely the variable “financing of migration”, which takes the form of a dummy and indicates whether or not the household has helped his members to emigrate; it is expected to have a positive effect on the probability and the amount remitted by the migrant, at least in the first years of migration. This investigation also seeks to test the possible link between the poverty rate of community of origin of migrants and their remittance behavior.

6. Main Results

6.1 Migration determinants

In this section, we test whether the selectivity of rural-urban migration with respect to education and other particular characteristics exists. Table 6 summarizes the results from the probit estimation of rural migration propensity and the marginal effects. It also reports the Tobit and the OLS linear regression estimates of the determinants of the amount of remittances. Results reported in the first two columns of the table suggest that female headship exerts a positive influence on the household’s decisions of migration. Thus, we can expect individuals who are originate from female headed households are more likely to migrate than others because intuitively living in such household may be linked to poorer conditions and uncertainty about the future land availability (Kudo, 2015). As reported in descriptive part, as principal reason of female migration is marriage which can positively affect the decision of sending a female migrant into cities. This subjective report of rural migration motives guides us in our analyses by estimating another model with migration for only economic reasons as dependent variable.

The results of such exercise are reported in the last two columns of the Table 6. The findings confirm that obtained for all reasons of migration. This outcome seems consistent with that of Chant and Radcliffe (1992), suggesting that women's migration is higher when a women's earning potential is more highly valued and when they have access to local labor markets and income-generating activities.

In the rest of this section, we comment the results obtained for all reasons of migration. They show that the migration decision is associated with the economic well-being of the rural household measured by the variable whether household has a productive asset. This proxy can also measure how strongly rural migration is associated with leaving agriculture activity. We find that the probability of migrating of individuals or household members decreases with the household's assets. Intuitively, households with such asset have higher income in the commune and so lower returns to migration. This interesting finding also suggests that as households' possibility for agricultural activity increases, the likelihood of participation in migration activity decreases.

Despite positive selection into international migration reported by some studies (Bouoiyour and Miftah, 2015b), our findings in the case of internal migration suggest that the likelihood of being a household without migrants decreases with educational level of the household. It is common knowledge that education typically promotes rural out-migration, but not to all potential migrant destinations. The gender of household head is another factor that can confirm this negative selection. In fact, as noted early being female head households increases the probability of migrating. Further, we find that funding of migration by household increase the probability of migrating by 88%.

Ultimately, community-level-characteristics which indicate the poor economic conditions and the lack of employment opportunities in rural areas are perceived as the major "push factors" that drift the rural population to the urban areas. Our results show a negative sign of the *unemployment rate*'s coefficient which implies that households living in commune with lower rate of unemployment are more likely to migrate. But this result is not surprising in the case of Morocco because despite unemployment seems relatively low, an increased rural migration is observed during the last decades. In fact, even if rural people have jobs, their earnings tend to be lower and highly volatile. Following Todaro (1969), the migration decision is based essentially on the difference between the expected incomes in urban and rural areas. Further, results using the poverty rate as explanatory variable show a positive sign of its coefficient which implies that households living in a developed community are less likely to migrate.

6.2 Remittances' determinants

Two sets of regressions performed are displayed in Table 7. The first set presents the results related to remittance equations (selection and outcome equations). The last column reports the Tobit results. We note that the specification corresponds to the two-step selection model is not presented because when estimating the Heckman model, Heckman's lambda is not statistically significant. We can observe that the results of the estimation of the two remittance equations reveal that all variables have the same impact on the probability of transferring and the amount remitted (except the variable related to the dependents persons in the household).

With regard to the household head characteristics, our results suggest that female are more likely to receive a larger amount of remittances than otherwise.

Besides, we show that less great are the remittances from migrants, the higher is the education (secondary level in particular) achieved by the household members, and that the probability of remitting decreases by 6% for relatively higher educated people (secondary educational level) as opposed to no-educated. Further, the probability of receiving remittances increases by 15% with the funding of migration by household.

Furthermore, there is a positive relationship between the number of dependents (children below age 15) in the origin household and the remittances amount. This implies that a migrant behaves altruistically.

Finally, we notice that the communal poverty rate has a positive impact on remittance decision and the amount of remittances. This may suggest that with the existence of a poor community the family needs a less average remittance level. Moreover, access to safe water affects positively the probability and the amount of remittances; it is well known that an increased access to potable water is well-being enhancing.

7. Conclusion

This study provides an analysis of the socio-economic causes of rural migration in the case of Morocco. Answers to the questions as to whether the economic incentives to migrate and the selectivity of rural-urban migration with respect to education and other particular characteristics are far from clear-cut. Addressing these vexing questions is of paramount importance for our purpose. Our findings suggest that the propensity to migrate from rural to urban areas increases with the funding of migration by households. Interestingly, the estimates suggest that more educated household members compared to less educated are less likely to migrate to urban areas. It is common knowledge that highly educated have a lesser chance of finding employment in urban centers where they have often to take low-skilled jobs. Thus, our finding provided evidence of a negation selection into internal migration since we can expect that migrants with the greatest incentive to migrate will tend to be those with below-average skill levels relative to their community-of-origin citizens. In support of this selection hypothesis, we find that the migrant households are those who have lower levels of asset holdings compared to non-migrant households. This implies that rural migration can benefit home communities and family members left behind by stimulating household income, thereby decreasing wage dispersion in Morocco.

Furthermore, our results underscore that the propensity to migrate is significantly higher when there are poor economic conditions in the rural areas which are perceived as the most influential “push factors” that drift the rural population to the urban areas. In addition, we demonstrate the prominent role played by the gender, age and marital status of household head. They permit to realize therefore the effect of rural-urban migration in concentrating individuals with certain characteristics in the urban areas.

Many migrants remit some of their destination earnings back home, which means that the benefits to rural migration must include the benefits of remitting. This is why our study has analyzed the determinants of internal remittances. We note that the propensity to remit and the amount remitted increase with the female leadership, the growing number of dependents, and the funding of migration, and decrease with individual’s level of education of household.

Our study leads to several policy implications. Rural economic development schemes can be used as an indirect way of restricting rural to urban migration. Rural migration should be viewed as an inevitable part of unequal regional development. Some authors, such Stark and Taylor (1991), have suggested that economic development that does not redress intra-village income inequalities may exacerbate migration. Many countries have implemented policies aimed at forbidding migration from rural to urban areas. This is the case of China. Accordingly, Au and Henderson (2006) evaluated the impact of migration restrictions and found as consequence of a restricted rural-to-urban migration a surplus of labor in agriculture, a first order cost in terms of lost GDP. At the same, in developing countries, unrestricted rural-to-urban migration can reduce the average income of both rural and urban dwellers in equilibrium (Stark and Fan, 2007).

A relevant implication of our results which indicates that more educated people and those who have productive assets are less likely to migrate into the cities signifies that the Moroccan authorities have to achieve two fundamental objectives: the generalization of basic education or more generally the increase of human capital in the rural areas and the achievement of sustainable development by stabilizing the rural population. In this vein, Morocco can plan based on territorial planning and development policy for a better geographical distribution of the rural population, activities and wealth. Note that the development of rural areas in Morocco, the continuous expansion of certain towns and the changes brought about by urbanization have involved for authorities challenges that have demanded fundamental strategic reorientation. They have, for example, conducted the Moroccan authorities to favor other seaboard axis others than that of Casablanca-Rabat-Kénitra. However, the urban system could be more dominated by an increase in the size of the small-sized towns where a development of public services including administration, education and health is necessary. There is also an utmost need for carrying out wealth-generating activities and a new type of economic development for rural territories, by ameliorating local production sectors, and promoting tourism. Some programs such as workfare program (see Imbert and Papp, 2014) which hires rural workers during the off season of agriculture with the goal of increasing the income of the poor can have a favorable impact on migration.

In future work, we could extend the analysis of the present paper by paying a tremendous attention to the migration effects on households and community of origin. For instance, migration can affect the migrants themselves, but also their families and the rural areas of origin, but very few effects have been subjected to a rigorous assessment. We will try in further research to significantly elucidate the understanding and improve the knowledge of the effect of internal remittances.

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Table 1: Poverty Rate by Area of Residence (in %)

	1985	1991	2001	2007	2008
Urban	13.3	7.6	7.6	4.8	4.7
Rural	26.9	18	25.1	14.4	14.2
National	21	13.1	15.3	8.9	8.8

Source: Moroccan High Commissariat of Planning (2009).

Table 2: Evolution of Urban Rates

Years	1960	1965	1970	1975	1980	1985	1990	1995	2000	2005	2010	2015 (a)	2020 (a)
Urban rates	29,2	32	34,6	37,6	41,1	44,9	48,6	51,9	54,2	55,5	57,8	60	62

Source: HCP. (a) Projections.

Table 3: Major Provinces of Migration

	Effectif	Percent
Laayoune	40	1.63
Agadir Eddaoutnan	133	5.43
Inzgan Ait Mloul	54	2.2
Taroudant	57	2.33
Kénitra	47	1.92
Marrakech	129	5.27
Nador	57	2.33
Oujda Angad	51	2.08
Casa Blanca	537	21.92
Rabat	169	6.9
Meknès	78	3.18
Fès	136	5.55
Taza	54	2.2
Tanger – Assila	123	5.02
Tatouan	48	1.96
Other towns	737	30.08
Total	2,450	100

Source: Authors' own calculations using LSMS

□
□
□

Table 4: Reasons for Migration to Urban Areas by Sex

	Total	Males	Females
Marriage	29.26	3.82	67.38
Education	8.14	9	6.85
Work/employment	56.38	83.29	16.05
Moved to rejoin parents	1.15	1.09	1.23
Moved to rejoin family	3.48	1.57	6.34
Others	1.60	1.23	2.15
Total	100.00	100	100

Source: Authors' own calculations using LSMS.

Table 5: Some Descriptive Statistics

	Migrant Household		No migrant households		All households	
	Mean	Std.Dev	Mean	Std.Dev	Mean	Std.Dev
Average household expenditure	53910.5	44249.8	57520.8	56495.2	56887.4	54560.5
Age of household head	57.25	13.26	50.44	13.86	51.64	14.00
Proportion of household members with						
Primary	0.248	0.210	0.270	0.236	0.2662	0.232
Middle secondary education	0.110	0.164	0.144	0.187	0.138	0.184
High secondary education	0.050	0.121	0.084	0.1628	0.078	0.157
Higher education	0.033	0.105	0.0526	0.1443	0.0492	0.138
Household size	5.58	2.843	5.051	2.325	5.144	2.432
Number of observations		1239		5823		7062

Source: Moroccan LSMS 2006/07.

Table 6: Marginal Effects of The Significant Explanatory Variables for Migration Models

	All reasons	All reasons	Economic reasons	Economic reasons
Household head characteristics				
Male	-0.170*** (0.026)	-0.170*** (0.026)	-0.139*** (0.021)	-0.139*** (0.021)
Age	0.0128*** (0.0025)	0.0136*** (0.002)	0.0051*** (0.001)	0.0057*** (0.0015)
Age squared	-0.0008*** (0.000)	-0.0008*** (0.000)	-0.0003** (0.013)	-0.0003*** (0.000)
Married	-0.038 (0.035)	-0.0315 (0.035)	-0.020 (0.022)	-0.019 (0.022)
Divorced	-0.108*** (0.013)	-0.111*** (0.014)	-0.053*** (0.006)	-0.055*** (0.006)
Widowed	-0.114*** (0.015)	-0.113*** (0.017)	-0.058*** (0.008)	-0.058*** (0.008)
Household characteristics				
Proportion of household members with high secondary education	-0.164*** (0.037)	-0.185*** (0.038)	-0.140*** (0.025)	-0.149*** (0.025)
Proportion of household members with higher education	-0.0761* (0.041)	-0.0895** (0.042)	-0.0506* (0.026)	-0.0616** (0.027)
Household size	0.0072 (0.006)	0.0077 (0.006)	0.0017 (0.003)	0.0023 (0.003)
Household size squared	-0.0001 (0.000)	-0.0001 (0.000)	0.0004 (0.000)	0.0001 (0.000)
Household has a productive asset	-0.0412*** (0.010)	-0.0395*** (0.010)	-0.0291*** (0.006)	-0.0284*** (0.006)
Proportion of children below age 15	-0.0543* (0.027)	-0.0496* (0.028)	0.0049 (0.017)	0.0073 (0.017)
Proportion of persons above 60 years old	0.0142 (0.030)	0.0188 (0.030)	-0.0112 (0.018)	-0.0115 (0.018)
Funding of migration	0.880*** (0.011)	0.878*** (0.010)	0.407*** (0.023)	0.419*** (0.023)
Community characteristics				
Access to water	0.0004*** (0.000)	0.0000 (0.000)	0.0002*** (0.000)	0.0000 (0.000)
Hospital capacity	-0.0004*** (0.000)	-0.0003*** (0.000)	-0.0002*** (0.000)	-0.0001*** (0.000)
Unemployment rate	-0.0135*** (0.001)		-0.0060*** (0.000)	
Poverty rate	0.00873***			0.00602*** (0.000)
Number of observations	6,679	6,679	6,679	6,679

Notes: Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 7: Determinants of Remittances

	Selection equation	Remittance equation	Tobit
Household head characteristics			
Male	-0.080*** (0.015)	-0.823*** (0.085)	-11.05*** (1.413)
Age	0.0011 (0.000)	-0.0024 (0.009)	0.230 (0.195)
Age squared	-0.0004 (0.000)	0.0000 (0.000)	-0.0003 (0.001)
Married	0.0037 (0.010)	0.0832 (0.124)	0.973 (2.726)
Divorced	-0.019*** (0.003)	-0.710*** (0.177)	-9.589** (4.024)
Widowed	-0.020*** (0.005)	-0.582*** (0.144)	-7.92*** (2.975)
Household characteristics			
Proportion of household members with high secondary education	-0.059*** (0.015)	-0.365*** (0.127)	-14.63*** (3.868)
Proportion of household members with higher education	-0.019 (0.015)	-0.183 (0.144)	-4.861 (3.690)
Household size	0.0031* (0.001)	-0.0135 (0.026)	0.441 (0.418)
Household size squared	-0.0000 (0.000)	0.0029 (0.001)	-0.0005 (0.024)
Household has a productive asset	-0.0043 (0.003)	-0.0700 (0.048)	-1.178 (0.997)
Proportion of children below age 15	-0.0021 (0.009)	0.225** (0.112)	-0.810 (2.215)
Proportion of persons above 60 years old	0.0173* (0.009)	0.0803 (0.133)	- -
Funding of migration	0.153*** (0.017)	1.810*** (0.073)	14.00*** (1.065)
Community characteristics			
Access to water	0.0000** (0.000)	0.0018*** (0.000)	0.0218** (0.011)
Hospital capacity	0.0000 (0.000)	0.0000 (0.000)	0.0000 (0.000)
Unemployment rate	-0.0046*** (0.000)	-0.044*** (0.005)	-1.092*** (0.142)
Constant		1.044*** (0.257)	-18.71*** (5.631)
Number of observations	6,679	6,679	6,679
R-squared		0.130	

Notes: Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.