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Migrants from marginal dry areas in Syria: destinations, employment, and returns

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Abstract

We examine the determinants of migrants' choices of destination, employment, and remittances from one of the poorest marginal dry areas in Syria. Qualitative and econometric analysis of cross-sectional data indicates that migrants' choices depend mainly on individual, household, and community characteristics and also on availability of opportunities. The main factors affecting the choice of destination and employment are the sending area, age, and sex of migrants, while the educational level had no significant effect in both cases. The larger the endowments of migrants' households, the higher the remittances sent back home to preserve households' assets in marginal dry areas.

Keywords: Syria, Dry areas, Migration, Remittances, Migrants' characteristics, Destination choice, Employment, Gender

1 Introduction

The wide range of literature has described the differences between migrants and non-migrants. According to the paper on New Economics of Labor Migration (NELM) published by Stark and Bloom (1985), migration is a family arrangement, migrants are chosen according to specific characteristics, they are usually younger and more educated (Stark and Taylor 1989), and it is more likely that international migrants would be males (Massey and Zenteno 1999). Also, having a spouse in the home country increases migrants' likelihood of return (Constant and Massey 2002).

Migration is not a random process; people who migrate usually have different individual, household, and community characteristics than those left behind (Ezra and Kiros 2001; Mora and Taylor 2006). Several theories tried to explain the migration phenomenon. Taylor and Martin (2001) stated that classical and neoclassical theories—despite their contribution to explain this phenomenon from a macroeconomic perspective—could not explain the migration selectivity process (i.e., why do some people migrate while others do not?). Moreover, the theory stresses that migrants' destinations as well as their probabilities of getting work are a function of their individual characteristics.

According to the NELM, migration consists of a household's strategy that aims at mitigating risks and facing market failures (namely credit and labor markets) in developing countries. Thus, migration is a solution. Remittances sent home by migrants help household to diversify and improve their production systems and thus to minimize risks.

Accordingly, migrants play the role of insurer. Remittances also depend on a number of specifications such as age, education, sex, poverty status, agro-ecological stability zone, number of household's members, land, and livestock sizes.

Migration, or more specifically emigration, has been of enormous importance for Syria since many decades. Rural out-migration is becoming one of the most important phenomena that shape the rural areas, namely in the less-favored regions where poverty and environmental risks push people to look for new opportunities outside agricultural sector and rural areas. Migration from Syrian rural areas is increasingly gaining more attention from researchers in socio-economic fields, as limited micro-level studies have documented migration flows from rural areas and the main reasons for such mobility. Available studies focused mainly on internal migration in Syria (especially the rural-urban migration) and the consequences of such trends (Central Bureau of Statistics CBS 2000; Khawaja 2002). Other studies were concerned with migration only as a part of livelihood strategies adopted by households in poor areas (Abdelali-Martini et al. 2003; La Rovere et al. 2009, Mazid and Aw-Hassan 2002).

In 1987, the State Planning Commission with the United Nations Population Fund (UNFPA) cooperation and the International Labour Organization (ILO) surveyed internal migration in three main governorates: Damascus, Aleppo, and Homs. Findings from the survey were utilized in implementing the National Strategic Plan for Internal Migration in the Syrian Arab Republic. The study found that the main push factors from rural areas are landlessness, land fragmentation, poor productivity, and small income generated from rural activities while the main pull factors towards urban areas were working opportunities as well as the higher returns from non- agricultural activities especially for highly educated people (Abu-Al Shamat 1991). Another survey on internal migration was conducted in 1999; the Syrian Central Bureau of Statistics (CBS) in collaboration with the University of Damascus and the Institute for Applied International Studies in Norway (Fafo) conducted the Syrian Internal Migration Survey (SIMS). In his study, Khawaja (2002) summarizes the main survey findings, stating that most migrants originate from rural areas and are usually young and more educated. He indicates that women are most likely to migrate internally accompanied with their family members and that 55.9 % of male migrants aged between 15 and 35 years old, while 58.8 % of female migrants, belong to this category (Central Bureau of Statistics CBS 2007).

Our study comes to fill a gap on the factors characterizing migration from one of the poorest areas in rural Syria and determines the drivers for the different migration destinations. This research, initiated on the NELM hypotheses, aimed at analyzing the gendered migration in one of the poorest Syrian dry areas through the individual, household, and community characteristics of migrants. More specifically, our objectives are first, to analyze the impact of migrants' characteristics on migration destination and sector of employment, second, to measure the impact of migrants' destination and employment on remittances sent to the left-behind households, and third, to analyze the determinants to remit.

Findings suggest that the main factors affecting the choice of migration destination and employment are the sending area (origin of migrants), the age, and the sex of migrants as well as the social ties and connections from origin to destination. In addition, the larger the endowments of migrants' households, the more the remittances sent back home which indicates the important role of migration in preserving households' assets in marginal dry areas.

The paper consists of the following: Section 2 presents a description of the research site and the data used in the analysis, while Section 3 reviews the analytical methods. Section 4 discusses the main results obtained from the econometric analysis, and Section 5 summarizes the main findings.

2 The study area: an overview

Three research sites were selected in Syria for this study; they are characterized by acute rural poverty, resource degradation, and important migration flows. These sites are the Jabal El-Hoss Samaan area and the Jabal El-Hoss Sfireh—both rainfed sites—and a newly irrigated area in Sfireh located 70 km southeast of Aleppo City. The research area (Fig. 1), characterized by a diversity of livelihood strategies and significant deterioration of the environment through depletion and degradation of natural resources, was already classified among the poorest in Syria (El- El-Laithy and Abu-Ismail 2005; Abu-Ismail et al. 2007) and is spread over 157,000 ha, including 157 villages. This area falls between rangelands and rainfed agriculture sites and is located within zone 2 and zone 3 of the defined agro-ecological zones in the country.[1] The average annual winter rainfall ranges from 200 to 250 mm. The study area is characterized by its high population growth rates (up to 3 %), with a total of 250,000 inhabitants (Central Bureau of Statistics CBS 2007). At the country level, around 60 % of rural households practice agriculture, and the poorest rely entirely on agriculture under three main types of agricultural production systems: rainfed, livestock/pasturing, and irrigated, in addition to off-farm income. In Syria, out of the 6.04 million hectares of available arable land in 2010, about 1.34 million hectares is irrigated (National Agricultural Policy Center NAPC 2010). These areas are mostly located in the Orontes River Valley in the west and the Euphrates Valley in the east.

The main crops cultivated in the area are cereals (wheat and barley). According to climate trends, there were an increasing desertification and loss of biodiversity which might get even worse due to the current weather and conflict conditions (Ministry of State for Environment Affairs (MSEA) 2012). About 27 % of lands are covered with rocks and low rainfall to grow rainfed crops, and groundwater level is decreasing in addition to limited financial resources and access to markets; it was very crucial for rural inhabitants in *Jabal El-Hoss* to search for job opportunities outside their area whether inside or outside the country.

3 Methodological framework

3.1 Data collection, sample size, and selection procedures

We collected data using the following procedure: In 2009, we conducted participatory rural appraisals (PRA) in ten villages using a checklist of 113 questions addressing the causes and trends of migration, different types of migrants, impacts of migration, remittances and their uses for livelihoods and investments, on-farm labor, off-farm rural activities, agricultural technologies, community activities, and natural resource management.

The Directorate of Extension in Aleppo provided us with lists of farm households, regardless of their asset ownership. Based on that, we selected the households' sample for the formal survey using a multi-stage sampling procedure. Due to a lack of prior data on variances of income and number of migrants within and across the villages, we included 25 % of the total 120 villages in the study area in our research sample.

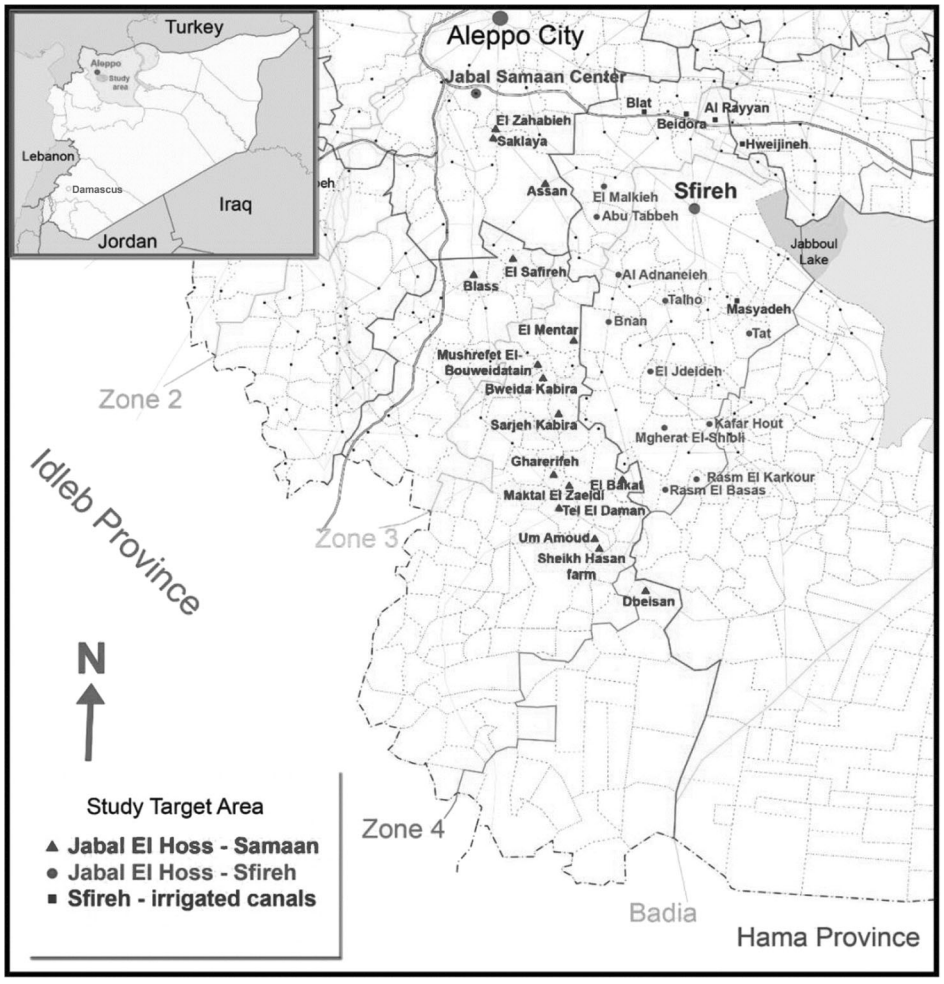

Fig. 1 Map of the study area

The online "sample size calculator" formula determined the size of our sample at 577 households as the minimum sample size to ensure 95 % confidence and 4 % precision levels. The second step was to distribute the total sample size proportionally among selected villages using, as suggested by the theory, a 50-50 weighting between the population and the number of households in each village. We considered five as a minimum sample size from each village. Accordingly, in cases where the minimum sample size determined is below five, it was increased to five for which the total sample size became 608. Finally, we used a simple random sampling procedure to select respective numbers of households from each village (Abdelali-Martini and Hamza 2014).

We targeted heads of households (almost all men) in our survey, and we defined migrants as individuals who spent any period of time away from home during the past 12 months at the time of the survey. Migration included off-farm activities performed through daily commuting to Aleppo City or neighboring towns. Additionally, ten focus group discussions were held with women and men in the communities to complete our understanding from women migrants and non-migrants. We gathered detailed information about household capitals (human, social, physical, natural, and financial capitals), in addition to migrants' profiles (individual characteristics,

destination of migration, and types of work performed by each member) as well as information about remittances.

The paper focuses on analyzing migrants as individual observations for further understanding migrants' behavior regarding the choice of migration's destination and sector of employment as well as the use of their remittances. These observations constitute a sample of 349 migrants of which 49 are women (14 %). We replicated the community and household characteristics (target area, household type, household members and total land, number of sheep and goats, number of income sources, land reclamation, development project beneficiaries, as well as the number of migrants from the household) for each migrant. Additional variables such as socio-demographic (age, sex, education level (number of years)), institutional (relationship to the head of the household, destination of migrants), and economic (type of work performed and the amount of remittances) were included.

We used three categories of variables in our empirical analysis:

1. Individual characteristics of migrants including migrant's age, educational level in years, sex, marital status, and whether the migrant interviewed was the head of the household or not
2. Socio-demographic and economic household characteristics such as household size, land per capita, number of sheep, and the economic status of households (poor or less poor) and the number of other migrants in the household
3. Community characteristics (e.g., the agricultural stability zone)

3.2 Analytical framework

In this study, we simulated an empirical multinomial logit model (Mora and Taylor 2006). In their paper, Mora and Taylor (2006) intended to estimate "the differential net effects of individual, family and community variables on migration outcome" using the probability that individual j is combined with destination-and-sector regime d as follows:

$$\text{prob}\left(U_d^i \forall j \neq d\right) = \frac{e^{\beta_d Z^i}}{\sum_{j=0}^{J} e^{\beta_j Z^i}} \tag{1}$$

where Z^i is a vector of i's personal, household, and community characteristics.

In our paper, we incorporated personal, household, and community characteristics to estimate the factors determining migrants' destination and sector of employment. We used two logit models in our analysis: The first one includes the destination and the other the sector of employment. Consequently, in order to estimate the factors affecting the amount of remittances, we used the Heckman (two-stage) model. When modeling the main drivers of migrant remittances, it is important to indicate that only part of the households that reported members' migration received a transfer (of any amount). Given this special case on which the dependent variable is censored, the application of the ordinary least squares (OLS) method would not be satisfied. This problem has been treated for a long time in the econometric literature, and two alternative approaches are used to solve it. The first approach consists of modeling the remitting decision and interprets the factors affecting the probability that a household would ever receive a transfer and then use the corrected OLS to model the amount transferred. In fact, this

is an application of the standard Heckman (1979) two-step procedure and has been used by Banerjee (1984), Cox (1987), Hoddinott (1994), and Zhu (2002) in modeling remittances. This approach has the advantage of treating the remitting as a two-stage process. In the first stage, the decision whether to remit or not takes place and in the second stage follows the decision on the amount of transfer.

However, as noted by Hoddinott (1994), in none of the theoretical literature on migration and remittances, there is a distinction made between factors influencing the decision to remit and the level of remittances. It is possible to avoid such a challenge by adopting a second approach, which assumes that the decision to remit and level of remittances are made simultaneously. We used a censored *Tobit* model that uses data from both remitters and non-remitters, where the independent variable has two effects: it affects the probability of migrants falling in the remitting sub-sample and the amounts they remit. The maximum likelihood estimation of this model yields parameter estimates that are consistent in the context of modeling remittance behavior and has the disadvantage that a given determinant is restricted to having the same sign effect on the decision to remit as on the size of the remitted amount (Hoddinott 1994). It is therefore possible to explore both econometric procedures in this case.

As using the first approach, we define a two-stage sequential remitting process to correct the selectivity bias:

$$r_i = \gamma X_i + u_i \tag{2}$$

and

$$R_i = \beta' X_i + \varepsilon_i \tag{3}$$

where i indexes households, r_i is the binary variable denoting the decision to send remittances: $r_i = 1$ if a migrant sends remittances and $r_i = 0$ if the migrant remits zero, R_i is the size (amount) of remittances received by the household i, γ and β are vectors of parameter estimates, X_i is a vector of remittance determining variables and characteristics for household i, and u_i, ε_i denote the error terms. Following Hoddinott (1994), the estimation of two separate equations, Eqs. (2) and (3), implicitly assumes that emigrants take the decision whether or not to remit and how much to remit sequentially. Thus, in order to obtain consistent and efficient estimates, we used the Heckman (1979) two-step procedure.

The second model in our empirical analysis of remittance functions is the so-called censored *Tobit*, specified as follows:

$$R_i^* = \beta' X_i + u_i \quad u_i \approx N(0, \sigma^2) \tag{4}$$

where

$$R_i = \begin{cases} R_i^*, \text{ if } \beta' X_i + u_i > 0 & \text{(the observed values)} \\ 0, \text{ otherwise} & \text{(the unobserved values)} \end{cases} \tag{5}$$

Let R_i^* the partial latent dependent variable that captures the ith individual's propensity to remit and R_i the observed value of amount remitted by the ith individual. Equation (5) indicates to us that R_i is either positive or zero. It is important to indicate here also that X_i denotes the vector of remittance determining variables for the ith individual (characteristics) and u_i the error term. We estimated β and σ using the maximum likelihood method.

3.3 Selection of variables and specifications

We selected a set of variables for analysis using the logit models. They include community, households, and individual characteristic variables.

4 Results and discussion

4.1 Employment of migrants

The dependent variable is the employment sector; it takes the value of zero (0) if migrants work in non-agricultural sector and one (1) if the migrant works in agricultural sector. Estimation results from these models are presented in Table 1.

Empirical findings indicate that migrants from zone 3 are expected to work in non-agricultural sector where the probability of working in the non-farm sector raised about 2.29 times for migrants from zone 3 compared to migrants from zone 2. Less-poor people are more likely to work in agricultural activities whereas poor people are expected to engage in non-agricultural jobs with a probability of 0.77 (costs of migration and the support of migration networks[2]). The empirical findings highlighted also that the existence of other migrants (other than the household head) from the same household influences significantly the choice of the sector of employment, which indicates and reinforces our preliminary observations where the role of migration networks is crucial in finding job opportunities outside agriculture for the newcomers.

Our results indicate that sex and age are the individual characteristics that affect the most the choice of work sector. Female migrants are expected to work in agricultural activities, mainly because they work as groups, which is looked as a secured way of work for relatives. In addition, younger people (of both sexes) are also expected to have jobs as agricultural laborers. Our empirical findings show that the education variable has no significant impact on the choice of the sector of employment, most probably because migrants engage in activities that do not require specific education levels (Abdelali-Martini and Dey de Pryck 2014).

Table 1 Logit estimates of employment of migrant function

Variable	Coefficient
Community characteristics	
Stability zone	2.29 (1.15)**
Household characteristics	
Poverty status	0.77 (0.411)*
Total household members	−0.06 (0.045)
Land area (ha)	0.002 (0.003)
Livestock	0.005 (0.007)
Number of total migrants from each household	0.47 (0.13)***
Individual characteristics	
Age	−0.16 (0.082)**
Age squared	0.002 (0.001)**
Education level	−0.016 (0.065)
Gender	4.33 (0.6)***
Household head (dummy = 1 if the migrant is the head of the household; 0 otherwise)	0.85 (0.7)

Source: model results. Note: sample size = 349, likelihood ratio χ^2 (11) = 162.88, SE in parentheses
***Significant at 1 %; **significant at 5 %; *significant at 10 %

4.2 Destination of migrants

The dependent variable is the destination choice; it takes the value of zero (0) if individual migrated internationally and 1 if they migrated internally, as shown in Table 2. Results indicate that migration destination is a function of the sending zone; migrants originating from zone 2 have a propensity to remain inside Syria while migrants from zone 3 have a propensity to migrate abroad because the first receives more rainfall than the others and cropping patterns require more labor in zone 2 as well, which explains their choice to remain close to their lands, and at the same time, they can diversity their activities. Poverty status affects negatively the destination of migration: poor people tend to migrate within Syrian borders but non-poor people eventually tend to migrate outside Syria most likely because the most poor cannot afford bearing migration costs.

In addition, the bigger the household size, the smaller the probability that migrants will travel abroad. However, the existence of other migrants (than the household's head) does not have a significant impact on migrants' destination. Land and livestock holdings have an opposite impact: while migrants with larger household land are more likely to go abroad, we found that migrants with fewer livestock heads have a higher propensity to migrate internationally. Age has a negative impact on international migration, and younger people tend to migrate internally as compared to older migrants. This is most probably due to the work experience that is required abroad. Individuals with a local experience are more likely to find a job abroad as opposed to beginners who still have to prove themselves and learn a specific occupation that would generate a good income. On another side, women migrants represent 14 % of the total number of migrants, most of which were working as wage laborers in agriculture inside Syria, although those working in neighboring villages and commuting everyday were not counted among female migrants. Most international migration was masculine in the Near East and North Africa (NENA), except for rare cases where women travel for seasonal agricultural work to neighboring countries within hired labor groups or family

Table 2 Logit estimates of destination of migrant function

Variable	Coefficient
Community characteristics	
Agro-ecological stability zone	−1.27 (0.46)***
Household characteristics	
Poverty status	−0.46 (0.25)*
Total household members	−0.05 (0.025)**
Land area (ha)	0.004 (0.02)*
Livestock—number of small ruminants (sheep and goats)	−0.01 (0.006)*
Number of other migrants	0.049 (0.086)
Individual characteristics	
Age	−0.11 (0.06)*
Age squared	0.002 (0.001)**
Education	0.021 (0.04)
Sex	1.6 (0.46)***
Household head	−0.49 (0.43)

Source: model results. Note: sample size = 349, likelihood ratio χ^2 (11) = 66.51
***Significant at 1 %; **significant at 5 %; *significant at 10 %

labor groups. For other types of work, female migrants constituted for about 51 and 46 % of all migrants in the developed and developing countries, respectively, by 2000 (International Labour Organization (ILO) 2003).

4.3 Remittance model results

It is worth indicating that the information on migrants' income used here was generated from household's head responses coupled with additional information from the migrants themselves who were in their place of original residence at the time of the surveys. We concluded that although the information provided with respect to migrant's personal characteristics might be relatively accurate, it may be less so in regard to their conditions and income in the receiving areas and countries.

When selecting the variables that could affect remittances, we first considered the income of the migrants. Theoretical considerations anticipate that the likelihood of an incurred transfer as well as the amount of transfer will increase proportionally with the migrant's earnings. In our empirical analysis, the effect of the migrants' income generated from the variable income was calculated based on the migrants' monthly income. We then analyzed the potential effect of the economic status of rural households on the probability to remit (or not) and, if so, the amount available to remit.

In the methodological framework, the selection of the explanatory variables is restricted by the used estimation approach. In the first approach, i.e., the Heckman two-step procedure (Bierens 2007) remittance decision, the outcome equation in the model measures the factors affecting migrants' decision in sending remittances. The explanatory variable is a dummy variable that takes the value of 1 if migrants remit and 0 if they do not; the independent variables are divided into two groups: first, the household's characteristics (per capita owned land, sex of the household head, the number of livestock heads, etc.) and, second, the migrant's personal characteristics (age, marital status, and education level).

The selection equation explores the determinants of remittance amounts. The dependent variable is the amount of remittances, and the independent variables are divided into household characteristics (household size, agricultural stability zone, per capita owned land, and the number of livestock heads) in addition to migrants' characteristics (age, marital status, and educational level)[3].

Results from Table 2 indicate that the higher the per capita owned land, the higher the migrant's likelihood in sending remittances to the household (sig. at 10 %). In accordance with the theoretical background (de La Briere et al. 2002; Hoddinott 1994; Lucas and Stark 1985), the result indicates that those migrants are expected to invest more in increasing and improving their available assets.

The positive relationship with the number of livestock heads (sig. at 1 %) indicates the propensity of migrants to invest in this important source of livelihood particularly in rainfed areas characterized by their high potential of production. Provided that we cover two rainfed areas in our research, the likelihood of investing more in livestock production is higher in *Jabal El-Hoss (Sfireh)* because of its proximity to zone 4 (drier), as compared to *Jabal El-Hoss Samaan* closer to the wetter zones.

The relationship between remittances and sex of the household head indicates that the amount of remittances rises when the head is female. This could mainly be attributed to the role of insurers that migrants play towards their families especially that most female-headed households belong to the poorest group in our sample.

The agro-ecological zone where the household is located is significantly important. Migrants from zone 3 tend to send more remittances probably because of low agriculture returns in these areas (due to poor natural resources) and the impulsive need for additional income sources. The inclusion of the migrant's age as an important demographic characteristic resulted in a negative relationship indicating that the higher the age of migrant, the more likely the amount of remittances sent or brought is low. One explanation is that those younger migrants might be more involved in external migration,[4] as they perform harder activities as compared to their elders. Most of the activities migrants perform are of physical types. This is in accordance with our first investigations and observations where older and previous migrants are suffering from different types of illness especially back pain and cannot perform anymore the activities they use to do when they were younger (Table 3).

The education-level coefficient of migrants is negatively correlated with the amount of the remittances sent. Results show that the lower the education level, the higher the remittance amounts sent. Our interpretation is that most migrants' destination is the neighboring countries (Lebanon and Jordan), where they perform mainly activities that do not require high levels of education but some specific skills such as construction, painting, and trading. Women migrants to neighboring countries have skills in agricultural manual tasks, which do not require any formal education but previous experience. The highest level of education among migrants in our sample survey was the ninth grade (intermediate level). The more educated people are expected to migrate internally and work in Syrian cities, or in non-agricultural activities inside Syria, counted among those commuting daily from their village to their work location. This shows the importance of non-agricultural work of rural people even if not counted among the migrants.

Table 3 Factors affecting the decision to send remittances and their determinants

	Coefficient	[95 % conf. interval]	
Sending remittances			
Per capita owned land	0.0039314* (0.0021)	−0.00012	0.007987
Gender of Household Head	0.1078534* (0.0556)	−0.00119	0.216898
Number of livestock	0.0014896*** (0.0005)	0.000575	0.002405
Migrant's age	0.0103778*** (0.0015)	0.007496	0.013259
Marital status	0.2187417*** (0.0275)	0.164812	0.272671
Migrants' level of education	0.0539073*** (0.0043)	0.045439	0.062376
Remittance amounts			
Household size	0.123203*** (0.0161)	0.09163	0.154776
Zone	0.2457177*** (0.0321)	0.182748	0.308687
Per capita owned land	0.1372131*** (0.0208)	0.09646	0.177966
Number of livestock	0.0076023*** (0.0026)	0.002411	0.012794
Migrant's age	−0.0760842*** (0.0041)	−0.08409	−0.06808
Migrants' level of education	−0.2496008*** (0.0186)	−0.286	−0.21321

Source: model results. LR test of indep. eqns. (rho = 0): χ^2 (1) = 11.6 Prob > χ^2 = 0.0007
***Significant at 1 %; **significant at 5 %; *significant at 10 %

4.4 Gender, migration, and empowerment

Despite the increased range of studies about women's migration, only few focus on gender relationships in this field. The majority of available studies has limited their analysis to differential models of males and females' migration and simply compares results, an approach strongly contested by Hondagneu-Sotelo (2003) who called it "add women and stir."

Migration has always implied a distribution of power within the household (Department for International Development DFID 2007). In this study, wage labor for women has not led to a real economic independence of women in decision-making and equal relationships because income alone cannot secure that independence. Rather, it requires a transformative process of the social customs in the society. Women have migrated or worked within Syria as wage laborers because of the pressing need of an additional income for the household. Migration and off-farm work is mainly tied-up to men's migration, and women's mobility obeys to important restrictions that persist in the area. In Syria (to our knowledge and based on our investigations), there is a lack of migration policy; migrants are not registered at the borders when they move from and to a neighbor country for work. The research has unveiled that women do migrate from the study area, although much less than men. The migration trends particularly work migration are mostly informal. The gender effects are manifold and complex and deserve to be further addressed and analyzed in a different paper.

5 Conclusions

The main objective of our study was to analyze the drivers behind migrants' choices of their destination, employment, and remittances, which is to our knowledge, a pioneer study that has conducted such an analysis of both internal and international migration in Syria and the impact of migration on the rural sending areas, all on micro level.

We have reached a number of findings. First, the results obtained from econometric models reveal that migration from the *Jabal El-Hoss* area is a sequential selective process; the set of personal, household, and community characteristics highly affects the choice of migration destination and sector of employment. International migrants are more likely to be males, young, and originated from large households performing mainly non-agricultural work such as in the sector of construction or services, whereas female migrants engaged mainly in agricultural activities and related post-harvest and processing.

Second, the amount of remittances sent back home is highly correlated with households' assets, which indicates the role played by migrants in investing and strengthening their assets in their area of origin. Pre-transfer income of migrants' households is related to the probability that migrants will transfer remittances to households as well as related amount. Once the migrant decides to remit, and takes action, our computed remittance/migrant income elasticity indicates that the amount remitted is a function of the income of the remitter. Development policies in this area should better be targeted towards creating niches that help migrants' households invest remittances—individually or collectively—in a productive manner in their harsh environment.

However, despite the great efforts devoted to understand and analyze the destinations, employment, and return of migrants from marginal drylands in Syria, the results of this paper constitute only a first step that should be interpreted with caution, given

the limited scope of the data collected and analyzed. Future research is especially advised to concentrate on generating information on non-monetary transfers and provide more insights and accurate information about remittance senders and their working conditions at destination. This could be generated both from migrants and their families at the sending areas as well as from them in the destination areas to better help interpret the motivations for international remittances and potential investments in agriculture.

Endnotes

[1]There are five agro-climatic zones in Syria classified depending on the rainfall and other related characteristics (Appendix).

[2]Transport, and other related costs, and all kinds of support provided from others originated from the same village and other Syrians who migrated before the newcomers.

[3]This corresponds with the NELM that considers the decision of migration as a joint family decision that depends on both migrants and household members left behind (Stark and Bloom 1985).

[4]The main destinations of external migrants were towards Lebanon and Jordan, with a very limited number to the Golf States.

Appendix

A.1 Syrian agricultural stability zones

In 1975, the government divided the country into five agricultural stability zones according to rainfall and other agro-ecological conditions. These zones, which reflect traditional farming systems, are described below:

1. Zone 1A: average annual rainfall is over 600 mm. Moisture is not a constraint, and a broad range of rainfed crops can be produced.
2. Zone 1B: annual rainfall between 350 and 600 mm, with not less than 300 mm during two thirds of the years.
3. Zone 2 is characterized by an annual rainfall ranging between 250 and 350 mm, with not less than 250 mm during two thirds of the years.
4. Zone 3 has an average annual rainfall of 250 mm, with not less than 250 mm in half of the years, i.e., it should be possible to get one to two harvests out of every 3 years.
5. Zone 4: "the marginal lands" have an annual rainfall ranging between 200 and 250 mm with not less than 200 mm during half of the years.
6. Zone 5 encompasses the Syrian Desert and steppe. It consists of land receiving less than 200 mm of rain and cannot sustain rainfed crops. It covers 10,208,000 ha, which represents 55.1 % of the total area of the country.

In summary, the largest area is not suitable for crop production. The favorable areas, zones 1 and 2, constitute 27 % of the total land area. The less-favorable areas, zones 3 and 4, constitute 17 % or the total land area, and agriculture in these zones is characterized by high risk and low productivity.

Source: adapted from MAAR (Ministry of Agriculture and Agricultural Reform), Annual Statistical Abstract.

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Competing interests
The IZA Journal of Migration is committed to the IZA Guiding Principles of Research Integrity. The authors declare that they have observed these principles.

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