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**CLIMATE CHANGE, GENDER, DECISION-MAKING  
POWER, AND MIGRATION  
INTO THE SAISS REGION OF MOROCCO**

**Dina Najjar, Boubaker Dhehibi, Aden Aw-Hassan,  
and Abderrahim Bentaibi**

**Working Paper No. 1102**

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## Abstract

Studies on migration in the Middle East and North Africa (MENA) region have so far focused on migration to urban areas (local cities and European countries). Little research has explored internal migration into rural areas. Yet in Morocco rural-rural migration is an important strategy for many who are escaping climate variability and unemployment in their hometowns to take advantage of labor opportunities in thriving agricultural enterprises. Gender remains largely missing from migration research in Morocco especially for migrant women. Gender differences are important to account for as men and women have diverse motives, strategies and experiences with migration, and thus require different interventions. In light of gender differences and climate-induced migration and investments in irrigation, this research follows up on the ground to understand the experiences of men and women laborer as the migration continues in three rural areas in the Saiss region (Morocco). These are chosen based on differences in socio-economic, gender norms, and biophysical dynamics to capture as diverse experiences as possible with labor work and migration as possible. These areas also represent both sending and receiving communities. Data was collected through a survey administered to 400 laborers (179 women and 221 men) employed in the intensified agricultural sector of Saiss in Morocco. Using gender analysis, logistic regression models framework and political ecology approach, our findings emphasize that men should be sensitized in their attainment of tertiary education on gender equality and the importance soliciting women's participation in decision-making, particularly with regards to assets (house). For the economic advancement of women, there should be a sustained focus on their ownership and control over unalienable assets (such as housing). The same recommendation applies to the youth. Finally, we found that migrants were less likely to control houses that they owned probably due to a general lack of title deeds. We recommend formalizing their ownership of housing in the settlement areas.

**JEL Classification:** Q5, R2, F2

**Keywords:** Gender analysis, Decision-making, Migration, Rural Livelihoods, Climate Change, Logistic Regression, Morocco.

## ملخص

ركزت الدراسات حول الهجرة في منطقة الشرق الأوسط وشمال أفريقيا حتى الآن على الهجرة إلى المناطق الحضرية (المدن المحلية والبلدان الأوروبية). واستكشفت بحوث قليلة الهجرة الداخلية إلى المناطق الريفية. ومع ذلك، فإن الهجرة الريفية والريفية في المغرب هي استراتيجية هامة لكثير من الذين يهربون من تقلب المناخ والبطالة في مدنهم لاستغلال فرص العمل في المشاريع الزراعية المزدهرة. ولا يزال النوع الاجتماعي مفقودا إلى حد كبير من بحوث الهجرة في المغرب خاصة بالنسبة للمهاجرات. فالفوارق بين الجنسين مهمة لأن الرجال والنساء لديهم دوافع واستراتيجيات وتجارب متنوعة مع الهجرة، وبالتالي تتطلب تدخلات مختلفة. وفي ضوء الفروقات بين الجنسين والهجرة الناجمة عن المناخ والاستثمارات في الري، فإن هذا البحث يتابع على أرض الواقع فهم تجارب الرجال والنساء العاملين مع استمرار الهجرة في ثلاث مناطق ريفية في منطقة سايس (المغرب). ويتم اختيار هذه الاختلافات استنادا إلى الاختلافات في المعايير الاجتماعية والاقتصادية، والمعايير المتعلقة بنوع الجنس، والديناميات الحيوية الفيزيائية للاستفادة من الخبرات المتنوعة قدر الإمكان مع العمل في مجال العمل والهجرة قدر الإمكان. وتمثل هذه المناطق أيضا المجتمعات المرسلة والمستقبلة. وجمعت البيانات من خلال دراسة استقصائية أجريت على 400 عامل (179 امرأة و 221 رجلا) يعملون في القطاع الزراعي المكثف في سايس بالمغرب. وباستخدام التحليل النوعي وإطار نماذج الانحدار اللوجستي ونهج الإيكولوجيا السياسية، تؤكد النتائج التي توصلنا إليها أنه ينبغي توعية الرجال في تحقيقهم للتعليم العالي بشأن المساواة بين الجنسين وأهمية التماس مشاركة المرأة في صنع القرار، لا سيما فيما يتعلق بالأصول (المنزل). وفيما يتعلق بالتقدم الاقتصادي للمرأة، ينبغي أن يكون هناك تركيز مستمر على امتلاكها للسيطرة على الأصول غير القابلة للتصرف (مثل السكن). وتنطبق نفس التوصية على الشباب. وأخيرا، وجدنا أن المهاجرين أقل عرضة للسيطرة على المنازل التي كانوا يمتلكونها على الأرجح بسبب النقص العام في سندات الملكية. ونوصي بإضفاء الطابع الرسمي على ملكيتهم للسكن في مناطق الاستيطان.

## 1. Introduction and Research Background

Studies on migration in the Middle East and North Africa region have so far focused on migration to urban areas (local cities and European countries) (Heering *et al.*, 2004; Arango and Martin, 2005; De Haas 2006; de Haas and Van Rooij 2010; Schilling *et al.*, 2012). Little research has explored internal migration into rural areas. Yet, in Morocco rural-rural migration is an important strategy for many who are escaping climate variability and unemployment in their hometowns to take advantage of labor opportunities in thriving agricultural enterprises. Furthermore, gender remains largely missing from migration research in Morocco. Gender differences are important to account for as men and women have diverse motives, strategies and experiences with migration (Silvey, 2006; Resurreccion and Elmhirst, 2012). Many gender and migration studies elsewhere have pointed out how migration dilutes gender norms in the hosting communities and leads to an increased participation of women in the workforce (Yeoh and Ramdas, 2014; Schmalzbauer, 2004; Resurreccion and Van Khanh, 2007). However, the decision-making power of the women who work remains missing from this literature. These considerations are important for the empowerment of women who are often marginalized in decision-making power more generally (Gammage *et al.*, 2016; Agarwal 1997; Martini *et al.*, 2003). It is not enough for women to generate income, it is important that they also have control over this income and have a say in the decision to work. Equally important is that women also own assets in face of shocks such as divorce and widowhood (Agarwal 1994).

In Morocco, severe drought in the more vulnerable areas, particularly the center and the south (Dahan *et al.*, 2012), compounded with government investment in agriculture and services in the more resource-endowed areas is leading to internal migration into the more promising areas. In addition to drought, hopes, dreams and aspirations fuel the migration process. In light of rural-rural migration, gender differences in motives, strategies and decision-making power, and the local socio-economic and the broader policy and environmental context, this research follows up on the ground to understand the experiences of men and women migrants as the migration continues in three rural areas in the Saiss region of Morocco, particularly in Betit, Ain Jemaa, and Sidi Slimane. These are chosen based on differences in socio-economic, gender norms, and biophysical dynamics to capture as diverse experiences as possible. Furthermore, these areas represent both sending (Ain Jemaa) and receiving communities (Betit and Sidi Slimane). Data was collected using a mixed methods approach. The study employed a survey with 400 agricultural laborers (both migrants and original inhabitants) and qualitative interviews and focus groups. Analysis of the data employed gender analysis and logistic regression models. In the analysis, we draw from feminist political ecology framework and explicitly focus on how gender is centrally implicated in the relationship between people, their environments, the state, and the economy (Rocheleau *et al.*, 1996; Elmhirst, 2011). Gender analysis refers to segregation of data collected and findings by age and gender to understand the reasons and approach for migration, extent of control over labor participation and subsequent control over and use of financial resources and assets.

We focus on understanding and linking migration experiences with gendered motives, strategies and decision-making power in control over decision to work, income spending and assets (such as a house). Many migrants in the Saiss region are employed in the waged agricultural labor sector and have migrated to escape unemployment in drought-prone areas. In light of these income generating opportunities, it would be interesting to see whether women, compared to men and other men and women who are not migrants, are able to make decisions related to spending income and controlling assets. A particular focus is placed on understanding jointness in decision-making related to spending income for migrant and non-migrant men and women. There is a sustained focus in development work on women in isolation despite growing concerns over such approaches (Agarwal, 1997; Razavi, 2009). We take a relational approach to gender and focus on jointness in decision-making. In particular, we look at whether men and

women respondents participated in decisions related to work, spending income and control over assets. If so, we examine whether these decisions were taken alone or in consultation with others and what does that mean for men and women.

The first section starts with a literature review on gender, migration and decision-making power with a special focus on Morocco and the Middle East more broadly. Following the case study is introduced with description of the age, gender, migration status and other demographic characteristics of the research participants. The paper then moves to looking at gendered motives and strategies for migration; age- and sex-disaggregated reasons for migration and strategies for migration; factors affecting decisions to migrate; control over decision-making related to participating in agricultural work and the nature of these decisions (joint vs. alone); control over decision-making related to spending of the subsequent income and the nature of these decisions (joint vs. alone); control over assets (house) and the nature of this control (joint vs. alone).

## **2. Decision-making, Migration, and Gender**

Women are often marginalized in their abilities to control resources (Gammage *et al.*, 2016). This is attributed to gender norms which shape decision-making power (Agarwal, 1997). By regulating what is acceptable behavior for men and women, norms have their effects on decision-making power or lack of and also imply a price for protesting the status quo. Migration often results in dilution of gender norms and reduced social control (Yeoh and Ramdas, 2014; Schmalzbauer, 2004; Resurreccion and Van Khanh, 2007). What is prohibited in the original home areas could become permissible in the host communities. Employment is often cited as a reason for migration (Yeoh and Ramdas, 2014; Schmalzbauer, 2004; Resurreccion and Van Khanh, 2007). This could be because work for women is more acceptable or available than in the original hometowns.

In recent years, attention of the research community has shifted away from the unitary model of the agricultural household towards a focus on the individual within the household (Razavi, 2009, Agarwal, 1997). This perspective has the advantage of revealing the preferences, agency, and actions of individual household members, but it obscures important interactions between men and women within the household. Most households have elements of jointness in control, ownership, and decision making. We explore this topic in this research in mainly two ways: quantitative and qualitative. Each of the decision-making domains are further analyzed along the lines of alone or joint decision-making. At a second level, we explore qualitatively the meaning of jointness and the gender differences with regards to decision-making over income.

Most of the migration studies related to agriculture in the Middle East region are focused on women who are left behind (Martini *et al.*, 2003; Larson, 1991; de Haas and Van Rooij 2010). Studies on migration in the Middle East note that in Syria, Morocco and Egypt migration of men compounded with intensification of agriculture, particularly in the irrigated areas, is leading to increased demand for labor which is provided by women (Martini *et al.*, 2003; Larson 1991; de Haas and Van Rooij 2010). This falls within a broader global pattern of increased dependence on women's cheap labor in efforts to commercialize agriculture (Razavi, 2009).

The Middle East and North Africa (MENA) region remains one of the most vulnerable areas in the world to climate change and is currently undergoing rapid social and political change (Kaplan *et al.*, 2011; Sowers *et al.*, 2011; Waterbury, 2013; Haddad and Shideed, 2013; Iglesias *et al.*, 2007). This region is projected to have an increase in temperature (2-3° C) and decline in precipitation (10-30%) in the coming years (Intergovernmental Panel on Climate Change (IPCC), 2014). Morocco is particularly vulnerable to climate change due to its increased dependence on rainfed agriculture (Schilling, 2012).

In Morocco in 1990 only 3 percent of all employed women and 4 percent of all employed men worked in agriculture. By 2009, those figures had burgeoned to 59 percent of all employed women and 34 percent of all employed men and by 2011 to 61% women and 32% men (World Bank, 2011, 2013). Agriculture, as such, is the largest employer for women in the country. This represents the shift to *waged* rather than *subsistence* agricultural work through agricultural intensification, characterized by irrigation and labor-intensive crops. These areas are attracting men and women migrants from other rural areas.

This study looks at the gendered impacts, strategies and reasons for migration by comparing the experiences, particularly decision-making power with a focus on joint decision-making, of migrant and non-migrant laborers in the agricultural wage sector in Morocco.

### **3. Case Study**

In the past decades, the Moroccan government has placed considerable attention on agriculture. Nowadays, the agricultural sector contributes with around 19% to the national Gross Domestic Product (GDP) divided between agriculture (15%) and agro-industry (4%). In addition, this sector employs over 4 million people. The new agricultural strategy, Green Morocco Plan (GMP), established by the Ministry of Agriculture and Fishing (MAF), aims to consolidate the success achieved and to meet new challenges facing Morocco's competitiveness and opening of markets as well as adaptation to climate change. It is within this new agricultural strategy that GMP provides farmers with wells and drip irrigation at a highly-subsidized rate. In areas where groundwater is available or accessible, and with the state support to access this water, significant changes happened in the types of crops grown, labor demands, and profitability of farming. An increased demand for labor led to creation of job opportunities in the resource endowed areas of Betit and Sidi Slimane in the Saiss region. Prior to the GMP, land privatization in the region of Saiss in 2005 also facilitated the adoption of drip irrigation. Three areas of the Saiss region of Morocco were included in this study, namely, Ain Jemaa, Betit and Sidi Slimane (Figure 1).

These areas differ in terms of natural resource endowments and labor markets. Ain Jemaa is rainfed, typically grows food crops such as wheat, chickpeas, fava beans and olives. Sunflower is also grown as an oil crop. Most agricultural work is carried out by family labor. Demand for paid agricultural is relatively low but often a little higher during planting, weeding and harvesting seasons. The other two areas, namely, Betit and Sidi Slimane, have been irrigated increasingly so, and more recently owing to the Green Morocco Plan (GMP). The GMP offers grants to cultivators for drip irrigation and wells at a highly-subsidized rates (GMP, 2016). Because of the availability of water in these two areas and the demand for more water-intensive crops such as onions, potatoes and fruit trees, there is a higher need for hired agricultural labor in Betits and Sidi Slimane. Agricultural wages are also significantly higher than in Ain Jemaa. For these reasons, laborers from the rainfed areas, including women, migrate in large numbers to the irrigated areas.

In these irrigated areas, onions, potatoes and fruit trees are particularly laborious crops and require additional labor to the family especially during planting and harvesting. Both onions and potatoes are of the top ten commodities by quantity produced in Morocco, with Potato at the third place and onions at the tenth place (FAO, 2012). Furthermore, processed fruits rank fifth on the top ten export commodities by quantity in Morocco (FAO, 2011). In context of the local and global significance of these crops cultivated in receiving communities, it is important to understand the social implications, aspirations and decision-making power of men and women involved in the production of these crops as migration continues into the respective cropping areas.

#### **4. Methods and Analytical Framework**

The empirical data for this study was collected through a survey administered to 400 laborers (179 women and 221 men) in the Saiss region of Morocco during November and December 2014. Laborers are known to constitute significantly of landless migrants. Out of the 400 laborers interviews, 187 were migrants. Because the survey was conducted during the winter time (a relatively lean labor season), the number of seasonal migrants is low (6 survey participants). Six men and six women – all fluent Arabic speakers with strong backgrounds in social science and experience with data collection – were employed as enumerators for this survey. The female enumerators surveyed women, and the male enumerators surveyed men. Enumerators used a snowballing technique (where one person who is interviewed identifies other potential information-rich individuals) in order to identify and select interviewees. Some interviews were carried out while respondents were working; others were interviewed in their homes. Site coordinators also assisted in recruiting survey and interview participants. Interviewees were not compensated for participating in the survey. Interviewing women was often challenging because women tend not to spend much time in public spaces such as streets or coffee shops, which interviewers, especially if they are men, can more easily access. Men were interviewed more often in these public venues, while women were interviewed at work or in their homes by female interviewers.

The surveys were conducted in the districts of Betit, Ain Jemaa, and Sidi Sliman in 26 villages: 14 were surveyed in Ain Jemaa (2 women and 12 men), 144 in Betit (59 women and 95 men) and 160 in Sidi Slimane (101 women and 59 men). The number of laborers surveyed is proportional to the size of labor community present in each of the three areas. Sidi Slimane had the largest number of wage workers as the farms are largest and depend more on hired labor. Enumerators were asked to ensure diversity in age groups of respondents so that both youth and adult workers were included. Sixty-three participants were less than twenty four years of age, which is about 16% of the survey participants. We used two age categories, 35 years and more and 35 years and less. In the qualitative reporting, we used 24 years as segregation of youth.

A total of 20 unstructured interviews with employers and participants in paid agricultural labor helped design survey questions. For example, knowing that most of the laborers were migrants, we formulated questions to understand the origin, reasons and means of migration. The interviews also helped contextualize the findings and characterize the three areas with regards to social norms, crops grown and demand for labor.

We use Ain Jemaa (sending community) as a comparative advantage point to Betit and Sidi Slimane (receiving communities) to highlight the key variations in gender norms, work opportunities and decision-making power. The survey was also designed to elicit information about demographic characteristics (age, marital status, education, number of dependents, the relation to the head of household), decision-making power with regards to decision to participate in work, to control the subsequent income, and to have control over assets. We defined control over assets by who can make the decision about the sale of the asset. To gain rigorous data on decision-making, respondents were asked to explain why they took the decision alone or with someone. Respondents were also asked about the items which they spent their income on in order to understand gender differences in spending choices as well as abilities to accumulate income.

The gathered data in the survey was analyzed using excel and SPSS software. The analysis of the survey was completed using logistic regression models for categorical dependent variables focused on 1- the causes and approach of labor migration and how that differs with age, gender and communities 2- the decision-making power, with emphasis on work, income expenditure and assets. The explanatory variables for migration triggers included the socio-economic



profile of the migrants (age, gender, marital status, number of dependents, relationship to head of household, type of migration, education level, and the three communities). The participation in decision making and the nature of this decision (joint or alone) was used as dependent variables. These variables were used under three decision making models regarding three areas of decision-making: decisions over own labor, decisions over own income and decisions over assets with a particular emphasis on the house. Open ended questions in the survey related to why decision-making was taken by certain individuals, were analyzed by teasing out patterns in the data (Bernard, 2011).

#### **4.1 Conceptual Framework**

Since conventional regression analysis (Ordinary Least Squares or OLS) cannot accommodate zero observations on the dependent variable, Logistic Regression (LR) was used instead to predict a categorical (usually dichotomous) variable from a set of predictor variables. In this case study, the research is predicting an event that has two possible outcomes, (control vs. not control) / (joint or alone decision)/ (migrate vs not migrate), which means that the dependent variable is not continuous but has only two possible outcomes, 1 or 0. This case violates the assumption that the variable is normally distributed (single peak), since a 1/0 variable by definition has a binomial distribution (double peak).

The Binary Logistic model (Logistic Regression model) solves this problem by putting the predicted dependent variable as a function of the probability that a particular subject will be in one of the categories, i.e., by determining the odds of 1 or 0. If the odds of 1 are higher than the odds of 0, then a 1 would be expected and not a 0. This is accomplished by estimating the Log Odds Ratio, which is the log of the odds of 1 divided by the odds of 0. Since odds are a probability, there will be a ratio of 2 positive numbers. The log of a positive number can have a value between  $-\infty$  and  $+\infty$ , which removes the upper and lower bound on the dependent variable, which can now be estimated by a regular regression model.

Based on what proceeded, Binary Logistic Regression was applied in this research to regress the dependent variable, Y, of whether the respondent is with a particular subject (event) against this subject (i.e., control vs not control; joint vs alone decision; migrant or not; etc.) such as:

$\text{Prob}(\text{event}) = \text{Prob}(Y_i, 1 \text{ represents } i^{\text{th}} \text{ respondent positive to the event, an } 0, \text{ otherwise}).$

Given that our research is covering several different events, the dependent variable Y can be presented as follows:  $Y_i = 1$  (event) or 0 (no event),

Where i: event (decision control over labor/joint, decision control over income/joint, decision control over house/joint and migrate).

Consequently, the theoretical equations to be estimated are displayed as follows:

Equation 11: Woman migrant:  $Y=1$  if the migrant women (seasonal or permanent) and,  $Y=0$  if the respondent women is not a migrant.

Equation 12: Man migrant:  $Y=1$  if the migrant is men (seasonal or permanent) and,  $Y=0$  if the respondent (men) is not a migrant.

Equation 2: Control over decision to work:  $Y$  is control making over decision on work and take 1 ( $Y=1$ ) if the respondent is controlling decision on work, and  $Y=0$ , if the respondent does not control the decision on work.

Equation 3: Type of control over decision to work:  $Y=1$  if the respondent take decision on work jointly with others and,  $Y=0$  if he/she is taking this decision alone

Equation 4: Control over income expenditure:  $Y=1$  if the respondent is controlling decision on income and,  $Y=0$  if the respondent does not participate in the decision about income expenditure.

Equation 5: Type of control over income expenditure: Y=1 if the respondent take decision on income with others and, Y=0 if he/she is taking this decision alone.

Equation 6: Control over asset-house: Y=1 if the respondent controls house and, Y=0 if the respondent does not control house.

Equation 7: Type of control over asset-house: Y=1 if the respondent take decision on house with others and, Y= 0 if he/she is taking this decision alone.

Let  $X_i$  represents the set of variables including social, economic, institutional factors, etc. which influence the respondent decisions against each one of the events raised above. For the respondent  $Z_i$  is an indirect utility derived from the event decision, which is a linear function of  $k$  explanatory variables ( $X$ ), and is expressed as:

$$Z_i = \beta_0 + \sum_{i=1}^n \beta_i X_{ki} \quad (1)$$

Where:

$\beta_0$  : Is the intercept term (constant), and  $\beta_1, \beta_2, \beta_3, \dots, \beta_i$  are the coefficients associated with each explanatory variable  $X_1, X_2, X_3, \dots, X_i$ . These factors explain the event decision, or the probability that the  $i^{\text{th}}$  respondent proceed (decide) with this event:

$$P_i = \frac{e^{z_i}}{1+e^{z_i}} \quad (2)$$

$P_i$ : The probability that the  $i^{\text{th}}$  respondent decides towards the event and  $(1-P_i)$  is the probability that  $Y_i=0$ . The *odds* (Y=1 versus Y=0) to be used can be defined as the ratio of the probability that a respondent (agree/accept/decide) on the event ( $P_i$ ) to the probability of no event ( $1-P_i$ ), namely  $\text{odds} = P_i/(1-P_i)$ . By taking the natural log, we get the prediction equation for an individual respondent as follows:

$$\text{Ln}\left(\frac{P_i}{1-P_i}\right) = \text{Ln odds} = \beta_0 + \sum_{i=1}^n \beta_i X_{ki} = Z_i \quad (3)$$

Where:  $Z_i$  is also referred to as the log of the *odds* ratio in favor of the event.

#### **4.2 Review of variables**

The dependent and explanatory variables that are used in those models are presented in the respective table (Table 1). Table 1 gives a definition of such variables indicating their influence on the likelihood of the event. The value and magnitude of the estimated coefficients for those variables are to be used as an indicator for the respondents in terms of their reaction against each event (we can infer that respondents with a higher value for these variables are more likely to accept the event –control over participation in work, as an example).

These variables were selected based on the literature which places significant focus on the importance of women's decision making power in controlling resources (Agarwal 1997, Gammage *et al.*, 2016, Martini *et al.*, 2003). They were also grounded in the empirical findings. We found that desirability to own a house was one of the main factors for migration. As such, we included decision-making over house control as a variable, defined as ability to participate in making decision related to the sale of the house. We explore the impact of migration on decision-making power in three domains: ability to have voice related to decision-making over participation in work, ability to have voice in expenditure of respective income, and control over house asset.

Finally, the framework of political ecology was used to link gender, migrant experiences, ecological factors (climate-induced migration, water availability), and policies at play (Najjar, 2015; Rocheleau *et al.*, 1996; Zimmerer and Bassett, 2003).

## 5. Results and Discussion

With a total of 187 migrants (97 women and 90 men), empirical findings indicate that Ain Jemaa had the least number of migrants of participants in the survey with one woman and two men. Migrants in Betit constituted 35 or 19% of migrants surveyed (16 women and 19 men) and in Sidi Slimane 149 or 80% (100 women and 69 men) of migrants surveyed. The migrant youth amount to 23 (7 women and 16 men) constituting 12% of the surveyed migrants. The women Heads of Households constituted 45% of migrant women surveyed, which also constitutes 51% of the total women heads of households (40 out of 78).

### 5.1 Reasons for migration

Women ranked the desire to find work, own a house and join family as the top three reasons for migrating (Figure 2). It is important here to mention that 44% of the women migrants are heads of households and as such had to work to sustain their families. Men similarly ranked the desire to find employment as a top reason for migration followed by the desire to join their families, and to escape family problems as a third reason (Figure 2). As opposed to men, women provided marriage as the reason for relocating. This is not surprising given that marriages in Morocco are patrilocal. Only men gave the answer of '*it is my father's job*' as the reason to why they migrated in order to work in the agricultural wage sector. It is more habitual for men to work as 'breadwinners', and as such it is common for them to be affected by their fathers' occupations.

Women were also more likely to report services as the reason for their migration, particularly schooling, electricity, water, and proximity to cities. Women are largely responsible for fetching water and house chores which are made easier through appliance. It is understandable then that they valued the availability of these services.

Although drought was only mentioned by few men and women as a reason for migration, most of the migrants reported coming from drought-prone, rainfed areas, such as the regions of Khneifra, Ain Jemaa and Gharb. In these rainfed areas there are limited jobs in agriculture. Biophysical endowment, gender norms and job opportunities are also interdependent. As opposed to Ain Jemaa (a sending community in our study) where agricultural wage jobs are scarce and mostly carried out by men, in Sidi Slimane and Betit (receiving communities) women are allowed to work as there is higher demand on hired labor. Women earn less even for the same tasks that men are hired for and as such were preferred by the employers. As one key informant and landholder in Ain Jemaa explained: "*The farms in the village are not irrigated, so women don't work. It's difficult to have available work even for men.*" As such, many of the women heads of households from Ain Jemaa migrate seasonally to Betit and Sidi Slimane to work as agricultural laborers on commercial and family-run farms.

For the second reason (Figure 3) men only reported family problems as the reason for their migration, such as conflict over inherited land. Sinke (2006) points out that not only economic but also social factors filtrate migration tendencies. The shrinking size of the land due to inheritance often leads to interfamilial conflict amongst inheritors. Some lose their rights and leave to the migrant communities. These migrants had to leave their family land and start a new life. Men, along the same lines, also reported gaining independence as a rationale for their migration. This could be attributed to the fact that men are socialized to becoming independent as 'breadwinners'.

Women ranked the desire to find work, to find a house and the ability to work in the hosting communities to work as the main reason for participating. Many women reported that in allowed their original hometowns they are not allowed to work. Appropriate gender behavior was redefined in the migrant communities. Social control and gender norms are less entrenched in the migrant communities and as such women had working opportunities albeit seasonally. Although women are not socialized into believing that it is their role to own housing, obviously

they value accessing a house. Women also were more likely to report their desire to access a house as a reason for migration. Women were the only participants to report lack of land as a reason for migration. This is not surprising given that almost half of the migrant participant women are heads of households and in Morocco women constitute only 4.4% of total landholders (FAO Gender and Land Rights Database 2016). Morocco and the Middle East more broadly have one of the lowest rate of women property ownership in the world (ibid).

Sidi Slimane migrants were more likely to rank family matters as the reason for migrating (particularly, join family, help family, and marriage). It is important to mention here that Sidi Slimane is a receiving community for agricultural laborers since the times of French colonialization. Family networks are entrenched and attract family members from the less resource endowed areas. The youth ranked finding work, accessing a house and availability of better services as their main second reason for migration (Figure 3). The youth were more likely to be concerned with services availability. Both men and women (half of which are heads of households (HHs)) reported accessing a house as a second reason for their migration. It is the role of HHs to provide housing for their families.

### ***5.2 Migration strategies***

Both women and men mostly migrated with their families, followed by migration with spouses and then alone (Figure 4). Men were more likely than women to migrate alone and less likely than women to migrate with spouses. Only men migrated with non-family members. The findings for migration strategies also reveal that women are more likely to be accompanied during their migration. Some women may accompany their husbands or parents, who often work in agriculture in the irrigated areas. Other women migrate to Betit and Sidi Slimane as *de jure* or *de facto* heads of households with their children.

### ***5.3 Factors affecting decision to migrate***

The decision to migrate logistic regression deals with the factors affecting migration for woman and man separately in the three studied regions (Betit, Sidi Slimane and Ain Jemaa). Empirical results from this estimation for both models (Equations 1.1 and 1.2) disaggregated by sex are outlined in Table 2. The results on the validity of the two models using the Hosmer and Lemeshow statistic indicates a good fitness for both models (this is because the significant P-values are 0.876 and 0.55 for factors affecting women's decision to migrate and factors affecting men's decision to migrate, respectively). This implies that we fail to reject the null hypothesis that there is no difference between the observed and predicted values of the dependent, implying that the model's estimates very well fit the data at an acceptable level. The prediction statistics for the two specifications is 70.9 and 72.9%, respectively.

The marital status is the only significant variable that affects (negatively) women's decision to migration with a negative and significant, at 1% level, coefficient. This result implies that the likelihood that a single woman to migrate is greater than married woman. This result was also suggested by Exp ( $\beta$ ) where the odds of a single migrated woman is 0.15 times the odds of a married migrated woman.

In the second model analyzing the factors affecting man migration, the regression coefficients of the number of dependents, education level and Sidi Slimene region are statistically significant but at different levels of significance (-0.145, -0.81 and 2.30, respectively) and the corresponding odds ratios are 0.86, 0.44 and 10.02. These findings indicate that men with more number of dependents are less likely to migrate. Such is the case probably because it is more difficult to move larger numbers of people. Accommodation, finding services in receiving areas, and expenses for moving, for example, would be more complicated as the number of dependents increases.

The education level variable negatively affects the decision to migrate for man. This implies that the educated are less likely to migrate to rural areas, although it is quite plausible that this positively affects migration to urban areas. The corresponding Exp ( $\beta$ ) suggested that the predicted change in the odds associated with a unit increase in the explanatory variable such as a not educated migrated man is 0.44 times the odds when the migrated man is educated.

Finally, a male migrant from Sidi Slimene region is more likely to migrate in comparison to a man from the other two communities of Betit and Ain Jemaa. The corresponding coefficient magnitude is high (2.3) and statically significant at the 5% level. Indeed, to have a migrated man from Sidi Slimene is 10.02 times more if the migrated man is from Betit or Ain Jemaa. As explained earlier, the community of migrants in Sidi Slimane have a very entrenched social network of migrants who are interconnected with family and regional ties. Often wives and husbands are also recruited into Sidi Slimane from the original communities as well as the unemployed looking for job opportunities.

#### ***5.4 Control over the decision to work (control vs no control)***

As this model deals with control over decision to work (voice vs voiceless), the coefficients of the binary logistic regression model (Equation 2) are presented in table 3. The results on the validity of the model using the Hosmer and Lemeshow statistic indicates a good fitness of this model (as the significant value is about 0.646 which is more than 0.05). This implies that we fail to reject the null hypothesis that there is no difference between the observed and predicted values of the dependent, implying that the model's estimates very well fit the data at an acceptable level. The overall percentage of correct predictions is 87.3%. The column, exp (B), in Table 3 gives the exponential of expected value of  $\beta$  raised to the value of the logistic regression coefficient, which is the predicted change in odds for a unit increase in the corresponding explanatory variable.

Out of the eleven (11) explanatory variables, we find that whether or not the respondent is a migrant is significant at 10% level of significance. This implies that control over decision making on work is influenced by if the respondent is migrant or not. We have a positive correlation between the control over the decision to work and migration. Thus, migrants (seasonal or permanent) have a greater likelihood to have control over decision making on work in comparison to those who did not migrate. A result of exp ( $\beta$ ) also suggests that the odds of a respondent who migrated are 1.725 times the odds of a respondent who did not migrate to have control over decision to work. This leads us to think that either migration has positive impacts over decision-making power with regards to participating in work or the migrants already have higher decision-making power and hence why they were able to migrate in the first place. These findings for migrants having higher decision-making power are further confirmed by descriptive statistics. Figure 6 below reveals further that the percentage of migrants both men and women who have decision-making power over the decision to work is higher than the percentage of non-migrants. Also, the findings reveal a narrower gender gap for the migrants with regards to decision-making power over participating in work.

The gender coefficient ( $\beta=0.885$ ) is positive and significant at 5% level of significance. This indicates that gender variable influence the control over decision to work. In particular, a woman has a greater likelihood to have control over decision to work than a man. This result is also suggested by the value of exp ( $\beta$ ) where the odds of a respondent who is woman is 2.424 times the odds of a respondent who is a man. Many of the women who are working in the waged sector mentioned that their husbands' work is not stable, and hence they chose to participate in waged labor to increase the financial security of the household. Social norms prohibit men from asking their wives to work as men are considered the breadwinners in their families which suggests that women are making these decisions and by doing so transgressing gender norms (Kandiyoti, 1988). Furthermore, many of the women who worked in the waged

sector were heads of households some of which were migrants who explicitly mentioned that they had migrated because women are allowed to work in the migrant areas of Betit and Sidi Slimane. All these factors could have contributed to the result of women being more likely to decide over their own participation in work.

### ***5.5 Type of participation in the decision to work (joint vs alone)***

The results of this model are concerned with if the control over decision making on work (Equation 3) was made jointly (with any other member of the household) or alone by the respondent are presented also in Table 4. The statistical analysis on the validity of the model, using Hosmer and Lemeshow statistic, shows a significant value of 0.138 greater than 0.05. This implies that our model fits well with the set of data and explanatory variables used in the empirical analysis. Moreover, the overall percentage of correct predictions is quite high (91.5%).

According to this fitted model, the variable age is negatively correlated with if the control over decision making on work was made jointly or only by the respondent himself. Given the nature of the age variable (1 if the age of the respondent is between 15 and 35, 0 if the age of the respondent is more than 35 years), as hypothesized, youth people (less than 35 years) have less likelihood to participate in the decision of work jointly with other members of the household. The youth were more likely to make decisions alone. This phenomenon is also observed when the respondent is the head of the household (given a negative and significant  $\beta$  coefficient for about -1.610). Those results are also confirmed by the exponential of expected value of  $\beta$  raised to the value of the logistic regression coefficient (for age and if the respondent is the head of HH), which is the predicted change in odds for a unit increase in the corresponding explanatory variable (0.34 and 0.20, respectively). This could be attributed to the youth's right for passage and their fulfillment of independence from parental guardianship.

The region plays significant role on the way (joint vs alone) how the control over decision making to work is made. The regression coefficients for the respondents in Betit (-1.723) is significant and negatively affecting the way of this decision. This indicates that respondents from this region are more likely to make the decision for participating in work alone.  $\exp(\beta)$  coefficient also suggest that the odds of a respondent from Betit region on taking alone decisions concerning work is 0.179 times the odds of a respondent who is coming from Sidi Slimane or Ain Jemaa regions. Our qualitative findings complement these results. Social norms in Betit were the most progressive in being the least prohibitive for women's participation in work. In comparison women had limited freedom to work outside their households in Ain Jemaa. Ain Jemaa was the least progressive with the ideal norms meaning cloistering women while men earn income. Many of the women-paid tasks were restricted to seed cleaning and sieving preferably in their own homes or nearby houses. In Sidi Slimane men expressed a strong preference for women to work inside the community on farms which they personally knew the owners. Almost all women laborers in Ain Jemaa were heads of households who were obliged to earn a living. In Betit and Sidi Slimane, on the other hand, wives were also largely employed in the wage sector and constituted almost 60% of the women survey participants in these two areas.

### ***5.6 Control over own income expenditure (control vs no control)***

The results from the estimation of third model (Equation 4) is displayed also in Table 3. As in the previous estimation, the Hosmer–Lemeshow statistics indicates the adequacy of the estimated model as fits the data because the significant P-values is 0.826. In addition, the prediction statistics for the empirical specification is 85.3%.

Empirical findings show a negative and significant relationship between the marital status and number of dependents variables and the control over income expenditure. This implies that a

married respondent has less control over the expenditure of income. A single respondent, on the other hand, have a greater likelihood to have control over income expenditure. This result was also suggested by  $\exp(\beta)$  where the odds of a single respondent on taking alone decision concerning the expenditure of income is 0.460 times the odds of a married respondent. The number of dependents on the respondent influences the decision making related to control over income. The more is the number of the dependents, the less is the control over spending income (negative and significant regression coefficient). This negative correlation with alone decision making for married people could be attributed to when having an increased number of members in the house, these members end up participating in decision-making. Survey findings (see Figure 6) confirm that laborers consulted with their children and other family members (mother, father, brothers) who can also be dependents when making decisions regarding how to spend income. Also “help family” was cited as a reason for working as seen in Figure 2. Financial resources could be pooled, and accordingly concerned household members decide on how to spend this income. Women were more likely to spend their income on helping their families meet their daily needs, such as school supplies, clothes for children and medicine, while men reported buying bicycles, cars and satellite dish with their income. Some men also reported that their wives cannot save money. This is likely because they spent their income on family needs.

Gender was not a significant variable in this model. However, it was negative indicating that men are more likely to have decision making power over the expenditure of their income by 0.847 times than women. The findings also indicate a positive relationship between if the respondent is the head of household and the control over income expenditure. Even when women are the ones making income they were more likely on average to consult with their husbands than men were with their wives. Figure 6 shows that the percent of migrant wives who consult with their husbands is higher than the percent of both migrant and non-migrant husbands who consulted with their wives. The model also reveals that if the respondent is the head of HH then he or she have a greater likelihood to make decisions related to income expenditure. These findings are also justifiable by the survey findings. Many of the answers to who makes the decisions on how to spend the income included myself, father, mother, and the justification was that this person is the head of the household. Decisions around income spending are part of the HH responsibilities.

### ***5.7 Control over expenditure of own income (joint vs alone)***

The findings related to the way (joint or alone) decision making over income (Equation 5) is predicted are displayed in Table 4. Concerning the validity of the model, the Hosmer–Lemeshow statistics indicates that model 5 adequately fits the data as the significant P-values is for about 0.166 and the prediction statistics for the this specifications is 76.8%.

The regression coefficients of if the respondent is the head of HH and gender are 2.294 and 1.601, respectively. Both coefficients are highly significant at the 1% level of significance, and the corresponding odds ratios are 9.914 and 4.958. These results indicate that control over income expenditure is joint if the respondent is the head of HH and if the respondent is a woman. When asked why, women often explained joint decision making in income expenditure as gaining approval from men especially in such important domains as spending. Men, on the other hand, often do not need approval from women, and this could explain why women and not men are more likely to make decisions jointly over income expenditure. These findings challenge the notion that joint decision-making is egalitarian when in this case they mean taking permission. Young men, similarly, reported taking decisions jointly with their fathers on spending income because “he is the head of the household”.

The variable region indicates that if the respondent is from Sidi Slimane, there is greater likelihood to take income expenditure decisions alone. Sidi Slimane is one of the least gender

progressive communities and as such men could be making all the decisions related to income expenditure and making them alone.

### **5.8 Joint decision-making over income expenditure**

Both migrant men and women were more likely to share decisions related to income spending with their spouses than non-migrant men and women. More broadly migrants were more likely than non-migrants to share decisions. Migrant men were more likely than non-migrant men to share decisions related to income spending with their family members. These findings could be attributed to migration bringing family members closer. Also through migration and due to more available working opportunities, more household members are likely to work and as such have more say in income expenditure.

### **5.9 Control over assets-house (control vs no control)**

The analysis of the specification on the control over assets-house (Equation 6) led to the following results. To assess the validity of the estimated model, the Hosmer and Lemeshow Goodness-of-Fit Test, which is, as indicated in previous sections, one of the most reliable tests of model fit for binary regression, has been used. Test results showed that our fits good with the data for an overall success rate of 72.3%, i.e., the percentage of correct predictions is 72.3% (Table 3).

The regression coefficient of gender and if the respondent is the head of HH are positive and significant at 10% and 5%, respectively. Their corresponding values are 0.404 and 0.640 and their odds ratios are 0.279 and 0.292 respectively. These results show the great likelihood that women have greater control over decision making on assets-house than men. The Exp ( $\beta$ ) suggest that the predicted change in the odds associated with a unit increase in the explanatory variable such as woman in controlling over decision making on assets-house is 0.279 times the odds when the respondent is a man. This could be attributed to the fact that the women at issue are working and this gives them decision-making power in the assets purchased or rented in the household. In addition, when the respondent is the head of HH there is great probability to control assets-house (Table 3).

However, the variables age and type of migration are correlated negatively with the control decision on assets-house. Thus, youth people have a less likelihood to have control over decision making on assets-house in comparison with old people. This is not surprising given that younger people are less likely to own the house asset themselves.

Moreover, migrants (seasonal or permanent) have a greater likelihood to have less control over decision making over assets-house in comparison of those who have not migrated. This decreased decision-making power for migrants could be due to the insecure tenure of migrant housing. The housings of the migrants are located in informal settlements. Settlers acquire an area of land on which they can build a structure of tin and plastic, locally known as a “*koukh*”. They do not have a title deed to the houses that they live in and they are distressed in anticipations that the government will demolish these structures. Despite the lack of tenure security, these houses are sold and bought and highly valued by the settlers, as one of the main reasons fueling migration. Settlers reiterated that housing in the hosting communities is affordable and one of the main reasons as to why they migrated.

### **5.10 Type of control over assets-house (joint vs alone)**

In case of analyzing the way (joint vs alone) on making decision over assets-house, it has been found that our empirical estimation of the equation 7 fits very well with data and explanatory variables. The Hosmer and Lemeshow value is quite reasonable (0.238) and the prediction statistics value is about 79.4% (Table 4).



Except the positive and significant regression coefficient of the variable “respondent is head of HH”, the rest of the significant coefficients are negative and consequently influences negatively the types of decision related assets-house. The number of dependents coefficient indicates that joint decision is less likely when the number of dependent increases. This is in contrast to decision-making related to control over decision-making for income expenditure. This could be attributed to the individuality of asset ownership. While income expenditure concerns more than one person in the household such as food, clothing, and household items, houses belong to individuals.

In addition, migrants (seasonal or permanent) have a greater likelihood to take decision alone on the control over decision making on assets-house in comparison of those who did not migrate. Again, similar to participation in making decision over work, migration is also attributed to increased decision-making with regards to assets-house.

A surprising result is the negative and significant coefficient of the education level variable. As indicated in the table 4, more educated people (high school, college or university levels) have a greater likelihood to take alone decisions over assets-house. This could be attributed to the social norms which stipulate that an educated person knows best and as such is more likely to make the major decisions and is expected to do so. Survey findings conform these results. Some respondents attributed their decision-making power over income spending to their education.

Finally, respondents from Betit are more likely to take their decision on control over assets-house alone in comparison of the respondent from the other two communities. Our findings reveal that Betit respondents were the most educated at 23% having higher education levels (secondary schooling and above). This could explain why people in Betit make decisions over assets alone. As we have seen above education is likely to increase decision-making power.

## **6. Conclusion**

Although there is a growing body of literature about the MENA region examining social issues related to climate change impacts and implications for adaptation, particularly with regards to equitable water management (see for example, Zeitoun et al. 2012; Sowers et al. 2011; Malm and Esmailian 2013), very limited research has explored the gender dimensions of climate change impacts and adaptation strategies. Our findings challenge the stereotype of left-behind women in the migration literature of the region. Our findings reveal that women as well as men are coping with drought vulnerability and subsequent unemployment by resorting to rural-rural migration from drought-prone areas to the more resource endowed and labor-intensive areas. Women (most of which were heads of households) overcame the dual lack of employment opportunities for women in their original hometowns and drought by moving into areas that are more accepting of women’s employment.

Based on our assessment of how migrants and laborers more broadly in the agricultural wage sector are faring with regards to gendered decision-making power over participation in work and subsequent income expenditure as well as control over assets, we have three main recommendations. It was clear that respondents who had a tertiary level of education (at the high school and postsecondary level), who were mostly men (84%), were more likely to lead on sole decision-making with regards to controlling assets in the form of housing. This suggests that education programs at this level should sensitize men on the importance of engaging their wives, sisters, and daughters in the control and ownership of immovable assets. Regional statistics show that women in the Middle East and North Africa (MENA) region have the least ownership rates for asset ownership in the world.

Along the same lines, while women were more likely to spend their own incomes jointly with men and for the most part on household needs, they were more likely control assets-house when

they had ownership over the house. Our findings reveal that the identities of those who own the house are the same as those who control the house. As such, it is recommended that programs targeting women for improving their income generation capacities, account for saving schemes and encourage asset accumulation in the name of women. These considerations are important in cases of threat to the household security, such as widowhood, abandonment and divorce.

Similarly, the youth were less likely to control assets. This highlights the need for government policies, through youth target activities, to set up youth saving development programs that encourage and facilitate their asset ownership.

Government responses to climate change in the region are, for the most part, focused on tapping into new sources of water, such as aquifers for groundwater pumping and desalination of seawater (Zeitoun et al. 2012; El-Sadek 2010). Morocco is no exception; for example, in its aim of adapting to climate change the GMP aims at saving water and tapping into new water sources (Al Monitor 2014). However, while government's investment in agriculture in Morocco, particularly in irrigation as an adaptation strategy to cope with climate change, created a surge of employment in the agricultural wage sector for men and especially women, it is also important to pay attention to social aspects and impacts of adaptation strategies, such as tenure security of those who are employed. Despite their desire to own a house fueling the migration process, migrants were less likely to have control over their housing than the non-migrants. We attributed this to the insecure nature of tenure for housing structures in the settler communities.

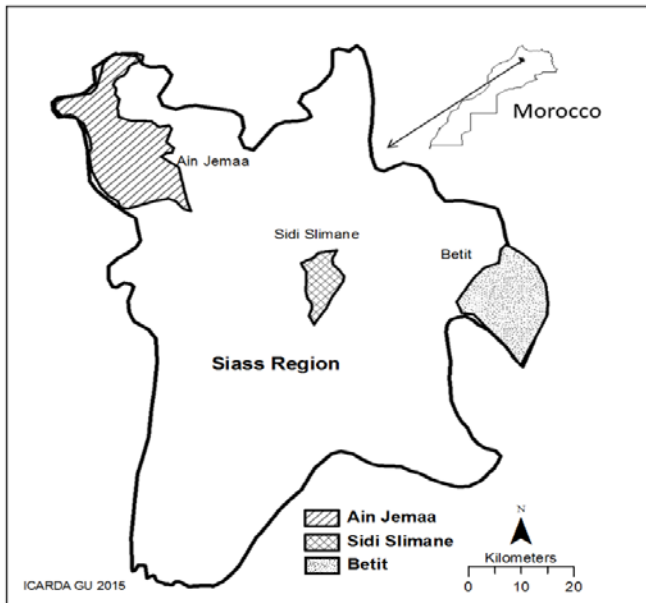
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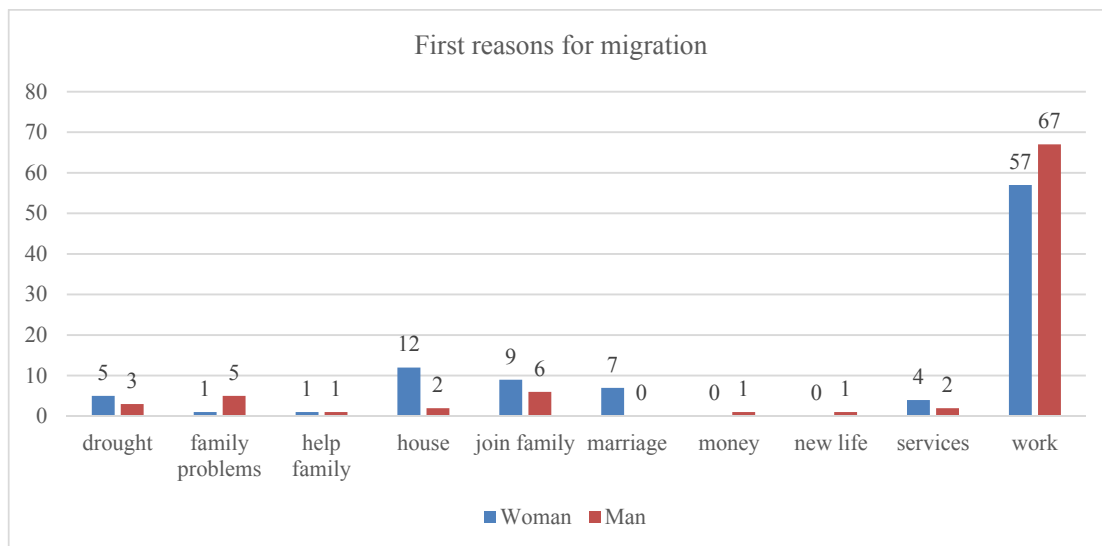
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**Figure 1: Map of Case Study Area for Saiss Region and Three Research Communities of Betit Ain Jemaa and Sidi Slimane.**



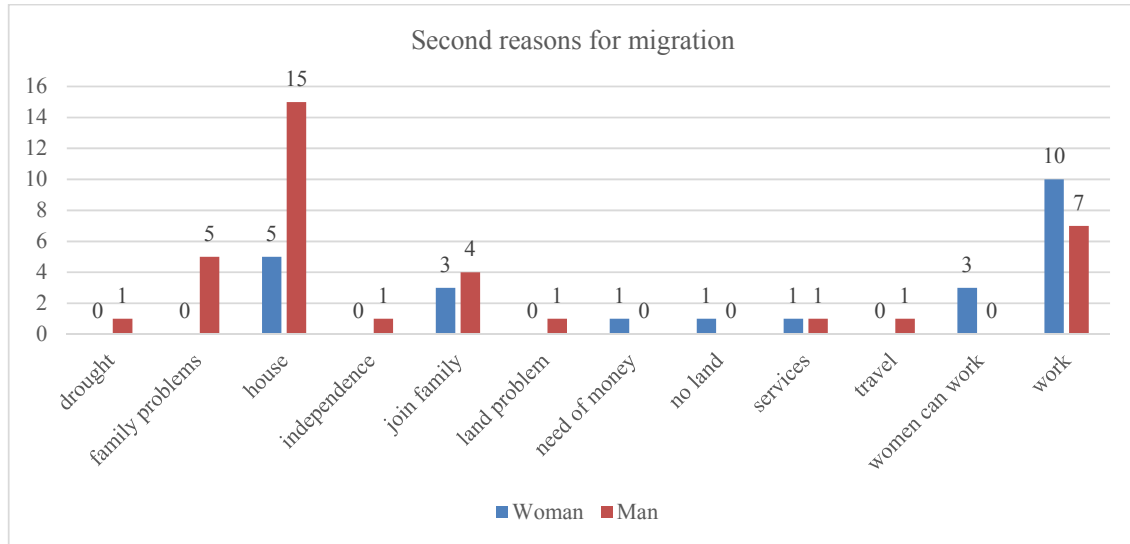
Source: ICARDA Geo-informatics Unit, 2015.

**Figure 2: Sex-Disaggregated Top Reasons for Migration**



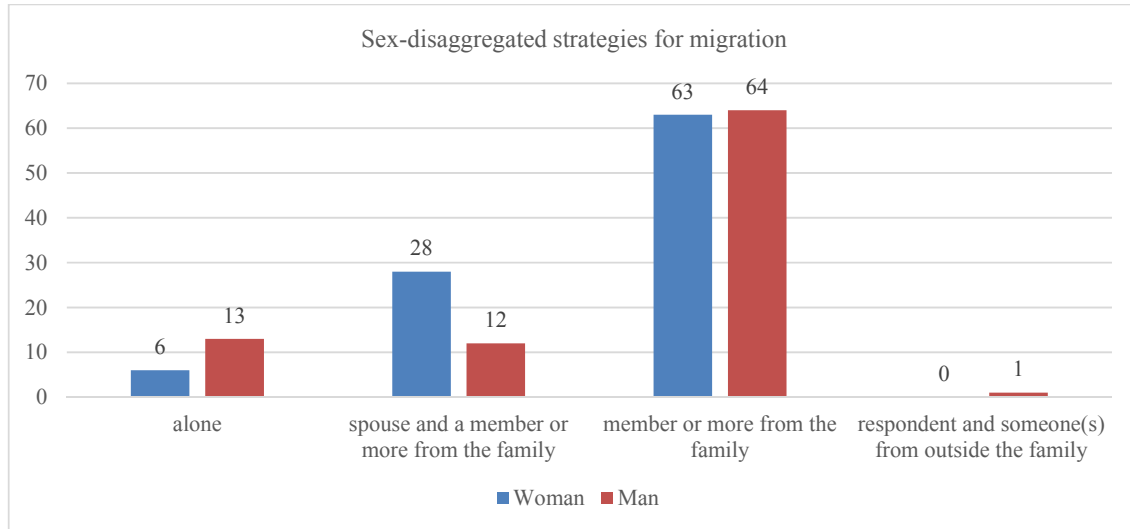
Source: Own elaboration from labor survey in Saiss region - Morocco (2016)

**Figure 3: Sex-Disaggregated Second Reasons for Migration**



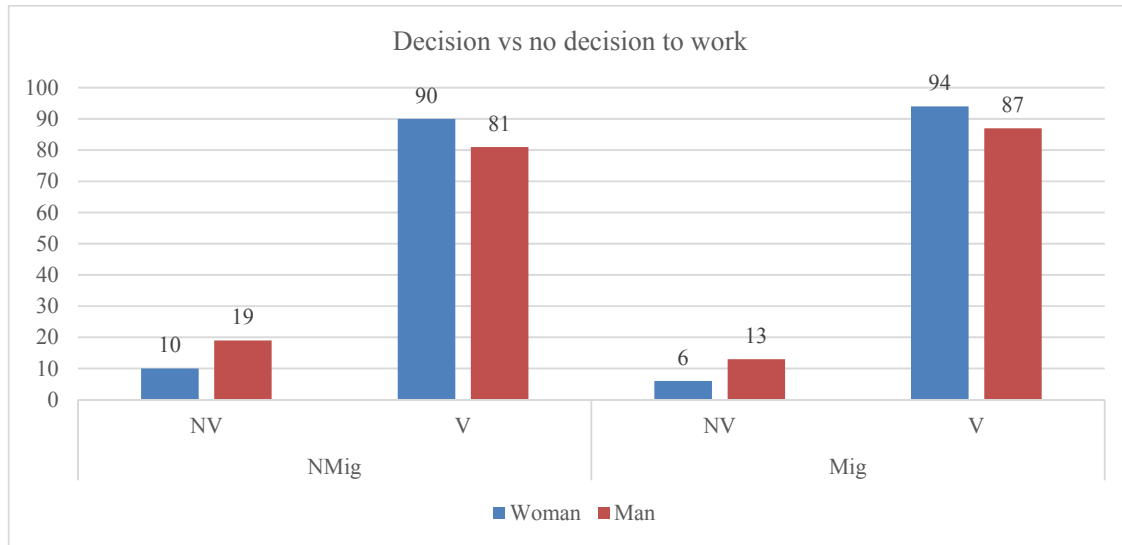
Source: Own elaboration from labor survey in Saiss region - Morocco (2016)

**Figure 4: Sex-Disaggregated Strategies for Migration**



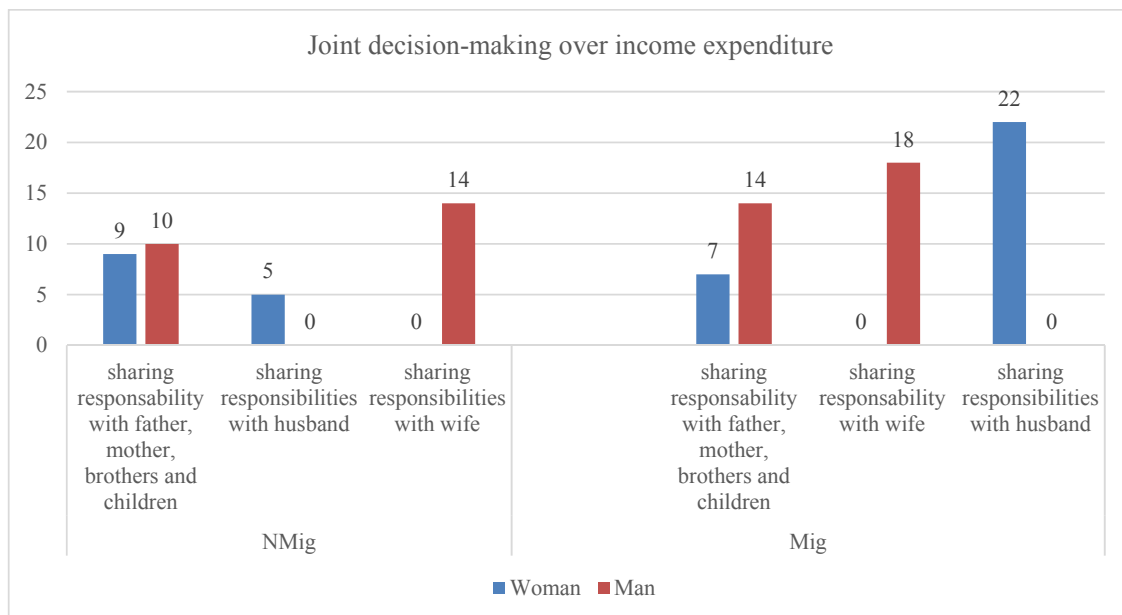
Source: Own elaboration from labor survey in Saiss region - Morocco (2016)

**Figure 5: Sex-Disaggregated Decision-Making Power Over Work: NV stands for no voice (or decision) and V stands for voice. NMig stands for non-migrant and Mig stands for migrant**



Source: Own elaboration from labor survey in Morocco (2016)

**Figure 6: Sex-Disaggregated Description of Joint Decision-Making. NMig stands for non-migrants and Mig stands for migrants.**



Source: Own elaboration from labor survey in Morocco (2016)



**Table 1: Definition of Variables Used in The Logit Regression Models**

<b>Symbols in the equation</b>	<b>Variable name</b>	<b>Description</b>	<b>Type of variable</b>
<b>Dependent Variables (DV)</b>			
YYM11	Woman Migration	DV11: If the respondent is woman and migrant	Dummy, 1 if the migrant is woman (seasonal or permanent), 0 if the respondent is not a migrant
YYM12	Man Migration	DV12: If the respondent is man and migrant	Dummy, 1 if the migrant is man (seasonal or permanent), 0 if the respondent is not a migrant
YYM2	Control over decision to work (control vs doesn't control)	DV2: Control over decision to work	Dummy, 1 if the respondent participated in the decision for him/her to work, 0 if the decision was made by someone else
YYM3	Type of control over the decision to work (joint vs alone)	DV3: Joint or alone control over the decision to work	Dummy, 1 if the respondent took the decision to work jointly with others, 0 if he/she took this decision alone
YYM4	Control over income expenditure (control vs no control)	DV4: Control over income expenditure	Dummy, 1 if the respondent is controlling income that her/she is producing from wage work, 0 if the respondent is not
YYM5	Type of control over income expenditure (joint vs alone)	DV5: Joint or alone control over income expenditure	Dummy, 1 if the respondent take decisions on income expenditure with others, 0 if he/she is taking this decision alone
YYM6	Control over assets (control vs no control)	DV6: Control over assets-house	Dummy, 1 if the respondent controls house, 0 does not control
YYM7	Type of control over assets-house (joint vs alone)	DV7: Joint or alone control over assets-house	Dummy, 1 if the respondent take decision on house with others, 0 if he/she is taking this decision alone
<b>Explanatory Variables</b>			
X1	Age	Age of the respondent	Dummy, 2 if the age of the respondent is between 15 and 35, 0 if the age of the respondent is more than 35 years
X2	Marital Status	Marital status of the respondent	Dummy, 1 if the respondent is married, 0 otherwise
X3	Number of Dependents	Number of dependents of the household head	Continuous variable
X4	HH respondent	If the head of the household is the respondent	Dummy, 1 if the head of household is the respondent, 0 otherwise
X5	Type of Migration	If the migrant is seasonal or permanent	Dummy, 1 if the migrant is seasonal or permanent, 0 otherwise
X6	Gender	Gender of the respondent	Dummy, 1 if the respondent is woman, 0 is man
X7	Education Level	Education level of the respondent	Dummy, 1 if the respondent attend high school and college, 0 if the respondent is Illiterate, Preschool or Primary
X8	Community 1	Migrant coming from Betit region	Dummy, 1 if migrant coming from Betit region, 0 otherwise
X9	Community 2	Migrant coming from Sidi Slimane	Dummy, 1 if migrant coming from Sidi Slimene region, 0 otherwise
X10	Community 3	Migrant coming from Ain Jemaa	Dummy, 1 if migrant coming from Ain Jemaa region, 0 otherwise

Source: Authors' classification from survey data (2016).

**Table 2: Factors Affecting Decision to Migrate (Women Vs Men)**

Variable	Factors affecting women's decision to migrate		Factors affecting men's decision to migrate	
	$\beta$	Exp ( $\beta$ )	$\beta$	Exp ( $\beta$ )
Constant	0.05	1.052	-1.02	0.36
Age	0.61	1.84	-0.21	0.80
Marital status	-1.86*	0.15	0.13	1.14
Number of dependents	0.049	1.05	-0.145***	0.86
Respondent is the head of household	-0.44	0.64	0.02	1.02
Education level	-1.023	0.36	-0.81**	0.44
Com1: Betit region	-0.07	0.93	0.44	1.56
Com2: Sidi Slimane region	0.69	2.00	2.30**	10.02
Com 3: Ain Jemaa region	-	-	-	-
N		179		221
Hosmer and Lemeshow test <sup>(a)</sup>		0.876		0.55
Cox & Snell R-square		0.158		0.188
Nagelkerke R-square		0.211		0.254
Prediction statistics		70.9		72.9

Notes: a A poor fitness if the significant value is less than 0.05. \*, \*\*, \*\*\* are 1%, 5% and 10%, level of significance, respectively.  
Source: Own elaboration from model results.

**Table 3: Decision Making Over Work Participation, Income Expenditure and Assets-House (Control vs No Control)**

Variable	Control over decision to work (control vs no control)		Control over income expenditure (control vs no control)		Control over house (control vs no control)	
	$\beta$	Exp ( $\beta$ )	$\beta$	Exp ( $\beta$ )	$\beta$	Exp ( $\beta$ )
Constant	1.032	2.808	2.515***	12.364	0.807	2.241
Age	0.373	1.452	-0.179	0.836	-1.219*	0.296
Marital status	0.085	1.088	-0.776***	0.460	-0.156	0.855
Number of dependents	-0.010	0.990	-0.124***	0.884	0.069	1.072
Respondent is the head of household	-0.075	0.927	1.834*	6.258	0.640***	1.897
Migration	0.545**	1.725	0.329	1.390	-0.532***	0.587
Gender	0.885***	2.424	-0.166	0.847	0.404**	1.497
Education level	0.523	1.687	0.224	1.251	-0.391	0.676
Com1: Betit region	0.267	1.306	-1.129	0.323	-0.848	0.428
Com2: Sidi Slimane region	0.164	1.178	-0.827	0.437	0.296	1.344
Com 3: Ain Jemaa region	-	-	-	-	-	-
N		400		400		400
Hosmer and Lemeshow test <sup>(a)</sup>		0.646		0.826		0.137
Cox & Snell R-square		0.034		0.169		0.184
Nagelkerke R-square		0.063		0.283		0.252
Prediction statistics		87.3		85.3		72.3

Notes: a A poor fitness if the significant value is less than 0.05. \*, \*\*, \*\*\* are 1%, 5% and 10%, level of significance, respectively.  
Source: Own elaboration from model results.

**Table 4: Type of Decision-Making on Work, Income and Assets-House (Joint Vs Alone)**

Variable	Type of participation in the decision to work (joint vs alone)		Type of control over income expenditure (joint vs alone)		Type of control over house (joint vs alone)	
	$\beta$	Exp ( $\beta$ )	$\beta$	Exp ( $\beta$ )	$\beta$	Exp ( $\beta$ )
Constant	-0.313	0.731	0.099	1.104	0.732	2.079
Age	-1.057***	0.347	0.437	1.549	-0.557	0.573
Marital status	-0.185	0.831	0.476	1.610	0.190	1.209
Number of dependents	-0.014	0.986	-0.082	0.921	-0.263*	0.769
Respondent is the head of household	-1.610*	0.200	2.294*	9.914	1.886*	6.596
Type of migration	0.110	1.117	0.004	1.004	-0.736***	0.479
Gender	-0.467	0.627	1.601*	4.958	-0.386	0.680
Education level	0.377	1.458	-0.212	0.809	-1.029**	0.357
Com1: Betit region	-1.723***	0.179	-0.660	0.517	-0.412**	0.663
Com2: Sidi Slimane region	-0.367	0.693	-1.396**	0.247	1.491	4.441
Com 3: Ain Jemaa region	-	-	-	-	-	-
N	400		332		253	
Hosmer and Lemeshow test <sup>(a)</sup>	0.138		0.166		0.238	
Cox & Snell R-square	0.064		0.177		0.232	
Nagelkerke R-square	0.145		0.255		0.331	
Prediction statistics	91.5		76.8		79.4	

Notes: a. A poor fitness if the significant value is less than 0.05. \*, \*\*, \*\*\* are 1%, 5% and 10%, level of significance, respectively. The majority of men and women decide themselves on how to spend the income. Men were more likely to make alone decisions with regards to how their own incomes are spent. Men were also more likely to devolve their income to someone else in the family (e.g., father, mother). Women, however, were more likely than men to devolve decision making of income how income is spent to their spouses.

Source: Own elaboration from model results.