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ABSTRACT

Moroccans' Assimilation in Spain: Family-Based versus Labor-Based Migration*

An important immigration policy question is to identify the best criteria to select among potential migrants. At least two methodological problems arise: the host country's immigration policy regime endogeneity, and immigrants' unobserved heterogeneity. To address the first problem, we focus in a country with an unprecedented immigration boom that lets immigrants *freely* into a country: Spain. To address the second problem, we focus on a large and homogenous group of immigrants: Moroccans. Using the 2007 *Encuesta Nacional de Inmigración* (ENI), we find that, even when focusing on a very homogenous group of migrants (Moroccans) who tend to be low-skilled, and after controlling for migrants' self-selection with employment history prior to and at arrival, family-based immigrants are less likely to work than their labor-based counterparts both at arrival and ten years later. Our Heckman-corrected estimates highlight that there are no monthly earnings differences by reason of arrival, and that failure to correct for labor force participation strongly biases these results.

JEL Classification: J15, J24, J61, J62

Keywords: legal and employment assimilation, Southern and Eastern Mediterranean men and women

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I. Introduction

An important immigration policy question is to identify the best criteria to select among potential migrants. While some countries have given priority to family migration, others advocate a greater emphasis on labor market skills in the immigrant selection process. In favor of prioritizing skill-based immigration is that it leads to higher quality and better employability of migrants (Borjas, 1985 and 1995; Bell, 1997; Green, 1999; Duvander, 2001; Cobb-Clark, 2000, 2003; Richardson *et al.*, 2001, 2002; Chiswick and Miller, 2006; and Thapa and Gørgens, 2006, among others). However, when trying to estimate the best immigrant selection process, lack of information on the type of visa an immigrant holds has made it difficult for researchers to assess the role of the selection criteria in the settlement and assimilation process of immigrants in the host country. As a consequence, several research strategies have exploited dissimilarities in immigration between countries with similar labor markets (Chiswick, 1986; Borjas, 1992) or policy changes across time within a country (Green and Green 1995; and Green, 1995). But these indirect approaches have yielded mixed and limited results at best (Cobb-Clark, 2000).

A reduced number of studies, with access to information on individual data on migrants' entry status, have compared employment- and family-based immigrants' settlement in the United States (Jasso and Rosenszweig, 1995; and Sorensen, *et al.*, 1992), Canada (Aydemir, 2011) and Australia (Williams et al, 1997; Miller, 1999; and Cobb-Clark, 2000). A concern with those studies that compare immigrants with different types of visa in a country with a long tradition of receiving immigrants is that the country has a clear immigration policy regime in place, which is very likely to be endogenous to the country's social, economic, and political situation, and at the same time affect the settlement process of the different types of immigrants it receives. As a

consequence, the ideal “experiment” would be to let immigrants *freely* into a country and then compare the labor market performance of those who arrived for family reasons and those who arrived to work. While there would still be an identification problem because of immigrants’ self-selection process, having a rich data set on individuals’ labor market characteristics before and after migration would enable the researcher to potentially address this unobserved heterogeneity problem. This is the identification strategy that we follow in the present paper.

The contribution of this paper is to use the 2007 *Encuesta Nacional de Inmigración* (ENI) to analyze whether Moroccan immigrants who arrive on the basis of family relationships rather than labor market opportunities in Spain have better legal and employment status (including earnings) immediately after migration, and whether this represents a long-term advantage or disadvantage in the labor market. The advantage of the ENI is that it contains rich and detailed information on the immigration process and the labor market involvement *before* and *after* arrival in the host country, enabling us to identify the reasons for migrating as well as reconstructing the employment history of immigrants from prior to departure from Morocco to arrival in Spain and (finally) to the survey date. The analysis uses a bivariate probit model that jointly estimates legal and employment status, and OLS, and Heckman-corrected regressions when analyzing earnings. Evidence of employment differences by reason of arrival implies that failure to account for these differences when estimating the earnings equation may bias the earnings results.

Spain presents a unique immigration experience to analyze such issues as the country experienced an unprecedented immigration boom in a short period of time—with immigrants increasing from 1% of the population in 1990 to 12% in 2009, and an average annual flow of immigrants of 500,000 per year. At the same time, Spain has

been an immigrant-friendly country because of a lax implementation of immigration laws and several generous amnesties granting legal residence to illegal immigrants (Dolado and Vázquez, 2007; Izquierdo *et al.*, 2009, among others).¹ The main reason to focus on Moroccans is that they represent a large (16.2% of all immigrants living in Spain in 2005) and homogenous group of immigrants (reducing our identification concerns raised earlier). In contrast with Ecuadorians (the other large group of immigrants in Spain), Moroccans' longstanding tradition of migrating towards Europe reduces potential endogeneities due to policy changes.² Finally, Morocco's pioneering role within Southern Mediterranean countries in terms of its European Neighborhood Policy, makes its study of great policy relevance for Southern and Eastern Mediterranean countries.

A priori it is not obvious whether family-based migrants will outperform in terms of legal or employment assimilation labor-based migrants. On the one hand, those migrating for family-reasons may be less prone to work (as they may specialize in home production). On the other, given that they arrive to the host country having at least a family member (who most likely is successful in its settlement), it may be easier for them to have access to (better) jobs or information on how to apply to (better) jobs. Similarly, it is unclear whether the family-based migrant will legalize her situation faster than the labor-migrant. While it is true that those arriving due to family reasons may have already a family member with legal permit who will guide them through the legal process, or (even better) facilitate their access to legal status, those coming to work, may quickly enter the labor market, which is the most direct path towards being

¹ An assumption here is that if people migrate to Spain to work, it is because there are jobs available. In the case of Spain at the time under analysis, this assumption seems to hold.

² While the large inflow of Ecuadorians has taken place at the turn of century and is a direct consequence of the social, economic, fiscal, and monetary crisis Ecuador was experiencing at the time, the arrival of Moroccans (albeit also increasing) has a longer tradition of steady outflows of immigrants towards European countries (including Spain).

legalized (as when amnesties occur, having a supporting employer considerably simplifies and accelerates the process). It is important to note that by having information on employment status before leaving Morocco and at arrival in Spain, we are able to potentially address an important individual self-selection problem, as we will compare family- versus work-based immigrants holding constant their employment history before and at arrival in the host country. Finally, because the literature review shows that the Southern Mediterranean region displays unique gender characteristics such as patriarchy, high fertility, male-breadwinner model, and low rates of education and waged work outside the home for women (Omran and Roudi, 1993; Yasmeen, 2004; McQuilan, 2004; Foroutan, 2008a,b,c; Foroutan, 2009), the analysis is disaggregated on the basis of gender.

Our contribution to the literature is threefold. First, we use a sample of legal and illegal immigrants (as opposed to only legal migrants, as is standard in the literature that uses visa information). Moreover, instead of using information on visa status, we use migrants' self-reported reason of arrival, namely arrival due to the presence of a family member or to work. Second, we are able to jointly model the employment and legal status decision as they are both heavily intertwined. Third, while most studies have limited information on observable characteristics, such as education, experience and language, our dataset also contains information on employment status prior to departure, as well as information on networks at arrival and at survey date in the host country. We are thus able to explore their effect on legal and employment outcomes.

We find that, even when focusing on a very homogenous group of migrants (Moroccans) who tend to be low-skilled, and after controlling for migrants' self-selection with employment history prior to and at arrival, family-based immigrants are less likely to work than their labor-based counterparts both at arrival and ten years later,

suggesting that family ties are not as helpful in terms of securing employment. Our Heckman-corrected wage estimates indicate that no wage differences exist by reason of arrival, consistent with the fact that we are comparing a homogeneous group of migrant workers. Our results highlight the importance of correcting for selection into employment for both males and females

The paper is organized as follows. The next section presents background information. Section III describes the data and the descriptive statistics. Section IV explains the methodological approach, and analyzes the results. Section V concludes with a discussion on policy implications.

II. Background Information

Moroccan Immigration

Over the second half of the 20th century, Morocco has evolved into one of the world's leading emigration countries. Since the early 1960s, this country has a longstanding tradition of sending migrants towards France, Belgium and the Netherlands. However, legislation changes from the 1980s limiting migration in the traditional receiving countries in Europe led to a shift of Moroccan low-skilled (often irregular) migration towards Spain and Italy that has lasted until today. As of 2007, according to the Spanish Labor department, as many as 648,735 Moroccans had a resident permit in Spain (representing over 16.3% of legal immigrants in this country). In terms of the Moroccans living in Spain (regardless of their legal status), the *Encuesta de la Población* estimates that in 2007 there were 706,666 Moroccans in the Spanish territory, representing 13.07% of all immigrants. This group of migrants has been observed to be clustered at the end of the occupational spectrum and in low-skilled sectors, such as agriculture (30%), construction (27%), and services (36%), highlighting

their potential vulnerability and increasing their policy relevance both for economic and social reasons.

Despite Morocco's strong economic progress since 2001 (with growth rates averaging around 5%), the country still confronts formidable challenges common to other Southern and Eastern Mediterranean countries, such as the vulnerability to shocks (social, natural, and economic); inadequate social indicators relative to the country's income level; high unemployment, especially among youth; increasing pressure on natural resources, especially water, which is exacerbated by climate change; large social and economic inequality, and lagging structural economic change. Thus, understanding Moroccans' settlement in a host country is insightful to other Southern European Mediterranean migrants. Finally, in regional terms, Morocco has, since the 1990s, acquired a pivotal role in border management and control. This status has conferred a key position for Morocco in Euro-Mediterranean migration governance, while leading to significant controversies regarding Morocco's regional role in the management of migration flows. How this has played into Morocco's migrants' settlement process is also worth exploring.

Spanish Assimilation Process

Several authors have recently analyzed immigrants' assimilation in Spain by looking at wages or immigrants' labor market success, and distinguishing by continent of origin. Although (to the best of our knowledge) there is no work focusing on Moroccans, given that they represent an important share of African immigrants in Spain, it is worth highlighting earlier findings on the Spanish assimilation process of immigrants coming from this continent.

The bottom line is that, although labor-market assimilation of immigrants takes place, convergence is far from occurring, with immigrants segregating into lower paid

occupations and more vulnerable jobs. The situation for Africans is even worse as their assimilation is slow and they remain in a vulnerable economic situation. Using 2001 decennial Population Census data, Amuedo-Dorantes and de la Rica, 2007, study the occupational assimilation process of the immigrants who arrived in Spain between 1996 and 2000, prior to the immigration boom. While these authors find evidence that non-EU15 and Latin American immigrants assimilate employment- and occupation-wise, there is limited evidence of labor market assimilation among immigrants from Africa. Using cross-sectional data from 1999 to 2009, Alcobendas and Rodriguez-Planas, 2009, analyze the occupational assimilation process *after* the Spanish immigration boom, finding less optimistic results for the new waves of immigrants. On the one hand, these authors find little sign of assimilation among non EU-15 female immigrants (especially those from Africa) and regardless of their educational level. On the other, they find that, among non-EU-15 male immigrants, the degree of assimilation is higher the lower their education level, with the exception of African males who (again) have a harder time to assimilate. Using the same data but from 1996 to 2005, Fernandez and Ortega, 2008, also find that among immigrants, Africans are those faring worse in terms of returns to education, labor market assimilation, and higher sensitivity to the business cycle. Similarly, Sanromá *et al.*, 2009, find that immigrants coming from developing or culturally distant countries have lower average wages and show a relatively more compressed wage distribution than natives. The authors suggest that occupational segregation is part of the story behind these wage differences. Finally, using recently available panel data from Social Security records, Izquierdo *et al.*, 2009, find that, despite a sizeable and significant reduction in the gap between legal immigrant men working in wage and salary jobs in the formal sector and their native counterparts within 5 years of arrival in Spain, full equality of wages does not take place as a 15

percentage points wage differential remains. They also find that, on average, Africans fare the worse.

III. Data and Descriptive Statistics

We use a retrospective micro database that has been derived from the National Immigrant Survey (ENI-2007). The National Immigrant survey (ENI-2007) was administered to approximately 15,500 non-native current residents of Spain between the months of November 2006 and February 2007. All persons 16 years and older who were born abroad and who had been in Spain for at least one year were eligible to be interviewed. For those who had been in Spain for less than a year, their intent to remain in the country for at least a year also qualified them for participation in the survey. A resident is a person who is present in the country regardless of her legal status. The Spanish Statistical Office designed the strategy for locating informants. This task was based on the existence of the Municipal Register or *Padrón Municipal*. A response rate with respect to the effective sample eligible respondents of 87.4 percent was obtained (15,465 interviews). The results of this survey are statistically representative of Spain, for the main migrant origins and for the major regions of the country. All results are weighted according to the sample frame set up by the Spanish Statistical Office.

The survey includes information on socio-demographic characteristics of immigrants (including language skills, education, fertility, and marital status, among others), household structure, current place of residence, conditions upon departure from their country of origin and arrival in Spain, personal migration histories, and country of origin.

In contrast with most of the literature that uses visa information, we have self-reported information on the reason of arrival, namely arrival due to the presence of a

family member, or to work. As the question in the ENI-2007 allowed for multiple answers, we defined family-based immigrant as those who reported leaving their country of origin to meet other family members already living in Spain (regardless of whether they also answered whether they came to work). This is important because we are exploring assimilation differences based on whether they had a family member in Spain prior to arrival that they were joining. Because some of our family-based migrants also reported coming to Spain to work, any differences in assimilation across the two groups will underestimate the differences across those who “only” came for family reasons versus those who “only” came to work.³ Finally, it is important to highlight that almost two thirds of those who reported coming to work to Spain knew someone in the host country at arrival (shown in Table 1). This information is relevant because it rules out that our study is identifying individuals with and without networks. In fact, we have detailed information on networks at arrival and at survey date, and we control for it in our regression analysis.

Restricting our attention to those individuals who were born in Morocco who were between 19 and 55 years old and who provided information about their year of arrival leaves us with a dataset of 1,334 observations, of which 65.22% are males (870 observations) and 34.78% (464 observations) are females. The reason for restricting our attention to this age group is that we are particularly interested in whether reason of arrival affects employment assimilation. Table 1 shows that a larger fraction of women (43.08% of women) than men (34.49% of men) arrived in Spain for family reasons. Table 1 also presents the summary statistics of migrants’ observable characteristics. At survey date, family-based male Moroccans are older than work-based male Moroccans, while the opposite is true for female Moroccans. The median Moroccan migrant in our

³ About 20% of those who reported coming for family reasons in our sample, also stated that they came to Spain to work.

sample arrived in the late 1990s. Family-based male Moroccans have been longer in the host country (about four years longer) than their work-based counterparts—but no difference in years since arrival is apparent among women. The average age at arrival is the early twenties. However, those who came for family reasons were, on average, about two years younger than those who arrived to work.

As already mentioned, this population has low levels of education with close to 60% of them having primary education or less. That said, those who came to work are more educated than those who came for family reasons. The likelihood of being married is higher for those women who came to work than for those who came for family reasons. And family-based migrants live in larger households than work-based ones.

There is evidence of self-selection among the family- and the work-based subgroups, as those who came to work are between twice (among women) and nearly five times (among men) more likely to have worked in Morocco prior to migrating. Thus, controlling for employment status prior to arriving in Spain will be of most importance to reduce endogeneity bias due to self-selection.

Not surprisingly, those who arrived in Spain for family reasons travel less to their country of origin. Family-based women are less likely to participate in co-ethnic associations (but more likely to participate in Spanish associations) than their work-based counterparts. Among men, the main network difference is that those who arrived for family reasons are more likely to participate in co-ethnic associations.

Table 2 displays summary statistics of selected outcome variables by reason of arrival and sex. We observe clear differences between Moroccans who came to work and those who came for family reasons, and these differences differ across sex. Close to 90 percent of Moroccans living in Spain are legal residents. However, those who came for family reasons are between 2 and 9 percentage points more likely to be legal

than those who arrived to work. When looking at the likelihood of working at survey date, we observe that men are slightly more likely to work than women, and that work-based migrants are about two-thirds more likely to work at survey date than family-based migrants. Among those who work, family-based males earn more than labor-based ones. The opposite is true for women. Clearly these observed differences across family- and work-based immigrants are just descriptive, and given the compositional differences that we have observed in Table 1, multivariate regression analysis is needed to try to disentangle possible causal effects. This is the main purpose of the rest of the paper.

IV. Legal and Employment Assimilation

This section analyzes the differences in legal and employment assimilation by reason of arrival. Three types of outcomes are discussed: (1) legal status at survey date; (2) employment status at survey date; and (3) earnings at survey date. Because the Southern Mediterranean region displays unique gender characteristics that imply important social, economic and cultural differences between men and women, the analysis is done separately for the two groups.

Employment and Legal Assimilation

Clearly the decision to work and the choice of legal status are heavily interrelated. Illegal migrants may find it more difficult to find a job or a job that matches their skills. As a consequence, many illegal migrants may decide not to work or not to accept certain types of jobs. Conversely, because of their precarious situation, being illegal may lower migrants' reservation wage and prompt them to accept any type of job. At the same time, having a job (even one in the black market) has been one of the administrative requisites for obtaining legal status during the amnesties in Spain. Moreover, to maintain legal status, many migrants have to periodically show proof of

employment. Because of this, we estimate a bivariate probit model in which the two LHS variables are dummies indicating whether the individual works and whether she has legal status at survey date.

The model consists of two simultaneous equations, one for the binary decision to have legal status or not, Y_{1i} , and another for the binary decision to work or not, Y_{2i} . Let the superscript * indicate an unobserved variable and assume that Y_{1i}^* and Y_{2i}^* are as follows:

$$Y_{1i}^* = \alpha_{10} + \alpha_{11}X_{1i}^1 + \alpha_{12}X_{1i}^2 + \alpha_{13}X_{1i}^3 + \alpha_{14}X_{1i}^4 + \varepsilon_{1i} \quad (1)$$

$$Y_{1i}=1 \quad \text{if } Y_{1i}^* > 0$$

$$Y_{1i}=0 \quad \text{otherwise}$$

$$Y_{2i}^* = \alpha_{20} + \alpha_{21}X_{2i}^1 + \alpha_{22}X_{2i}^2 + \alpha_{23}X_{2i}^3 + \alpha_{24}X_{2i}^4 + \varepsilon_{2i} \quad (2)$$

$$Y_{2i}=1 \quad \text{if } Y_{2i}^* > 0$$

$$Y_{2i}=0 \quad \text{otherwise} \quad \text{for } i=1, 2, \dots, N$$

where $\text{Cov}(\varepsilon_{1i}, \varepsilon_{2i}) \neq 0$. In other words, the errors in each model consist of a part (η_i) that is unique to that model, and a second part (θ_i) that is common to both:

$$\varepsilon_{1i} = \eta_{1i} + \theta_i \quad (3)$$

$$\varepsilon_{2i} = \eta_{2i} + \theta_i$$

The disturbances ε_{ji} , $j=1, 2$ are assumed to be zero-mean, bivariate normal distributed with unit variances and a correlation coefficient ρ , where ρ is a “correlation parameter” denoting the extent to which the two ε_{ji} , $j=1, 2$, covary.

X_{ji}^1 , $j=1, 2$, is a vector including a dummy variable set to 1 if the individual arrived in Spain for family reasons (and 0 if she arrived to Spain to work); X_{ji}^2 , $j=1, 2$, is a vector of cohort of arrival dummies (grouping intervals of 5 years); X_{ji}^3 , $j=1, 2$, is a vector of covariates that include years since migration (YSM), its square, and both

variables interacted by reason of arrival; and X_{ji}^4 , $j=1, 2$, represents a vector of covariates that include state of residence, age dummies, education dummies, marital status and household size, employment status in Morocco prior to emigrating, employment status at arrival, having co-ethnic and Spanish networks at arrival or at survey date, and being fluent in Spanish. First, it is important to highlight the richness of our dataset, which contains employment information in the origin country, and at arrival, as well as information on networks.⁴ Second, while we are not exploiting the panel structure of this dataset, we are controlling for their employment status at arrival.⁵

The coefficients and standard errors of key variables from models (1) and (2) are shown in Table 3 (Panel A for men and Panel B for women). Columns (1) through (5) display different specifications in which we sequentially add different controls: (1) cohort of arrival and state dummies; (2) socio-demographic characteristics; (3) previous employment history (both in Morocco and at arrival to Spain); (4) network effects; and (5) Spanish fluency. We can look at the coefficients and standard errors to gauge direction and statistical significance of individual variable effects, and to see how these change as additional covariates are added into the model.

However, to analyze the effect of reason of arrival on employment and legal assimilation, we estimate predicted joint probabilities for four possible outcomes: $\Pr(Y_{1i}=1, Y_{2i}=1)$; $\Pr(Y_{1i}=1, Y_{2i}=0)$; $\Pr(Y_{1i}=0, Y_{2i}=1)$; and $\Pr(Y_{1i}=0, Y_{2i}=0)$ using the estimated coefficients from the bivariate probit model. These predicted joint probabilities are calculated by reason of arrival and at different years since arrival for a representative individual type of each gender: a migrant living in Madrid, who arrived in the 1990s, aged 35 to 39 years old, fluent in Spanish, currently married, with only

⁴ The richness of our dataset contrast with that of other papers in this literature, such as Aydemir, 2011, or de Silva, 1997.

⁵ We could construct a panel similar to the one in Aydemir, 2011, where we observe employment status at arrival and at survey date. We decided not to do so in this paper because we want to be able to estimate simultaneously employment and legal assimilation. Unfortunately, legal status at arrival is not observed.

primary education, living in a household with 4 members, working at origin, without a job at arrival and with no networks. These predicted joint probabilities are graphed in Figure 1. Below we summarize the main results.

Focusing first on women migrants, we observe that most of them arrive in Spain with legal status. The reason of arrival matters in terms of whether female migrants work or not when they first arrive in Spain. At arrival, family-based female migrants are more likely to not work (58%) than to work (42%). In contrast, work-based female migrants are more likely to work (77%) than to be non-employed (22%). Over time, there is employment convergence by reason of arrival because the joint probability of working and having legal status increases with years since migration for those who arrived due to family reasons, but decreases for those who arrived to work.

The story differs drastically for men for at least three reasons. First, we find that Moroccan men are much more likely to arrive in Spain illegally than women. While the likelihood of arriving in Spain illegally is practically non-existent among Moroccan women, the joint probability of being illegal and not working at arrival is close to one third among male migrants regardless of reason for arrival. This joint likelihood drops to 10% within the first five years in the host country for both types of migrants. Perhaps not surprisingly, Figure 1 also shows that the joint probability of working and being illegal at arrival for labor-based male migrants (14%) is more than three times that of their family-based counterparts (4%). Again, this joint probability converges towards 0 within the first few years after arrival.

Second, arriving in Spain to work is associated with a joint probability of both working and having legal status twice as large as that of family-based male migrants (24% versus 12%). In contrast with the convergence observed among women, this employment advantage does not narrow over time. For instance, after a decade in

Spain, work-based male migrants have a joint probability of working and having legal status of 55% compared to that of 26% for their family-based counterparts.

Third, the male findings are consistent with the fact that the easiest way to become legal in Spain is through employment (as one of the main conditions in the amnesties is to have an employer guaranteeing a job). We observe that migrants who arrived to work were less likely to be legal at arrival (53%) than their family-based counterparts (59%). However, after a decade in Spain, they were equally likely of having legal status (96%).

Summing up, we observe that once all observable characteristics are controlled for, family-based immigrants are less likely to work than their labor-based counterparts both at arrival and ten years later (and for each gender). These results are consistent with those found in countries that select immigrants based on their skills. For instance, Jasso and Rosenzweig, 1995, find that based on their occupations, skilled immigrants appear more favorably selected than immigrants entering as spouses of US citizens. Cobb-Clark, 2000, finds that immigrants selected for their skills have higher labor force participation and employment rates 6 months after arrival in Australia. Constant and Zimmermann, 2005a, find that, in Germany, former refugees and those who arrive through family reunification are less likely to work full-time compared to those who came through the employment channel. However, this contrasts with evidence indicating that reason of arrival does not play any significant role in terms of employment outcomes in Denmark (Constant and Zimmermann, 2005a), and in Canada (Aymenir, 2011).⁶ Our findings are novel in that we are focusing on a very homogenous group of migrants (Moroccans) who tend to be low skilled. We find that, even in this case and after controlling for migrants' self-selection with employment

⁶ Aymenir, 2011, does find an labor force participation advantage for the skill-based (instead of the family-based) migrants, but only among women. He finds no employment differences, though.

history prior to and at arrival, family ties are not as helpful in terms of securing employment.

Another novel result is that we do not find evidence of steeper YSM profiles for family-based male migrants than their work-based counterparts.⁷ This is particularly concerning as it suggests that family-based Moroccan males have a difficult time assimilating in the Spanish labor market, leaving them in a particularly vulnerable situation.

To explore how language and employment history may affect legal and employment assimilation, Figures 2 and 3 graph predicted joint probabilities for a similar type as in Figure 1 but who does not have Spanish fluency (in Figure 2), or who did not work at origin (in Figure 3). Interestingly, Figure 2 shows that language skills are extremely helpful in enabling women to work but do not make much of a difference for men. Comparing Figures 1 and 2, in which the only differences across types is whether the individual is fluent in Spanish, reveals that language proficiency doubles the joint probability of both working and being legal for women (regardless of reason of arrival). In contrast, language has little effect on Moroccan men's joint probabilities of working and having legal status. This differential result by gender is consistent with findings from Alcobendas and Rodríguez-Planas, 2009, that a language advantage exists and does not fade away among immigrant women in Spain but not among immigrant men.⁸ This finding suggests that a policy to increase labor market assimilation among Moroccan women may come through language proficiency classes.

Comparing Figures 1 and 3, in which the only differences across types is whether the individual worked at origin, shows that working at origin shifts up the joint

⁷ In contrast with our results, Chiswick and Miller, 1992; Wooden, 1990; and Cobb-Clark, 2000 find that the differences in legal and employment status eventually dissipate among males immigrants in Australia, which is well known by its point system.

⁸ Alcobendas and Rodríguez-Planas, 2009, compare occupational assimilation in Spain between immigrants from Latin America who are fluent in Spanish and those from Eastern Europe.

probability of working and being legal in Spain for both types and regardless of gender, while it decreases the joint likelihood of not working and being legal. However, whether the individual worked at origin has no effect on the joint likelihood of not working and being illegal. This reveals that having a job prior to migrating is important in determining migrants' employment success in the host country's legal labor market. Moreover, this result supports policies based on the point system.⁹

Wage Assimilation

When analyzing earnings, we use model (4) below with a log-linear specification and log earnings as the LHS variable.

$$Y_i = \alpha_0 + \alpha_1 X_i^1 + \alpha_2 X_i^2 + \alpha_3 X_i^3 + \alpha_4 X_i^4 + \varepsilon_i \quad (4)$$

where X_i^1 is a vector including a dummy variable set to 1 if the individual arrived in Spain for family reasons (and 0 if she arrived to Spain to work); X_i^2 is a vector of cohort of arrival dummies (grouping intervals of 5 years); X_i^3 is a vector of covariates that include years since migration (YSM), its square, and both variables interacted by reason of arrival; and X_i^4 represents a vector of covariates that include state of residence, age dummies, education dummies, marital status and household size, employment status in Morocco prior to emigrating, employment status at arrival, having co-ethnic and Spanish networks at arrival or at survey date, and being fluent in Spanish.

In addition, to account for possible selection bias arising from not accounting for individual's choice of whether to work or not, we use a Heckman selection bias correction. To do this, we first estimate the probability of working at survey date for all individuals in the data set. The probability that an individual worked is modeled as a function of age, the number of children and the age of the youngest child in the household, marital status, work experience, education, state of residence, tenant or

⁹ Countries using the point system "select" immigrants based on their skills.

house-ownership status, and living in a municipality with less than 5000 inhabitants. From this equation, we estimate the inverse Mills ratio, and use it as an additional independent variable in the earnings equation. Our source of identification that appears in the selection equation but not the wage equation includes: having children, age of youngest child, tenant or house-ownership status, and living in a municipality with less than 5000 inhabitants.¹⁰ We argue that correcting for the migrant's employment decision is particularly relevant in this analysis because we have observed clear employment differences by reason of arrival. Again, the analysis is done separately by gender. Results are presented in Table 4.

In terms of wages, OLS estimates indicate that family-based male migrants earn 18 log points higher wages prior to adding controls in the model. Adding controls to the OLS specification decreases the wage differential by two thirds. However, the Heckman corrected estimates of the family-based dummy become negligible (0 log points) and are no longer statistically significant, suggesting that once the employment decision is accounted for, there are no wage differences by reason of arrival among men. Similarly, while the OLS estimates indicated that the YSM profile is steeper for family-based male immigrants, this is no longer true after we have applied the Heckman correction. Notice also that the negative coefficient on the YSM profile for labor-based is no longer statistically significant after the Heckman correction and all controls are applied to the estimation. Similar results are found among women, indicating that any wage differences by reason of arrival are mainly due to labor force participation. The main difference worth highlighting is that the OLS coefficient on the family-based

¹⁰ Finding good instruments is difficult. Having children is a commonly used instrument, although it may be correlated with wages. Alternatively our variable on tenant or ownership status is probably a better instrument. Nonetheless, because of concerns with endogeneity of our instruments we estimated the OLS wage model including these variables as controls. When doing so, most of the coefficients of interest remain unaffected. The only coefficient that changes slightly is that of reason for migrating among males which drops from 0.05 (s.e. 0.011) to 0.039 (s.e. 0.011).

estimate among women is negative, indicating that prior to correcting for labor-force participation, family-based women earn less than their work-based counterparts.

Our OLS estimates for women are consistent with those found in the literature, but the opposite is true for those of men. For instance, de Silva, 1997, and Aydemir, 2011, find that skilled immigrants in Canada have higher annual earnings than assisted relatives and refugees, but that the gap narrows overtime. While this difference in the male results may come as a surprise it is important to remember that Canada has a point system that selects high-skilled migrants. In contrast, our analysis focuses on a relatively low skill group of migrants, Moroccans, in a country that lets anyone in.

In addition, Aydemir, 2011, finds that controlling for immigrants' characteristics explains only a small portion of the earnings differential across types. However, we find that among men, our controls explain two thirds of the wage gap by reason of arrival in the OLS regression. Most importantly, our results show that no wage differences exist by reason of arrival after selection into employment is accounted for. This is particularly important as it is well established in the literature that employment differences by reason of arrival exist in many host countries. Finally, finding that no wage differences by reason of arrival exist seems consistent with the fact that we are comparing a quite homogeneous group of migrant workers.

IV. Conclusion

Over the second half of the 20th century, Morocco has evolved into one of the world's leading emigration countries, and Spain has become one of its preferred destinations. Understanding the labor market assimilation of Moroccan low-skilled (often irregular) migrants is of great policy relevance not only for economic, but also for social reasons. Exploiting the rich information from the 2007 *Encuesta Nacional de Inmigración*

(ENI), which reports on labor market outcomes before and after arrival in the host country, we study the settlement process of Moroccan immigrants in Spain focusing on how the circumstances under which they entered the host country affected their legal and their employment status (including their earnings). More specifically, our analysis studies whether immigrants who arrive on the basis of family relationships rather than labor market opportunities assimilate faster both in terms of becoming legal citizens and of actively participating in the labor market.

Policy wise, the results in this paper show that what happens to Moroccans who leave for Spain depends on why they migrated in the first place and on their gender. Moreover, we find evidence that Spanish proficiency facilitates women's labor market assimilation but has no effect on men. Finally, our analysis also shows that having worked prior to migrating further increases the immigrant's labor market success in the host country.

A concern with our analysis is that we cannot correct for return migration. Indeed, the lack of employment convergence among men may be explained by higher return migration among the least successful work-based migrants as they lack family support in the host country. Nevertheless, because the richness of the data enables us to control for important characteristics, such as migrant's employment prior to migrating, we present estimates that are potentially less biased than those previously presented using cross-sectional data.

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Table 1. Moroccans in Spain in 2007, by Reason for Arrival and Sex
(Percent unless otherwise stated)

	<i>Family-based migrant</i>		<i>Labor-based migrant</i>	
	<i>Males</i>	<i>Females</i>	<i>Males</i>	<i>Females</i>
<i>Current age (mean)</i>	37.908	32.491	35.417	36.444
	(9.20)	(10.44)	(8.54)	(9.39)
<i>Year of arrival (median)</i>	1996	1998	2000	1998
	(12.01)	(11.78)	(8.53)	(12.46)
<i>Year since arrival (median)</i>	11.000	9.000	7.000	9.000
	(12.01)	(11.78)	(8.53)	(12.46)
<i>Age at arrival (mean)</i>	23.880	20.995	25.861	23.739
	(10.37)	(9.82)	(7.95)	(9.75)
<i>Primary</i>	0.563	0.575	0.576	0.473
	(0.5)	(0.49)	(0.49)	(0.5)
<i>HS dropouts</i>	0.241	0.202	0.109	0.136
	(0.43)	(0.4)	(0.31)	(0.34)
<i>HS graduate</i>	0.131	0.196	0.234	0.245
	(0.34)	(0.4)	(0.42)	(0.43)
<i>University degree</i>	0.064	0.026	0.081	0.146
	(0.25)	(0.16)	(0.27)	(0.35)
<i>Spanish fluency</i>	0.511	0.626	0.600	0.591
	(0.5)	(0.48)	(0.49)	(0.49)
<i>Married</i>	0.679	0.570	0.575	0.678
	(0.47)	(0.50)	(0.49)	(0.47)
<i>Couple</i>	0.623	0.568	0.351	0.593
	(0.48)	(0.50)	(0.48)	(0.49)
<i>Number of persons in household</i>	4.734	5.011	3.840	3.607
	(2.23)	(2.53)	(2.15)	(1.51)
<i>Working in origin country</i>	0.125	0.205	0.594	0.431
	(0.33)	(0.40)	(0.49)	(0.5)
<i>Had a job before leaving Morocco</i>	0.046	0.041	0.127	0.174
	(0.21)	(0.2)	(0.33)	(0.38)
<i>Was working within 30 days after arrival to Spain</i>	0.179	0.250	0.353	0.318
	(0.38)	(0.44)	(0.48)	(0.47)
<i>How many times have you visited the country since coming to Spain (mean)</i>	3.761	5.433	5.164	6.350
	(4.93)	(6.47)	(5.8)	(6.86)
<i>Participates in co-ethnic associations</i>	0.066	0.048	0.050	0.073
	(0.25)	(0.21)	(0.22)	(0.26)
<i>Participate in Spanish associations</i>	0.090	0.122	0.090	0.091
	(0.29)	(0.33)	(0.29)	(0.29)
<i>Someone known in Spain at arrival</i>	0.765	0.726	0.595	0.570
	(0.43)	(0.45)	(0.49)	(0.5)
<i>Sample size</i>	313	202	557	262
<i>Population size</i>	34,346	20,761	65,229	27,421

Note: All means have been weighted at the population level. Standard deviations in parentheses.

**Table 2. Moroccans in Spain in 2007, by Reason for Arrival and Sex
Selected Outcome Variables**

	<i>Family-based migrant</i>		<i>Labor-based migrant</i>	
	<i>Males</i>	<i>Females</i>	<i>Males</i>	<i>Females</i>
<i>Currently legal resident</i>	0.929 (0.256)	0.913 (0.2814)	0.855 (0.352)	0.887 (0.317)
<i>Working last week</i>	0.417 (0.493)	0.390 (0.488)	0.714 (0.452)	0.630 (0.483)
<i>Monthly Wages</i>	1,115.03 (602.733)	935.03 (401.749)	1,041.39 (368.672)	954.35 (570.597)
<i>Sample size</i>	34,346	20,761	65,229	27,421
<i>Population size</i>	313	202	557	262

Note: All means have been weighted at the population level. Standard deviations in parentheses.
Source: National Immigrant Survey (ENI 2007)

Table 3. Bivariate Probit Model. Moroccans 19 to 55 Years Old in Spain.

	<i>Panel A: Males</i>					<i>Panel B: Females</i>				
	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)
	<i>Cohort dummies + CCAA</i>	<i>Demographic characteristics</i>	<i>Employment</i>	<i>Networks</i>	<i>Spanish fluent</i>	<i>Cohort dummies + CCAA</i>	<i>Demographic characteristics</i>	<i>Employment</i>	<i>Networks</i>	<i>Spanish fluent</i>
<i>Dependent variable: Legal status</i>										
Family-based migrant	0.325*** (0.048)	0.097* (0.052)	0.161*** (0.053)	0.205*** (0.053)	0.160*** (0.054)	-0.462*** (0.043)	-0.429*** (0.048)	-0.266*** (0.050)	-0.231*** (0.050)	-0.164*** (0.050)
Family-based migrant * Ysm	0.293*** (0.007)	0.308*** (0.008)	0.311*** (0.008)	0.316*** (0.008)	0.280*** (0.009)	-0.103*** (0.010)	-0.071*** (0.011)	-0.063*** (0.011)	-0.071*** (0.012)	-0.053*** (0.012)
Family-based migrant * Ysm ²	-0.009*** (0.000)	-0.009*** (0.000)	-0.009*** (0.000)	-0.009*** (0.000)	-0.008*** (0.000)	0.002*** (0.000)	0.002*** (0.000)	0.001*** (0.000)	0.002*** (0.000)	0.001*** (0.000)
Ysm	-0.037*** (0.010)	-0.031*** (0.010)	-0.033*** (0.011)	-0.030*** (0.011)	-0.011 (0.011)	-0.462*** (0.043)	0.114*** (0.010)	0.092*** (0.010)	0.101*** (0.010)	0.084*** (0.010)
Ysm ²	0.002*** (0.000)	0.003*** (0.000)	0.002*** (0.000)	0.002*** (0.000)	0.002*** (0.000)	-0.103*** (0.010)	-0.002*** (0.000)	-0.002*** (0.000)	-0.002*** (0.000)	-0.001*** (0.000)
<i>Dependent variable: Employment status</i>										
Family-based migrant	-0.991*** (0.025)	-0.977*** (0.026)	-0.646*** (0.027)	-0.656*** (0.027)	-0.656*** (0.027)	-1.591*** (0.029)	-1.357*** (0.032)	-1.052*** (0.034)	-1.048*** (0.034)	-1.045*** (0.034)
Family-based migrant * Ysm	-0.000 (0.003)	0.039*** (0.003)	0.053*** (0.003)	0.064*** (0.003)	0.064*** (0.003)	-0.043*** (0.003)	-0.042*** (0.004)	-0.043*** (0.004)	-0.052*** (0.004)	-0.051*** (0.004)
Family-based migrant * Ysm ²	-0.000*** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)	0.000** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.001*** (0.000)	0.001*** (0.000)
Ysm	-0.012*** (0.003)	-0.018*** (0.003)	-0.022*** (0.003)	-0.024*** (0.003)	-0.024*** (0.003)	0.121*** (0.004)	0.088*** (0.004)	0.076*** (0.004)	0.079*** (0.004)	0.078*** (0.004)
Ysm ²	0.001*** (0.000)	0.001*** (0.000)	0.001*** (0.000)	0.001*** (0.000)	0.001*** (0.000)	-0.002*** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)
Unweighted sample size	870					464				

Note: All specifications include region dummies. *** p<0.01, ** p<0.05, * p<0.1

Figure 1. Predicted Probabilities from Bivariate Probit Model for a Spanish Fluent Low Skilled Worker Who Worked at Origin

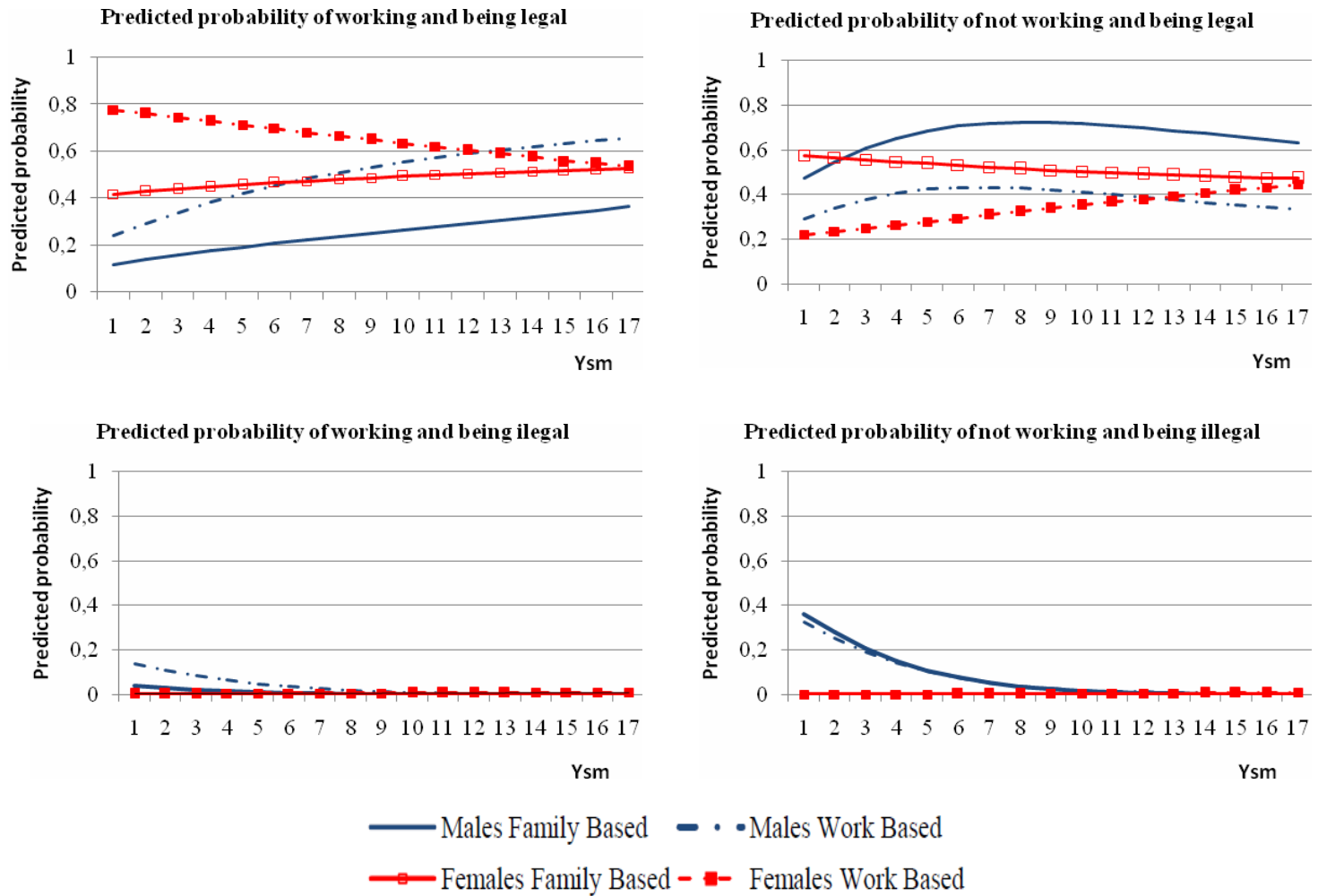


Figure 2. Predicted Probabilities from Bivariate Probit Model for a not Proficient in Spanish Low Skilled Worker Who Worked at Origin

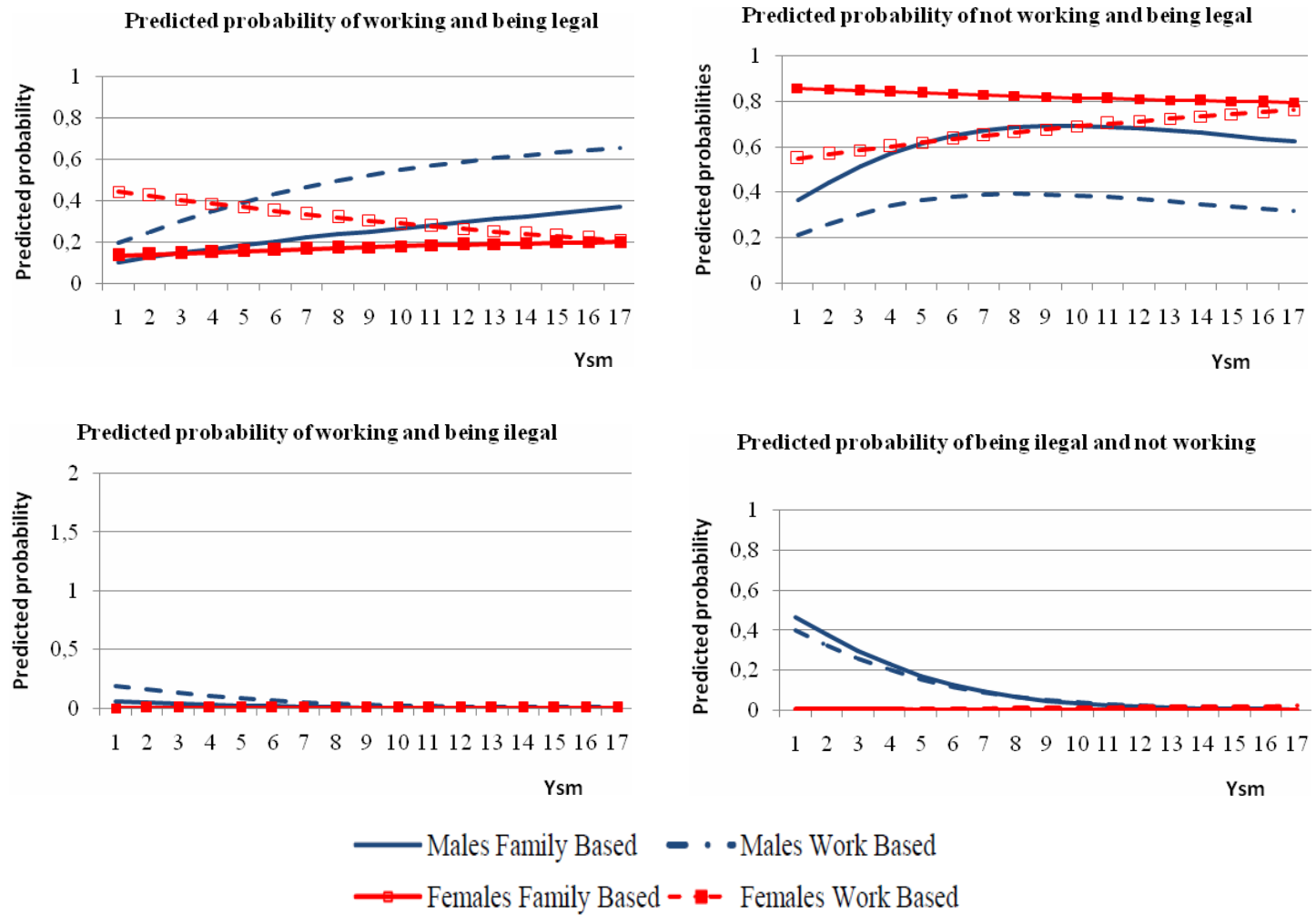


Figure 3: Predicted Probabilities from Bivariate Probit Model for a Spanish Fluent Low Skilled Worker Who Did Not Work at Origin

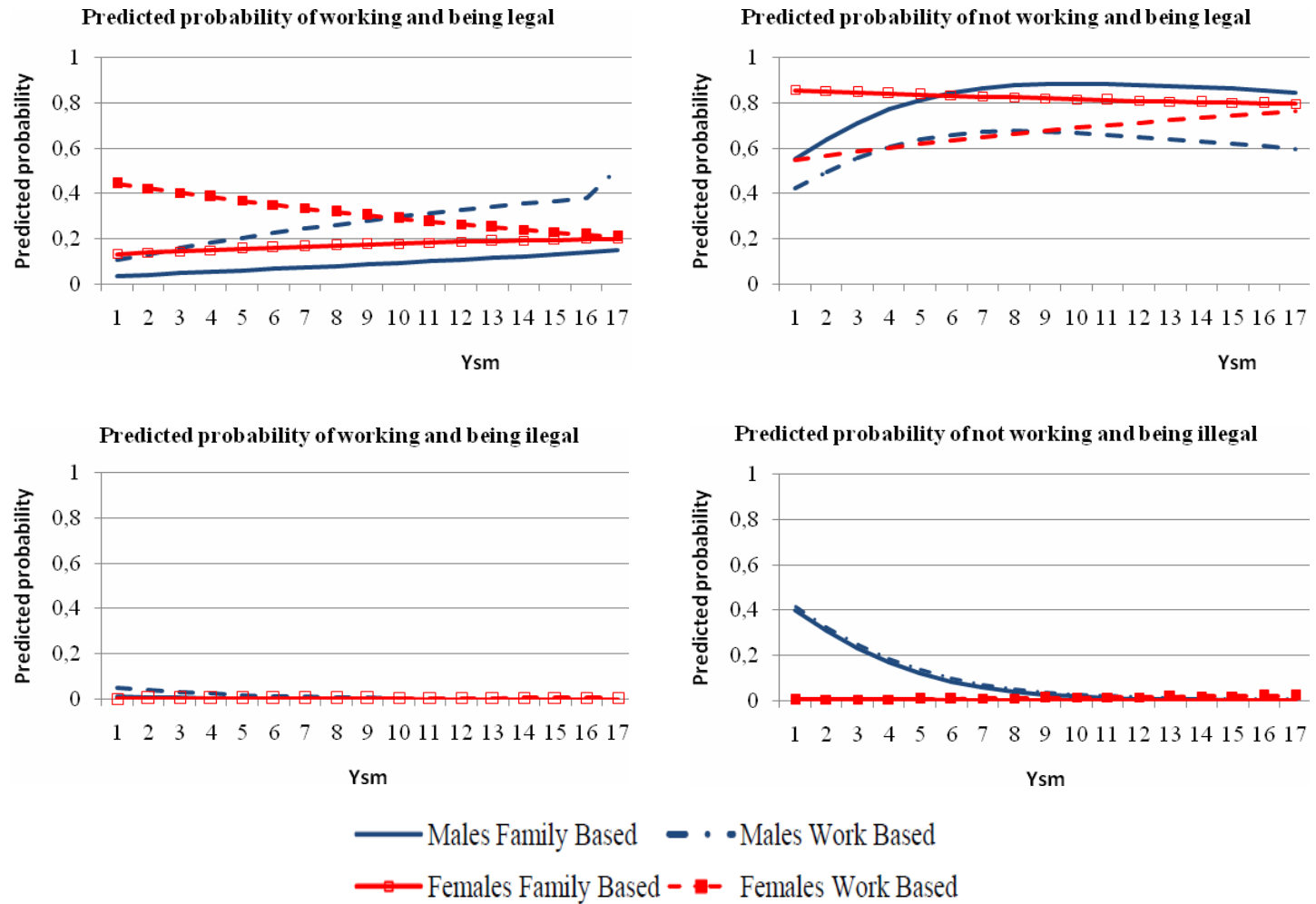


Table 4. Log Wage Estimation. Moroccans 19 to 55 Years Old in Spain.

	Men				Women			
	OLS		Heckman corrected		OLS		Heckman corrected	
	<i>No other covariates</i>	<i>All controls</i>	<i>No other covariates</i>	<i>All controls</i>	<i>No other covariates</i>	<i>All controls</i>	<i>No other covariates</i>	<i>All controls</i>
Family-based migrant	0.183*** (0.011)	0.050*** (0.011)	0.026 (0.111)	0.001 (0.109)	-0.235*** (0.016)	-0.297*** (0.016)	-0.000 (0.176)	0.004 (0.168)
Family-based migrant * ysm	0.012*** (0.001)	0.015*** (0.001)	0.013 (0.011)	0.016 (0.011)	0.021*** (0.002)	0.029*** (0.002)	0.025 (0.022)	0.021 (0.020)
Family-based migrant * ysm_sq	-0.000*** (0.000)	-0.000*** (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000*** (0.000)	-0.000 (0.000)	-0.000 (0.000)
Ysm	-0.032*** (0.001)	-0.016*** (0.001)	-0.021* (0.012)	-0.014 (0.012)	0.033*** (0.002)	0.036*** (0.002)	-0.013 (0.022)	-0.012 (0.021)
Ysm_sq	0.001*** (0.000)	0.000*** (0.000)	0.000** (0.000)	0.000 (0.000)	-0.001*** (0.000)	-0.001*** (0.000)	-0.000 (0.000)	0.000 (0.000)
Unweighted sample size	859				458			
Goodness of fit ¹	0.128	0.307	79.42	147.2	0.135	0.322	49.22	119.2

Note: 1 Adjusted R squared in OLS and Chi Square in Heckman corrected specification.
All specifications include region dummies. *** p<0.01, ** p<0.05, * p<0.1