UNIVERSITAT ROVIRA I VIRGILI
DEPARTAMENT D'ECONOMIA

CREIP
CENTRE DE RECERCA EN ECONOMIA INDUSTRIAL I ECONOMIA PÚBLICA

WORKING PAPERS

Col·lecció "DOCUMENTS DE TREBALL DEL DEPARTAMENT D'ECONOMIA - CREIP"

Immigrants and Entrepreneurship: a Road for Talent or Just the Only Road?

Susana Iranzo Sancho

Document de treball n.23 - 2017

DEPARTAMENT D'ECONOMIA – CREIP
Facultat d'Economia i Empresa

UNIVERSITAT ROVIRA I VIRGILI

DEPARTAMENT D'ECONOMIA

Edita:

Departament d'Economia
www.fcee.urv.es/departaments/economia/public_html/index.html
Universitat Rovira i Virgili
Facultat d'Economia i Empresa
Av. de la Universitat, 1
43204 Reus
Tel.: +34 977 759 811
Fax: +34 977 758 907
Email: sde@urv.cat

CREIP
www.urv.cat/creip
Universitat Rovira i Virgili
Departament d'Economia
Av. de la Universitat, 1
43204 Reus
Tel.: +34 977 758 936
Email: creip@urv.cat

Adreçar comentaris al Departament d'Economia / CREIP

ISSN edició en paper: 1576 - 3382
ISSN edició electrònica: 1988 - 0820

DEPARTAMENT D'ECONOMIA – CREIP
Facultat d'Economia i Empresa

Immigrants and Entrepreneurship: a Road for Talent or Just the Only Road?

Susana Iranzo
Universitat Rovira i Virgili

December 2017

Abstract

Casual evidence for some developed countries suggests that most talented migrants become entrepreneurs (positive sorting), but entrepreneurship might also be chosen by less talented migrants who have fewer opportunities in the labour market of the destination countries (negative sorting). Building upon Lucas (1978), we develop a theoretical framework to analyze the different mechanisms at play that draw migrants into entrepreneurship. The model can explain the selection into self-employment of both high-skilled and less skilled migrants. We test the model predictions on a rich survey dataset of immigrants in Spain for 2006-2007. Our findings reject a U-shaped relationship between immigrants.skills and self-employment for the Spanish case and instead points to positive sorting into entrepreneurship. Self-employed migrants tend to have (statistically significant) better observable characteristics than salaried workers. However, non-market mechanisms, that is, penalties in the labour market beyond the mere human capital losses than migrants experience upon arrival, are also consistent with the relatively higher probability of self-employment and the lower entrepreneurial quality of certain migrant groups.

1 Introduction

Entrepreneurs are not always business owners with smart ideas that started small and grew big. Data on firm statistics for developed countries (an even more so in developing countries) show a non negligible share of small firms, with slow or null growth over time, run by individuals who were drawn into entrepreneurship not to pursue golden opportunities but rather by their low prospects in the labour market. According to the Global Entrepreneurship Monitor (GEM) project, these "out of necessity" entrepreneurs represent 14% of the entrepreneurs in industrialized countries.

Clearly, migrants who arrive in a new country tend to face more limited possibilities in the labour market, either because some of their skills are not transferable or because they experience additional penalties based on prejudice or discrimination of some sort. They are thus likely candidates to enter self-employment and form part of the "out of necessity" entrepreneurship statistics.[1] Cross-country data on self-employment of natives and migrants seems to confirms this conjecture. As Table 1 shows, in many OECD countries self-employment rates are higher among foreign-born than among natives, and so one would be tempted to conclude that least capable or skilled migrants, who stand little chances in the labour market, are pushed into entrepreneurship (negative sorting). However, entrepreneurship is also chosen by most skilled migrants. For example, data for the U.S. (see Table 2) shows that migrant business owners are concentrated on both tails of the educational distribution: among those with less than high school and among those with college education. This suggests positive and negative sorting into entrepreneurship. At first glance, the Spanish data used in this paper also seems to point out to positive and negative sorting into entrepreneurship. Self-employment rates are relatively higher among migrants from European Union (EU) countries, who are more "assimilated" and tend to have better characteristics than other migrants, and among those from the Africa and Asia regions who, by contrast, have lower educational and human capital levels.

Evidence of a U-shape relationship between education and entrepreneurship in the overall population has been documented for some countries –see for example, Poschke (2013) for the U.S., Schjerming and Le Marie (2007)

[1] The definition of entrepreneurs in the data used here is that of self-employed. Thus, although strictly speaking they might not be equivalent terms, throughout the paper we will use entrepreneurship and self-employment interchangeably.

for Denmark or Blanchflower (2000) for 19 OECD countries. However, these papers do not consider immigrants (unless they are part of the sample and then, at the most, they control for immigrant status). As it will be clear in Section 2, there are reasons why migrants might become self-employed that do not necessarily apply to natives.

The studies on entrepreneurship and migration are scant. Except for some of Borjas' earlier work -e.g. Borjas (1986)-, most of the recent work on migration has only tangentially dealt with entrepreneurship and the few existing studies focusing on migrant entrepreneurs are predominantly descriptive. For instance, Hunt (2010) examines what migrants in the U.S. are more innovative and entrepreneurial by Visa type. Also for the U.S., Fairlie (2008) provides quite a comprehensive picture of immigrant business owners, documenting facts such as migrants being 30% more likely to start a business than non-migrants and immigrant business owners being geographically concentrated in states with high overall immigration rates. Based on surveys to more than 1,500 engineering and technology companies founded between 1995 and 2005 in the US, Wadhwa et al (2007) document that in 25% of the companies at least one key founder was foreign-born, and the vast majority of them were highly educated with degrees in STEM (science, technology, engineering, and mathematics) -related disciplines. These studies, however, are not informative of the underlying mechanisms by which migrants are drawn into entrepreneurship. Knowing these mechanisms is important for obvious public policy reasons. First, if not only the most educated and talented migrants become entrepreneurs but starting a business is also a common path for the least talented, then migration policies such as the award (or easiness) of Visas to foreigners who open new business would not be the most appropriate and neither would be other incentives, such as tax breaks or subsidies, that promote entrepreneurship. Second, if migrants are pushed into self-employment due to prejudice or discrimination, public policies aimed at correcting this situation would also result in more efficient allocation of skills across occupational choices.

This paper examines the choice between entrepreneurship (or self- employment) and salaried work by migrants. In doing so, we draw from the previous literature on entrepreneurship.[2] In particular, we tailor Lucas (1978) model to explain the allocation of migrants between self-employment and

[2]The literature on entrepreneurship is vast. Much of it has focused on the financial constraints that prevent capable individuals from becoming entrepreneurs and on the characteristics that make good entrepreneurs –see, for example, Evans and Jovanovic

salaried work. We account for the different market and non-market penalties that migrants experience upon arrival in the new country: pure human capital losses, discrimination of some sort in the labour market and heterogeneous entrepreneurship entry costs. Based on the relative importance of these factors, *positive* or *positive and negative* sorting into entrepreneurship might obtain. In this sense, the paper is related to the literature on entrepreneurship and racial groups, such as Borjas and Bronars (1989), Fairlie and Meyer (1996) or Hout and Rosen (2000) that try to explain the different propensities to self-employment of different racial groups in the U.S. but, as explained above, this paper is concerned with the distinct mechanisms that affect this choice in the case of migrants.

The rest of the paper is organized as follows. Section 2 sets out the theoretical framework and conducts comparative statics that generate testable predictions regarding the likelihood and the quality of entrepreneurship. These predictions will allow us to disentangle the main factors driving the choice between self-employment and salaried work across different groups of migrants. Section 3 describes the survey data of immigrants in Spain on which the model predictions are tested. Section 4 presents and discusses the empirical results. Finally, Section 5 concludes.

2 The Model

Our model builds upon Lucas (1978) entrepreneurship model. The economy consists of individuals who have different skill or efficiency levels, denoted z_i, drawn from a distribution function $\gamma(z)$ with support $[\underline{z}, \overline{z}]$, with $0 < \underline{z} < \overline{z} < \infty$ and cumulative distribution function $\Gamma(z)$. Entrepreneurial ability, a, depends positively on general skills z_i,[3] and also on specific entrepreneurial attributes such as attitudes towards risk, ambition, etc., that although we do not explicitly modelled here we will try to control for empirically. We assume $a(0) = 0$, $a' > 0$, and in order not to introduce unnecessary complications, we will also assume $a'' = 0$.[4] Each firm is run by an entrepreneur and firms

(1989), Holtz- Eakin et al (1994), Blanchard and Oswald (1998), Lazear (2005) or Dabla-Norris et al. (2014).

[3]Lucas (1978, p.522) also argues for "the existence of a kind of human capital which is productive both in managing and in working for others".

[4]While there is consensus in the literature that a good entrepreneur is someone who possesses additional abilities to the skills that are valuable to work as an employee, it is not

produce output using workers (n) and capital (K) according to the following production function:

$$a_i.g[f(L,K)] \tag{1}$$

where $L = \Sigma_{j=1}^{n} z_j$ is total labour in efficiency units, while f is a constant return to scale function and, following Lucas (1978), g is a concave transformation so that the production function exhibits some diminishing returns to the variable inputs –Lucas span of control. Notice that more capable entrepreneurs are those who are able to extract more output from the same inputs or, equivalently, those who can generate higher TFP. Given the constant return to scale assumption, equation (1) can be re-written as

$$a_i.g[L.\phi(k)] \tag{2}$$

where $k = \frac{K}{L}$. The profits of an entrepreneur with ability a_i are then given by

$$\Pi = a_i.g[L.\phi(k)] - wL - rK$$

where w is the wage per labour efficiency unit and r is the capital rental. The first order conditions for profit maximization are:

$$\frac{\phi(k) - k\phi'(k)}{\phi'(k)} = \frac{w}{r} \tag{3}$$

$$a_i.g'[L.\phi(k)]\phi'(k) = r \tag{4}$$

The above FOCs give two equations in two unknowns, which can be solved implicitly to obtain the two factor demand functions in terms of entrepreneurial ability, $L(a_i)$ and $K(a_i)$. It can be immediately verifiable that $L'(a_i) > 0$ and $K'(a_i) > 0$, so more capable entrepreneurs will employ more labour and more capital.

Writing the factor demands just as a function of skills, the optimal profits of an entrepreneur with skill or productivity z_i are:

$$\Pi(z_i) = a(z_i).g[L(z_i).\phi(k)] - L(z_i)[w + rk] \tag{5}$$

clear what exactly these abilities are and how they interact, if at all, with general skills. Thus, the entrepreneurial ability function we have in mind can essentially be modelled as the entrepreneur's general skills, z_i,with specific entrepreneurial attributes just shifting the ability function up.

Using the optimal input conditions (3) and (4) and our earlier assumption $a''(z_i) = 0$, we get

$$\Pi'(z_i) = g\left[L\left(z_i\right).\phi\left(k\right)\right].a'\left(z_i\right) > 0$$

and

$$\Pi''(z_i) = g'\left[L\left(z_i\right).\phi\left(k\right)\right].L\left(z_i\right).\phi\left(k\right).a'\left(z_i\right) > 0$$

or, in words, profits are a convex function of entrepreneur's skills.

Alternatively, an individual might decide to work as an employee. In the labour market, a worker with skill z_i receives a wage proportional to her productivity

$$W(z_i) = w.z_i \tag{6}$$

Following Guiso and Schivardi (2011), we consider entry or startup cost of entrepreneurship, C, that include, among others, all the bureaucratic and red tape costs of starting up a business. Thus an individual of skill z_i becomes an entrepreneur if the net profits from being an entrepreneur are higher than the wage she would get by working an as employee for somebody else:

$$\Pi(z_i) - C \geq w.z_i \tag{7}$$

Given that $W(0) = \Pi(0) = 0$, the wage and entrepreneurial profit functions only cross once on the interval $[\underline{z}, \overline{z}]$, and we obtain the skill level, S, of the individual indifferent between becoming an entrepreneur or working as an employee when equation (7) holds with an equality.[5] Individuals with skill level above S become entrepreneurs and those with skill level below S work as employees, with the share of employees and entrepreneurs in the total working population being $\Gamma(S) = \int_{\underline{z}}^{S} \gamma(z)dz$ and $(1 - \Gamma(S))$ respectively. Entrepreneurial average skill is then given by

$$E\left(z|z \geq S\right) = \frac{\int_S^{\overline{z}} z\gamma(z)dz}{1 - \Gamma(S)} \tag{8}$$

[5] As said above, because abilities other than general skills affect entrepreneurial ability, the net profit function might be higher or lower for particular individuals and so in practice we observe entrepreneurs along the whole skill distribution. However, as long as the other especific entrepreneurial abilities do not correlate negatively with general skills, condition (7) is still valid to identify the average skill level of the marginal entrepreneur.

Finally, for the economy to be at equilibrium, w and r must be such that the market-clearing conditions for labour and capital are satisfied

$$\begin{aligned} 1 - \Gamma(S) + \int_S^{\overline{z}} L(z)\,\gamma(z)dz &= 1 \\ \int_S^{\overline{z}} k(z)\,\gamma(z)dz &= \frac{\overline{K}}{\overline{L}} \end{aligned} \tag{9}$$

2.1 Immigrants and the choice of entrepreneurship

In the case of migrants equation (7) needs to be modified in at least two ways. First, as it is well known, transferability of skills across countries is not perfect as some skills, such as the knowledge of the language, the legal and institutional systems, are country-specific. In particular, we will assume that a percentage of a migrant's skills, δ, with $0 \leq \delta < 1$, is "lost" upon arrival and only as the migrant spends time in the country and assimilates, can some of these human capital losses be recovered. We allow for migrants from different countries of origin (or, rather, different regions of origin) to suffer different degrees of human capital losses. Second, certain groups of migrants might be subject to additional penalties in the labour market, based on prejudice or opportunistic behavior from employers, that would reduce their wages below competitive levels or would make it impossible for them to be employed altogether. We model this discrimination in a very simple way. We assume that all migrants from certain origin suffer a wage cut of D. Finally, we also allow for entry costs of entrepreneurship to differ across different groups of migrants. These costs include the bureaucratic and red tape costs of starting up a new business, but they could also reflect the financial constraints to becomes entrepreneurs in which case, it is sensible to think of them being different across groups of migrants.

Thus, for migrants equation (7) that yields the skill level S of the marginal entrepreneur becomes

$$\Pi[(1-\delta_m)\,S] - C_m = w.\,(1-\delta_m)\,S - D_m \tag{10}$$

where m denotes the region or country of origin of the migrant.

To a larger or lesser extent, all migrants might be subject to human capital losses, non-market penalties in the labour market and potentially different entrepreneurship entry costs. However, our goal is to identify the main factors driving the choice between entrepreneurship and salaried work

across groups of migrants and to be able to explain negative sorting, if any, into entrepreneurship. To that aim, we will assume the same skill distribution across groups of migrants and perform comparative statistics on (10) by considering each of the above three factors at a time, assuming the other two away.[6]

2.1.1 Effect of human capital losses

We start by analyzing the effect of different degrees of human capital losses (δ_m) in the absence of non-market penalties in the labour market ($D_m = 0$) and group-specific entrepreneurship entry costs ($C_m = C$).

Differentiating (10) we obtain

$$\frac{dS}{d\delta_m} = \frac{S}{1-\delta_m} > 0$$

and then

$$\frac{d[1-\Gamma(S)]}{d\delta_m} = -\gamma(S)\frac{S}{1-\delta_m} < 0$$

That is, the skill cutoff of the marginal entrepreneur will be higher and the probability of becoming an entrepreneur will be smaller for those groups of migrants suffering higher human capital losses upon arrival.

However, there is an ambiguous effect of δ_m on the average entrepreneurial ability as the derivative of average entrepreneurial skills –equation (8)– with respect to human capital losses (δ_m) yields

$$\begin{aligned}\frac{dE[(1-\delta_m)z|z\geq S]}{d\delta_m} &= -E(z|z\geq S) + (1-\delta_m)\frac{[E(z|z\geq S)-S]\gamma(S)}{1-\Gamma(S)}\frac{dS}{d\delta} \\ &= -E(z|z\geq S) + \frac{[E(z|z\geq S)-S]\gamma(S)}{1-\Gamma(S)}S \qquad (11)\end{aligned}$$

The first term of (11) is the effect of human capital losses on the average entrepreneurial skill keeping the cutoff S fixed, which is negative, as skills are reduced by a percentage δ_m. The second term of (11) is the effect of human

[6]Notice that our analysis is partial equilibrium in that we implicitly assume the arrival of migrants does not affect the wage, w, in the recipient country. But even if there are first-order effects of migration so that the market wage changes, we should understand the comparative statitics with respect to the new equilibrium wage and the new skill level of the marginal entrepreneur.

capital losses on the cutoff of the marginal entrepreneur, S, which is positive as human capital losses pushes up the skill level of the marginal entrepreneur. Mathematically, it is evident that the second term in (11) is positive because $E(z|z \geq S) - S > 0$, i.e., the skill level of the marginal entrepreneur is lower than the average entrepreneurial skill. Whether the negative or the positive effect dominates depends on the particular distribution function of skills.[7]

Notice that as $W[(1-\delta_m)0] = \Pi[(1-\delta_m)0] = 0$,the wage and entrepreneur net profit functions still only cross once on the skill range $[\underline{z}, \overline{z}]$ and the effect of δ is to tilt both curves causing them to intersect at a higher skill level. Thus if for $\delta = 0$ the skill level of the marginal entrepreneur was S_0, with $\delta > 0$, the new threshold skill level is $S_1 > S_0$ such that $W(S_0) = W[(1-\delta_m)S_1] = \Pi[(1-\delta_m)S_1] = \Pi(S_0)$.

2.1.2 Effect of non-market penalties in the labour market

We now assume $\delta_m = 0$ and $C_m = C$ and consider changes or differences across migrant groups in D_m. The wage function shifts down on a parallel fashion so that the skill level of the marginal entrepreneur is now lower. Moreover, if D_m is sufficiently high, it is then possible for the wage and the entrepreneurial profit functions to also intersect at a lower skill level resulting in negative sorting into entrepreneurship. Thus we need to distinguish two cases:

1. $D_m > 0$ is such that the wage and the entrepreneurial net profits still cross only once.

Differentiating (10) we obtain

$$\frac{dS}{dD_m} = \frac{1}{w - \Pi'(S)} < 0 \tag{12}$$

and

$$\frac{d[1-\Gamma(S)]}{dD_m} = -\gamma(S)\frac{1}{w - \Pi'(S)} > 0$$

where the inequality in (12) follows from the fact that $\Pi'(S) > w$,i.e., the slope of the profit function is larger than that of the wage function at $z = S$.

[7]For example, for a uniform distribution function the overall effect is negative, but this result does not necessarily hold for all types of distribution functions.

As for the average entrepreneurial skill, we have

$$\frac{dE\left(z|z\geq S\right)}{dD_m}=\frac{\left[E\left(z|z\geq S\right)-S\right]\gamma\left(S\right)}{1-\Gamma(S)}\frac{dS}{dD_m}<0$$

where the inequality follows from the fact that $E\left(z|z\geq S\right)-S>0$ and $\frac{dS}{dD_m}<0$.

Thus, provided the wage and entrepreneurial profit functions only intersect once (positive sorting), the skill cutoff of the marginal entrepreneur will be lower and the probability of becoming an entrepreneur will be larger for those groups of migrants suffering higher penalties (D_m) in the labour market and their average entrepreneurial ability will be lower.

2. $D_m>0$ is sufficiently large, so that the wage and entrepreneurial profit functions cross twice.

In this case, there are skill levels S_1 and S_2 such that $\Pi_{NET}(S_1)=W_{NET}\left(S_1\right)$ and $\Pi_{NET}(S_2)=W_{NET}\left(S_2\right)$, with individuals with $z_i>S_2$ becoming entrepreneurs (positive sorting) but also individuals with $0<z_i<S_1$ becoming entrepreneurs (negative sorting). A necessary and sufficient condition for negative sorting is $D_m>w.\underline{z}-\Pi\left(\underline{z}\right)+C$.

Trivially, with respect to the case of positive sorting only, the share of entrepreneurs increases further and average entrepreneurial skill decreases further.

2.1.3 Effect of entrepreneurship entry costs

Finally, we consider the differential effect of heterogeneous entry costs, C_m, alone. In this case differentiating (10) we obtain

$$\frac{dS}{dC_m}=\frac{1}{\Pi'(S)-w}>0$$

and

$$\frac{d[1-\Gamma(S)]}{dC_m}=-\gamma\left(S\right)\frac{1}{\Pi'(S)-w}<0$$

Thus, the skill cutoff of the marginal entrepreneur will be higher, and the probability of becoming entrepreneur smaller, the higher the startup entrepreneurship costs are. This is equivalent to the prediction regarding human

capital losses. But unlike the latter, higher C has an unambiguous positive effect on the average entrepreneurial ability as we have

$$\frac{dE\left(z|z \geq S\right)}{dC_m} = \frac{\left[E\left(z|z \geq S\right) - S\right]\gamma\left(S\right)}{1 - \Gamma(S)} \frac{dS}{dC_m} > 0$$

The model is useful in two ways. First, it explains the possible negative sorting of migrants into entrepreneurship as a consequence of penalties in the labour market beyond mere human capital losses experienced by migrants. Second, the model generates predictions regarding the likelihood of entrepreneurship and entrepreneurial quality (as measured by the average entrepreneurial skill) that will allow us to disentangle the most important factors driving the choice between entrepreneurship and salaried work among migrants from different origins.

3 The Data

The data used in this paper comes from a survey on immigrants, the *Encuesta Nacional de Inmigrantes 2007,* conducted in Spain between November 2006 and February 2007. Spain constitutes an interesting case study for migration because in the short time span of less then 15 years it went from having a negligible share of immigrants (1.4% of the Spanish population in 1995) to foreigners accounting for 11.4% of the population in 2007. This share has decreased considerably in the last years as many migrants have left due to the severe economic recession that followed the global financial crisis of 2008. However, the survey is prior to the economic crisis and thus it is not affected by the sudden worsening of economic conditions.

Over 15,000 immigrants were interviewed on a vast number of issues ranging from working and living conditions in Spain to past employment in the country of origin, or questions related to the decision to migrate. After eliminating the observations of migrant who were not working in week prior too the interview, those younger than 16 and older than 65 years old, we are left with approximately 8,900 individuals. About 1200 of them are migrants who have Spanish nationality from birth, either because they were foreign-born to Spanish parents and/or they arrived in Spain when they were below 2 years old. For the purpose of this study we do not consider them. The dataset

includes individual characteristics such as age, gender, marital status, country of origin and nationality, age at time of arrival, etc. As most relevant to this study, it has information on migrants skills: education (whether received abroad or in Spain), how well they speak Spanish, and information on the approximate length of time until they found a job in Spain and whether they suffered spells of unemployment since then, which allows us to get estimates on their effective (rather than potential) experience in Spain. In a more imperfectly way, we can also get an estimate of the working experience in their country of origin. There are a number of questions on the intended duration of their stay in Spain, and we can infer the legal status of the migrant too. As for the migrants' employment status, we know the occupation and sector where they work, whether they are salaried workers or self-employed. Self-employment constitutes our proxy for entrepreneurship. For the majority of individuals there is information on their earnings (exact earnings or interval earnings) and assets (for example whether they own a house in Spain or in their country of origin). Regarding their employment histories, we know the last occupation in the country of origin, as well as the occupation when they first arrived in Spain. Therefore, although the dataset is a cross-section and as such it has obvious shortcomings, it is sufficiently rich and detailed so that the use of several controls helps us get around some of the limitations of cross-sectional data.

Tables 3 reports summary statistics for the main variables used in the empirical analysis while Tables 4 through 7 provide more detailed information about the sample of migrants. Table 4 shows the educational level of all the migrants (column I) and the self-employed migrants (column II). These raw statistics already suggest that negative sorting into entrepreneurship is unlikely as the migrants with some college and college education are over-represented among the self-employed. Table 4 shows the origin of the migrants. We have grouped them into 5 main regions: EU-15 (the 15 countries member of the European Union prior to the enlargement of the mid 2000s, among which there is free labour mobility), Eastern European countries (including the countries that joined the EU in 2004 and 2006, but for which labour mobility restrictions were kept in place during a transitory period up to 2011), the combined region of African and Asian countries (excluding Israel and Japan), the Latin American countries, and the category of Others that include the rest of countries and thus it mainly consists of developed countries such as the U.S., Canada, Switzerland, Norway, Australia, etc. As observed, the largest share of immigrants in Spain come from the

Latin American region (about 44% of our sample) among which, Ecuador is the country sending most migrants; in the African and Asia group, the country with the largest number of immigrants is Morocco, whereas among the Eastern Europeans, Romanians are the largest group. Migrants from the EU-15 represent the smallest share and unlike the other groups of migrants, most of them did not arrive during the migration boom initiated in the mid 1990s but have been in Spain for longer. They also tend to have better observable characteristics and more wealth than most other groups of migrants. As Table 4 shows, this group is over-represented among the self-employed; while it accounts for about 17% of the total migrants in the sample, they represent 32% of the self-employed. The self-employment rate is also relatively high for migrants from Africa and Asia; they represent 18% of the total sample of migrants and about the same rate is observed among the self-employed migrants. This is surprising considering that neither their educational levels nor other observable characteristics would make them a priori particularly likely to enter entrepreneurship. Finally, for the Eastern European and Latin American groups the self-employment rates are lower than the overall migrant shares.

Table 5 reports the sector of occupation of the migrants and the self-employed migrants while Table 6 is informative of the geographical distribution within Spain. Migrants are predominantly concentrated in the construction sector (Spain experienced a real state boom during the 1990s and 2000s) followed by the hospitality sector (that is, restaurants, hotels, bars, etc.) and also, importantly, by the household and personal services that include child and elderly caring. The highest self-employment rates are found in the same sectors, with the retailing sector hosting an important share of self-employed too. Geographically, migrants are concentrated in the regions along the coast and islands (Catalunya, Valencia, Baleares) where the real state boom was more prominent and in Madrid that hosts the capital and was also a fast-growing region during those years.

4 Testing the model

The model above can explain negative sorting into entrepreneurship by penalties in the labour market, beyond mere human capital losses, that decrease wages below competitive levels or makes migrants unemployable altogether. However, even if no negative sorting into entrepreneurship is observed, such

discrimination can not be ruled out. It might still exist and push into self-employment some migrants that would otherwise not make such occupational choice. The table below summarizes the predictions concerning negative sorting, the likelihood of entrepreneurship and average entrepreneurial quality of the different factors that might have a differential impact across groups of migrants:

	Negative sorting	Likelihood of entrepreneurship	Entrepreneurial quality
Heterogeneous startup costs ($C_m > C$)	*No*	*Negative*	*Positive*
Pure Human Capital losses ($0 \leq \delta_m < 1$)	*No*	*Negative*	*Ambiguous*
Discrimination ($D_m > 0$)	*Possible*	*Positive*	*Negative*

Our strategy goes as follows. We first examine whether there is negative sorting into self-employment for the full sample of migrants and for any group of them. Then, we try to disentangle the main factors driving the different propensities to self-employment across migrant groups.

4.1 Positive or negative sorting?

Table 8 reports additional summary statistics on a number of characteristics for all migrants and for the self-employed, for each of the 5 broad groups of migrants. To more or less extend all these observable characteristics are correlated with and proxies for skills and ability. Although comparison across groups is not sensible as there are obvious differences among them, especially in schooling quality, the comparison within groups between all the immigrants and just the self-employed is informative. Except for schooling and fluency in Spanish in the case of the EU-15 group, self-employed migrants tend to have more years of schooling, more years of effective experience (at least in Spain), a better knowledge of Spanish, higher rates of previous self-employment in their country of origin and their earnings are also higher on average. If we look at the whole distribution of these characteristics, and not just the means, we observe that the distributions for self-employed tend to be skewed to the right, what is indicative of positive sorting into self-employment. This is true for schooling, for the full sample of migrants (see

Figure 1) and for practically each group of migrants (see Figure 2).[8] In all cases except for the EU-15 migrants, the Smirnov-Kolmogorov test of equality of distributions is rejected at reasonable significance levels. Similarly, the kernel density functions for potential experience are shifted to the right –see Figures 3 and 4.

The existence of a U-shape relationship between self-employment and the proxies for skills, schooling and experience, is also directly tested by estimating probit models on the likelihood of self-employment that include quadratic terms for schooling and experience. An important control in the regressions is the dummy for whether the migrant owned a business in her country of origin, a proxy for specific entrepreneurial skills. The rest of controls include individual characteristics, enclave migrant variables, sector, region and 5-year arrival cohort fixed effects to allow for different migrant cohort quality. Regression results are reported in Table 9. As columns I and II make clear the U-shape relationship between self-employment and schooling and experience (both potential and effective) is clearly rejected for the full sample of migrants, and also for each migrant group –see columns III through VI.

The use of schooling and experience as proxies for migrant skills poses obvious problems of comparability across regions and even across countries. There is heterogeneity in schooling curriculum and quality across countries. Moreover, some of the skills acquired in the schooling system (such as the language, certain social and cultural values) as well as through the working experience in the country of origin might be country-specific. As such, they might not be useful in the Spanish labour market. In order to use a "common" metric for migrant skills, we compute human capital indices based on the returns that the Spanish labour market places on schooling and experience from the different regions of origin of migrants. That is, we estimate region of origin-specific Mincerian wage regressions where the monthly earnings of salaried migrants from that particular region are regressed on schooling (distinguishing between schooling in the country of origin and that obtained in Spain), effective experience in the country of origin and in Spain, quadratic terms of experience, a number of individual controls (gender, marital status, illegal status, whether the person speaks Spanish fluently, hours

[8] The 7 schooling categories in the histograms are: no schooling, incomplete primary education, complete primary education, incomplete secondary education, complete secondary education, some college and college.

worked) as well as sector, Spanish and arrival cohort dummies.[9] Table 10 reports the results. As observed, one year of school in EU-15 countries increases wages in Spain by approximately 4%.[10] According to some studies, this is roughly the return on education for native Spanish, what indicates that this group suffers minimal or no human capital losses regarding education. By contrast, schooling obtained in any other of the main origin regions is much less valued –one year of school in Eastern Europe and in Africa and Asia is associated to less than 1% increase in wages in Spain and 1.5% in the case of Latin America. Effective experience in the country of origin seems to not be valued at all in the Spanish labour market, as the coefficients are in this case never statistically significant. However, this variable is quite imperfectly computed and thus subject to considerable error. Finally, experience accumulated in Spain is significant across all the main migrant groups and the difference in the magnitude of the coefficients suggest that they accumulate skills at different catch up rates. Based on this returns we construct different human capital indices. The main index, and the one we will use later in the empirical analysis, is based on those returns that appear to be statistically significant, that is the returns to schooling (both in the country of origin and in Spain) and on effective experience in Spain. However, for robustness checks we also compute the index following the definition of human capital (that is, the return on schooling plus the returns on experience in the country of origin and in Spain and their quadratic terms). Figure 5 compares the kernel density functions of these human capital indices for salaried migrant workers and self-employed migrants. As apparent in the plots, the distribution of human capital indices of self-employed is more skewed to the right and the Smirnov-Kolmogorov test of equality of distributions is rejected at reasonable significance levels. The probit regressions estimated in Table 11 for each different group of migrants also rejects a U-shape relationship between the index of human capital (based on returns to schooling and just effective experience in Spain) and self-employment. Taken together, all these results reject negative sorting into self-employment for migrants in Spain.

[9] As the different regions of origin are quite heterogenous, we estimate different models for each region and this way we allow for not only different returns on schooling and experience but also different coefficients on all other covariates.

[10] For this group schooling obtained in Spain is rewarded slightly higher (5%) but the two coefficients are not statistically different from each other.

4.2 Heterogeneous entry costs, human capital losses or discrimination?

In this section we document different propensities to enter self-employment across migrant groups and aim at disentangling the role that heterogenous entrepreneurship entry costs, human capital losses and discrimination play in explaining such differences. Our starting point is a slight variation of the probit model reported earlier in Table 9 column I. In Table 12 column I, our baseline model, we estimate the model on the likelihood of self-employment based on school and potential experience (without the quadratic terms) and all other covariates, and we add region of origin dummies. We observe that with respect to the EU-15 countries (the reference group), all other migrant groups are less likely to become self-employed; their estimated coefficients are negative and, except for the group of Others, they are statistically significant. This is consistent with higher human capital losses experienced by these groups but also with higher entrepreneurship entry costs. Another important point to notice is that the estimated coefficient is smaller in magnitude (less negative) for the Africa and Asia region dummy. That is, self-employment appears to be relatively more likely for this group than for Latin Americans and migrants from Eastern Europe. Statistically, the coefficient on the Africa and Asia dummy is different from that for Latin American but we can not reject that it is equal to that of Eastern Europeans.

As argued above, part of the heterogeneity in entrepreneurship entry costs might arise from the financial constraints that prevent migrants from starting up their own business.[11] We try to assess the importance of this barrier to self-employment by adding controls related to the assets owned by migrants. In particular, we include dummies variables for whether the migrant owns her own house in Spain, and whether she owns a house and land in their country of origin. Owning a house in Spain, even if the mortgage is still not fully paid, is not only and indicator of the migrant's wealth but more importantly, it is informative of her access to credit for two reasons. One, because it can be used as collateral when asking for a bank credit and two, because it conveys information of how likely she is to be successful in getting credit. Model 1 (on Table 12 column II) shows the new estimated coefficients for the region of origin dummies. As we can see, the coefficients for all the main

[11] As being self-employed does not necessarily require making investments in own´s business, this factor might be of limited importance in explaining differential self-employment rates.

migrant groups increase slightly (become less negative), what indicates that the lower propensity of self-employment of these groups with respect to that of EU-15 countries is partly due to higher entry costs in the form of financial constraints. Moreover, based on hypothesis testing, Eastern Europeans and Latin Americans have similar propensities to self-employment now, while the propensity of the Africa and Asia group is statistically different from that of the other two groups.

Next in Model 2, instead of schooling and experience, we use the human capital index computed as explained earlier. When we use this common metric of skills, the coefficients on the region of origin dummies increase considerably in magnitude. In the case of Eastern Europeans and Latin American is not now statistically different from zero (and thus from the reference group of EU-15), whereas for the group of Africa and Asia is positive and significant. We can draw two important conclusions from this result. First, human capital losses on the pre-arrival skills of these 3 groups of migrants are an important explanation of their lower self-employment propensities compared to the EU-15 countries. Second, when controlling for their "real" skills, as valued by the Spanish labour market, migrants from Africa and Asia display "too" high self-employment propensities. The remaining explanation consistent with this fact is some sort of discrimination experienced by this group of migrants. Indeed, if we include the illegal status of the migrant as an additional control (Model 3 in Table 12), the coefficient on the Africa and Asia dummy decreases slightly (as do the other two coefficients). This suggests that illegal migrants might be drawn into self-employment to avoid opportunism from employers linked to their illegal status, but even after controlling for that, migrants from Africa and Asia still appear subject to some other sort of discrimination.

Finally, we test the predictions regarding entrepreneurial or self-employment quality. We use earnings of the self-employed as a proxy for it. Recall the model has an ambiguous prediction about the average entrepreneurial quality for those groups of migrants suffering relatively larger human capital losses. However, entrepreneurial quality should unambiguously be lower for those groups experiencing penalties in the labour market unrelated to human capital losses. In Table 13 we estimate probit models to explain the probability of self-employed earnings belonging to the bottom and the top of the self-employment earnings distribution. Controlling for individual characteristics, sector, Spanish region and arrival cohort fixed effects, the dummy for Africa & Asia migrants is always significant and points in a clear direction. The

earnings for self-employed migrants from this group tend to fall disproportionately more into the bottom of the distribution and less into the top of the distribution. Moreover, the coefficient is in most cases statistically different from that for other groups. Thus the relatively high self-employment rate among this group is consistent with discrimination of some sort in the labour market.

5 Conclusions

Data for several countries suggests that "too many" migrants are drawn into entrepreneurship as opposed to salaried work, and the self-employment rates of migrants across educational and origin groups seems to point to positive and also negative sorting into entrepreneurship. Building upon Lucas (1978) entrepreneurship model, we develop a framework to understand the underlying factors driving the choice between entrepreneurship (or self-employment) and salaried work in the case of migrants. We show that negative sorting is possible when migrants are subject to penalties in the labour market that go beyond the mere human capital losses they are likely to experience upon arrival in the new country. We also derive testable predictions regarding the likelihood and the average quality of entrepreneurship that allow us to disentangle the relative importance of human capital losses, discrimination and heterogenous entrepreneurship entry costs.

The model predictions are tested on a rich survey of migrants in Spain for the years 2006-2007. Spain constitutes an interesting case study because it received unprecedented immigration inflows since the mid 1990s up until the start of the global financial crisis in 2008. However, the model could be applied to any other economy too. In the case of Spain, we do not find evidence of negative sorting into self-employment. Self-employed migrants tend to have statistically significant better observable characteristics than salaried migrants. However, even if no U-shape between skills and the likelihood of self-employment is found, penalties based on opportunism or discrimination of some sort are also consistent with the relatively higher probability of self-employment and the lower entrepreneurial quality of migrants from Africa and Asia.

References

[1] Batista, C., J. Umblijs (2014): "Migration, risk attitudes, and entrepreneurship: evidence from a representative immigrant survey", *IZA Journal of Migration* 3 (17), p.1-25.

[2] Blanchflower, D. G., A. J. Oswald (1998): "What makes an entrepreneur?", *Journal of Labor Economics* 16 (1), p. 26-60.

[3] Blanchflower, D.G. (2000): "Self-employment in OECD countries", *Labor Economics* 7, p.471–505.

[4] Blau, D. (1985): "Self-employment and self-selection in developing countries labour markets", *Southern Economic Journal*, p. 351-363.

[5] Borjas, G. J., Bronars, S. G. (1989): "Discrimination and Self-Employment", *Journal of Political Economy*, 97 (3), p. 581-605.

[6] Dabla-Norris, E., Y. Ji, R. Townsend, D. Filiz Unsal (2014): "Identifying constraints to financial inclusion and their impact on GDP and inequality: a structural framework for policy", *IMF Working Paper*, November 2014.

[7] Evans, D. S., B. Jovanovic (1989): "An estimated model of entrepreneurial choice under liquidity constraints", *Journal of Political Economy* 97, p. 808-827.

[8] Fairlie, R. W. (2008): "Estimating the Contribution of Immigrant Business Owners to the U.S. Economy", SBA report.

[9] Fairlie, R. W., Meyer, B. D. (1996): "Ethnic and Racial Self-Employment Differences and Possible Explanations", *Journal of Human Resources* 31(4), p.757-93.

[10] Fernández-Huertas, J. (2011): "New Evidence on Emigrant Selection", *The Review of Economics and Statistics* 93(1), p. 72-96.

[11] Friedbberg, R. (2000): "You can´t Take it with You? Immigrant Assimilation and the Portability of Human Capital", *Journal of Labor Economics* vol.18(2), 221-251.

[12] Gollin, D. (2008): "Nobody's business but my own: Self-employment and small enterprise in economic development", *Journal of Monetary Economics* 55, p.219–233.

[13] Guiso, L., F. Schivardi (2011): "What determines entrepreneurial clusters?", *Journal of the European Economic Association* 9 (1), p. 61-86.

[14] Hatton, T. (2010): "The Cliometrics of International Migration: a Survey", *Journal of Economic Surveys* 24 (5), p. 941–969.

[15] Hout, M., H. Rosen (2000): "Self-employment, family background and race", *Journal of Human Resources*.

[16] Hunt, J. (2011): "Which Immigrants Are Most Innovative and Entrepreneurial? Distinctions by Entry Visa", *Journal of Labor Economics*.

[17] Lazear, E. P. (2005): "Entrepreneurship", *Journal of Labor Economics* 23, p.649-680.

[18] Lucas, R. E. (1978): "On the size distribution of business firms", *The Bell Journal of Economics* 9 (2), p. 508-523.

[19] OCDE (2010): "Entrepreneurship and Migrants".

[20] Poschke, M. (2013): "Who becomes an entrepreneur? Labor market prospects and occupational choice", *Journal of Economics Dynamics & Control* 37, p.693-710.

[21] Schjerning, B., D. LeMaire (2007): "Earnings, Uncertainty, and the Self-Employment Choice", Center for Economics and Business Research Discussion Paper 2007-04.

[22] Wadhwa, V. et al (2007): Education, Entrepreneurship and Immigration: America's New Immigrant Entrepreneurs, Ewing Marion Kauffman Foundation.

6 Tables

Table 1: Percentage of workers in self-employment, 2007

Country	Natives	Foreign-born
Australia	16.3	18.8
Austria	9.3	8.4
Belgium	12.1	15.5
Canada	14.5	17.5
Czech Republic	15.3	19.6
Denmark	7.0	9.6
Finland	9.6	14.1
France	8.1	10.8
Germany	10.0	9.5
Greece	26.4	10.6
Hungary	10.8	16.4
Ireland	16.8	9.3
Italy	23.6	17.5
Luxembourg	5.4	6.5
Netherlands	11.0	11.0
Norway	5.8	6.9
Poland	11.2	29.2
Portugal	15.6	12.1
Slovak Republic	12.6	26.4
Spain	16.0	11.7
Sweden	8.5	10.0
Switzerland	12.4	9.1
Turkey	21.5	18.2
United Kingdom	11.9	13.4
United States	9.9	10.2

Source: OECD Migration Outlook 2009, reproduced in OECD (2010), Table 1.

Table 2: U.S.business owners by educational level, 2000

	Immigrant business owners (%)	All business owners (%)
All education levels	100.0	100.0
Less than high school	27.2	11.9
High school graduate	19.9	25.8
Some college	21.6	29.5
College graduate	31.3	32.7

Source: Fairlie (2008), Table 4

Table 3: Summary Statistics

Variable	No observations	Mean	Std. Dev.	Min	Max
Entrepreneur	7739	0.13	0.34	0	1
Age	7739	36.59	9.95	16	65
Female	7739	0.49	0.50	0	1
Married	7739	0.63	0.48	0	1
Has children	7737	0.66	0.48	0	1
Age at arrival	7642	26.59	11.13	0	65
Years since Migration	7642	10.00	10.79	0	62
Years of schooling	7739	10.56	3.73	0	16
Schooling in CO	7739	8.50	5.28	0	16
Schooling in Spain	7739	2.06	4.59	0	16
Potential experience in CO (years)	7642	11.36	9.73	0	59
Effective experience in CO (years)	6949	10.27	9.88	0	59
Potential experience in Spain (years)	7642	8.68	8.51	0	54
Effective experience in Spain (years)	6829	7.02	8.01	0	51.96
Speaks Spanish well	7425	0.87	0.33	0	1
Owned Business in CO	7041	0.12	0.33	0	1
Illegal status	7322	0.09	0.29	0	1
Log monthly earnings (Euros)	7405	6.86	0.59	0	9.21

Table 4: Educational level of migrants

	All migrants	Self-employed
Total	7,738	1,035
Less than primary education	9.03%	8.70%
Primary education	30.59%	25.89%
Secondary education	38.14%	36.14%
College and some college	22.24%	29.28%

Table 5: Origin of migrants

	All migrants (total)	All migrants (% in total)	Self-employed (% in total)
Total	7,738	100	100
EU-15	1,293	16.71	31.69
Eastern Europe	1,488	19.23	10.82
Africa & Asia	1,402	18.12	18.45
Latin American	3,394	43.86	36.23
Others	161	2.08	2.80

Table 6: Sector of occupation of migrants

Sector	All migrants (% in total)	Self-employed (% in total)
Agricult., fishing & mining	6.60	2.80
Manufacturing	11.73	6.09
Construction	19.39	14.70
Retailing	10.73	18.57
Hospitality	13.14	12.86
Tranportation & communications	5.26	5.22
Real state & renting services	8.65	13.35
Household services	10.70	11.90
Other social & personal services	10.79	13.54
Others	3.01	0.97

Table 7: Geographical location in Spain

Spanish Region	All migrants (% in total)	Self-employed (% in total)
Andalucía	6.85	8.31
Aragón	4.39	2.80
Asturias	2.30	4.35
Baleares	7.50	12.27
Canarias	4.08	5.51
Cantabria	2.65	3.09
Castilla & León	4.03	3.86
Castilla la Mancha	4.38	1.93
Cataluña	13.13	12.37
C. Valenciana	8.39	11.50
Extremadura	1.85	1.26
Galicia	2.64	3.96
Madrid	13.50	10.63
Murcia	8.18	5.02
Navarra	7.90	4.83
País Vasco	3.59	5.02
Rioja	3.94	2.32
Ceuta & Melilla	0.70	0.97

Table 8: Migrants characteristics –means

	All Migrants		EU-15		Eastern Europe		Africa&Asia		Latin America		Others	
Variable	All	Self-employed	All	Self-employed	All	Self-employed	All	Self-employed	All	Self-employed	All	Self-employed
Schooling	10,56	10,94	11,28	11,25	10,97	11,52	8,12	9,04	11,01	11,34	12,60	12,48
Potential experience	20,04	23,49	22,88	26,16	16,92	17,78	22.49	26,18	19,36	21,65	19,22	21,62
Effective experience in CO	10,27	10,60	8,63	11,96	11,30	11,19	8,56	6,85	11,11	11,15	6,67	10,29
Effective experience in Spain	7,02	11,30	13,22	14,55	3,19	4,73	8,52	14,32	5,72	9,26	11,20	13,65
Years since migration	10,00	14,05	18,91	17,81	4,35	5,45	11,64	17,18	7,86	11,43	21,64	18,82
Age	36,59	40,42	40,15	43,40	33,88	35,29	36,61	41,22	36,36	38,96	37,80	40,10
Speak Spanish	0,87	0,88	0,89	0,83	0,72	0,77	0,70	0,76	0,99	0,99	0,97	0,96
Entrepreneur in CO	0,12	0,25	0.09	0.23	0.06	0,25	0.13	0,18	0,16	0,30	0.09	0.36
Log(earnings)	6,86	6,99	7,04	7,09	6,76	6,84	6,83	6,84	6,84	6,99	7,11	7,06

Figure 1: Schooling distribution of migrants

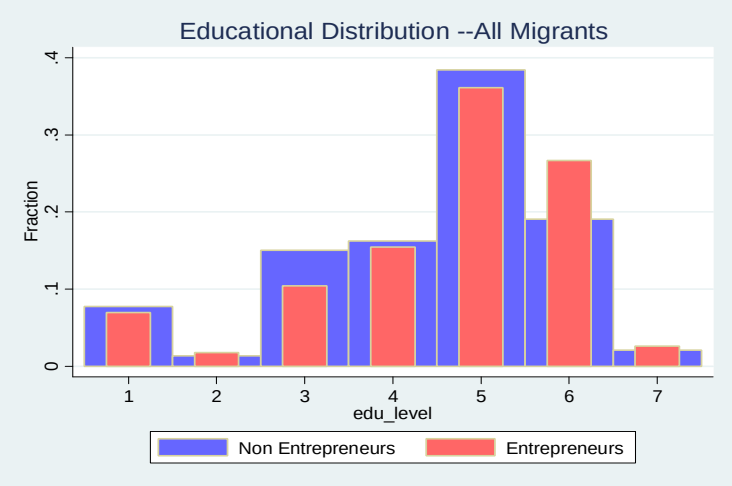


Figure 2: Schooling distribution by region of origin

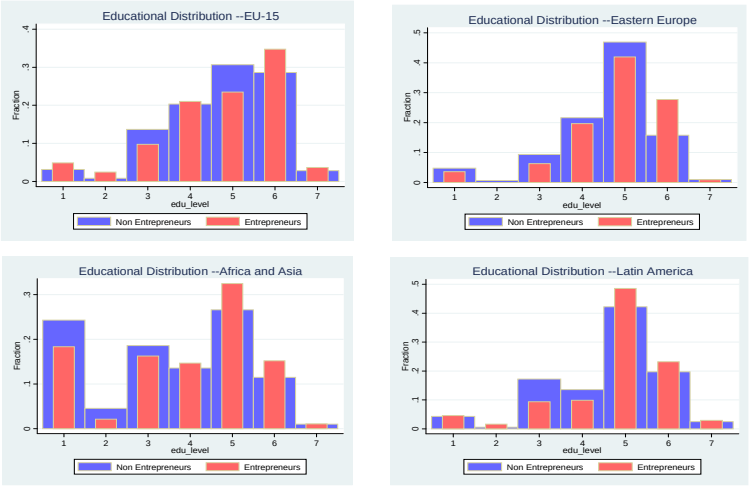


Figure 3: Distribution of potential experience of migrants

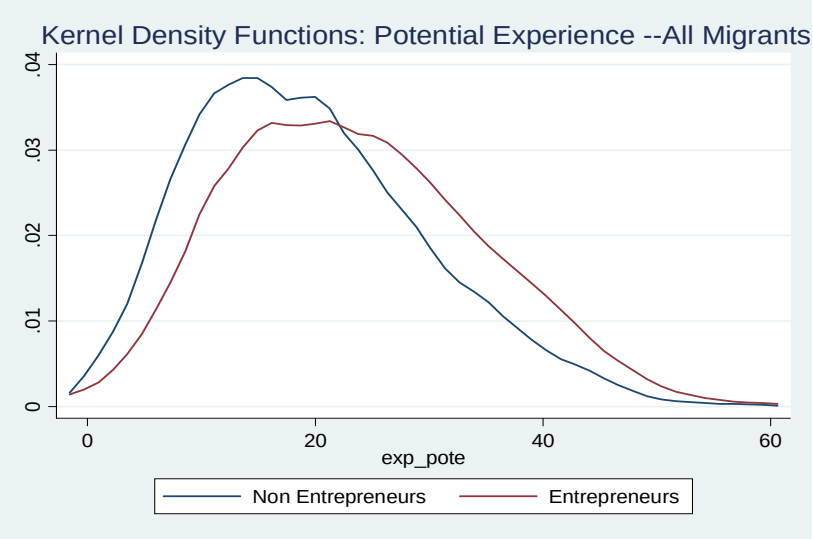
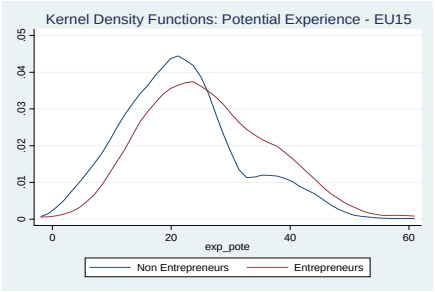
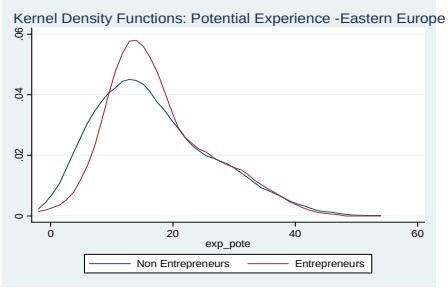
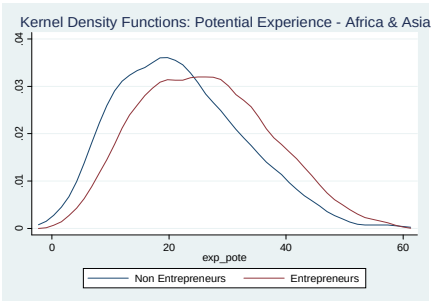


Figure 4: Distribution of potential experience by region of origin







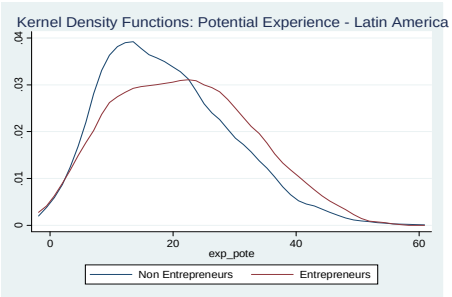


Table 9: School and experience and self-employment – Probit regressions

	All Migrants (I)	All Migrants (II)	EU-15 (III)	Eastern Europe (IV)	Africa & Asia (V)	Latin America (VI)
School	-0.0041	-0.0042	-0.0240	-0.0008	-0.0001	-0.0026
$(School)^2$	0.0006***	0.0005***	0.0017**	0.0002	0.0001	0.0004
Potential Experience in Spain	0.0024					
$(Potential\ Experience\ in\ Spain)^2$	0.0000					
Potential Experience in CO	-0.0001					
$(Potential\ Experience\ in\ CO)^2$	0.0000					
Effective Experience in Spain		0.0147***	0.0304***	0.0028	0.0130***	0.0099***
$(Effective\ Experience\ in\ Spain)^2$		-0.0002***	-0.0004*	0.0003	-0.0002	-0.0001
Effective Experience in CO		-0.0008	0.0053	0.0031*	-0.0039	-0.0020
$(Effective\ Experience\ in\ CO)^2$		0.0000	-0.0000	-0.0002***	0.0001	0.0001*
Owned Business in Co.of Origin	0.1708***	0.1445***	0.4163***	0.1650***	0.0970**	0.1061***
Female	-0.0126*	-0.0091	-0.0226	0.0079	-0.0133	-0.0055
Married	0.0114	0.0060	-0.0301	0.0045	0.0447**	0.0064
Has children	0.0188**	0.0188**	0.0643**	0.0068	-0.0199	0.0185
Enclave vars:						
% of EU-15 in province pop	-0.2691	-0.7276	-0.4086	-3.0399**	0.9879	-0.2054
% of Eastern European in province	-1.9398**	-2.1986***	-1.1400	-1.0691	-3.3498*	-3.2595**
% of Africa&Asia in province	1.8733***	1.8511***	0.7088	2.6679***	0.9479	2.0839*
% of Latin American in province	-0.3376	-0.4764	0.0706	1.1104	-2.1318	-1.7923*
% of other migrants in province	6,6471	11.3580*	27.3092	25.6417*	-1.0374	5.8301
Sector Fixed Effects	YES	YES	YES	YES	YES	YES
Region Fixed Effects	YES	YES	YES	YES	YES	YES
Arrival Cohort Fixed Effects	YES	YES	YES	YES	YES	YES
Pseudo R-squared	0.146	0.153	0.20	0.23	0.28	0.13
No, Observations	6,943	6,201	867	1,264	1,037	2,878

(*), (**) and (***) significant at 10%, 5% and 1% significance level respectively.

Table 10: Mincerian wage regressions by region of origin

	EU-15	Eastern Europe	Africa & Asia	Latin America	Others
	(I)	(II)	(III)	(IV)	(IV)
School in CO	0.0388***	0.0081**	0.0090***	0.0149***	0.0700
	(0.0095)	(0.0031)	(0.0034)	(0.0023)	(0.0537)
School in Spain	0.0503***	0.0102*	0.0135	0.0198***	0.0877
	(0.0092)	(0.0057)	(0.0091)	(0.0031)	(0.0551)
Effective experience in CO	0.0048	0.0039	0.0030	0.0020	-0.0108
	(0.0063)	(0.0027)	(0.0046)	(0.0022)	(0.0355)
(Effective experience in CO)^2	0.0000	-0.0002*	-0.0000	-0.0000	0.0015
	(0.0002)	(0.0001)	(0.0001)	(0.0001)	(0.0011)
Effective experience in Spain	0.0494***	0.0355***	0.0132**	0.0121**	0.0563
	(0.0124)	(0.0118)	(0.0056)	(0.0050)	(0.0558)
(Effective experience in Spain)^2	-0.0009***	-0.0021	-0.0003	-0.0000	-0.0009
	(0.0003)	(0.0014)	(0.0002)	(0.0002)	(0.0020)
Sector Fixed Effects	YES	YES	YES	YES	YES
Spanish Region Fixed Effects	YES	YES	YES	YES	YES
5-Year Cohort Arrival Fixed Effects	YES	YES	YES	YES	YES
R-squared	0.389	0.593	0.250	0.497	0.846
Observations	593	1,009	797	2,335	57

Note: Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1.
Dependent variable: Log wages of salaried workers. All regressions include the following individual characteristics: dummies for female, married, legal status, whether the person speaks Spanish, and the log of hours worked.

Figure 5: Distribution of Human Capital indeces

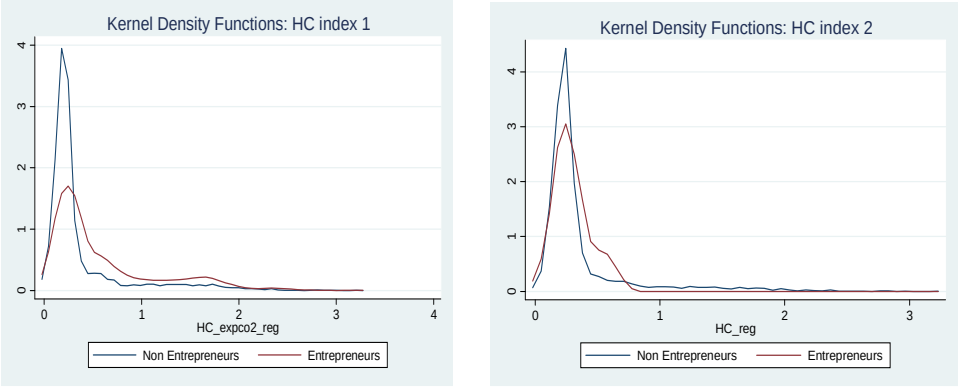


Table 11: Human Capital and self-employment – Probit regressions

	EU-15 (I)	Eastern Europe (II)	Eastern Europe (III)	Africa&Asia (IV)	Africa&Asia (V)	Latin America (VI)	Latin America (VII)
HC Index	0.3768**	0.0778	0.2129***	0.3633	0.3678***	0.1788	0.3601***
$(\text{HC index})^2$	-0.0545	0.2965		0.0096		0.3423	
Owned Business in Co.of Origin	0.4457***	0.1832***	0.1846***	0.0945**	0.0945**	0.1073***	0.1082***
Female	-0.0267	0.0080	0.0082	-0.0144	-0.0144	-0.0056	-0.0057
Married	0.0030	0.0053	0.0051	0.0478**	0.0478**	0.0078	0.0078
Has children	0.0692**	0.0024	0.0025	-0.0175	-0.0175	0.0204*	0.0211*
Enclave vars:							
% of EU-15 in province pop	-0.3985	-3.1982**	-3.2295**	0.9074	0.9057	-0.2173	-0.2166
% of Eastern European in province	-0.9760	-1.1002	-1.1001	-3.2151*	-3.2144*	-3.3607**	-3.3576**
% of Africa&Asia in province	0.1680	2.9641***	2.9587***	1.1153	1.1165	2.1661**	2.1710**
% of Latin American in province	0.1829	1.1915	1.1977	-2.0526	-2.0515	-1.8231*	-1.8298*
% of other migrants in province	32.4344	27.7678*	28.0635*	-0.6133	-0.5990	5.7719	5.8100
Sector Fixed Effects	YES	YES	YES	YES	YES	YES	YES
Spanish Region Fixed Effects	YES	YES	YES	YES	YES	YES	YES
5-Year Cohort Arrival Fixed Effects	YES	YES	YES	YES	YES	YES	YES
Pseudo R-squared	0.177	0.201	0.200	0.269	0.269	0.124	0.123
No observations	867	1,264	1,264	1,037	1,037	2,878	2,878

(*), (**) and (***) significant at 10%, 5% and 1% significance level respectively.

Table 12: Explaining the different propensities of self-employment across migrant groups - Probit regressions

VARIABLES	Baseline Model	Model 1	Model 2	Model 3
School	0.0053***	0.0054***		
Pot. Experience in Spain	0.0026*	0.0025		
Pot. Experience in CO	0.0013***	0.0015***		
Owns house in Spain		0.0310***	0.0203**	0.0204**
Owns house in CO		-0.0057	-0.0042	-0.0038
Owns land in CO		-0.0205*	-0.0197	-0.0178
HC Index			0.2998***	0.3002***
(HC index)^2			-0.1050***	-0.1058***
Illegal status				0.0224
Dum_Eastern_Europe (geo2)	**-0.0731*** **	**-0.0678*** **	**0.0173**	**0.0065**
Dum_Africa&Asia (geo3)	**-0.0515*** **	**-0.0460*** **	**0.0625***	**0.0523***
Dum_Latin_Amer (geo4)	**-0.0886*** **	**-0.0837*** **	**0.0157**	**0.0123**
Dum_Others (geo5)	**-0.0317**	**-0.0322**	**-0.0325**	**-0.0313**
Owned Business in CO	0.1683***	0.1706***	0.1520***	0.1395***
Female	-0.0126*	-0.0126*	-0.0103	-0.0137*
Married	0.0123	0.0090	0.0103	0.0154*
Has children	0.0170*	0.0162*	0.0210**	0.0212**
Enclave variables	YES	YES	YES	YES
Sector Fixed Effects	YES	YES	YES	YES
Spanish Region Fixed Effects	YES	YES	YES	YES
Arrival Cohort Fixed Effects	YES	YES	YES	YES
Pseudo R-squared	0.144	0.147	0.143	0.146
No observations	6,943	6,943	6,201	5,853

(*), (**) and (***) significant at 10%, 5% and 1% significance level respectively.

Table 13: Probability of belonging to the bottom and the top of the self-employed earnings distribution – Probit regressions

	Earnings<25%	**Earnings<10%**	**Earnings>75%**	**Earnings>90%**
Dum_Eastern_Europe (geo2)	0,1472**	0,0289	-0,0383	-0,0182
	(0,0747)	(0,0459)	(0,0237)	(0,0104)
Dum_Africa&Asia (geo3)	**0,2672*** **	**0,0923*** **	**-0,0860*** **	**-0,0336*** **
	(0,0593)	(0,0409)	(0,0169)	(0,0086)
Dum_Latin_Amer (geo4)	0,1124***	0,0030	-0,0172	0,0117
	(0,0455)	(0,0253)	(0,0201)	(0,0113)
Dum_Others (geo5)	0,1786*	-0,0049	-0,0169	0,0083
	(0,1144)	(0,0535)	(0,0412)	(0,0297)
Pseudo R2	0,204	0,166	0,159	0,168
No. Observations	871	852	862	804
Test hypothesis:	**p-value**	**p-value**	**p-value**	**p-value**
geo3=geo2	0,10	0,20	0,04	0,16
geo3=geo4	0,00	0,00	0,00	0,00
geo3=geo5	0,40	0,17	0,06	0,04

Notes: All regs include individual characteristics, sector, region and arrival cohort dummies.
Robust standard errors in parenthesis.