



Occupational choice of immigrants in Portugal

How entrepreneurial are they?

by

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Biographic note

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Her interest in research *pulled* her to join the Global Student Think Tank that is ShARE where in 2016, she was prized for having produced the best research project. The topic was "Will the migration influx fit in Portugal's labour market?" and it was inspired by the popular debate concerning the role Portugal should assume towards the Refugee Crisis in the framework of European values, responsibility and solidarity. Furthermore, her interest in the complex relationship between the individual, Society and the Economy have been nurtured by the large number of sat conferences and debates provided by the University, namely by research, student and professional bodies. These would include, for example, the 3-day long Intensive Workshop on Global Affairs in October 2015 at the Faculty of Humanities and the several year-round events with invited topic experts organized by Academia Política Apartidária and Quórum Fórum Político. Recently, in June 2017, Lia took part in the Barcelona GSE Summer Forum in Migration.

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“*To be, or not to be, that is the question*”

William Shakespeare – Hamlet, Act III, Scene I

Abstract

This dissertation aims to study the representation in entrepreneurship of immigrants vis-à-vis natives in Portugal. For that purpose, we use matched employer-employee data from Quadros de Pessoal for the year 2012.

There is a long standing literature focusing on immigrant entrepreneurship, discussing the different channels (i.e. push and pull factors) that may explain the representation of immigrants in entrepreneurship (Fairlie and Lofstrom, 2015). With a probit model, we study the effect of being immigrant, relative to being Portuguese, on the probability of being an entrepreneur. While taking in account that immigrants constitute a heterogeneous group, we attempt to understand if self-employment rates would be different if immigrants' characteristics were rewarded as Portuguese characteristics are.

We observe that immigrants that represent 5% of the work force are less entrepreneurial than Portuguese, even after controlling for the observed characteristics. However, results differ largely between the different immigrant groups: Chinese and West European are more entrepreneurial, Brazilian and Indian are similarly entrepreneurial and African and East European are less entrepreneurial than the reference group, Portuguese. From our results, it seems that Chinese, already highly represented in entrepreneurship (22.1%) compared to Portuguese (7%), have higher propensity towards entrepreneurship, hold entrepreneurship-conducive characteristics and enjoy higher returns to these characteristics than Portuguese which leaves a large portion of "*entrepreneurability*" to be explained. In the opposite side of the spectrum, African immigrants from Portuguese ex-colonies have very low rates of self-employment (2%), low propensity and non-conducive characteristics, but the returns to these characteristics are not significantly lower than those of Portuguese which suggests that there must be other factors *discouraging* this group to engage in entrepreneurship.

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Resumo

Esta dissertação visa estudar a representação no empreendedorismo dos imigrantes em relação aos nativos em Portugal. Com esse objetivo, utilizamos dados que ligam o empregador ao empregado proveniente dos Quadros de Pessoal para o ano de 2012.

Existe uma literatura extensa debruçada sobre o empreendedorismo imigrante, discutindo os diferentes canais (ou seja, fatores *push* e *pull*) que possam explicar a representação dos imigrantes no empreendedorismo (Fairlie e Lofstrom, 2015).

Com um modelo probit, estudamos o efeito de ser imigrante, em relação a ser português, na probabilidade de ser empreendedor. Tendo em conta que os imigrantes constituem um grupo heterogéneo, procuramos entender como variariam as taxas de empreendedorismo se as características dos imigrantes fossem “reconhecidas” como são as dos Portugueses.

Observamos que os imigrantes, que representam 5% da força de trabalho, são menos empreendedores que os portugueses, mesmo depois de controlar para as características observadas. No entanto, os resultados diferem em grande parte entre os diferentes grupos de imigrantes: chineses e europeus ocidentais são mais empreendedores, brasileiros e indianos são igualmente empresariais e os africanos e europeus do leste são menos empreendedores que o grupo de referência, os portugueses. Os nossos resultados sugerem que o chinês médio, já altamente representado no empreendedorismo (22,1%) em relação ao português (7%), tem maior propensão para o empreendedorismo, possui características favoráveis ao empreendedorismo e desfruta ainda de retornos mais elevados a essas características do que o português. Do lado oposto do espectro, os imigrantes africanos provenientes das ex-colónias portuguesas têm taxas muito baixas de empreendedorismo (2%), baixa propensão e características não favoráveis ao mesmo, mas os retornos dessas características não são significativamente menores do que os gozados por portugueses. Outros fatores além dos estudados poderão estar a motivar os Chineses e a desmotivar os Africanos a serem empreendedores.

Códigos-JEL: L26, M13

Palavras-chave: Empreendedorismo, Empreendedorismo imigrante

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List of Abbreviations

GEI – Global Entrepreneurship Index

GNP – Gross National Product

INE – Instituto Nacional de Estatística

IRN – Instituto dos registos e do notariado

LFS – Labour Force Survey

QP – Quadros de Pessoal (the name of the database used for this study)

S.E. – self-employment

M.E. – marginal effect(s)

p.p. – percentage point(s)

Introduction

The engagement of immigrants in entrepreneurship is a topic that has been attracting more and more attention. Comparing their propensity to set up a business with natives and how it differs between different immigrant groups has been object of study of authors in the USA (f.e. Borjas, 1986; Yuengert, 1995; Fairlie and Meyer, 1996; Lofstrom, 2002), Canada (f.e. Bernhardt, 1994), UK (f.e. Rees and Shah, 1986; Clark *et al.*, 2016) among other countries. Literature on immigrant entrepreneurship in Portugal has been approached by sociologists such as Oliveira (2004). To the best of our knowledge, there exist no previous studies on the topic for Portugal within economics (to this regard, van Tubergen (2005) only compares observed self-employment rates). This is the gap we intend to work on.

Firstly, immigrants in Portugal tend to be younger and less educated than natives and most of them come from developing countries whether these are new EU members like Ukraine, Portuguese ex-colonies like Brazil and Angola, or Asian countries like China and India. If the majority comes from less developed Portuguese-speaking countries, another significant part comes from developed countries of West Europe. (Carneiro *et al.*, 2012)

Secondly, entrepreneurship in Portugal seems to be lagging behind larger EU countries ranking in 33rd in the GEI World Rank (average values of 2013-2014). Furthermore, it seems to be more efficiency driven than innovation driven (Zoltan *et al.*, 2016). From the logit estimation results over a sample from “Quadros de Pessoal” (1986-2000) done by Amaral and Baptista (2006), we know that the probability of switching to self-employment is more likely for individuals that are older, more experienced (both in a curvilinear trend), more professionally qualified and that work for smaller firms. However higher levels of education seem to discourage this transition which could be related to higher earnings in paid-employment consequently leading to a negative selection of workers into self-employment¹. In a static analysis, Macieira (2009) runs a logit estimation over data from the Labour Force Survey (2007) and concludes that self-employed tend to be men, older, with a higher level of

¹ Barradas (2016) also reaches this conclusion with data driven from the same database for years 2010-2012 (transition into self-employment from the wage/salary sector).

education, living in the North of Portugal and be in Construction, Trade and Hotels & Restaurants sectors².

Finally, among Oliveira (2004)'s conclusions, based on data from SEF (data on foreigners that asked for residence status in Portugal, 2000-2002), we may find that self-employment rates were the lowest for newly-arrived African and highest for Asian (who were even overrepresented in self-employment relative to nationals). In particular, Chinese were found to be more entrepreneurial than Portuguese. The author further points out that her estimates include self-employed individuals that do not employ others (isolated workers) in the group of entrepreneurs – this would hold the risk of including workers under “recibos verdes” which she claims are not entrepreneurs³. In fact, if only employers are considered among self-employed, foreigners would seem much more entrepreneurial than Portuguese whereas the exact opposite is found if only isolated workers are considered instead (1996-1998, INE and SEF)⁴. The author remembers that before 1998, there were institutional constraints towards immigrant self-employment, namely credit discrimination. Later, through public announcement of sectors suffering from labor shortage, immigrants started investing in those same sectors such as construction, restaurants, hotels and retail commerce sectors. Also, the informal sector seems to be prominent for immigrant entrepreneurship, where social networks play an essential role. This is the case of Chinese entrepreneurs in Portugal that work and employ mostly co-ethnics and tend to focus on retail of imported goods and restaurants of ethnic food.

In light of the facts stated above, this Masters' thesis will analyze the following research questions: Are immigrants more entrepreneurial than natives in the Portuguese case? Do socio-economic and firms' characteristics explain the differences? What if we take into account the differences among a heterogeneous pool

² Notice that different conclusions are made relative to education effects depending on the type of model, static (with cross-section data) or transition (with panel data).

³ A worker under “recibos verdes” is classified as an independent worker. He/She juridically collaborates with a firm but is not employed by it keeping a certain autonomy in that sense. In practice this means that the firm does not pay the employment tax “Taxa Social Única” and keeps the work link dependent on the worker's results. In the cited author's study, the rate of independent workers that do not employ others over all entrepreneurs was highest for the Asian group corresponding to 15,2% (SEF, 1998). Even so, the lack of employed workers may be a mere expression of family business where dependent workers are not formally remunerated.

⁴ In the authors' study, self-employed workers can either be isolated workers or employers. The author finds that the percentage of employers among active immigrants is close to 18% whereas for Portuguese the rate is 6%.

of immigrants? Moreover, are the different groups of immigrants rewarded differently for their characteristics?

In order to answer these questions, we will use “Quadros do Pessoal”, a very rich matched employer-employee database that by legal enforcement is expected to cover most of the (formal) national workforce. After defining our sample of interest, we will then estimate a probit model where the dependent variable is binary - being in paid- or self-employment. We want to know how being an immigrant affects the probability of being self-employed before (with descriptive statistics) and after controlling for socio-economic and firm characteristics (with estimation results). Furthermore, we predict the probability of being self-employed for each group of immigrants if they were to be rewarded for their characteristics in the same way Portuguese are.

The engagement of immigrants in entrepreneurship affects their welfare and the welfare of those employed by them. Furthermore, inter-firm competition and labour market dynamics concern both native entrepreneurs and wage-earners. In this context, studying the effect of immigrants on the job market and neglecting entrepreneurship is an evident flaw. If we view the outcome of the job market as the total income to be distributed in salaries, we would have a pie with a certain limited size. In this simplistic view, immigrants would take up jobs that would no longer be available for natives – they would be taking away a slice of the pie from natives. However, entrepreneurial immigrants increase the size of the pie with new jobs that can be enjoyed by both natives and immigrants (see discussion in Kerr and Kerr, 2016). Following this reasoning, we aim to better understand who the immigrant entrepreneurs in Portugal are and examine how their characteristics are being awarded in the Portuguese market.

The study will be divided in 2 chapters. Chapter I will contain the literature review exploring the concepts of immigration and entrepreneurship in 1) and immigrant entrepreneurship in 2). Chapter II presents the empirical study developed in this work, with description of the Data in 1), Summary Statistics in 2), Methodology in 3) and Econometric Results in 4). The study ends with a summary including limitations and suggestions for future research.

Chapter I - Literature Review

1. Fundamental concepts

In this section, we will discuss the two core concepts of this thesis: immigration and entrepreneurship. In section 1.1), we will focus on immigration, acquisition of nationality and briefly describe what are the guidelines in Portugal and in the EU, whereas in 1.2) we will conceptualize entrepreneurship, describe its theoretical framework, and further mention some approaches to measure it.

1.1. Immigration

Immigration is the phenomenon where an individual leaves a country to move into another one, where he or she will stay for a significant period of time. The motivations underlying this move are determinant in the choice of the host country and, consequently, the immigrant's economic role and performance. One of the main motivations to make this change of residence is to look for better opportunities in the job market. However, many immigrants finally find themselves in entrepreneurship.

Before moving on to the immigrant entrepreneur, it is important to define what the criteria is to define an individual as an immigrant. Country of birth, nationality, length of stay in the new country? In the perspective of the European Union (EU), an immigrant in the EU is a person from a non-EU country that establishes usual residence in the territory of an EU country for a period that is, or is expected to be, at least twelve months⁵. As time goes by, social and economic assimilation is presumed and after 5 years (while respecting the other criteria defined in the Council Directive 2003/109/EC), the immigrant is entitled to long-term residence status.

In terms of acquiring Portuguese nationality, the terms vary but, at least after 6 years of legally residing in Portugal, the immigrant, come of age, can apply for the national status constrained on certain conditions like minimum Portuguese fluency and relatively clean criminal record⁶. Portuguese citizenship may be acquired by descent from a Portuguese parent, naturalization in Portugal and marriage to a Portuguese

⁵ For more details see glossary available in the European Commission's official website which, link you'll find in the bibliographic references in the end.

⁶ For more details see the official webpage of Instituto de Registos e Notariado (IRN) which link you'll find in the bibliographic references in the end.

citizen.

1.2. Entrepreneurship

How to define entrepreneurship and entrepreneurs? There seems to be no general consent. Some definitions include:

Entrepreneurs: *“engage in any enterprise in the hope of creating wealth, and include those who start small businesses such as restaurants and bicycle repair shops, as well as those who innovate entirely new technologies and products (...) but the most dramatic contributions come from the endeavours of relatively few [“heroic entrepreneurs”]. These are the entrepreneurs willing to risk their wealth and reputations to challenge the prevailing views of the possible, and who, when they succeed, turn one generation’s fantasies into the next generation’s necessities”* - Clark and Lee (2006, p. 1)

Entrepreneurship: *“the dynamic, institutionally embedded interaction between entrepreneurial attitudes, entrepreneurial abilities, and entrepreneurial aspirations by individuals, which drives the allocation of resources through the creation and operation of new ventures”* – Ács et al. (2016, p. 19)

Besides new venture creation, entrepreneurship could also refer to small firms or self-employment/business ownership (Parker, 2009). In fact, there are several ways to become an entrepreneur. One can create a start-up, acquire an existing firm or even become the owner of the company for whom he or she previously worked (intrapreneurship).

What is in the very origin of entrepreneurship? According to Knight (1921), uncertainty in competition is what enables positive profits to be enjoyed by the incoming residual entrepreneur. According to Kirzner (1978), it is the gap between price and value that enables arbitrage, or the creation of a whole new market, until the equilibrium is reached. Finally, Schumpeter (2008) argues that the entrepreneur, with his disruptive nature, unsettles the Economy and current incumbents out of the equilibrium by introducing new products and production methods.

Taking in account that this disruptive creation can be either constructive or destructive for society and economic growth, Baumol (2010) points out the need for the right institutions and the right incentives for entrepreneurs. From self-employment

rates and business start-up rates to the Global Entrepreneurship Index (GEI) or the Kauffman Index on Entrepreneur Activity (for the USA), the direction seems to be that “*In entrepreneurship, quality matters more than quantity*” (Ács *et al.*, 2016, p.2). To illustrate this, notice that in Nigeria, a low income country, the self-employment rate is one of the highest while it fares very poorly in the GEI. Why? Instead of high quality jobs, self-employment is signaling low human capital and poor infrastructure where the individual finds himself as a small street vendor.

So what is “good” or “meaningful” entrepreneurship? Many aspects seem to matter to this definition⁷ and are therefore being taken in account in the new measurements of entrepreneurship. We now turn the attention to the focal question of this research: who is more “entrepreneurial”, natives or immigrants.

2. Immigrant Entrepreneurship

In this section, the focus will be on the aspects that differ immigrants from natives in their engagement in entrepreneurship. Section 2.1) will present the literature results regarding the comparison between the two groups under different approaches to entrepreneurship while sub-section 2.1.1) will present a more thorough analysis through the lens of self-employment rates. Section 2.2) will be about the determinants of self-employment, namely nationality, ethnicity and human capital in 2.2.1), gender and age in 2.2.2) and finally industrial and firm features in 2.2.3). Subsection 2.2.4) addresses the dimensions of time and context that should not be neglected when comparing the entrepreneurship propensity of immigrants versus natives.

2.1. Are immigrants more entrepreneurial than natives?

A recent literature survey on immigrant entrepreneurship by Fairlie and Lofstrom (2015) summarizes many key findings on the subject. First, self-employment rates of immigrants seem to be higher than those of natives in the USA, Canada, Australia and United Kingdom. For example, in the USA, the self-employment rate among immigrants is 11.0% while among natives it is lower, 9.6%. Additionally,

⁷ Should entrepreneurship imply innovation and technological sophistication? Or is the creation of jobs and income through the distribution of revenues/profits more important? What about growth, stability and business survival? Moreover, is entrepreneurship driven by opportunity or necessity (unemployment or poor employment prospects)? When thinking about entrepreneurship, these are some of the facets to keep in mind.

immigrants are overrepresented in entrepreneurship because the rate of immigrants among all self-employed, 18.2%, is higher than the rate of immigrants in the labour force, 16.3% (Fairlie and Lofstrom, 2015)⁸.

Second, Hunt and Gauthier-Loiselle (2010) support an indirect contribution of immigrants to innovation through management and entrepreneurial skills. They find that the presence of skilled immigrants is associated to the rise in natives' patents. Moreover, immigrants themselves are more likely to file patents than natives, in the USA. Significant contributions of immigrants in the fields related to technology and engineering, especially in Silicon Valley, have also been given emphasis by authors like Saxenian (2002).

Third, business expansion through increasing employment (see Clark *et al.*, 2016), earnings and sales should also be considered as relevant measures of success in entrepreneurship. Peroni *et al.* (2016) observe that the higher propensity of migrants towards entrepreneurship is not followed by higher chances of succeeding in establishing and running the new firm when compared to nationals. In fact, immigrants seem to fare worse than natives in entrepreneurship – in the USA in 2007, the average income and sales of immigrant-owned businesses⁹ were lower than those of non-immigrant-owned businesses (Fairlie and Lofstrom, 2015).

Fourth, business survival is another important measure of entrepreneurial success but it should be depicted with care. It could be a signal of success and, likewise, exit, a signal of failure (see Anyadike-Danes *et al.*, 2005; and Berryman, 1983). By contrast, Rocha *et al.* (2015) point out that firms' exit could be the result of a merger, an acquisition or even the result of a voluntary choice by the entrepreneur, even when the performance matches the expectations (see Bates, 2005; and Watson and Everett, 1996). Furthermore, firm exit as a disruptive element could be good for the Economy and Growth (see Jovanovic, 1982; and Reynolds, 1999) and even be part of a process of learning-by-failing culminating in future success for the individual entrepreneur (Yamakawa *et al.*, 2010). In fact, Murphy and Weber (2016) make a bold

⁸These figures were retrieved from the American Community Survey 2006-10 and are displayed in Fairlie and Lofstrom (2015) in page 880.

⁹The statement is based on the 2007 Survey of Business Owners (for the USA) and authors' calculations summarized in page 882 of Fairlie and Lofstrom (2015). Accordingly, immigrant-owned firms have 71% of the sales of non-immigrant firms. Immigrant-owned businesses are defined as firms in which the majority of owners are foreign-born.

choice in their article “Immigration causes American businesses to fail and that is a good thing”. They argue that the increase in immigration rates leads to an increase in business failure rates and, therefore, an increase in entrepreneurship, inspired by Schumpeter (2008)’s idea of creative destruction. Here, immigrants are more “entrepreneurial” in the sense that they boost entrepreneurship in their host country!

We conclude that many angles can be chosen to study the relationship between entrepreneurship and immigration¹⁰. Furthermore, it is undeniable that the combination of the two phenomena (and the resulting effects) is a topic that is driving more and more attention: looking at the search results in Scopus database¹¹, it is possible to see that the number of works covering research on “immigration and entrepreneurship” has been growing at an annual rate of 9.2% in the last 30 years (from 1986, when Borjas published his pioneer work, until 2016). The following sections will focus on (observed) self-employment rates and (estimated) marginal effects of being an immigrant as opposed to being a native in the propensity to engage in entrepreneurship.

2.1.1. Self-employment rates and propensity towards entrepreneurship

Many authors find that immigrants are more entrepreneurial than natives, based on their representation in entrepreneurship and propensity towards it, estimated by empirical models¹². Extensive literature is supportive of this idea with Borjas (1986) as one of the most cited authors, followed by others like Light and Sanchez (1987), Yuengert (1995), Fairlie and Meyer (1996), Lofstrom (2002), for the USA; Clark *et al.* (1998), Clark and Drinkwater (2000, 2010) for the UK; and Schuetze and Antecol (2007) for a comparison between immigrants and natives in Canada, USA and

¹⁰In this respect, it is important to refer to the literature review on international ethnic entrepreneurship depicted in Ma *et al.* (2012). It seems that over the past four decades, there has been a shift from studying ethnic enclaves to immigrant business and self-employment.

¹¹ To come to these figures we inserted “immigration and entrepreneurship” and chose the fields “Article title, Abstract, Keywords” on the search options in Scopus search motor. After, we clicked on “Analyze search results” which provides the user with a graph and respective figures of the number of documents per year restricted to the mentioned 2 conditions. We observed a positive slope at increasing rates.

¹² Analytical models include those of Beladi and Kar (2015) who suggest that the overrepresentation of immigrants in self-employment in developed countries is the result of asymmetric information between immigrants and potential employers, lower risk aversion vis-à-vis natives and that this phenomenon is more likely to happen for more skilled immigrants in developed countries.

Australia.

Van Tubergen (2005) compares the probability of being self-employed in 17 countries with data from 2002 the latest. He points towards higher self-employment rates in the same age category for immigrants vis-à-vis natives for only 6 of these countries. Portugal¹³ is one of the countries where self-employment rates were higher for immigrants than for natives, similarly to the United States, United Kingdom, Canada, Belgium and Spain. Germany is one such country where immigrants observe a lower rate of self-employment than natives - this may seem odd since it occurs in a situation where immigrants are better off as self-employed than as paid workers (30% premium in income in the blue-collar category according to Constant, 1998) and reach earnings parity with other self-employed natives, everything else equal (Constant and Zimmermann, 2006). Contrasting evidence is presented by Rees and Shah (1986) for the UK where they find that non-white men are less entrepreneurial than white men (data from 1978). Moreover, Bernhardt (1994) finds that in Canada white recent immigrants may not necessarily be less entrepreneurial than their non-immigrant counterparts (data from 1981).

In terms of self-employment rates and propensity to be in entrepreneurship, we conclude that immigrants are not more entrepreneurial than natives across all countries throughout time. In Table 1, we present some of the work that is closest to our empirical study. From this point on, being more or less entrepreneurial will always refer to the magnitude and differences in self-employment rates between the different groups. This measure corresponds to the number of self-employed workers over the total active labour force. However, in most of the studies, the labour force is restricted to and decomposed in either self-employment or paid-employment assuming a binary occupational choice.

¹³In Portugal, the self-employment rate of immigrants was 25.2%, higher than for natives, 23.9%. The source of the data is The European Union Labour Force Survey (surveys conducted from 1992 through 2002). The data on the immigrant labor force was standardized in a single cross-national data set and restricted to employed male immigrants between the ages of 25 and 54. The author used multilevel techniques where the dependent variable was a log-odds of an immigrant being self-employed as opposed to being a wage earner.

Table 1. Probability of being self-employed – evidence from the literature

Author (year)	Country	Period	Methodology	Sample group	Other variables	Evidence for immigrants
Blau (1985)	Peninsular Malaysia	1976	logit	Farmers and non-farmers	Education (+), Education squared (-), Age (-), Age squared (+ if non-farm), Land, State dummies	Chinese (+ if non-farm); Indian (-)
Borjas (1986)	USA	1970 + 1980	logit	Men; 6 groups (White, Black, Asian, Mexican, Cuban, Other Hispanic); either native-born or immigrant	Education (+), Experience (+) and its square (-), marital status, health, dummies for cohorts of immigrants according to years since arrival	Immigrant (+), enclaves (+)
Rees and Shah (1986)	UK	1978	probit	White and non-white	Education (+), Age (+), Age squared (-), Health, marital and family status, earnings differential	Non-white (-)
Borjas and Bronars (1989)	USA	1980	probit	4 groups (White, Black, Hispanic or Asian)	Age (+), Age squared (-), Education (+), Years since arrival and its square, marital status, wife's education, health, veteran, region dummies, fraction of Black, Hispanic or Asian	Immigrant (-); with returns of whites, Black, Hispanic and Asian would have higher Pr(S.E.)*
Kidd (1993)	Australia	1982	probit	4 groups (Native, Migrant, English speakers or not)	Age (+), Age squared (-) Education (+/-), marital and family status, location, duration of residency	Determinants are more/less significant depending on the group
Berhardt (1994)	Canada	1981	probit	White – Immigrant or not	Education (-/+), Age (+), Age squared (-), Experience and its square, Year since arrival and its square, Health, marital and family status, fraction of Black and Chinese in the area, investment income, own home	Recent immigrant (no effect)
Yuengert (1995)	USA	1980	Maximum likelihood	immigrant and nonblack native men	Age, Age squared, education, dummies for year of immigration, dummies for immigrant group, immigrant group interactions, residence, language, GNP of country of origin, distance from US	Immigrant (+); home self-employment (+), enclaves (insignificant), taxes (+)

(Table 1. continued)

Author (year)	Country	Period	Methodology	Sample group	Other variables	Evidence for immigrants
Fairlie and Meyer (1996)	USA	1990	probit	60 different ethnic/racial groups	Age (+) and its square (-), Education (+), language problems (-), marital and family status, dummies for ethnic group, region dummies, time since arrival, disability, veteran	home self-employment (insignificant), advantaged immigrant (+)**; African-American (-); Chinese (-)
Clark <i>et al.</i> (1998)	Britain	1973-1995	Maximum likelihood	Whites and non-whites	Age (+), age squared (-), Education (+), Male (+), Marital and family status, residence, house owner/renter, industry dummies, time dummies	Construction (+), Services (+) when compared to manufacturing
Clark and Drinkwater (2000)	England and Wales	1993-1994	Maximum likelihood	Ethnic minorities and whites	Age (+), Age squared (-), high qualifications (-), male (+), language problems (-), ethnic enclaves (-), marital status, renting house, health, industry dummies, ethnic groups, time since arrival, religion dummies, unemployment rate	UK born (-), Indian (+), Chinese (+) compared to Black Africans
Lofstrom (2002)	USA	1980 + 1990	probit	Men - immigrant or not	dummies for ethnic groups, age (+), age squared (-), education (+), language problems (-), time since arrival, arrival cohort, % immigrants from same country	Immigrant (+)
Fairlie <i>et al.</i> (2010)***	USA/ Canada/ UK	2000/ 2001/ 2001	Maximum likelihood	white and other races - native or immigrant	dummies for immigrant ethnic groups, college graduate (+), male (+), age dummies (+), marital status, industry dummies, region dummies	Chinese immigrant (-/+/+), Indian immigrant (-/-/+), relative to native whites; construction (+)
Clark <i>et al.</i> (2016)	England and Wales	2011	probit	Several groups according to region of birth	Dummies for immigrant ethnic groups, age dummies (+), education namely degree (-), language problems (-), time since arrival, residence, marital and family status	Indian (-), African (-), Old-EU (-)

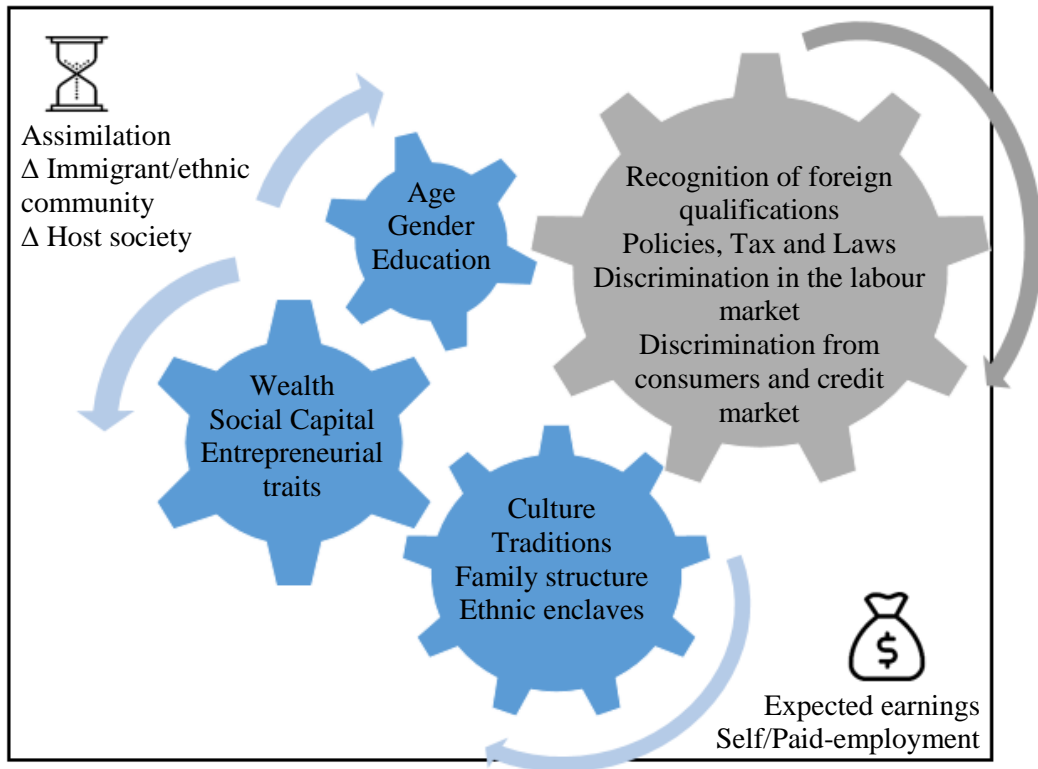
Notes: (*) Pr(S.E.) refers to the probability of self-employment; (**) Fairlie and Meyer (1996) tests the Disadvantage Theory and observe that it is the racial/ethnic groups with more wage, self-employed earnings or other income that are more likely self-employed. In this sense, “advantaged” minorities are more likely found in self-employment; (***) Fairlie *et al.* (2010) refers to business ownership rates/propensity; The signs positive (+) and negative (-) concern the sign of the estimated coefficient of the respective variable. For simplicity in the analysis of the table, only the most relevant variables for this study were attributed this information.

2.2.Determinants of self-employment over paid-employment

Our focus will be on nationality/ethnicity and how it influences the propensity towards entrepreneurship. The channel for an immigrant to be or become an entrepreneur conveys several important aspects. Some are related to the individual features namely standard socio-economic characteristics (age, gender, human capital) and specific traits for entrepreneurship (motivation, risk aversion, ability to detect opportunities). Wealth/financial capital and social capital also take a role, the last one defined as the social links of trust and cooperation that one has with others both from inside and outside of the country. Country of origin and ethnic community he/she will be taking part of, upon arrival, are also discussed determinants (culture and traditions, family structure, ethnic enclaves).

The dynamics between the individual, the immigrant/ethnic community and the host country could also impact the observable choice between being or not an entrepreneur (institutional framework namely law, taxes and policies; recognition of foreign qualifications, discrimination in the labour market as a wage-earner, discrimination from consumers and credit market as an entrepreneur). Notice that this interaction may result in different returns to the (perceived) abilities of the immigrant as self-employed when compared to natives. This would affect not only their propensity towards self-employment but also their business performance. Finally, time is an undeniable vector where the assimilation of immigrants, intergenerational effect and changes in the host country may impact the choices and performance of both immigrants and natives. In the occupational choice, *push* factors are those that drive individuals to self-employment as a necessity (difficulties as a wage-earner: discrimination from employers, etc.) and *pull* factors are those driven by opportunity (advantage as an entrepreneur: access to particular social and financial resources, etc.). Furthermore, the immigrants may find it more difficult to succeed as an entrepreneur when compared to natives (f.e. discrimination in the credit market). Figure 1 illustrates the several determinants that intervene in the final choice/outcome of the immigrant to be an entrepreneur including the expectation of earning more when becoming an entrepreneur.

Figure 1. Determinants of self-employment for an immigrant



We will now present some theoretical and empirical considerations on the determinants of self-employment that will be used in this study (see Table 2 in the end for a summary).

2.2.1. Nationality, ethnicity and human capital

For nationality and ethnicity, there are several theoretical approaches in the literature. Here we will mention: (1) Human capital theory, (2) Entrepreneurial traits, (3) Discrimination (4) Enclave hypothesis (5) Differences across groups, namely between Black/African and Asian.

(1) Human capital theory

Human capital has a different value at home and at the destination country and the loss incurred with immigration will be bigger if the two are economically and culturally very different (Chiswick, 1979). This will directly be translated into a wage gap between immigrants and similar natives (see Friedberg, 2000) together with occupational downgrading and segregation into low-wage workplaces, even if temporarily (see Carneiro *et al.*, 2012). The disadvantage could dissipate with

assimilation as immigrants incorporate local human capital as language knowledge and move up the occupational ladder. However, immigrants may choose self-employment instead¹⁴. In this context, lower or unrecognized human capital, imported from abroad (more acute when from developing countries), can work as a push factor into self-employment (see, for example, Kanas *et al.*, 2009).

However, if the targeted clients of the immigrant entrepreneur are co-ethnics (see enclave hypothesis in point 4) or if the products are supplied from home, home-country human capital and ethnic/class resources may work for the advantage of the immigrant (see, for example, Evans, 1989; Sanders and Nee, 1996; and Pyongm and Bozorgmehr, 2000)¹⁵. At the level of the firm, an internationalization strategy can also benefit from the knowledge and contacts brought about by the immigrant entrepreneur (see Jiang *et al.*, 2016). Furthermore, the “culture clash” between different settings can develop one’s critical analysis, creativity and problem-solving skills – according to Vandor and Franke (2016), the international experience makes the individual more apt to detect business opportunities and transpose ideas from one country to the other.

On one hand, Light (1979) claims that the immigrant, as disadvantaged¹⁶, is pushed into self-employment because he/she can’t compete with natives in the labour market. On the other hand, Fairlie and Meyer (1996) find that it is not the more disadvantaged immigrants but rather the ones with more income (i.e. wage or self-employment earnings)¹⁷ that observe the highest self-employment rates in the USA. Additionally, in their study, immigrants with difficulties in speaking English had lower probability of being self-employed (consistent with Clark and Drinkwater (2000) for

¹⁴ In fact, if assimilation enables the individual to gradually become fluent in the local language, he/she would be more apt to communicate with potential customers and suppliers and learn about regulations, associated to higher self-employment. At the same time, the gained fluency may also unblock opportunities in the wage/salary sector, associated to lower self-employment (Fairlie and Lofstrom, 2015).

¹⁵ Note that although Chinese and Japanese are successful in reaching both co-ethnic and the general public with their ethnic food business, other groups such as Cubans in Miami had to expand their business to other industries to reach a broader market (Portes, 1987). In this sense, taking Light (1972)’s theory of special demands in consideration, restricting to the co-ethnic market may not be enough (Aldrich and Waldinger, 1990).

¹⁶ Low wages and unemployment are considered push factors towards self-employment for native individuals in the USA (Evans and Leighton, 1989; Evans and Jovanovic, 1989; and Blanchflower and Meyer, 1994) although unemployment benefits could distort this tendency (Moore and Mueller, 2002). Interestingly, van Tubergen (2005) in his cross-country analysis found that higher unemployment rates among natives would make it more likely for the immigrant to become self-employed.

¹⁷ In general, it seems that individuals with more wealth or assets are more propense to engage in self-employment (Evans and Jovanovic, 1989; Holtzeakin *et al.*, 1994; and Taylor, 2001).

immigrants in England and Wales, although opposing evidence can be found in Kidd (1993) for Australia).

Van der Sluis *et al.* (2008) find in their review of empirical studies that the impact of education on selection into self-employment is insignificant even if it affects earnings in a positive and significant way. For immigrants, the relationship between education and propensity towards entrepreneurship is not clear: it is positive in some studies (f.e. Li, 2001; Lofstrom, 2002¹⁸) and insignificant or weak in others (see Constant and Zimmermann, 2006; and Fairlie *et al.*, 2010¹⁹).

(2) Entrepreneurial traits

According to the *Middleman minority theory* introduced by Bonacich (1973), immigrants would be sojourners with no intention of staying permanently in the host country. Their main aim would be fast wealth accumulation in a short period of time, which meant that they were predisposed to higher efforts (see McGrath *et al.* (1992) for a comparison between values, culture and ideologies of immigrant entrepreneurs in America, including the Chinese). This could also justify their choice of occupation like trade, when capital ties are insignificant or liquidable, besides independent professions like barber, shoemaker or tailor (Bonacich, 1973; Zhou, 2004; Nestorowicz, 2012). However, in the USA, Jews seemed to be more entrepreneurial than sojourners in trade (Light, 1979). Additionally, Koreans seemed to be at the same time very entrepreneurial and with no intention of leaving (Min, 1984). In fact, Fairlie and Meyer (1996) show that higher self-employment rates are found among older cohorts of immigrants (>30 years in the country) and not sojourners (<10 years in the country). The same authors also suggest differences in entrepreneurial ability (Lucas, 1978), and/or risk aversion (Kihlstrom and Laffont, 1979), of entrepreneurs when compared to others, but point out that empirical measures are not readily available.

(3) Discrimination

Discrimination from employers could limit upward mobility, compromise the access to medium-high paid jobs or even jobs overall. This would push immigrants to self-

¹⁸ In the author's study, education was higher among self-employed migrants compared to immigrant wage-earners but less significant in the probability of being self-employed when compared to natives.

¹⁹ Their regression estimates show a positive but not strong role of high education on business ownership in the United States and Canada, but insignificant in the case of the United Kingdom.

employment as an alternative (Constant and Zimmermann, 2006; Clark and Drinkwater, 2000). However, the immigrant entrepreneur can also be faced by discrimination by the credit market (Blanchflower *et al.*, 2003) and consumers (Borjas and Bronars, 1989).

If immigrants and natives had the same characteristics, would their self-employment rate be similar? What about earnings? Borjas and Bronars (1989) observe that if the estimated coefficients of the “white” sub-sample of the work force (returns) were “applied” on the respective characteristics of minorities, “blacks” and Hispanics would have, not lower, but almost the same self-employment rates as “whites”, and Asians even higher than “whites”²⁰. The difference between the actual self-employment rates and those predicted through the mentioned method would be due to a mechanism of selection into self-employment that would be related to something other than differences in characteristics across groups – discrimination from consumers, the authors suggest. Clark *et al.* (1998) notice that in Britain the wage gap between ethnic minorities and similar natives is even worse in self-employment than in the wage-sector. With decomposition techniques, the authors conclude that immigrants enjoy lower return, measured in earnings, for the same characteristics (namely education) in self-employment.

(4) Enclave hypothesis

Borjas (1986) observes that immigrants in the USA have a higher probability of being self-employed when compared to their similarly skilled native-born male counterparts and that this could be due to “enclave effects”²¹ - the hypothesis that the probability of self-employment is larger in enclaves. This was early on contested by Yuengert (1995), who showed that among higher concentration of immigrants, the self-employment rates were no larger than outside these enclaves²². In Britain, rather

²⁰ Their empirical results point at 10.5% (4.5%) predicted (actual) self-employment rate for the average “black”, 12% (7%) for the average Hispanic and 15.4% (11.9%) for Asians, while whites observe a self-employment rate of 11.8%. In their theoretical model, the authors suggest that the lower variance in self-employment income for minorities compared to whites would translate into lower incentive for able minorities to move from the salaried sector. As a consequence, immigrants would observe negative selection into self-employment, while for whites the selection would be positive.

²¹ With maximum likelihood logit regressions the author included as covariate the proportion of the individuals’ local population that belonged to his ethnic group, observing a significant positive coefficient.

²²Also, Aldrich and Waldinger (1990) point out that Jews had higher self-employment rates outside of

than a positive “enclave” effect, Clark and Drinkwater (2010) indicate that local economic conditions are determinant in the rate of self-employment for some ethnic groups such as Pakistanis and Bangladeshis - in this case, the impact would be negative since they live in economically deprived neighborhoods. Nevertheless, if the concentration of co-ethnics enables the supply of ethnic goods it can have a positive impact on self-employment (Aldrich *et al.*, 1985).

(5) Differences across groups

The home-country self-employment hypothesis supports that countries with higher self-employment rates “export” more entrepreneurial individuals. Yuengert (1995) finds evidence for this hypothesis but not Fairlie and Meyer (1996). These last authors alert to the ethnic and racial differences across immigrants coming from the same country of origin. Some groups may have more tradition of trade and business enterprise imported as cultural endowments (Light, 1984), or, instead, be more risk averse or “ethnically disinclined” to be self-employed (Borooah and Hart, 1999). As mentioned, we would like to contrast the literature on two groups that seem to be found in opposite sides of the spectrum in terms of participation in entrepreneurship, Asian and Black/African.

a. Asian

Asian entrepreneurs have been gathering a lot of attention - for example, Basu (1998) for Britain; Kim *et al.*, (1989) and Fernandez and Chung (1998) for the USA; and Fairlie *et al.* (2010) with a cross-country analysis between the USA, United Kingdom and Canada. In the UK, instead of avoiding unemployment, it seems to be the desire for independence and financial prosperity that drives them to entrepreneurship. They depend quite significantly on informal resources of capital and advice (Basu, 1998)²³. In the USA, it seems that it may be blocked mobility in the labour market that pushes the low-skilled to self-employment (Fernandez and Chung, 1998). According to Fairlie *et al.* (2010), Asian have higher levels of education than the average population, particularly in the USA²⁴. Furthermore, education levels are

their main enclave in New York.

²³ The study focuses on Indian, Bangladeshi and Pakistanese in Britain in 1994-95.

²⁴ In this study, the differences in education levels of Asian in the USA, Canada and United Kingdom are suggested to be related to immigration policy selection among other institutional, structural and

more determining for business income than for business ownership (consistent with Fernandez and Chung, 1998²⁵).

Changes throughout time also bring about contrasting evidence as may be seen from the study of Kim *et al.* (1989) to that of Fernandez and Chung (1998). According to these last authors, the expansion in Asian business in the USA could have resulted in the accumulation of the necessary ethnic social capital to drive the less skilled to self-employment. This could potentially explain the predominance of noncollege graduates in the non-Korean groups in self-employment a decade later.

When compared to natives, Asians have similar self-employment rates in the USA and even higher in the case of the UK²⁷. Additionally, they earn similar self-employment earnings as the national average in the US and Canada, and Indians specifically earn high business incomes relative to the national average (Fairlie *et al.*, 2010). In the UK, Asian businesses were found producing at a higher growth rate than average and shifting to higher added-value industrial sectors (Adcroft, 2007).

b. Black/African

African-origin and Black immigrants and their lower representation in self-employment relative to other groups (between two to three times lower than white Brits and Americans) are object of study of Borooah and Hart (1999) for the UK and Bates (1989), Meyer (1990), Fairlie and Meyer (1996)²⁸, Fairlie (1999)²⁹, Fairlie and Meyer (2000), for the USA, among others. First, lower educational qualifications of Black in the USA seem to compromise business survival relative to nonminorities and Asian (Bates, 1989). Second, family structures³⁰ that don't promote the financial

historical aspects²⁴ (Fairlie *et al.*, 2010).

²⁵ The study focuses on Koreans, Chinese, Asian Indians and Vietnamese in 1990 in the USA. These authors point out that Asian noncollege graduates would have enough skills to set up a business based on their "ability to mobilize business resources" through social links. Even so, their earnings as self-employed would be lower than the earnings of self-employed college graduate Asians demonstrating that education matters.

²⁷ To have an idea of the self-employment rates in the USA in 1990 of some groups of Asian men (women): Korean – 27.9% (18.9%), Indians – 11.7% (7.4%), Chinese – 13.5 % (9.1%) while for the US population it was 10.8% (5.8%). (Fairlie and Meyer, 1996)

²⁸ From the source of the above footnote, Black Africans have very low self-employment rates relative to other ethnic/racial groups: 7.1% (3.2%), although these are higher than those for Afro-Americans.

²⁹ According to the author based on 1968-1989 data, self-employment rates for black (white) men in the USA were 4.61% (15.23%), entry rates were 2.02% (3.95%) and exit rates were 36.64% (18.51%).

³⁰ Family structure is relevant for the engagement in entrepreneurship with marriage and children tending to have a positive influence, although with differences depending on the gender of the entrepreneur (see Simões *et al.*, 2015).

stability to undertake risk, namely absence of spouses or family members that contribute to the household's income, seem to negatively determine entry into self-employment (Borooah and Hart, 1999). Third, wealth and income are lower for Afro-Americans when compared to white natives (Blau and Graham, 1990)³¹. Additionally, in the US, black business owners are fairly twice as likely to be denied credit when compared to white business owners, before controls (Blanchflower *et al.*, 2003)³². Even so, Meyer (1990) supports that the liquidity constraint is not an important determinant of the difference in self-employment rates since most businesses require little initial capital, borrowing is not usual and that blacks are mostly represented in industries that require less initial capital. Finally, from an intergenerational perspective, the lack of business experience among older generations does not seem to explain much of the gap in self-employment rates between black and white in the USA (Fairlie and Meyer, 1996).

To conclude our analysis on nationality, ethnicity and human capital, it is important to remember that while people could generally prefer being self-employed (Blanchflower *et al.*, 2001)³³, the engagement of immigrants in entrepreneurship could either signal good or bad integration in the host country. As Clark (2015) sums up, rising self-employment rates in immigrant and ethnic communities can signal prosperity for minorities where they make the most of ethnic-specific resources, ethnic enclaves and provide employment to others. On the other hand, declining self-employment rates can also signal prosperity for these minorities since immigrants in business often face poor working conditions, worse business performance and choose this path to avoid discrimination and poor prospects in the paid employment sector.

“It cannot simply be assumed that the existence of a large, ethnic, entrepreneurial class is a healthy sign” - Clark *et al.* (1998, p. 634)

³¹ Asset levels seem to explain the disadvantage of Blacks in self-employment levels (Fairlie and Meyer, 1996), entry (Fairlie, 1999) and survival (Bates, 1989).

³² Bates (1989)' results also indicate that blacks obtain smaller loans than comparable nonminorities in terms of education, age and equity capital traits.

³³For example, in Portugal in 2000, the preference for being self-employed was above 70% (second in the rank and above the USA). However, less than 30% was actually self-employed. This could be seen with a skeptic eye since authors like Hamilton (2000) argue that independent workers have lower initial earnings and lower earnings' growth than in paid employment. To argue against unrealistic expectations of self-employment, Blanchflower and Oswald (1998), with a theoretical model, and later with empirical evidence in Blanchflower *et al.* (2001), further demonstrate that self-employed do express higher job satisfaction, which means that non-pecuniary aspects must have a role in the choice, jointly with constraints, namely in terms of initial capital.

2.2.2. Gender and Age

A common finding among entrepreneurship studies is that men observe significantly higher ratios of participation than women do. Motivations to enter self-employment seem to differ due to “gender-specific” traits and different labour market expectations. Women seem to be more risk averse, less likely to seek external financing and more propense to set a business in less profitable sectors, as personal services. Also, they may be limited by lower social capital and more time-consuming family/domestic responsibilities³⁴. Moreover, they report higher job satisfaction in the paid-sector even for worse jobs. All these aspects make a career in self-employment less appealing for women. However, discrimination in the labour market and the potential flexibility in working hours as self-employed, enabling a better work-life balance, could motivate women to engage in self-employment (Simões *et al.*, 2015).

As for the relationship between age and propensity towards entrepreneurship, it seems to be positive at decreasing rates until a certain threshold³⁵ and then negative (inverse U-shaped relationship) (Simões *et al.*, 2015). This is why many studies include age and age squared in their econometric models and the findings are mainly³⁶ consistent (Fairlie, 1999; Andersson and Hammarstedt, 2010; among others³⁷). Blanchflower *et al.* (2001) adds that even if the probability of being self-employed increases with age, the preference towards it decreases with it.

2.2.3. Industrial and firm features

In a simplistic view, looking over a sample of individuals that organize themselves in firms, more firms mean more self-employed individuals, less wage-earners and, therefore smaller firms on average³⁸. The propensity towards self-

³⁴ Hundley (2001), based on decomposition methods as seen in Oaxaca (1973), tries to disentangle why women earn less than men as self-employed and points at the unbalance of housework and family responsibilities (energy and time not assigned to business), mainly over the shoulders of women.

³⁵ Bates (1995) finds that the likelihood of entry into self-employment increases with age and peaks at around 40 years old and then levels out.

³⁶ Mixed evidence does exist over the impact of age on self-employment. See, for example, Evans and Leighton (1989).

³⁷ See Table 1 for the estimated effects of the variables age and age squared on the probability of being self-employed.

³⁸ Having more firms means that they will be smaller on average as workers will distribute themselves across a larger number of firms.

employment would then be higher among small firms³⁹. Moreover, the literature suggests that in big firms the wage-earner will feel more secure and enjoy higher non-salary benefits than in small firms (Georgellis and Wall, 2005) where career progress is limited (Rocha *et al.*, 2015a).

Depending on the industry⁴⁰, individuals can also be more or less propense to be self-employed. Moreover, the same individual characteristics will have different effects on the occupational choice depending on the industry. Bates (1995) notices that having more education can increase the likelihood of entering self-employment in skilled services and decrease in construction. Also, wealth seems to be determinant for manufacturing and wholesale. He points out how different sectors require different assets and present different barriers to set up a business. For example, in wholesaling and manufacturing the major barriers are financial while in the skilled services industries it is the attainment of advanced education that determines entry.

2.2.4. Time and change

Assimilation to the country and intergenerational effects are part of the time vector that may affect the propensity of immigrants vis-à-vis natives to self-employment. Although this dimension will not be included in this dissertation, it serves as a remark to pay attention to the year, contemporary context in the country⁴¹ and specific immigrant population/cohort at the time for a more vigorous analysis.

With assimilation comes the increase in the likelihood of immigrants becoming entrepreneurs (Borjas, 1986; Li, 2001) with self-employment rates starting below those of natives at the time of entry and growing over and above within 10 to 20 years

39 Additionally, prior paid-employment in small businesses seem to have strong effects on the probability of starting one's own business through accumulation of know-how and information transfers (Meyer, 1990; Portes, 1992).

⁴⁰ Although Bernhardt (1994) considers that expected earnings and industry could be treated as endogenous to the choice of self-employment, Clark and Drinkwater (1998) support a strong industry effect on self-employment and Fairlie and Meyer (1996)'s results suggest that it explains part of the differences in self-employment rates across ethnic/racial groups (including industry dummies changed the estimated coefficients of the self-employment probit model).

⁴¹ In regard to Portuguese Law, it provisions third-country nationals with a residence visa for independent work if he/she holds a contract to exert a liberal professional and proves to be capable of doing so. When there is a clear intention of investing in national grounds, the residence visa is offered if the immigrant has already proceeded with investment transactions or proves to hold the necessary financial means in a Portuguese institution (see Article 60.º of the Foreigners' Law – find link in the references in the end).

after arrival (Schuetze and Antecol, 2007). As for convergence with natives in terms of earnings, it seems to be a slow process (Borjas, 1995). However, self-employed immigrants are observed to have a better chance in achieving so than immigrant wage-earners (Lofstrom, 2002).

Le (1999) finds that having a self-employed parent is crucial in the decision to follow the same path. Andersson and Hammarstedt (2010) conclude that this aspect may be more determining for immigrants than for natives especially the case of having a self-employed grandparent. However, other evidence suggests that immigrants that have self-employed parents or are similarly raised in business traditions are not necessarily more propense towards entrepreneurship themselves (Fairlie and Meyer, 1996; Hout and Rosen, 2000). If authors don't seem to agree on how individuals' propensity to be/become self-employed is influenced by previous generations (with whom they probably share the same household), it seems consensual that there is a decreasing tendency from one generation of immigrants to the next to engage in entrepreneurship (see Simões *et al.*, 2015).

With a cross-section analysis, our object of study will be a stock rather than a flow. Many authors agree that events occurred in the past (that may lead to entry into entrepreneurship) are better captured in present outcomes than in the potentially reduced transitions into and out of entrepreneurship that occur in a certain time frame (longitudinal analysis)⁴². In this sense, successful entrepreneurship may be efficiently captured in cross-section analysis which happens to be the main interest of policy-makers as well as economists (Blanchflower and Oswald, 1998).

⁴² The literature points out that the effects of gifts, inheritances and other events that may have occurred in the past are efficiently captured in present outcomes (Blanchflower and Oswald, 1998). It should be noted that Fairlie (1999) observes that one same aspect may hold different explanatory power depending on the type of transition when attempting to explain racial differences in self-employment. This is also the case of the effect of education on the engagement in self-employment for Portugal: Amaral and Baptista (2006) and Barradas (2016) in their entry model observe that higher education demotivates entry, while Macieira (2009) in her static analysis observes that more educated individuals are more likely found in self-employment. Therefore, it is relevant to point out that different conclusions may be drawn depending on the type of model, static (with cross-section data) or transition (with panel data). It is important to note that the analysis of entry into entrepreneurship without the analysis of exit neglects business survival.

Table 2. Expected impact of determinants on the probability of being/becoming self-employed

Variables	Theoretical links	<i>The propensity to engage in self-employment is expected to...</i>
Nationality and ethnicity	Compared to natives, immigrants are: - more likely to suffer employer discrimination - more likely to suffer from lower wages - more likely to possess entrepreneurial traits	be higher for immigrants than for natives
	Compared to natives, immigrants are: - more likely to suffer consumer discrimination - more likely to suffer from wealth and credit constraints	be higher for natives than for immigrants
Human capital - education	Education develops: - the capacity to identify self-employment opportunities - managerial ability	be higher for more educated individuals
	Lower levels of education limit the opportunities in the wage sector	be higher for less educated individuals
Gender	Men are: - less risk averse - more engaged in sectors with higher self-employment rates - less satisfied with their salaried jobs - more prone to seek external finance - less discriminated against in the credit market - more likely to have better networks of contacts - driven by higher potential returns	be higher for men than for women
	Women have: - higher likelihood of suffering employer discrimination - more desire for flexibility	be higher for women than for men
Age	Older individuals have: - more human, financial, and social capital - additional desire for flexibility - desire to avoid mandatory reforms	Increase with age
	Older individuals have: - higher risk aversion - lower physical and mental availability - less time to recover the initial investment	decrease after a given threshold

Source: Adapted from Simões *et al.* (2015)

Chapter II – Empirical Study

1. Data

This section includes an overlook over the database in 1.1) and a description of the dataset which will be used for this study in 1.2). Furthermore, the definitions of immigrant and entrepreneur for the purpose of this study will be clarified in 1.1).

1.1.Description of the original database

This study uses data from Quadros de Pessoal (QP), a database whose access is provided by the Portuguese Ministry of Labour and Social Solidarity. It is created from an annual survey that the employing entity must fill in by legal obligation. The outcome is matched information concerning the worker, the firm and the establishment in a longitudinal panel. Each of the workers, firms and establishments is given a unique constant identification number which will not only link the three elements together but also make it possible to track them over time. Information on the worker covers features like age, gender, education, skill level, earnings, occupational choice and professional situation. For the firms and establishments, it is possible to know location, industry, sales, social capital and ownership among other aspects.

The survey virtually includes all firms in the private sector with at least one wage earner (i.e. employee) and therefore excludes self-employed individuals without employees. Similarly to Rocha *et al.* (2015), the definition of entrepreneur in the present study will stand as the business owner with at least one wage earner at the service of the firm or, in other words, the employer with at least one employee. Hereafter, employer, entrepreneur and self-employed will be used interchangeably under this definition. Likewise, employee, wage-earner and paid-worker will fall under the opposite definition.

In its raw state, the database covers the period 1985-2012. However, information on the years 1990 and 2001 is not available. Also, many changes in the variables occur during the period 1985-2012, including for the relevant variable for this study, the nationality of the worker - it is only added in the year 2000. Moreover, nationality is the only variable that can be used to identify migrant workers. Therefore,

immigrant will be taken as synonymous to non-national citizen where nationality is taken as a proxy to country of birth/origin¹. Similarly, native will be used under the meaning of national citizen.

1.2. The sample: the restrictions over the database for this study

To analyze the choice of entrepreneurship over paid-employment and the related differences between nationals and immigrants, the data sample is restricted to year 2012 and to the worker and firm files.

Furthermore, on the sample are imposed the following restrictions: (1) Only employers and paid-employees are considered, (2) the age gap is limited to 16-65 years old (working age population), (3) Non-apatrid (i.e. stateless) workers are excluded, (4) Duplicate recordings are deleted, (5) Observations with missing values in the explanatory variables, namely age, are also left out of the sample. Also, (6) workers are excluded from the analysis for whom the identification number suggests a mismatch between the information held in the Social Security database and the provided in QP. Finally, (7) in case of workers holding different jobs in the same period, the individual is restricted to the job where he or she spends more hours². With the described restrictions over the original database, and after merging the worker and firm files (which also excludes observations), in 2012, the sample covers 2 549 414 individuals of the initial 2 617 333.

¹For our study, we want the concept of immigrant to be as close as possible to the individual that comes from a different social, economic, political and legal “setting”, as opposed to someone brought up or accustomed to the national “setting”. The use of the nationality variable to convey this concept of immigrant presents the following issue: The same individual that entered the database as an immigrant can see his/her status changed after only some years of residence with the acquisition of Portuguese nationality. Without tracking him/her back to the time of arrival in the database/legal force (which is not necessarily time of entry in the country and is only available data since the year 2000), the researcher risks no longer being able to distinguish between the Portuguese born in Portugal and the Portuguese born elsewhere. On the bright side, the “immigrant” will then more likely be new in the country as older cohorts take up the Portuguese nationality as time goes by. Additionally, since nationality is earned at birth (naturalization), our group of immigrants is most likely first-generation immigrants.

² In the database, the individual can be considered either as employer, employee or other (5 categories in total). As an outcome of this discrete nature, it is not impossible that the individual classified as an employer (employee) has other jobs (and sources of income) as an employee (employer) that are not considered in the database – probably being an employer (employee) is the dominant occupational choice, the one where he/she dispenses more time and effort. Moreover, informal work is not considered in the database. In this line of thought, it seemed more prudent to restrict the worker to one job only, the potentially most significant one where he/she spends more hours.

2. Summary Statistics

In this section, the sample will be studied from two angles. Descriptive statistics on the worker will be offered in section 2.1)³. In section 2.2), comparisons will be drawn between the firm managed by a majority of immigrants (i.e. immigrant firm) and the non-immigrant firm.

From the 199+1 nationalities⁴ observed in the sample withdrawn from QP for 2012, immigrants coming from Brazil represent the majority, corresponding to 24.7% of the sample of immigrant workers. With an exception to China (4.8%) and India (1.4%), immigrants coming from East Europe (former Soviet Union nations), West Europe (EU15 except Portugal) and Africa (Portuguese ex-colonies) will be grouped up for the following analysis⁵.

2.1. The worker

a. Rate of self-employment⁶

The first observation is that an overrepresentation of immigrants in entrepreneurship does not seem to be the case in Portugal, in contrast to what happens in countries like the USA (Fairlie and Lofstrom, 2015). From the sample of 2 549 414 workers, 113 953 are immigrants which is 4.5% of the overall work force. Since only 3.6% of entrepreneurs are immigrant, there is no overrepresentation, but instead underrepresentation of immigrants in entrepreneurship. In fact, 5.2% of immigrants are self-employed while 6.5% of Portuguese are self-employed. Therefore, it seems more cautious to claim that immigrants are probably less entrepreneurial than Portuguese. This evidence goes against that of van Tubergen (2005) with data from the EU Labour Force Survey (1992-2002)⁸ and Oliveira (2004) with joint data from

³ Table A1 of the Appendix summarizes some of the most distinctive characteristics of wage-earners and entrepreneurs for both Portuguese and immigrant workers. Table A2 and A3 compare these same characteristics for entrepreneurs and wage-earners respectively, focusing on the different immigrant groups.

⁴ “+1” refers to Portuguese nationals.

⁵ See Table 4 for the composition of each group with respect to the included nationalities.

⁶ Remember that the rate of self-employment is defined as the number of employers over the total labour force (i.e. employers and employees). Moreover, self-employed individuals refers exclusively to employers leaving out isolated workers.

⁸ The sample is restricted to male immigrants and self-employed include both those with and without employees in their own business. Moreover, immigrants are defined as individuals that weren't born in Portugal.

SEF and INE (1996-1998)⁹. Therefore, as adverted in the literature review, analysis over different timings (and databases) may lead to different conclusions.

Table 3. Representation in the labour force and self-employment rate of each group, 2012

	N	Labour force (%)	Nr. Self-employed	Self-employment rate (%)
Portuguese	2 435 461	95.5%	157 553	6.5%
Immigrants	113 953	4.5%	5 912	5.2%
Chinese	5 479	0.2%	1 211	22.1%
Indian	1 561	0.1%	108	6.9%
Brazilian	28 091	1.1%	1 138	4.1%
EastEuropean	21 975	0.9%	462	2.1%
West European	11 893	0.5%	1 807	15.2%
African	24 658	1.0%	482	2.0%
Others	2 490 888	97.7%	160 714	6.5%
All	2 549 414	100%	163 465	6.4%

Source: Own calculations over the defined sample from “Quadros de Pessoal”

Among the selected groups of immigrants, the rate of self-employment is highest among Chinese (22.1%), followed by West European countries (15.2%). Although Brazilian constitute the biggest immigrant group, their self-employment rate is only 4.1%. Indian are the smallest immigrant group but their self-employment rate is slightly higher (6.9%). This could suggest that, among immigrants in Portugal, an enclave effect towards entrepreneurship is not sustained¹⁰. If that is the case, belonging to a larger ethnic community while setting up a business may not translate into an advantage (or its potential is not being explored) for all immigrant groups. In fact, the size of the immigrant community could determine the level of tolerance of the native community towards the first, affecting not only the immigrant wage-earner (discrimination in the labour market namely in access to jobs) but also the immigrant entrepreneur (discrimination from the credit market and consumers) as the minority

⁹ This conclusion is drawn considering the entrepreneur as an employer as done in our study. Differently, if self-employed (i.e. employers and isolated workers) were considered instead, foreigners would seem more entrepreneurial (higher self-employment rates than Portuguese nationals). See page 30 of the study.

¹⁰ Notice that in order to check the (non)existence of an enclave effect we would have to know the location of the workers in the country and the geographical distribution of the members of each group (more or less dispersed across the country?). The database only offers the location of the firm, but one firm can have more than one establishment. In this context, a larger self-employment rate among a lower numbered group, *ceteris paribus*, could only exclude the enclave hypothesis if we were to assume that the groups are geographically equally dispersed.

community grows. For a less pessimistic view, the entrepreneurial outcome could be less related to barriers towards entrepreneurship from the host community but more to the own preferences of the immigrant groups (see literature review, section 2.2.1). Finally, the less entrepreneurial groups are those from Africa (2.0%) – in line with studies for the USA (f.e. Bates, 1989) - and East Europe (2.1%).

b. Gender and Age

Consistent with evidence from other countries, men are overrepresented in entrepreneurship – the rate of men among entrepreneurs (69.8%) is higher than the rate of men among the whole work force (around 53%). Moreover, the predominance of men in entrepreneurship is more pronounced among Portuguese (69.9% of Portuguese entrepreneurs are men) than immigrants (65.1% of immigrant entrepreneurs are men). Concerning age, we observe that entrepreneurs tend to be older than wage-earners and immigrants tend to be younger than Portuguese¹¹.

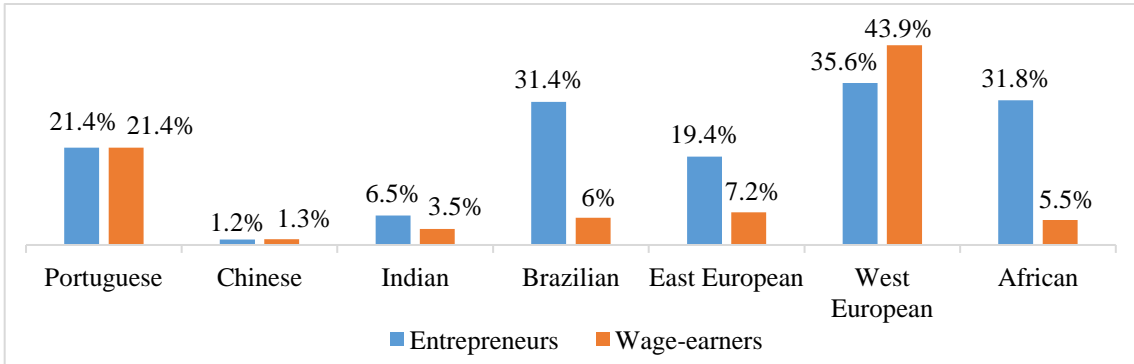
c. Education

Entrepreneurs have, on average, higher levels of education than paid workers observable by a higher percentage of individuals with university degrees¹². This trend is observable for almost all groups, especially among Brazilian and African, but there is a clear exception for West European immigrants. West European are overall more educated than Portuguese and the most distinctive aspect is the inverted trend where 11.6% of wage-earners have a university degree whereas for entrepreneurs it is significantly lower (7.3%). Another interesting feature is that Chinese workers are not only the least educated but share similar education levels between entrepreneurs and wage-earners - remember that they are the group with the highest self-employment rate by far (22.1%). This could suggest that education does not have an effect in the occupational choice for this group. Differently, low education could be working as a push factor from the paid- to the self-employment sector for West European and pull factor for Indian, Brazilian, East European and African.

¹¹ The average age of Portuguese workers is 46 for entrepreneurs and 39 for wage-earners. The average age of Immigrant workers is 43 for entrepreneurs and 37 for wage-earners.

¹² See table A1 in the Appendix for more segmented levels of education.

Graph 1. Workers with a university degree (%), 2012

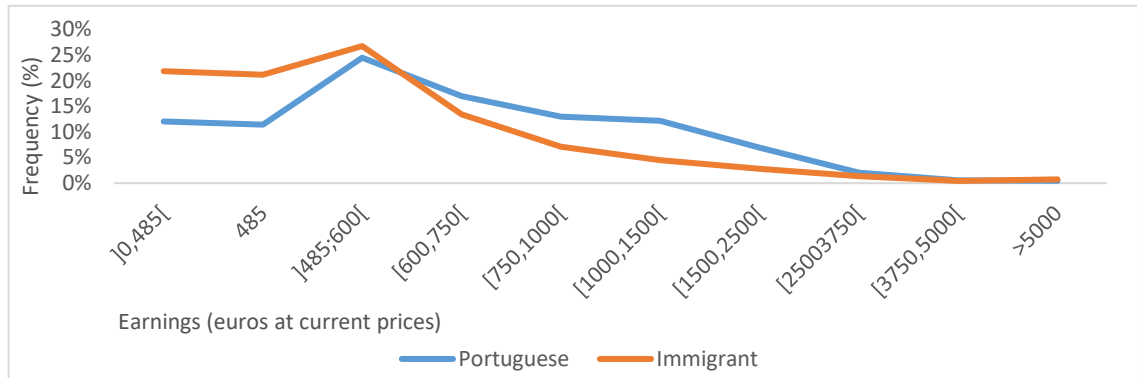


Source: Own calculations over the defined sample from “Quadros de Pessoal”

d. Earnings of the employee

On average, immigrant wage-earners are paid around 100 euros less per month than Portuguese¹³. Among the immigrant groups, only the West European tend to earn more than Portuguese with a monthly salary of nearly 1800 euros. It is interesting to note that among the groups under focus, Chinese paid-workers are the ones that earn less. However, we cannot predict if their higher self-employment rate (22.1%) is necessity-driven¹⁴.

Graph 2. Distribution of monthly earnings among employees, 2012



Source: Own calculations over the redefined sample from “Quadros de Pessoal”

¹³ This calculation excludes zero wages and missing values (this means that the defined sample misses out on 7% of the observations).

¹⁴ However, in a strict earnings-perspective, this hypothesis is left to be scrutinized when further data on the wages of entrepreneurs/employers is collected. With the available data, we cannot confirm that Chinese entrepreneurs earn more than similar Chinese wage-earners and, therefore, may expect that becoming an entrepreneur is driven by the expectation of a higher wage. If it happens to be the case, then the *theory of the disadvantaged* (Light, 1979) is sustained two-fold: immigrants are *pushed* into self-employment to avoid salaries that are not only low but also lower than those enjoyed by natives.

e. Firm characteristics: industry, size, sales, location and antiquity

In Portugal, wage-earners are mostly in Manufacturing (22.1%) and Wholesale & retail trade (20.1%). These 2 sectors are also relevant among immigrant workers (10.7% and 16.3%) but they are more evenly spread across sectors than Portuguese workers, namely in Hotels & Food/Restaurants (19.8%) and Construction (10.2%).

Wholesale & retail trade is the industry that aggregates most entrepreneurs, both among Portuguese entrepreneurs (28.9%) and immigrant entrepreneurs (33.8%) alike. This sector is particularly relevant for Chinese entrepreneurs where 80.1% of them are found. 50% of Indian entrepreneurs are also in this sector while the other half is found in Hotels & Food/Restaurant (44.4%). These 2 sectors are also the most relevant for Brazilian entrepreneurs with 16.3% in Wholesale & retail trade and 15.8% in Hotels & Food/Restaurants. West European entrepreneurs are also found in these 2 sectors (21.9% and 18.6% respectively), closely followed by Banking, insurance & services to firms (10.2%). As for the least entrepreneurial groups, African entrepreneurs are also mainly found in Wholesale & retail trade (28.0%), but East European entrepreneurs not so much (only 13.6%) – the majority is found in Construction (28.1%), followed by Transport, storage & communication (24.0%).

Portugal observes a high-proportion of micro-firms (<10 workers)¹⁵ where 87.4% of immigrant entrepreneurs and 82.0% of Portuguese entrepreneurs may be found. Portuguese entrepreneurs tend to be in larger firms with more revenues¹⁶. Although it is the case for Wholesale & retail trade¹⁷, in Manufacturing immigrant entrepreneurs are found in firms with both more workers and larger revenues, on average. Finally, it is interesting to note that in the Banking, insurance & services to firms, West European entrepreneurs tend to be in larger firms with more revenues than Portuguese entrepreneurs. In terms of location, it is for firms in the North of Portugal that most entrepreneurs work for (37.6%). However, the largest group of immigrant entrepreneurs may be found working in firms located in Lisbon (41.2%). Moreover, immigrant entrepreneurs tend to work for younger firms than Portuguese entrepreneurs

¹⁵ In 2012, 96% of firms in Portugal had under 10 workers (INE and PORDATA, 2017a).

¹⁶For the analysis on revenues, the missing values on sales (0.4% of the defined sample) were excluded.

¹⁷ This is also true for Chinese entrepreneurs specifically. Moreover, in construction; Portuguese entrepreneurs can similarly be found in larger firms with larger revenues when compared to east European entrepreneurs.

(6 years gap).

In sum, Chinese immigrants are the most entrepreneurial – they receive low wages, have low education and set up businesses mostly in Wholesale & retail trade (80.1%). West European immigrants are the second most entrepreneurial group – they have very high levels of education (although wage-earners tend to be more educated than entrepreneurs) and relatively more entrepreneurs can be found in sectors with higher added-value (i.e. Banking, insurance & services with 10.2%). Indian are not so numerous (around 1500 workers in Portugal) and their self-employment rate is also not that high (although slightly above Portuguese) – however, their engagement with business must be more “visible” since half of the entrepreneurs are in trade (50.0%) and the other half in Hotels & Food/Restaurant (44.4%). Relative to Brazilian, we notice that they are the most numerous group (and most representative nationality too) and that entrepreneurs are more educated than Portuguese ones - even so, their self-employment rate is lower than for the average immigrant and are more dispersed across industries. African are the second largest group and, like Brazilian, share language and cultural proximity with Portuguese to some extent – even so, their self-employment rate is even lower and, this time, the lowest of all groups (2.0%). We observe that African tend to be less educated although entrepreneurs surpass average education levels of Portuguese entrepreneurs. Additionally, African employees seem to earn low salaries – more than half earns less than 485 euros monthly (the average minimum is at the time 557.0 euros)¹⁸. Finally, East European wage-earners, more linguistically distant from Portuguese than African, tend to have similarly low education and low wages (although not as low as African employees) – their self-employment rates are also similarly low but the industries where most of these entrepreneurs are found are Construction (28.1%) and Transport, storage & communication (24.0%). In Tables A1, A2 and A3 in the Appendix more detailed descriptive statistics are presented.

We conclude from this section that even though immigrants tend to be less entrepreneurial than Portuguese (measured in self-employment rates), characteristics

¹⁸ Percentage of employees that earn less than 485 euros per month: Chinese (72.9%), Indian (65.6%), African (51.1%), Brazilian and Portuguese (42.9%), East European (38.7%), West European (15.4%). Despite the less pessimistic figures above, African employees seem to earn lower average salaries than Chinese and Indian (see table A3 for average monthly salaries).

differ widely between groups. This means that different combinations could explain the different levels of participation in entrepreneurship.

Notice that (1) this analysis is not extensive and many more aspects may have an influence in the propensity to be self-employed as mentioned in the literature review and, (2) self-employment rates are strict outcomes and do not directly express ethnic-propensity, ability or other kind of causes to these outcomes.

2.2. The Immigrant Firm – an exploratory approach

In this section, we present an exploratory analysis on the characteristics of firms run by immigrants. For this study, we define an immigrant firm as a firm where the majority of members in the board of directors²⁰ is immigrant. The reasoning underlying this definition would be that the decisions that impact the performance of the firm would potentially be influenced by immigrant specific traits. In the case of Portugal, we observe that the “director” and the employer are close concepts since 97% of employers are also directors in the firm²¹. Moreover, firms have on average 1 to 2 employers²² and 43 directors. For this section, the sample was further limited: deletion of missing values in revenues and observations where the number of directors in the firm was null²³.

At first sight, immigrant firms seem to perform worse than non-immigrant firms due to lower average sales. It could be due to low investment, an asymmetric regional or sectorial distribution of immigrant versus non-immigrant firms or the fact that immigrant firms tend to be much younger (14 years younger on average) – this could imply less time to grow and adapt to the conditions of the market. However, taking in account that the number of workers of the average immigrant firm is significantly smaller (on average, 6% of a non-immigrant firm), we observe that labour

²⁰ Here, director is defined as one of the professional categories of the CPP2010 to 1 digit: “Representantes do poder legislativo e de órgãos executivos, dirigentes, directores e gestores executivos”. It includes marketing, finance, human resources, strategy directors among other executive positions.

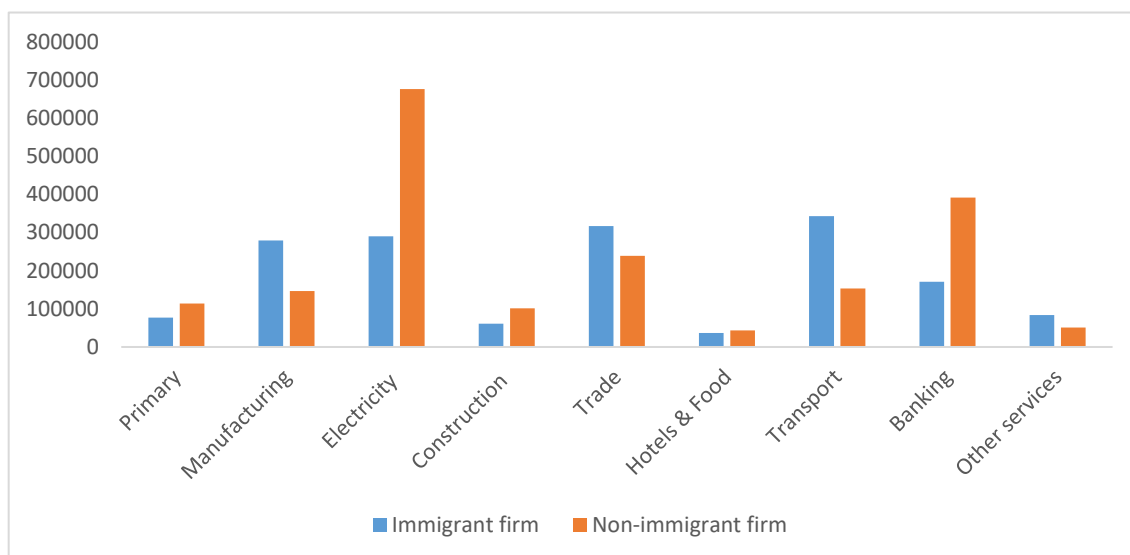
²¹ The percentage is very similar for immigrant firms and non-immigrant firms.

²² The average number of employers per firm is 0.5, or 1.6 if we exclude the firms that do not report having an employer (these firms are not required to answer the survey and correspond to irregular cases such as firms in process of insolvency).

²³ The definition of an immigrant firm implies a quotient - number of immigrant directors over total number of directors in the firm. We exclude firms with no directors because the denominator in the quotient must be non-null. The new sample has 1 985 246 observations (22% of observations are dropped).

productivity, measured in sales per worker, tends to be higher among firms managed by a majority of immigrants (notice differences across industries in Graph 3). Immigrant firms also have an important impact in terms of employment – they employ 1.6% of the total labour force in the country, mostly in Lisbon (37%). Moreover, immigrant firms employ relatively more people in construction, trade, hotels than non-immigrant firms. Finally, the lower average income²⁴ of employees in immigrant firms may explain why most immigrant employees are in non-immigrant firms.

Graph 3. Average labour productivity across industries: immigrant and non-immigrant firms, 2012



Source: Own calculations over the redefined sample from “Quadros de Pessoal”

Note: (1) Labour productivity is measured in sales (euros at current prices) per worker (2) The full label of the industry variables and respective composition may be found in Table A1 of the Appendix

²⁴For the earnings analysis, missing values and zero wages were excluded.

3. Methodology

In this section, 3.1) presents the probit model used in our study and 3.2) describes the variables to be included in the different estimations.

3.1. Model Specification

Our aim is to analyze the determinants of the occupational choice with an emphasis on the effect of nationality. Like many authors (f.e. Borjas, 1986; Constant and Zimmermann, 2006; and Clark *et al.*, 2016)²⁵, we assume that this choice is binary: the individual is either an entrepreneur or a paid employee²⁶.

We assume that the occupational choice depends on the net value that individual i attributes to being an entrepreneur, y_i^* . The i^{th} individual's net value can be expressed as:

$$y_i^* = \mathbf{X}_i\boldsymbol{\beta} + u_i \quad (3.1)$$

where \mathbf{X}_i is the vector of explanatory variables of the agent, $\boldsymbol{\beta}$ is the vector of associated unknown coefficients and u_i is the error term.

The dependent variable y_i^* is a latent variable that represents the utility (net value) that the individual i takes from being an entrepreneur. While this utility is *unobserved*, we may define a binary variable, y_i , which relates to the *observed* final choice – it will assume the value of 1 if the individual is an entrepreneur and 0 otherwise. Therefore, y_i , and y_i^* relate in the following way:

$$y_i = \begin{cases} 1 & \text{if } y_i^* > 0, \text{ the individual is an entrepreneur.} \\ 0 & \text{if } y_i^* \leq 0, \text{ the individual is a paid employee.} \end{cases} \quad (3.2)$$

The method to estimate the coefficients of this discrete binary model will be the maximum likelihood method (see, for example, Amemiya, 1981; or Long and Freese, 2006). In this approach, if u_i is assumed to follow a standard normal distribution, then probit is applicable; differently, if u_i is assumed to follow a logistic

²⁵ Other important studies that similarly report self-employment selection models with cross-sectional data but exclude immigrants from the sample are Evans and Leighton (1989), Dewit and Vanwinden (1990) and Blanchflower and Oswald (1998). We suggest seeing, for example, Le (1999) for a comparative overview on empirical studies regarding methodology.

²⁶Notice however that self-employment is not necessarily incompatible with paid-employment and can work as a complement to labor market income (Li, 2001).

distribution, then the logit is otherwise applied²⁷. Between logit and probit, Amemiya (1981) suggests that the models are roughly interchangeable. In this study, similarly to the most recent studies on the topic (see Table 1), u_i is assumed to follow a normal distribution with zero mean and unit variance.

The estimated probability of individual i being self-employed is given by:

$$\Pr[\widehat{y}_i = 1 | X_i] = \Pr[X_i\widehat{\beta} + u_i > 0] = \Pr[-u_i < X_i\widehat{\beta}] = \Phi(X_i\widehat{\beta}) \quad (3.3)$$

where the function Φ is the cumulative distribution of u_i assumed to be standard normal.

Additionally, we complement the analysis of immigrant/native differences in self-employment representation with a technique based in Maddala (1983, p.26) (*Apud* Borjas and Bronars, 1989). Firstly, we estimate the probit model on the Portuguese sample of workers resulting in a set of coefficient estimates, $\widehat{\beta}_{PT}$. Secondly, for every individual i in the immigrant sample of size N , we compute these $\widehat{\beta}_{PT}$ over their individual characteristics, X_i , and then ask for the individual standard normal cumulative function, $\Phi(X_i\widehat{\beta}_{PT})$. Finally, we add up the N functions $\Phi(X_i\widehat{\beta}_{PT})$ and divide it by the number of individuals in the immigrant sample (N). This results in the predicted probability of the immigrant being an entrepreneur if the returns (i.e. values for the coefficients) were those of Portuguese:

$$\widehat{Pr}_{B\&B} = \sum_i \frac{\Phi(X_i\widehat{\beta}_{PT})}{N} \quad (3.4)$$

where the subscript in $\widehat{Pr}_{B\&B}$ refers to Borjas and Bronars, the authors that rehearse a similar econometric experience in the USA comparing White, Asian, Black and Hispanic self-employment outcomes. Notice that this formula ensures that the predicted probability of the reference sample (i.e. Portuguese) is identical to its self-employment rate. The goal is to estimate how self-employment rates of immigrants would evolve if they were “rewarded” in the same way as Portuguese for their specific characteristics.

²⁷ The linear probability model is an alternative to estimate the model (it was especially relevant in the past due to computational simplicity) but its assumptions are not reasonable. This model assumes that the marginal effect is constant across the different values assumed by the regressors. As a result, the configuration of this model does not respect the probability boundaries of [0,1], nor the non-linear distribution of the probability function (Amemiya, 1981).

3.2. Description of the variables

Considering the literature review (Part I) and the data (section 1 of Part II), the vector of regressors X_i of the empirical model defined in equation 3.1) includes variables related to the socio-economic characteristics of the agent, such as nationality, gender, education and age; and firm characteristics such as industry and size, defined as number of workers in the firm.

Individuals can either be *Immigrant* or *Portuguese*. As immigrants, they may be from one of the previously mentioned groups: *Chinese, Indian, Brazilian, West European, East European, African* or *Other* (residual category)²⁹. In this context, a dummy variable is created which equals to 1 if the individual is immigrant and 0 otherwise. As an alternative, a set of dummies represents each of the immigrant groups, holding Portuguese as reference group. Asian, particularly Chinese, are expected to be more likely self-employed than Portuguese whereas African as a Black group are expected to be less likely self-employed (see section 2.2.1 of the literature review). However, selection effects and different context/incentives in Portugal should we taken in account when drawing comparisons to other countries.

Gender is considered binary, where the individual is either *Male* or not (i.e. Female). We expect men more likely to be entrepreneurs than women since both the literature and our sample express a dominance of men in self-employment over women (see section 2.2.2 of the literature review). Education is represented by a set of dummy variables: *Basic, High School, Bachelors, Masters & PhD* or *Non-defined* (residual category). To construct these variables, we grouped up available education levels as presented in the right column of table 4. The relationship between education and self-employment seems to be more controversial. Low educated individuals may be pushed into entrepreneurship due to adversity found in the salary/wage sector whereas high educated individuals may be pulled towards it motivated by skills and knowledge acquired with schooling. However, higher education increases individuals' expected earnings in the job market translating into a higher opportunity cost of leaving the wage/salary sector (see section 2.2.1 of the literature review). Even so, Macieira (2009) with a comparable model using a sample from the Labour Force Survey (2007)

²⁹ See Table 4 for the nationalities included in each group.

observes that in Portugal the more educated individuals are more likely found in self-employment. *Age* is kept as a continuous variable and an additional variable is created: *Square of age*. Based on the literature, the probability of being self-employed is expected to grow with age at decreasing rates (see section 2.2.2 of the literature review).

Similar to what is done for education levels, industries are also grouped up in 9 dummies to control for sectoral differences. These configurations are the product of prior analysis of the trends in self-employment in our sample and the choices in the literature (namely in Carneiro *et al.*, 2012; and Clark *et al.*, 2016). Bernhardt (1994) claims that industry is endogenous to the decision of becoming self-employed encouraged by the unveiling of a profit opportunity. However, more recent studies consider industry to be exogenous and include these dummies as independent variables (f. e. Clark *et al.*, 1998; Clark and Drinkwater, 2000; Macieira, 2009; Fairlie *et al.*, 2010). Finally, the size of the firm is defined by the number of people at the service of the firm: *Micro* firms (<10 workers), *Small* firms (10-49 workers), *Medium* firms (50-250 workers) and *Large* firms (≥ 250 workers). We expect a positive relationship between the firm size and the probability of being self-employed (see section 2.2.3 of the literature review). Table 4 sums up the variables used.

Table 4. Definition and description of variables

Variable	CODE
Socio-economic variables	
<i>Dummy variables for nationality</i>	
Immigrant = 1 if immigrant (i.e. non-Portuguese)	
Chinese= 1 if Chinese	
Indian= 1 if Indian	
Brazilian = 1 if Brazilian	
East European = 1 if East European	
West European = 1 if West European	
African = 1 if African or East Timorese	
Others = 1 if from any of the remaining nationalities (residual category)	
Portuguese = 1 if Portuguese (omitted category)	
Male = 1 if male	<i>homem</i>
Age: age (in years)	<i>idade</i>
Square of age: square of age (in years)	
<i>Dummy variables for the level of education</i>	
Basic = 1 if the individual has basic education or less (omitted variable)	1,2
High School = 1 if the individual has high-school or non-university education	3,4
Bachelors = 1 if the individual has a Bachelors degree	5,6
Masters & PhD = 1 if individual has a Masters and/or PhD level	7,8
Non-defined = 1 if individual has unrevealed level of education (residual category)	9
Firm variables	
<i>Dummy variables for industry / economic activity sector: one-digit level according to the Portuguese Classification of Economic Activities (CAE), A-U</i>	
Primary = 1 if firm belongs to that industry	A,B
Manufacturing = 1 if firm belongs to to that industry	C
Electricity, gas & water = 1 if firm belongs to to that industry	D,E
Construction = 1 if firm belongs to to that industry	F
Wholesale & retail trade = 1 if firm belongs to that industry (omitted category)	G
Hotels & Food/Restaurants = 1 if firm belongs to that industry	I
Transport, storage & communication = 1 if firm belongs to that industry	H,J
Banking, insurance & services to firms = 1 if firm belongs to that industry	K,M
Other services = 1 if firm belongs to some other industry (residual category)	U,S,P-R, L, N, O
<i>Dummy variables for the size (number of people at the service of the firm)</i>	
Micro if firm has [0,10[workers (omitted category)	
Small = 1 if firm has [10,50[workers	<i>pemp</i>
Medium = 1 if firm has [50,250[workers	
Large = 1 if firm has ≥ 250 with workers	

Notes: (1) Code is the original code in the database “Quadros de Pessoal”; (2) Immigrant groups: East European: Estonia, Latvia, Lithuania, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan, Belarus, Moldova, Ukraine, Russia, Armenia, Azerbaijan, Georgia; West Europe: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Italy, Ireland, Luxembourg, The Netherlands, Spain, Sweden, United Kingdom; Africa & East Timor: Angola, Cape Verde, Guinea-Bissau, Mozambique, São Tomé & Príncipe, and East-Timor; A similar decomposition may be found in Carneiro *et al.*, 2012 (3) Sector T is not observable in the sample. Other services include community, social and personal services.

4. Econometric results

In this section, we present the estimated effects of individual socio-economic and firms' characteristics on the probability of being an entrepreneur, using a probit model. The dependent variable *Entrepreneur* is a binary variable, which equals to one if the individual is an entrepreneur and zero if the individual is instead a paid employee.

The model assumes some variations in terms of both sample and nationality variable(s) among the set of regressors defined in 3.2). The first estimation is done over the full sample (N=2 549 414) and includes the single binary dummy *Immigrant* – equals to 1 if immigrant or 0 otherwise. The second and third estimations exclude this independent variable and are run over the sub-samples of Immigrants (N=113 953) and Portuguese (N=2 435 461) respectively. The fourth estimation is run over the full sample but differs from the first as the single binary dummy is now replaced by a set of 7 dummies, one for each group of immigrants. In the first and fourth estimations, the reference group to the nationality variable (s) is Portuguese (omitted category). All the remaining independent variables are included in each of the 4 estimations: gender, age, age squared, education dummies, industry dummies and firm size dummies. The very low p-values of the LR tests, presented in Tables 5 and 6, suggest that each of the 4 estimations is jointly significant in explaining the occupational choice between entrepreneurship and the wage/salary sector.

From Table 5, the first main result is that, all else equal, immigrants are less likely to be self-employed than Portuguese (negative sign of the coefficient of the *Immigrant* variable which is statistically significant at 1%). This goes in line with the summary statistics in section 2.1) based on our sample from QP database (2012). Besides finding contrasting evidence for Portugal in terms of self-employment rates (Oliveira, 2004; van Tubergen, 2005)³¹, our results suggest that Portugal's body of immigrants, incentives and/or barriers towards entrepreneurship must differ from those of the USA, among other countries, where immigrants are found to be more entrepreneurial than natives (f.e. Borjas, 1986, Yuengert, 1995, Lofstrom, 2002).

³¹ As mentioned in the Summary Statistics in 2), van Tubergen (2005) with data from the EU Labour Force Survey (1992-2002) and, Oliveira (2004) with joint data from SEF and INE (1996-1998) similarly defining entrepreneurs as employers, find instead that self-employment rates of immigrants were higher than those of Portuguese in the time framework of their studies.

Table 5. Probit estimation results on the probability of being an entrepreneur: dependent variable = 1 if the individual is an entrepreneur

Variable	All	Immigrants	Portuguese
<i>Variable of interest</i>			
Nationality Immigrant	-0.1485*** (0.0078)	-	-
<i>Control variables : socio-economic characteristics</i>			
Gender	0.3837***	0.2910***	0.3879***
Male	(0.0033)	(0.0166)	(0.0034)
Age (years)	0.0943*** (0.0012)	0.0750*** (0.0057)	0.0953*** (0.0012)
Square of age (years)	-0.0007*** (0.0000)	-0.0005*** (0.0001)	-0.0007*** (0.0000)
Dummy variables for Education			
High School	0.1863*** (0.0038)	0.2686*** (0.0183)	0.1855*** (0.0039)
Bachelors	0.3546*** (0.0101)	0.5235*** (0.0519)	0.3487*** (0.0103)
Masters & Phd	0.5119*** (0.0145)	0.6909*** (0.0729)	0.5054*** (0.0148)
Non-defined	0.4747*** (0.0257)	0.8139*** (0.0346)	-0.0225 (0.0447)
<i>Omitted category:</i> Basic			
<i>Control variables: firm characteristics</i>			
Dummy variables for Industry			
Primary	-0.3704*** (0.0090)	-0.9456*** (0.0484)	-0.3452*** (0.0092)
Manufacturing	-0.0666*** (0.0048)	-0.3966*** (0.0327)	-0.0559*** (0.0048)
Electricity, gas & water	-0.3716*** (0.0261)	-0.7795*** (0.1614)	-0.3567*** (0.0265)
Construction	-0.1045*** (0.0052)	-0.5715*** (0.0280)	-0.0849*** (0.0053)
Hotels & Food/Restaurant	0.0247*** (0.0056)	-0.4027*** (0.0224)	0.0517*** (0.0058)
Transport, storage & communication	-0.0157** (0.0068)	-0.2120*** (0.0339)	-0.0076 (0.0069)
Banking, insurance & services to firms	0.0997*** (0.0060)	-0.0278 (0.0369)	0.1082*** (0.0061)
Other services	-0.0951*** (0.0049)	-0.1767*** (0.0229)	-0.0926*** (0.0050)
<i>Omitted category:</i> Wholesale & retail trade			
Size of the firm			
Small (10-49 workers)	-0.9189*** (0.0036)	-0.9833*** (0.0197)	-0.9153*** (0.0036)
Medium (50-250 workers)	-1.7538*** (0.0072)	-1.78312*** (0.0437)	-1.7522*** (0.0073)
Large (>250 workers)	-2.6891*** (0.0197)	-2.5621*** (0.1039)	-2.6929*** (0.02012)
<i>Omitted category:</i> Micro (<10 workers)			
Constant	-3.7019*** (0.0251)	-3.1908*** (0.1178)	-3.7360*** (0.0258)

(Table 4. continued)

Pseudo R2	0.2896	0.2925	0.2903
Likelihood ratio test: LR chi2 (19)	351 682.12	13 601.30	338 875.16
(p-value: Prob> chi2)	(0.0000)	(0.0000)	(0.0000)
Number of observations	2 549 414	113 953	2 435 461

Notes: (1) *, **, *** denotes statistically significant at 1%, 5% and 10%, respectively. (2) Estimations of the coefficients and respective standard deviation in parenthesis (3) Marginal effects are computed in table A.4 of the Appendix. (4) For a more detailed consultation of the variables see Table 4.

Furthermore, while the self-employment rate (S.E.) is -1.3 percentage points (p.p.) for immigrants, the estimated average marginal effect (M.E.) of being an immigrant over the probability of being self-employed is -1.2 p.p.³⁴. Since the raw data's figure is smaller than the estimated one, this could indicate that the average control characteristics (excluding nationality) of immigrants come to the *disadvantage* of immigrants in their propensity towards self-employment. However, following Clark *et al.* (2016)'s analysis, this wouldn't be significant and would imply that in fact the characteristics (namely education) don't explain much of the difference in self-employment rates. In the authors' study, the difference between S.E. rates and estimated M.E. of Pakistan born men versus UK born men was 2 p.p.. In our case, it is even lower (0.1 p.p.), which strengthens the argument that the control variables do not explain much of the difference in self-employment propensities between immigrants and Portuguese.

The results concerning the control characteristics³⁵ are consistent with the studies reported in the literature review. Firstly, it is more likely to be an entrepreneur if the individual is male. Interestingly, this effect is more notable among natives than immigrants. Secondly, the probability of being an entrepreneur increases at decreasing rates with age for Portuguese and immigrants alike. However, since the marginal effect of *Square of age* is close to zero, it is possible that the probability evolves with age in a inverted-U trend (increasing until a certain threshold from which it would start decreasing). Thirdly, it increases with the level of education - from a certain level of education to a higher one, the marginal effect increases, relative to basic education or

³⁴ See Table A4 of the Appendix for the marginal effects. We opted to estimate average marginal effects due to the predominance of discrete variables in the estimation. This would imply estimating the marginal effect of each individual considering his/her observed characteristics and the estimated coefficients from the probit specification (over the whole sample), and then asking for the mean of these marginal effects for a certain explanatory variable.

³⁵ Control characteristics refers to the socio-economic and firm characteristics under analysis excluding nationality, our main feature of interest.

less, which implies that from one level to the next the individual is more likely to be an entrepreneur. Fourthly, wholesale & retail trade seems to be in fact the industry where individuals are more likely to be self-employed. However, a closer look at the second estimation run over the immigrant sub-sample alerts the reader to the fact that Banking, insurance & services is an industry where the propensity towards entrepreneurship is similar to wholesale & retail trade (i.e. the difference is not statistically significant). For Portuguese, trade loses some relevance with entrepreneurs being as likely found in Transport, storage & communication (i.e. the difference is not statistically significant) and even being more likely found in Hotels & Food/Restaurants and the banking sector (statistical significance at 1%). Fifthly, it is less likely to find an entrepreneur in a larger firm, both for Portuguese and immigrants alike (notice the increasingly negative marginal effect of being an entrepreneur as the individual works for bigger and bigger firms).

Although immigrants seem to be less propense to engage in entrepreneurship, it seems that the relative positioning of the different groups is consistent with what happens in countries like the USA, Canada and UK, notably for Asian (i.e. Chinese and Indian) and African/Black at opposite sides of the spectrum (see discussion in section in 2.2.1 in point 5). The results presented in Table 6 are consistent with the descriptive statistics, where Chinese, Indian, Brazilian and West European are more likely to be entrepreneurs than Portuguese, while East European and African are less likely to be so, even after controlling for the selected individual and firm characteristics.

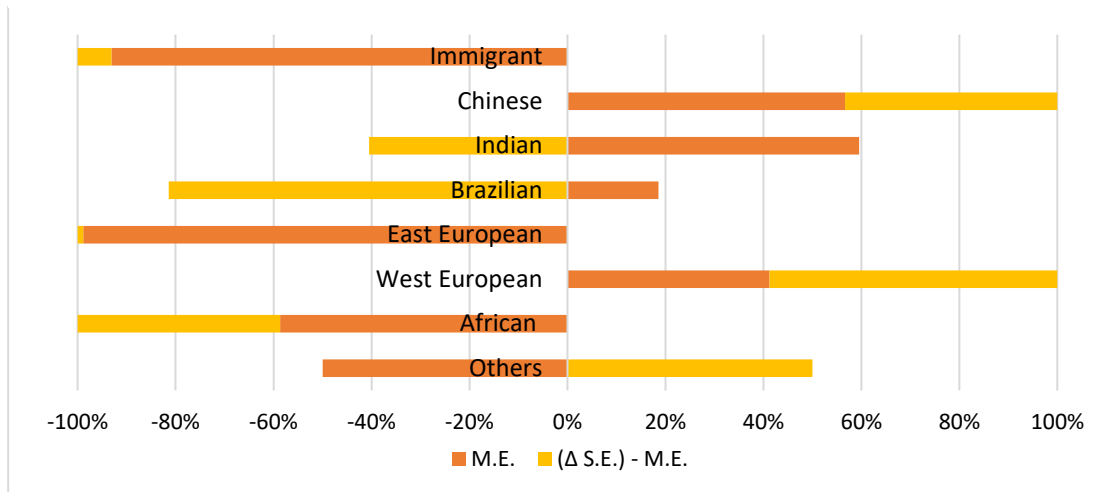
Considering that, for each group, the difference between S.E: rate gap and M.E. of the nationality variable relative to Portuguese is explained by the remaining control characteristics, Graph 4 illustrates the positive (to the right) or negative (to the left) impact of the characteristics on the propensity towards self-employment. In this line of thought, characteristics are conducive to self-employment for Chinese and West European but not for Indian, Brazilian or African. As for East European this set of characteristics doesn't seem to explain the lower self-employment rates relative to Portuguese - after controlling for the characteristics, the propensity towards self-employment remains practically unchanged.

Table 6. Estimation results and marginal effects of the probit regression over the immigrant groups: dependent variable = 1 if the individual is an entrepreneur

Variable	Coefficients	(Standard Error)	Marginal Effects	(Standard Error)
<i>Variable of interest</i>				
Nationality				
Chinese	0.7152***	(0.0290)	0.0884***	(0.0046)
Indian	0.1302**	(0.0588)	0.0125**	(0.0060)
Brazilian	-0.0760***	(0.0262)	0.0071***	(0.0025)
East European	-0.6950***	(0.0227)	-0.0435***	(0.0009)
West European	0.3394***	(0.0175)	0.0359***	(0.0021)
African	-0.3516***	(0.0250)	-0.0264***	(0.0015)
Others	-0.3062***	(0.0206)	-0.0237***	(0.0014)
<i>Omitted category:</i> Portuguese				
<i>Control variables: socio-economic characteristics</i>				
Gender - Male	0.3985***	(0.0034)	0.0349***	(0.0003)
Age - in years	0.0998***	(0.0012)	0.0090***	(0.0001)
Square of age - in years	-0.0007***	(0.0000)	-0.0001***	(0.0000)
Education				
High School + Non-University	0.3701***	(0.0040)	0.0370***	(0.0004)
Bachelors	0.6661***	(0.0047)	0.0750***	(0.0006)
Masters & Phd	0.7804***	(0.0130)	0.0984***	(0.0021)
Non-defined	0.5252***	(0.0274)	0.0602***	(0.0038)
<i>Omitted category:</i> Basic education or less				
<i>Control variables: firm characteristics</i>				
Dummy variables for Industry				
Primary industries	-0.3149***	(0.0274)	-0.0244***	(0.0006)
Manufacturing	-0.0018	(0.0048)	-0.0002	(0.0004)
Electricity, gas & water	-0.4117***	(0.0267)	-0.0300***	(0.0015)
Construction	-0.0467***	(0.0053)	-0.0041***	(0.0005)
Hotels & Food/Restaurant	0.0933***	(0.0057)	0.0087***	(0.0005)
Transport, storage & communication	-0.0390***	(0.0068)	-0.0035***	(0.0006)
Banking, insurance & services to firms	-0.1193***	(0.0063)	-0.0102***	(0.0005)
Other services	-0.1770***	(0.0051)	-0.0150***	(0.0004)
<i>Omitted category:</i> Wholesale & retail trade				
Size of the firm				
Small (10-50 workers)	-0.9476***	(0.0036)	-0.0793***	(0.0003)
Medium (50-250 workers)	-1.8332***	(0.0074)	-0.0995***	(0.0002)
Large (≥250 workers)	-2.7965***	(0.0206)	-0.1136***	(0.0003)
<i>Omitted variable:</i> Micro firms (<10 workers)				
Constant	-4.0483***	(0.0260)	-	
Pseudo R2	0.30784		-	
Likelihood ratio test: LR chi2 (25)	373 740.76		-	
(p-value: Prob> chi2)	(0.0000)		-	
Number of observations	2 549 414		-	

Notes: *, **, *** denotes statistically significant at 1%, 5% and 10%, respectively; Marginal effects were computed as average marginal effects.

Graph 4. Marginal effects and the effect of characteristics on the propensity to be self-employed relative to Portuguese



The graph decomposes self-employment rate observed differences (leveled to be 100%) into estimated marginal effects of the nationality-wise variable (orange) and remaining effect of characteristics (yellow), where the reference level is Portuguese (at 0%).

Notes: (1) M.E. denotes marginal effects; $(\Delta S.E.) - M.E$ denotes the calculated difference between the self-employment rates' gap and the estimated marginal effects of the probit model (2) Marginal effects are computed in tables 5 and A4 of the Appendix.

We observe that Brazilian: have a M.E. of + 0.71 p.p. and a difference in observed S.E. rates of -2.4 p.p.. This means that if it weren't for their characteristics, their representation in entrepreneurship would be higher and above that of Portuguese (base level, 0%). For Chinese, the M.E. is +8.8 p.p. and the difference in the observed S.E. rate is +15.6 p.p. - this means that a significant part of the propensity towards self-employment is explained by the depicted “*positive*” characteristics (contribution of +16.8 p.p.). With higher education estimated to lead immigrants to self-employment (Table 5), this could come out as strange since at least 80% of Chinese workers only have basic education or less. Even so, Chinese entrepreneurs differ from other groups since they concentrate highly in trade (80.1%) where they could possibly have an advantage. As for African, they are observed to have a self-employment rate that is already below that of Portuguese but it seems that only part of the difference is due to the less conducive characteristics.

We mentioned that the control characteristics are possibly not uncovering the reason why the propensity towards entrepreneurship is lower for immigrants (notice the small yellow portion in Graph 4). Could it then be due to different returns to these characteristics? In other words, is it possible that the lower propensity of immigrants

towards entrepreneurship is not so much related to their characteristics as it is to the way these are rewarded? This is what we hope to answer with the predicted probability ($\widehat{Pr}_{B\&B}$) of the immigrant being an entrepreneur if the returns (i.e. values for the coefficients) were those of Portuguese (see methodology section for a more thorough explanation).

Table 7. Observed self-employment rates (S.E. (%)) and predicted probabilities applying Portuguese sample probit coefficients ($\widehat{Pr}_{B\&B}$)

	S.E. (%)	Δ to PT (p.p.)	$\widehat{Pr}_{B\&B}$	S.E.- \widehat{Pr} (B&B)
Portuguese	6.5%	0 p.p.	6.5%	0.0 p.p.
Immigrant	5.2%	- 1.3 p.p.	6.3%	- 1.1 p.p.
Chinese	22.1%	15.6 p.p.	12.4%	+ 9.7 p.p.
Indian	6.9%	0.4 p.p.	8.9%	- 2.0 p.p.
Brazilian	4.1%	- 2.4 p.p.	5.8%	- 1.7 p.p.
East European	2.1%	- 4.4 p.p.	6.9%	- 4.8 p.p.
West European	15.2%	8.7 p.p.	6.9%	+ 8.3 p.p.
African	2.0%	- 4.5 p.p.	3.3%	- 1.3 p.p.
Others	6.5%	0.0 p.p.	6.4%	+ 0.1 p.p.

Note: The first column refers to S.E. rates of each group and the second column refers to the difference between this S.E. rate and the S.E. rate of Portuguese (negative sign means the group has lower self-employment than Portuguese). The third column is the predicted probability following Borjas and Bronars (1989) exercise described in the methodology section. The fourth column is the difference between the S:E. rate and this predicted probability (positive sign means that the group would manage to surpass Portuguese levels of self-employment if they were rewarded in the same manner as Portuguese; negative sign means the group would still not meet Portuguese levels of self-employment if they rewarded in the same manner)

The results from the estimated predicted probability, $\widehat{Pr}_{B\&B}$, explained in equation 3.4 of the previous section, are presented above in Table 7 Looking at the last column, we conclude that for the observed characteristics, the returns are worse for Indian, Brazilian, East European and African (negative sign) and better for Chinese and West European (positive sign), when compared to Portuguese. Indian, already with a higher level, would see their self-employment rate grow even further by 2 p.p. if their returns were to be the same. One possible reason could be difficulty in getting access to credit as felt by nearly 30% of Indian entrepreneurs in the survey performed in 2001-2002 described in Oliveira (2004). Brazilian would see their self-employment rate get closer to the Portuguese one but remain below. East European are a distinct

case of lower returns to their characteristics since their self-employment rate would be much higher (6.9% instead of 2.1%) and would even surpass the Portuguese rate (6.5%). Finally, for African, the increase (+1.3 p.p.) would still leave a big gap relative to the Portuguese level (-3.2 p.p.).

This could explain why immigrants are less propense to be self-employed than Portuguese - their incentive is lower knowing that they won't be rewarded in the same manner as nationals for their characteristics. If this happens to be true then it could result in negative selection of immigrant minorities into self-employment as suggested by the theoretical model of Borjas and Bronars (1989). Two interesting exceptions are West European and Chinese.

The predicted self-employment rate of Chinese is 12.4% while their actual self-employment rate is 22.4%. In fact, the structure determining self-employment seems to be more conducive towards this occupational choice for these 2 groups than for Portuguese. In other words, they hold an *advantage* in entrepreneurship relative to Portuguese that cannot be explained by the control characteristics (previously found to be conducive) but how these are rewarded. Notice that differences in characteristics of Chinese entrepreneurs relative to Portuguese entrepreneurs include lower predominance of men (62.1% vs 69.9%), lower average age (39.0 vs 45.9), lower education (56.6%-89.0% vs 55.6% with basic education or less), higher predominance in trade (80.1% vs 29.8%) and location in smaller firms (94.5% vs 82.0% are located in micro firms)³⁷.

In Borjas and Bronars (1989), Asian are more represented in self-employment and would meet natives' self-employment rates if they were to enjoy the same structure determining occupational choice as whites in the USA (data from the 1980 US Census of the Population). Moreover, they were observed to be more educated than whites, both employees and self-employed (around 50% would have more than 16 years of education). As Fairlie *et al.* (2010) point out, Asian immigrants' level of education varies considerably across different host countries namely due to differences in educational institutions and selection. However, in the three countries under analysis, USA, UK and Canada³⁸, the rate of college graduates among Asians, and among

³⁷ See summary statistics or Table A2 and A3 in the Appendix

³⁸ The samples were retrieved from the 2000 US Census of Population Public Use, 2001 UK Census and 2001 Canada Census Public Use Microdata File.

Chinese alone, is considerably higher than the national average. We therefore conclude that Asian immigrants in Portugal largely differ in educational levels from those found in the preferred countries of destination of this group (among the top ten, USA hosted 29.7% of Asian immigrants, Canada hosted 7% and the UK hosted 5.6%, in either year 2000 or 2001). Even so, they consistently demonstrate having higher representation in self-employment than other non-Asian groups and at least similar to natives, both in Portugal and the USA (Fairlie *et al.*, 2010; Kim *et al.*, 1989; Fairlie and Meyer, 1996). In sum, it seems that education differences between Chinese and Portuguese do not explain the differences in self-employment representation. In that case it would be the remaining control characteristics that would explain the estimated joint positive effect on the propensity to be self-employed.

Moreover, the higher returns to their characteristics suggest that there must be some “*entrepreneurability*” to this group explained by other aspects than those treated in this study. There could be a higher incentive to engage in entrepreneurship due to language barriers blocking opportunities in the wage/salary sector and leading this group to self-employment as a *push* factor (see Bates, 1997; and Min, 1989). Also, considering the cost of migration and culture differences between the two groups, it could be that the Chinese worker arrives in the country with the mindset of engaging in community businesses where he/she profits from “ethnic” social capital (see Zhou, 2004).

As for Africans, the lower return to their characteristics (evidenced by an increase from their observed self-employment rate to their predicted one) could suggest some perceived difficulty in making it as an entrepreneur (f.e. discrimination from consumers and credit market, asymmetric access to information and opportunities). Combining our evidence that with higher education comes a higher propensity towards entrepreneurship with the fact that one third of African entrepreneurs have a university degree, Africans seem to be negatively affected two-fold regarding their low representation in entrepreneurship: *unfavourable* characteristics (f.e. 73,5% of African workers only have basic education or even less), and, on top of that, *unfavourable* rewards to these characteristics. However, as mentioned, the increase in the propensity to be self-employed, if rewards were to be similar to Portuguese workers, is relatively small (+ 1.3 p.p.) which could suggest that

other than unfavourable and unrewarded characteristics to be an entrepreneur, this group could be, for other reasons, “ethnically-disinclined” to set up a business of their own (see Borooah and Hart, 1999).

Conclusions

In a context of subsistence entrepreneurship (prevalence of micro firms) and frustrated entrepreneurs (Blanchflower *et al.*, 2001), it seems like immigrants are even less represented in entrepreneurship than Portuguese nationals. With Portugal becoming a net sender of immigrants in 2012 (INE and PORDATA, 2017b), prospects in the job market seemed scarce. Immigrants were then faced with the choice between paid-employment and self-employment balancing opportunities and barriers. Self-employment rates are the result of an individual decision, but what factors entered this equation?

Based on 2012 data from “Quadros de Pessoal”, this study presents an empirical analysis over the differences between immigrants and natives in self-employment propensities. Additionally, it explores the differences between selected immigrant groups by looking at the impact of characteristics and how these are rewarded on the self-employment choice.

Our findings suggest that while self-employment rates are low for African and East European, there are two groups that are clearly more represented in entrepreneurship than Portuguese: Chinese and West European. Brazilian and Indian share closer rates to those of Portuguese.

Following the descriptive statistics, entrepreneurs seem to have either similarly low or lower education than wage-earners for the most entrepreneurial groups, Chinese and West European respectively. This implies that the higher propensity towards self-employment with higher levels of education is not observed for these 2 groups, as predicted by the probit estimation on the whole sample of immigrants. In their case, relatively low education seems to be working as a *push* factor towards self-employment. Indeed, when comparing the marginal effect with the difference in self-employment rates relative to Portuguese, the contribution of their characteristics seems to be positive. In the case of Chinese, generally low educated, their characteristics could be driving them to entrepreneurship as necessity-driven. For West European, generally high educated, their characteristics could also be pushing them towards entrepreneurship in the sense that the most able individuals would prefer the earnings, stability or other feature of paid-employment. In this case, there would be negative

selection into self-employment.

Differently, Africans seem to be disadvantaged in self-employment. We observe that they are low educated but that it doesn't push them towards self-employment. The hypothesis of lower returns to their characteristics is confirmed which could indicate that this group suffers from discrimination from consumers or the credit market. However, this hypothesis left a significant portion of the gap in self-employment rates between African and Portuguese to be explained. There could be other important factors in play like lower wealth/capital, lack of business skills or tradition in the community among other. This could influence their preferences and make them "ethnically-disinclined" towards entrepreneurship.

Similarly not too entrepreneurial, East European seem to concentrate in different sectors like construction, instead of trade (where around 80% of Chinese entrepreneurs are located), and suffer from much lower returns to their characteristics when compared to Portuguese. Finally, although their self-employment rates are not distant from those of Portuguese, Indian and Brazilian's characteristics seem to be *less conducive* to this occupational choice. Furthermore, these 2 groups suffer from lower returns to their characteristics.

It seems that our explanatory characteristics - age, gender, education, industry and size of the firm - have a different impact on self-employment propensities depending on the group. From the host community's perspective, the way these characteristics are rewarded could be determinant in the engagement of minorities in entrepreneurship. If immigrants are rewarded worse for their characteristics, there is a risk of negative selection into self-employment with the less able individuals becoming self-employed and managing firms. Combining this with the fact that average labour productivity was at the time higher in firms directed by immigrants, public policies should be alerted to the negative selection into self-employment as it could affect the performance of immigrant firms that employ nearly 2% of the total workforce in Portugal.

Our study was limited by information constraints namely by lack of information on the earnings of the self-employed which according to some authors is jointly determined with self-employment rates (f.e. Rees and Shah, 1986; Borjas and Bronars, 1989; Bernhardt, 1994; Lofstrom, 2002). However, individuals can only

make expectations on how much they will earn as self-employed which could be far from the truth due to the large variance in business performance. Secondly, having a sample that is big enough to reasonably represent the population can be understood as an advantage. However, the reader should be alerted to the fact that some authors opt to withdraw smaller sub-samples instead in order to obtain a more balanced econometric interpretation (f.e. Lofstrom, 2002; and Clark *et al.*, 2016).

Future research could include further analysis over industry allocation of immigrant entrepreneurs since different groups seem to concentrate in different added-value/skill sectors (notice the contrast between Chinese entrepreneurs in trade (80%) and West European entrepreneurs in Banking (10%), their third choice). Furthermore, differences between genders could be further explored. In terms of methodology, decomposition techniques as seen in Fairlie (1999) (*Apud* Fairlie and Lofstrom, 2015) could be an interesting alternative to separately capture group differences in observed/measurable characteristics and unobserved/unmeasurable characteristics since both may determine the probability of being an entrepreneur. To the extent that labour productivity is an indication of entrepreneurial “success”, understanding the impact of immigrant business leaders on their peer workers should be a focus for future research as a follow-up of the introductory descriptive analysis. For this purpose, data should be complemented with information on capital investment in order to take in account both revenues and costs. Public policies related to entrepreneurship and immigration would benefit from this analysis since labour productivity is related to the welfare and well-being of both immigrants and natives.

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Appendix

Table A 1. Descriptive Statistics - Portuguese and Immigrants, 2012

Variable	Entrepreneurs			Wage-earners		
	All	Portuguese	Immigrant	All	Portuguese	Immigrant
<i>How many are there?</i>						
N	163 465	157 553	5 912	238 5949	2 277 908	108 041
% / all workers of nationality group	6.4%	6.5%	5.2%	93.6%	93.5%	94.8%
<i>Who are they?</i>						
Gender (%)						
Male	69.8%	69.9%	65.1%	52.5%	52.5%	52.5%
Age						
in years	45.8 (9.7)	45.9 (9.7)	42.8 (9.7)	39.4 (10.7)	39.5 (10.7)	37.3 (10.0)
Education (%)						
Basic	55.0%	55.6%	39.7%	58.2%	55.6%	63.9%
High School	23.0%	22.9%	26.7%	24.2%	22.9%	24.3%
Bachelors	19.7%	19.6%	22.1%	16.1%	19.6%	9.0%
Masters and/or Phd	1.8%	1.8%	2.3%	1.2%	1.8%	1.0%
Non-defined	0.4%	0.1%	9.1%	0.2%	0.1%	1.7%
Earnings						
Monthly wage (euros)	-	-	-	832.1 (972.0)	837.0 (820.9)	727.8 (2580.7)
<i>Where can they be found?</i>						
Industry (%)						
Primary	2.7%	2.7%	1.7%	2.3%	2.2%	5.2%
Manufacturing	14.7%	15.0%	5.4%	22.6%	23.2%	11.0%
Electricity, gas & water	0.2%	0.2%	0.2%	1.2%	1.2%	1.0%
Construction	12.9%	13.1%	8.5%	8.2%	8.1%	10.3%
Wholesale & retail trade	29.0%	28.9%	33.8%	19.5%	19.7%	15.3%
Hotels & Food/Restaurant	10.9%	10.7%	17.3%	7.1%	6.5%	19.9%
Transport, storage & communication	6.4%	6.4%	6.5%	7.7%	7.8%	5.9%
Banking, insurance & services to firms	9.5%	9.6%	6.2%	7.6%	7.8%	3.2%
Other services	13.7%	13.4%	20.5%	23.9%	23.7%	28.2%
Size of the firm (%)						
Micro (<10 workers)	22.6%	79.6%	44.7%	32.8%	28.7%	22.8%
Small (10-49 workers)	26.0%	19.7%	33.4%	28.9%	33.3%	22.3%
Medium (50-249 workers))	22.2%	0.3%	13.6%	17.4%	20.9%	26.5%
Large (≥250 workers)	29.2%	0.4%	8.3%	21.0%	17.1%	28.3%
Performance of the firm						
Sales (euros at current prices)	775 171.5 (5 690 697)	780858.4 (5 725 155)	623580.7 (4 677 417)	2.4E08 (1.1E09)	2.4E08 (1.1E09)	7.7E07 (4.53E08)
Location of the firm (%)						
Lisbon	25.3%	24.7%	41.2%	37.8%	37.0%	55.5%
North	37.6%	38.3%	17.9%	33.8%	34.8%	11.8%
Other	37.1%	37.0%	40.9%	28.4%	28.2%	32.7%
Antiquity of the firm						
in years	13.3 12.9	13.5 12.9	8.0 9.7	25.7 39.0	26.0 (39.4)	19.1 29.7

Source: Own calculations over the (re)defined sample of “Quadros de Pessoal”

Notes: (1) For age, earnings and antiquity of the firm, the average is presented followed by the standard deviation in parenthesis. (2) Relative to earnings, zero wage and missing values are excluded from the sample. This means that 7% of the initial sample (N) is not taken in account for the analysis on this variable. (3) See Table 4 for the description of the variables

Table A2. Descriptive Statistics - Entrepreneurs by groups, 2012

Variable	Portuguese	Groups of Immigrants						
		Chinese	Indian	Brazilian	East European	West European	African	Others
<i>How many entrepreneurs are there?</i>								
N	157 553	1 211	108	1 138	462	1 807	482	3 161
% /nationality group	6.5%	22.1%	6.9%	4.1%	2.1%	15.2%	2.0%	5.7%
<i>Who are they?</i>								
Gender (%)								
Male	69.9%	62.1%	85.2%	56.6%	66.5%	68.5%	70.3%	69.8%
Age								
(years)	45.9 (9.7)	39.0 (9.0)	40.2 (10.3)	40.6 (8.8)	40.2 (8.5)	47.4 (9.5)	45.7 (8.3)	40.2 (9.1)
Education (%)								
Basic	55.6%	56.6%	81.5%	41.2%	41.1%	23.2%	44.8%	48.2%
High School	22.9%	8.9%	10.2%	25.2%	35.5%	38.0%	22.2%	19.7%
Bachelors	19.6%	1.0%	6.5%	28.1%	18.8%	32.2%	29.3%	15.8%
Masters & Phd	1.8%	0.2%	0%	3.3%	0.60%	3.4%	2.5%	1.9%
Non-defined	0.1%	33.40%	1.90%	2.1%	3.90%	3.3%	1.2%	14.4%
<i>Where can they be found?</i>								
Industry (%)								
Primary industries	2.7%	0.2%	0.0%	0.5%	0.2%	4.0%	0.2%	0.9%
Manufacturing	15.0%	0.3%	0.0%	6.0%	3.0%	8.8%	5.8%	3.8%
Electricity, gas & water	0.2%	0.0%	0.0%	0.0%	0.0%	0.4%	0.0%	0.1%
Construction	13.0%	0.1%	0.0%	10.3%	28.1%	5.4%	17.8%	5.9%
Wholesale & retail trade	28.9%	80.1%	50.0%	16.3%	13.6%	21.9%	28.0%	44.4%
Hotels & Food/Restaurant	10.7%	17.3%	44.4%	15.8%	11.5%	18.6%	10.4%	18.5%
Transport, storage & communication	6.4%	0.2%	0.9%	9.7%	24.0%	5.5%	4.4%	4.7%
Banking, insurance & services to firms	9.6%	0.6%	0.0%	4.8%	3.9%	10.2%	12.0%	3.4%
Other services	13.4%	1.3%	4.6%	36.6%	15.6%	25.2%	21.4%	18.3%
Size of the firm (%)								
Micro (<10 workers)	82.0%	94.5%	93.5%	90.4%	93.3%	80.0%	83.0%	91.5%
Small (10-49 workers)	16.0%	5.5%	6.5%	8.6%	6.7%	17.1%	15.4%	7.8%
Medium (50-249 workers)	1.8%	0.0%	0.0%	1.0%	0.0%	2.5%	1.7%	0.6%
Large (≥250 workers)	0.1%	0.0%	0.0%	0.0%	0.0%	0.4%	0.0%	0.0%
Performance of the firm								
Sales (euros at current prices)	780 858.4 (5 725 155)	181 687 (577 101.6)	171 994.4 (234 836.8)	254 566.9 (797 978.7)	214 487.8 (654 709)	1 360 114 (8 138 064)	661 123.8 (2 622 406)	256 230.1 (1 214 134)
Location of the firm (%)								
Lisbon	24.7%	47.2%	88.0%	52.0%	34.6%	26.7%	55.8%	48.3%
North	38.3%	20.6%	1.9%	18.4%	13.4%	18.8%	15.2%	18.5%
Other	37.0%	32.2%	10.2%	29.6%	52.0%	54.6%	29.0%	33.2%
Antiquity of the firm								
(years)	13.5 12.9	5.7 6.8	12.0 15.2	6.7 9.0	4.3 5.9	10.6 10.7	9.4 9.0	6.9 9.3

Source: Own calculations over the (re)defined sample of “Quadros de Pessoal”

Notes: (1) For age, size of the firm (number of workers and sales) and antiquity of the firm, the average is presented followed by the standard deviation in parenthesis. (2) See Table 4 for the description of the variables.

Table A 3. Descriptive Statistics – Wage-earners by groups, 2012

Variable	Portuguese	Groups of Immigrants						
		Chinese	Indian	Brazilian	East European	West European	African	Others
<i>How many wage-earners are there?</i>								
N	2277908	4268	1453	26953	21513	10086	24176	52266
%/ nationality group	93.5%	77.9%	93.1%	95.9%	97.9%	84.8%	98.0%	94.3%
<i>Who are they?</i>								
Gender (%)								
Male	52.5%	58.0%	93.1%	50.1%	60.4%	53.1%	39.7%	52.5%
Age								
in years	39,5 (10.7)	34.5 (9.9)	34.8 (9.1)	35.2 (9.0)	40.2 (10.0)	39.2 (9.9)	37.7 (11.0)	35.5 (9.3)
Education (%)								
Basic	55.6%	88.7%	81.9%	62.8%	64.8%	24.2%	74.9%	66.2%
High School	22.9%	7.8%	10.0%	29.4%	25.9%	30.0%	18.9%	25.0%
Bachelors	19.6%	1.0%	3.0%	5.6%	6.9%	38.1%	5.2%	6.1%
Masters & Phd	1.8%	0.3%	0.5%	0.4%	0.3%	5.8%	0.3%	0.8%
Non-defined	0.1%	2.5%	4.7%	1.8%	2.0%	1.8%	0.7%	2.0%
Earnings								
Monthly wage (euros)	837.0 (820.9)	511.4 (258.2)	535.0 (390.4)	663.6 (2638.2)	556.5 (832.6)	1789.5 (5542.6)	550.6 (509.7)	674.9 (2677.1)
<i>Where can they be found?</i>								
Industry (%)								
Primary	2.2%	0.1%	5.2%	2.7%	6.6%	2.6%	0.6%	7.2%
Manufacturing	23.2%	0.4%	2.8%	10.1%	20.3%	14.2%	6.2%	8.8%
Electricity, gas & water	1.2%	0.0%	0.7%	0.6%	2.0%	0.5%	1.0%	0.6%
Construction	8.1%	0.1%	15.3%	8.1%	16.3%	5.0%	10.4%	8.9%
Wholesale & retail trade	19.7%	62.6%	18.4%	15.7%	10.3%	15.0%	8.5%	18.7%
Hotels & Food/Restaurant	6.5%	34.9%	40.7%	26.2%	14.4%	11.2%	19.2%	24.2%
Transport, storage & communication	7.8%	0.2%	1.0%	5.7%	9.3%	8.9%	3.1%	5.2%
Banking, insurance & services to firms	7.8%	0.3%	1.4%	2.9%	1.7%	8.9%	3.5%	2.5%
Other services	23.7%	1.4%	14.5%	28.1%	19.2%	33.7%	47.5%	23.9%
Size of the firm (%)								
Micro (<10 workers)	22.6%	79.6%	44.7%	32.8%	28.7%	22.8%	14.2%	35.1%
Small (10-49 workers)	26.0%	19.7%	33.4%	28.9%	33.3%	22.3%	21.2%	28.3%
Medium (50-249 workers))	22.2%	0.3%	13.6%	17.4%	20.9%	26.5%	18.2%	18.2%
Large (≥250 workers)	29.2%	0.4%	8.3%	21.0%	17.1%	28.3%	46.5%	18.4%
Performance of the firm								
Sales (euros at current prices)	2.4E08 (1.1E09)	710572.1 (6746769)	9216836 (6.8E07)	7.8E07 (4.5E08)	2.9E07 (2.2E08)	1.1E08 (5.1E08)	1.5E08 (6.66E08)	5.8E07 (3.8E08)
Location of the firm (%)								
Lisbon	37.0%	50.4%	61.7%	63.6%	33.4%	44.5%	79.0%	55.9%
North	34.8%	18.9%	7.5%	10.6%	14.1%	20.2%	7.7%	11.1%
Other	28.2%	30.7%	30.8%	25.9%	52.5%	35.2%	13.4%	33.0%
Antiquity of the firm								
in years	26.0 (39.4)	6.4 (7.9)	11.8 (13.2)	18.5 (33.9)	18.7 (22.0)	22.7 (35.1)	22.9 (34.4)	16.9 (28.9)

Source: Own calculations over the (re)defined sample of “Quadros de Pessoal”

Notes: (1) For age, size of the firm (number of workers and sales), earnings and antiquity of the firm, the average is presented followed by the standard deviation in parenthesis. (2) Relative to earnings, zero wage and missing values are excluded from the sample. This means that 7% of the initial sample (N) is not taken in account for the analysis on this variable. (3) See Table 4 for the description of the variables.

**Table A 4. Marginal effects and respective standard errors of the probit results:
dependent variable = 1 if the individual is an entrepreneur**

Variable	All	Immigrant	Portuguese
<i>Variable of interest</i>			
Nationality	- 0.0121***	-	-
Immigrant	(0.0006)		
<i>Control variables : socio-economic characteristics</i>			
Gender	0.0351***	0.0215***	0.0368***
Male	(0.0003)	(0.0012)	(0.0003)
Age	0.0090***	0.0054***	0.0092***
in years	(0.0001)	(0.0004)	(0.0001)
Square of age	-0.0001***	-0.0000***	-0.0001***
in years	(0.0000)	(0.0000)	(0.0000)
Education			
High School	0.0370***	0.0391***	0.0336***
	(0.0004)	(0.0018)	(0.0004)
Bachelors	0.0758***	0.1012***	0.0603***
	(0.0006)	(0.0018)	(0.0004)
Masters & Phd	0.1000***	0.1187***	0.0711***
	(0.0021)	(0.0105)	(0.0012)
Non-defined	0.0739***	0.1134***	0.0114***
	(0.0039)	(0.0057)	(0.0041)
<i>Omitted category:</i>			
Basic education			
<i>Control variables: firm characteristics</i>			
Dummy variables for Industry			
Primary	-0.0252***	-0.0437***	-0.0273***
	(0.0006)	(0.0013)	(0.0008)
Manufacturing	-0.0009**	-0.0260***	0.0002
	(0.0004)	(0.0017)	(0.0004)
Electricity, gas & water	-0.0306***	-0.0393***	-0.0369***
	(0.0015)	(0.0043)	(0.0025)
Construction	-0.0054***	-0.0321***	-0.0037***
	(0.0005)	(0.0014)	(0.0005)
Hotels & Food/Restaurant	0.0083***	-0.0250***	0.0106***
	(0.0005)	(0.0014)	(0.0005)
Transport, storage & communication	-0.0045***	-0.0189***	-0.0038***
	(0.0006)	(0.0020)	(0.0006)
Banking, insurance & services to firms	-0.0107***	-0.0222***	-0.0103***
	(0.0005)	(0.0020)	(0.0006)
Other services	-0.0156***	-0.0218***	-0.0162***
	(0.0004)	(0.0015)	(0.0005)
<i>Omitted category:</i>			
Wholesale & retail trade			
Size of the firm			
Small (10-49 workers)	-0.0796***	-0.0659***	-0.0859***
	(0.0003)	(0.0011)	(0.0003)
Medium (50-250 workers)	-0.0996***	-0.0768***	-0.1663***
	(0.0002)	(0.0010)	(0.0007)
Large (>250 workers)	-0.1137***	-0.0852***	-0.2541***
	(0.0003)	(0.0010)	(0.0019)
<i>Omitted category:</i>			
Micro firms (<10 workers)			

Notes: (1) *, **, *** denotes statistically significant at 1%, 5% and 10%, respectively. (2) Estimations of the average marginal effects (dy/dx) and respective standard error in parenthesis. For factor levels, dy/dx is the discrete change from the base level.