ENTREPRENEURIAL GROWTH ASPIRATIONS AND POPULATION DENSITY: A HUMAN CAPITAL APPROACH

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ABSTRACT

Prior research in entrepreneurship has been studying the effect of entrepreneur’s human capital on growth-oriented new firms. However, little is still known about how levels of population density are moderated by entrepreneur’s human capital in this context. This research develops a theoretical model from a human capital perspective in which we examine how population density predicts growth aspirations. We test our hypotheses using data that combines individual-level information obtained from the Global Entrepreneurship Monitor project in Spain with province-level information gathered from the Spanish Statistics Institute for 2008 to 2010. Our findings reveal that population density effect has a positive influence on entrepreneurial growth aspirations. Besides, human capital shows that those entrepreneurs with more levels of education and ownership-management experience positively moderate the effect of population density on growth aspirations.

Keywords: entrepreneurship, growth aspirations, human capital, population density.

JEL code: M13; J24; D84
INTRODUCTION

Many scholars in the recent literature have been studying the impact of small firms predicting employment (Ashworth et al., 1998) as well as feelings and attitudes towards growth (Wiklund et al., 2003). This issue is defined in different ways such as entrepreneurial growth aspirations (Tominc & Rebernik, 2007; Hessels et al. 2008a; Hessels et al., 2008b; Autio & Acs, 2010; Autio, 2011; Gartner & Liao, 2012; Estrin et al., 2013), entrepreneurs’ expectations (Cassar, 2010; Ozcam et al., 2012), entrepreneurs’ forecast performance in new firms (Cassar, 2014) or growth ambitions (Verheul & Mil, 2011). All these four main definitions are jointly trying to understand the reasons of growth-oriented new small business and its potential impact on employment creation. Additionally, the relevance of the topic is paying much attention at individual-level characteristics and the environment in which firms operate (Capelleras et al., 2014; Grichnik et al., 2014).

To disentangle the main drivers of growth aspirations, one common approach that many of the studies addressing this topic have been using is human capital theory describing the way individuals raised their human capital through business and environment gaining (Cassar, 2014). In particular, some studies look at the effect of education (Autio & Acs, 2010; Kolvereid, 1992) and others at the experience level (Kolvereid, 1992; Cassar, 2014) in both scenarios evaluating growth aspirations. Thus, it is considered that entrepreneurs with greater levels of human capital will be more successful than those without such levels (Becker, 1964; Mincer, 1974). However, it is not only the individual and his/her characteristics that determine their aspirations but also the environment has a key role on it. In consequence, under the assumption of the environment dynamism, the speed of change is really fast creating unprecedented pressures on individual and organizations (Morris et al., 2013) and the necessity to organize efficiently resources to pursue market opportunities (Baumol, 1993). Accordingly, the way entrepreneurs act has closely to be with the environment where they are doing business (Acs and Armington, 2004) and the business opportunity-nexus idea (Ucbasaran et al., 20008; Dencker et al., 2009; Dencker and Gruber, 2014). In this sense, entrepreneurs will perceive those changes in the environment different one each other affecting their growth objectives heterogeneously (Capelleras et al., 2014).

So, the interest for entrepreneurial growth aspirations is increasing sharply and it can be studied by the interplay between the individual and the environment. This is because is closely related with the dynamism of the environment in which business operate and the
effect of it on actual firm growth (Baum et al., 2001; Wiklund & Shepherd, 2003; Wiklund et al., 2003; Davidsson et al., 2006). However, little is still known about how levels of population density are moderated by entrepreneur’s human capital in this context. So, this research develops a theoretical model from a human capital perspective in which we examine how population density is moderated by human capital predicting growth aspirations. In the literature, researchers have used many different variables regarding human capital theory such as, formal education, training, employment experience, start-up experience, owner experience, parent's background, skills, knowledge, and others (Unger et. al, 2011).

In our paper, we examined three human capital endowments likely to be of key relevance for entrepreneurial growth aspirations: education, owner-manager experience of an existing business and entrepreneurship training, and in order to capture the environment dynamism, and the business opportunity identification phenomena (Ucbasaran et al., 2008; Dencker et al., 2009; Dencker and Gruber, 2014), we use population density. More specifically, we focus on the unique effect of population density, and the joint effect with education, owner-manager experience and entrepreneurship training affecting growth aspirations. Our contention is highlighting the importance of population density as a nexus with business opportunities identification. The population density level gives us a signal of the potential business opportunities in the economy and the influence this effect could have on growth aspirations. Hence, we suggest that the impact that might have that level of population density on growing aspirations can be perceived different from each entrepreneur depending on their human capital characteristics. So, we advocate those entrepreneurs with education and owner-manager experience will moderate the impact of population density on growth aspirations.

This study makes several contributions. First, we develop a theoretical model in which we test the moderating effect of entrepreneurs’ human capital with the main effect of population density to disentangle the influence of potential business opportunities on growth aspirations. We consider the level of population density rather than the population rate or other economic variables because is steadier over time and therefore less subject to immediate changes in the environment giving a clearer state of art about the real economic environment situation. Furthermore, we also avoid the instantaneous effect or lag issues. Second, this study is important from a policy perspective because we give a deeper report of formal education system (either for post-secondary education and entrepreneurial training) to better see whether those systems work to foster growth-oriented small firms. Third, this paper has another big
contribution because we are assessing the potential employment creation in a recessive period what it makes contributions not only for policy-makers but also for the general economy welfare.

We consider a recessive period for our empirical analysis because we think that is the best stage to analyze aspirations mainly because of the following reason. Nascent entrepreneurs at such early stages they may show over-optimistic behavior in the transition to be self-employed so that it may occur an expectation bias effect in terms of employment predictions (Cassar, 2010). So if our years of analysis capture a non-favorable regional economic environment for business, aspirations are likely to be less biased. Therefore, we think this consideration could bring us a more realistic expectation from entrepreneurs in growth aspiring analysis.

To test our ideas we analyze the growing aspirations of a sample of nascent entrepreneurs in Spain. A nascent entrepreneur is defined as an individual who has launched an enterprise that is less than 3 months old. Our choice of nascent entrepreneurs is based on our interest for exploring growing aspirations when those intentions are emerging (Douglas, 2013). Specifically, our data set combines individual-level information obtained from the Global Entrepreneurship Monitor (GEM) project in Spain with province-level information gathered from the Spanish Statistics Institute during a recessive period (2008-2010). A multi-level approach is employed through a series of nested regression analyses.

The rest of the paper is organized as follows. First, we develop three testable hypotheses on the unique effect of population density and the joint effect with education, owner-manager experience and entrepreneurship training predicting entrepreneurial growth aspirations. Second, we describe the data, variables and methods. Third, we present the results of our empirical analysis. To conclude, we discuss the implications of the findings.

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1 In an expansion period of time, entrepreneurs could be influenced by the overoptimistic bias when predicting employment. To our understanding, this means that when the economy goes well and the indicators are positive, the easiness to expect growth more is higher because the motivational effect or expectation is very subject to the immediate effect of the environment. The implications and contributions in employment creation we think are captured better using this data not only for the relevance of the time but also for the adequacy of individuals’ expectations evaluation.
HYPOTHESES DEVELOPMENT

Population density level determining entrepreneurial growth aspirations

Variations in place where doing business are a topic extensively discussed in the literature (Capelleras & Greene, 2008). Besides, regional differences may determine the way entrepreneurs perceive changes and motivations from the environment. So, it seems clear that the way in which entrepreneurs act vary depending on where they are setting up a business and under what conditions of the economic environment (in our case the population density). Therefore, such environmental conditions may also vary geographically (Begley et al., 2005) and regional characteristics can influence in new formation rates (Reynolds et al., 1994). However, independently small business growth is possible under different territorial conditions (Vaessen & Keeble, 1995).

In the basis that entrepreneurial environment is the combination of factors that play a key role in developing a start-up strategy (Gnyawalli & Fogel, 1994), we approach this issue from a population density level perspective in which to attempt the analysis in the influence on aspirations to growth. Population density could give us an approach of potential business opportunities (potential demand) in the market and is steadier over time. We also suggest that the higher the level of population density is, the higher the possibilities to develop and sell new products are. In this sense, there could be an increase of exportations into more global markets. Furthermore, in areas with higher levels of population density there would be more services, infrastructures and overall more favorable conditions to influence in entrepreneurship.

The evolution of the regional economic environment may be expected to have an influence on the entrepreneur’s aspirations about the future firm size. A higher population density tends to imply more potential customers and higher business opportunities in the region, especially when the majority of firms are in the service sector (Wagner & Sternberg, 2004). Besides, some authors suggest that the more opportunities in the market come from the more educated population density is (they call it demand) (Millán et al., 2014). In this sense, since employment growth rates vary across areas, market opportunities are built by information and knowledge stock in the environment/economy (Acs & Armington, 2004). Overall, this together will have a positive impact on the expected returns to a new business, which in turn is likely to positively affect the firm founders’ expectations about the firm size. Conversely,
one would expect that firm growth aspirations would be lowered in regions with decreasing levels of population density. Consequently, we examine with the following hypothesis whether the level of population density has an influence on growth aspirations.

**Hypothesis 1. The level of population density will have a positive influence on entrepreneurial growth aspirations.**

**The moderating effect of human capital on growth aspirations and population density**

The level of entrepreneurs’ knowledge or information about the environment is not homogenously at everyone’s disposal (Acs & Armington, 2004). However, due to the large amount of entrepreneurs engaged in the process of entrepreneurship, we cannot consider that they act independently one each other (Shane & Venkataraman, 2000) but the environment influences them where they are developing an economic activity. So, it is of a matter of a great importance to understand the factors influencing in entrepreneurial intentions in new venture creation (Lee et al., 2009) and therefore the influence what represents to future entrepreneurs expectations to growth. The firm itself does not have a social network structure; it is for this reason that entrepreneurs with their abilities and personal attributes work in that way with the aim to manage the start-up process uncertainties and to influence to new venture growth (Ostgaard & Birley, 1996). Similarly, relationships that it may exist between environmental factors and the performance of an entrepreneur and the matching between specifics requirements and environment would lead to greater probability of success in start-up processes (Gnyawali & Fogel, 1994).

Human capital theory states that the number of successful aims achieved by individuals will be higher for those with more levels of human capital, this is because education leads to higher productivity and therefore to higher income (Becker, 1964; Mincer, 1958, 1974). According to Becker (1964), we understand human capital with those skills and knowledge that individuals get from investments in education, training and other types of experience. Possessing greater levels of human capital will allow individuals to achieve more relevant tasks successfully (Becker, 1994) as well as possessing stronger points of view (Colombo & Grilli, 2005). Thus, human capital is highly important in terms of business growth due to it gives to the entrepreneur the ability necessary to achieve the growth in a business (Becker, 1994; Wiklund & Shepherd, 2003) and therefore to make people expect more compensation.
in their investments on it (Becker, 1964). The more specific an investment in human capital is, the higher the expected returns should be (Bosma et al., 2004), in our case understanding returns as entrepreneurial growth aspirations. We consider in this paper the two most relevant endowments of human capital: education and experience. In this sense, human capital gathered from education is expected to be one of the most important factors of entrepreneurship performance (Millán et al., 2014). Additionally, the role of managerial experience as the other dimension of human capital approach, it allows entrepreneurs to moderate their growth expectations more realistically (Hmieleski & Baron, 2009).

In our context, entrepreneurs with higher levels of human capital have better economic prospects in the labor market. Hence, they will ask for higher returns in order to involved in entrepreneurial activities. As a consequence, an entrepreneur with higher investments in human capital will show, on average, higher growth aspirations, even though a performance advantage over other firms may be not a sufficient measure of entrepreneurial performance due to that performance advantage may be not enough to compensate for the opportunity cost of other alternatives (Shane & Venkataraman, 2000), as well as the exploitation of market inefficiencies that result from information asymmetries (Drucker, 1985). Furthermore, human capital theory can help us to better understand that moderating effect role with population density and the subsequent influence on growth aspirations.

The areas in which individuals acquire knowledge are broad and depend on different dimensions such as education or personal experiences (Dencker et al., 2009). In our case we are going to approach the study by looking at education, entrepreneurship training and experience that seems to be the most relevant investments in human capital (Becker, 1994). This is because entrepreneurs with higher levels of education are more likely to manage and to make a small business growth (Storey, 1994) as well as strength entrepreneurial success (Millán et al., 2014). In a more educated entrepreneurs’ environment is more likely to them to create more jobs (van Praag & van Stel, 2013; Millán et al., 2014). This is because education level of the entrepreneur has a positive influence in the business performance (Millán et al., 2014). Furthermore, these entrepreneurs are also going to increase their amount of earnings almost always well above average (Becker, 1994). In particular, general human capital has to do with general education and experience and allow entrepreneurs to understand the business environment (Cassar, 2006), specific human capital with entrepreneurship training; that are capabilities that founders can directly apply to the entrepreneurial job (Colombo & Grilli,
2005; Wiklund & Shepherd, 2003). We can connect with the entrepreneurs’ level of investment in human capital the concept of opportunity cost that in economics has to be with the true cost of something that you give up to get it. In other words, it is the value of the next best alternative, the one that is not chosen (von Wieser, 1927). Therefore, that opportunity cost of entrepreneurs influence the future size of the new venture (Cassar, 2006).

The knowledge when facing an entrepreneurial opportunity, it is specific and unique to that business, and it depends on the circumstances and the environment at that moment (Cassar, 2006). Additionally, entrepreneurs with managerial experience will be more able to understand the process of their start-up, due to they know which business functions, organizational processes, roles and relationships have to be established (Lazear, 2005). Moreover, they will be more able to consider those more important activities among the others less priority (Dencker & Gruber, 2014). Even some authors suggest that entrepreneurs improve their entrepreneurial assessment from past venturing experience (Baron & Ensley, 2006; Shane, 2000), not all investigations support the managerial experience positive effect when forecasting performance (Cassar, 2014).

In this sense, some studies have explored both industry experience and managerial experience on performance of start up (Dencker & Gruber, 2014) and forecast performance in new firms (Cassar, 2014). Others have concluded that entrepreneurs identifying possible future actions with better exploratory abilities are those holding higher levels of managerial experience (Gruber, MacMillan & Thompson, 2012) helping them to identify more opportunities when population density increase. In our study, we are going to focus on the analysis of managerial experience moderating population density when predicting growth aspirations.

More managerial experienced entrepreneurs would adapt their ventures in a better organizational disposal adapting their strategies towards the levels of change more successfully than those without such experience (Dencker & Gruber, 2014). Experience may also allow diminishing the influence of cognitive bias on entrepreneurial forecasting (Cassar, 2014) and therefore, entrepreneurs can have greater comprehension of the task at hand (Dimov, 2010; Kolb, 1984). This may allow entrepreneurs to cut down the uncertainties and knowledge gaps when forecasting future outcomes (Cassar, 2014). Besides, entrepreneur’s experience might help to temper their expectations when making predictions (Hmieleski & Baron, 2009).
Consequently, firms established by individuals with greater human capital have higher growth because of their unique capabilities (Colombo & Grilli, 2005). In this vein, a well-educated entrepreneur will demand higher return in the expectations to growth in the start-up business process (Becker, 1964; Autio & Acs, 2010). Prior educational and training experiences may enable entrepreneurs to gather and process information more efficiently (Forbes, 2005; Kim et al., 2006). The entrepreneurs’ knowledge gained through education and entrepreneurship training may also provide them with knowledge of ways to more rapidly identify changes and signals in the immediate economic environment (Alvarez & Busenitz, 2001). Therefore, they may be thought to have a greater understanding of how to build and grow their new business in line with environmental conditions and adjust their expectations for future firm size to such conditions.

So, on the one side, entrepreneurs with more general human capital are likely to be more sensitive to the signals from their immediate environment. More specifically, firm founders with greater levels of education and owner-manager experience are expected to be more aware of the population density level than other individuals. With this theory we want to justify the following hypotheses.

**Hypothesis 2.** Higher levels of population density will have a greater positive effect on entrepreneurial growth aspirations for those individuals with more levels of education.

**Hypothesis 3.** Higher levels of population density will have a greater positive effect on entrepreneurial growth aspirations for those individuals with more levels of owner-manager experience.

On the other side, specific human capital such as entrepreneurship training seems to be crucial for the good development of a business. Colombo and Grilli in 2005 suggested that there were synergistic effects within the founding team of specific complementary capabilities. However, what looks determine most in that concern is the quality and the nature of that business/entrepreneurship training programs, as well as the problem to predict the fast growth and higher frequency of growing SMEs (Vaesse & Keeble, 1995). It is our contention in this sense that entrepreneurs educated with entrepreneurship training at inception, they are going to affect positively on growth expectations. Based on these considerations, we suggest the following hypothesis.
Hypothesis 4. Higher levels of population density will have a greater positive effect on entrepreneurial growth aspirations for those individuals with more levels of previous entrepreneurship training.

Overall, we suggest that population density level have a positive influence on predicting entrepreneurial growth aspirations and that such effect is moderated by the entrepreneurs’ human capital level. Nevertheless, this moderator effect influence positively when considering general human capital such as education and owner-manager experience of an existing business. Contrary, specific human capital such as entrepreneurship training seems not to have any role in moderating the effect of population density level predicting growth aspirations. Therefore, figure 1 summarizes the conceptual model of the study.

Insert figure 1 about here

METHODS
Data collection and Sample
In order to test our hypotheses we use data that combines individual-level and province-level information. Individual observations are obtained from the GEM\(^2\) project in Spain. One of the most important characteristics of the GEM data is that it allows the study of the perceptual characteristics of those entrepreneurs that are in the process of starting up and managing a new business focusing entrepreneurship as a key role of economic growth (Reynolds et al., 2005). Regional variables were collected from INE\(^3\) (Spanish Statistics Institute) sorted at province-level. The analysis covers the years 2008, 2009 and 2010, which is considered a recessive period of the Spanish economy.

Individual observations are taken from the GEM Adult Population Survey for the above-mentioned years. Due to the opportunity identification process is an intentional stage,

\(^2\) The GEM research program is an annual assessment of the national level of entrepreneurial activity. Started as a partnership between London Business School and Babson College, it was initiated in 1999 with 10 countries, expanded to 21 in the year 2000, with 29 countries in 2001 and 37 countries in 2002. GEM 2009 is set to conduct research in 56 countries. For further information check http://www.gemconsortium.org/

\(^3\) INE (Spanish Statistics Institute) is a legally independent administrative autonomous institution assigned to the Ministry of Economy and Finances via the Secretary of State for the Economy. It is basically governed by Law 12/1989 of 9 May, on Public Statistics Function, that regulates Statistics activity for state purposes which is the exclusive competence of the State and by the Statute approved by Royal Decree 508/2001 of 11 May and modified by Royal Decree 947/2003 of 18 July, Royal Decree 759/2005, of 24 June and Royal Decree 950/2009, of 5 June. For further information www.ine.es/en.
intentions and in our case, aspirations, clearly merited our attention (Krueger et al., 2000). Therefore, from the original GEM database we selected observations corresponding to nascent entrepreneurs i.e. those in the process of setting up a business that have not paid salaries, wages or any other payments to the owners for more than three months (Reynolds et al., 2005). In total, the GEM 2008 to 2010 dataset contains 1976 nascent entrepreneurs. After cleaning missing values and non-valid answers, the sample is made up of 643 individuals. Regional variables for the same temporal period (2008-2010) are collected from the Spanish Statistics Institute at province level. The Spanish territory is divided into 52 provinces, which are the second-level territorial and administrative divisions and correspond to NUTS 3\(^4\) according to EUROSTAT\(^5\).

**Variable measurement**

**Dependent variable.** Entrepreneurial growth aspirations is the dependent variable of the study. We calculate entrepreneurs’ growth aspirations as the difference between the natural logarithms of the entrepreneurs’ expected number of employees in the next five years and the real number of employees at business inception (Estrin et al., 2013).

**Independent variables.** Population density is a level variable that assess the number of inhabitants per km\(^2\) in each province. Education is a dummy variable taking value 1 whether the entrepreneur has post secondary (university degree) education and 0 otherwise. Entrepreneurship training is also a dummy variable taking value 1 if the entrepreneur has received some education or training activities related to start an enterprise and 0 otherwise (Grichnik et al., 2014). Owner-manager of existing business is a variable that measures whether the already nascent entrepreneur is at the same time the owner or manager of an existing business that may explain an increase of the opportunity cost in starting-up a new venture (Estrin et al., 2013) and also shows the entrepreneur’s experience in the field of business, which may impact her growth expectations. To test hypotheses 2, 3 and 4 we create the following three interaction variables: population density \(x\) education, population density \(x\) owner-manager of existing business and population density \(x\) entrepreneurship training.

\(^4\)The NUTS classification (Nomenclature of territorial units for statistics) is a hierarchical system for dividing up the economic territory of the EU. For further information check http://epp.eurostat.ec.europa.eu/portal/page/portal/nuts_nomenclature/introduction

\(^5\)Eurostat is the statistical office of the European Union situated in Luxembourg. Its task is to provide the European Union with statistics at European level that enable comparisons between countries and regions. For further information check http://epp.eurostat.ec.europa.eu/portal/page/portal/about_eurostat/introduction
**Control variables.** Control variables in this study perform at individual and environment level as follows. On the one hand, we have the quantitative common variable of *age* of entrepreneurs in this paper. Then, we also control in terms of *gender* (1 male and 0 female). *Opportunity* measures the optimism of the entrepreneur (Cassar, 2010). Specifically this is a dummy variable that takes value 1 if the entrepreneur sees good opportunities to start up a business in the following six months in the area where she lives. It was interesting to control regarding *fear of failure* variable that measures whether that feeling would slow entrepreneur down to start-up a business. Immigrants present lower levels of socio-cultural fit (Contín-Pilart & Larraza-Kintana, 2014) which influences their understanding of the environment, and therefore may potentially influence their aspirations. For that, the variable of *Spanish nationality* measures taking value 1 if the entrepreneur was born in Spain and 0 abroad. The variable of *know an entrepreneur* is a binary social capital variable that measures 1 if the entrepreneur knew another entrepreneur before start up the business and 0 otherwise. We also control for *family size* measured in terms of the number of family members in the entrepreneurs’ household as well as for the *entrepreneurship by necessity* dummy variable that takes value 1 if the business was created by necessity and 0 if it was as a consequence of opportunity motivation. Finally, we also add the variable *manufacturing sector* to control for industry differences in growth potential and therefore aspirations. The variable takes value 1 if the upcoming business is in extractive and transforming sector and 0 in business service and consumer oriented one. We also control for other regional level variables besides the already presented population density. Specifically we have added three additional regional economic control variables. The *Annual unemployment rate change* in terms of the change experienced in the average unemployment rate from year t-1 to year t. Since unemployment rates (in percentage) per province are published each three months, yearly average unemployment rate is computed as the average of the four quarters of each year. The *annual population change* that it is measured using the absolute number of inhabitants of each province per year. As in the case of unemployment rates the change is measured relative to the previous year in percentage. Finally, the *GDP/h* measures the total output of the country divided by the number of population in each province.

**Methodological approach**
With the aim to understand the determinants of firm growth aspirations, we use the nested regression equation approach. These are a series of two or more regression equations where independent variables are successively added to an equation to observe changes in the
predictors’ relationship to the dependent variable. In line with this definition, we run three models; first with the individual-level variables, second adding the regional economic-level ones and third considering the interactions between the individual and the environment. This method allows us to see whether there is a significant difference or not when adding population density main effect. In line with Autio & Acs (2010), we run a multilevel model clustering it at province level to avoid heteroscedasticity concerns. Observations are also weighted following the standards provided by the GEM project in order to guarantee accurate representativeness. Furthermore, with this model, we use an F-test that allows us to compare simultaneously the statistical significance of one group of independent variables, controlling for another set of independent variables (Allen, 1997) with the aim to check the robustness in the relationship between the dependent variable and the independent ones.

RESULTS

Our empirical analysis was based on data from 643 nascent entrepreneurs. Therefore, we organize the results in the following way. First we show the descriptive statistics (table 1). Second, we provide the Pearson’s correlation matrix (table 2) in which we test the correlations for our variables. Finally, we present the nested regression results (table 3).

Table 1 presents us the descriptive statistics where we can give the nascent entrepreneur main characteristics. We can see that the average age of the entrepreneur is around 40 years old taking into account that that the analysis range of the study is between 18 to 64 years old. Almost 60% of the sample is men and 40% is women. Besides, 88% of the individuals were born in Spain. In their household, the average size of their families is about 3 members. The 17.8% of the sample accept that they were starting the business by a necessity motivation. Considering the industry, the 28.1% of start-up projects were based on the manufacturing sector. In terms of the human capital levels of our nascent entrepreneurs of the sample, we can state the following: 34% of entrepreneurs have education courses, 39.2% have received courses in entrepreneurship training and 33.7% of them are currently managers of owners of an existing business. Finally, we see that the average level of population density is about 336.378 inhabitants per squared kilometer and the standard deviation is about 725.108 inhabitants.

| Insert table 1 about here |
Table 2 gives us the variance inflation factor (VIF) and the bivariate Pearson’s correlation matrix of the dependent, independent and control variables in which we can see the following characteristics. Analyzing the variance inflation factor of the correlations coefficients we can state that multicollinearity concerns were not presented in our regressions. The highest VIF value is 3.55 far from 5, the value that would indicate that a possible problem of multicollinearity might arise (Studenmund, 1997). So, analyses are free of any multicollinearity bias problem.

We report that human capital has two opposite relationships with growth aspirations in the correlation approach. First, we look at the unique effects and we see a positive influence on education 0.144 (p<0.001) and entrepreneurship training 0.111 (p<0.05). So, formal education effects positively by 14% (education) and 11% (entrepreneurship training) on predicting growth aspirations. The relationship between owner-manager experience and growth aspirations is -0.483 (p<0.001) suggesting that experience does not influence positively into the forecast on growth aspirations (Cassar, 2014). Population density has also a positive influence on growth aspirations 0.152 (p<0.001). Second, if we look at the joint effects, human capital dimensions that we consider (education, entrepreneurship training and owner-manager experience) moderate population density positively on growth aspirations as follow respectively: 0.093 (p<0.05), 0.087 (p<0.05) and 0.095 (p<0.05). So, we can advocate that human capital seem to be a good moderator of the population density on predicting entrepreneurial growth aspirations.

Table 3 shows the effect of population density level and human capital dimensions predicting entrepreneurial growth aspirations. We present three models with the aim to better analyze our hypotheses. To do so, we are going to consider the model 2 and 3. In the model 2, we will analyze the influence of population density predicting entrepreneurial growth aspirations; in the model 3, the moderating role of human capital (education, entrepreneurship training and owner-manager experience) when entrepreneurs perceive an increase in the level of the population density and the subsequent effect on growth aspirations. So, in keeping with model 2 in table 3, population density has a positive impact on growth aspirations. So, these results are consistent with the level of population density and the positive influence on entrepreneurial growth aspirations, supporting hypothesis 1.
Model 3 in the table 3, includes three interaction terms: population density x education, population density x entrepreneurship training and population density x owner-manager experience. These results show that the dimensions of human capital that moderate the effect of population density are education and owner-manager experience while we do not find influence for entrepreneurship training. So, higher levels of population density will have a greater positive effect on entrepreneurial growth aspirations for those individuals with more levels of education and owner-manager experience of an existing business, supporting hypothesis 2 and hypothesis 3. As said before, we do not find support for hypothesis 4 that stated higher levels of population density would have had a greater positive effect on entrepreneurial growth aspirations for those individuals with more levels of entrepreneurship training.

With the aim to better understand the results and more specifically the moderator effect of human capital (education and owner-manager experience) and population density predicting growth aspirations, we plot the following interactions.

Insert figure 2 about here

Insert figure 3 about here

Results also give us other control variables statistically significant and worth it to just take into consideration and comment. From an individual perspective, entrepreneurs’ age have a negative relationship on the entrepreneurial aspirations. Besides, family size also affects negatively on entrepreneurial growth aspirations, this seems to be because strong familiar ties do not foster innovation and entrepreneurial initiatives (Weber, 1904). Finally, those businesses in manufacturing sector seem to influence more on the entrepreneurial growth aspirations rather than those in service or more costumers oriented ones. This is in line with the literature in regional development and entrepreneurship, and more specifically, in those lines that suggest a higher probability of becoming a nascent entrepreneur in rural areas than in urban ones (Capelleras et al., 2013). From a regional economic perspective, the control variable from which we found interesting negative influence on growth aspirations was GDP/h. Taking into account that in a recessive period the level of savings go up, we would suggest that a higher level of GDP/h does not lead to a higher expectation to growth.
DISCUSSION

Using a sample of 643 nascent entrepreneurs from GEM project, our study investigated how the population density level under a slowdown context influenced on entrepreneurial growth aspirations. To approach this issue we have used the theory of human capital. More specifically, we have investigated the unique effect of population density level and the joint effect with human capital (education, entrepreneurship training and owner-manager experience) predicting growth aspirations. Consistent with our expectations, results for the unique effect indicated that the level of population density positively affected growth aspirations predictions. Concerning the moderator role of human capital, those dimensions corresponding to general human capital theory such as education and experience positively moderated the effect of population density predicting growth aspirations while those entrepreneurs with specific human capital such as entrepreneurship training seem not to be a good moderator.

One interpretation of this finding is the following. Entrepreneurs with education and owner-manager experience are more sensitive in perceiving the level and the economic effect of population density. Education and experience are two dimensions of human capital that need more investment in terms of years to achieve a certain level, and therefore more opportunity cost is associated. In this sense, a level variable such as the population density is steadier over time and does not depend that much on the instantaneous effect such as population rate, that is a change variable. So, entrepreneurs’ reactions when perceiving certain levels in population density will not affect equal to all individuals but the level of human capital will determinate that awareness.

As noted we have not observed the hypothesized moderation of entrepreneurship training on growth aspirations. Considering the previous reasons, we attribute this non-influential effect to one main reason. In most of cases these kind of training courses are more focused on a negative indicators or negative changes in the economy such as an unemployment growth (Capelleras et al., 2014). However, when we consider indicators that not particularly show us a negative situation but it gives us the level of a certain macro indicator to investigate and see the effect on the entrepreneurial expectations, we state that these motivating entrepreneurship-
training courses do not cover that expectation. Consequently, we can justify that reason by looking at the unique effect of entrepreneurship training either in the model 1, 2 or 3 and see the positive influence on growth aspirations. This effect would suggest us that when not considering the effect of the economical environment, since nascent entrepreneurs in most cases are overly optimistic becoming self-employed (Cassar, 2010), entrepreneurship training, that mainly are high motivational courses, would have a positive effect on growth aspirations.

The relevance of the topic raises implications for policy makers and educators. In the last few years have exponentially emerged new entrepreneurial programs offered by many universities around the world. Therefore, we have today a huge scenario of entrepreneurship programs available that are offered by universities in degrees, graduates, MBA or PhD, among others (Morris et al., 2013). It is of a much importance that policy makers and educators keep taking care of these programs to generate more opportunities recognition and subsequent employment creation. In our environment the change is fast and a good regulation and enforcement of these entrepreneurial programs are required. So, educators and policy makers should keep working as a key tool of the redefinition of the job management (Morris et al., 2013).

Our study is not out of limitations and it also opens future research lines. In this sense, the study has three variables of human capital and it would be more interesting to see whether a broader study could be done capturing more levels of human capital dimensions and trying to focus on the issue of entrepreneurship training. A cross-sectional data set is used. So, it would be interesting to assess whether at country level results are similar. We could then see educational policies practices among countries and their implications. Furthermore, in future research it would be interesting to study if the type either of education or previous experience shape homogenously or not when predicting growth aspirations.
REFERENCES


Acknowledgements

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Figure 1

Conceptual model and hypotheses

Population density

Education: post-secondary

Entrepreneurship training

Experience

H1

H2

H3

H4

ENTREPRENEURIAL GROWTH ASPIRATIONS
Figure 2

Moderating effect of education and population density predicting entrepreneurial growth aspirations
Figure 3

Moderating effect of owner-manager experience and population density predicting entrepreneurial growth aspirations
Table 1

Descriptive Statistics

<table>
<thead>
<tr>
<th></th>
<th>MEAN</th>
<th>STD. DEV.</th>
<th>MIN</th>
<th>MAX</th>
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<td><strong>DEPENDENT VARIABLE</strong></td>
<td></td>
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<tr>
<td>Entrepreneurial growth aspirations (ln)</td>
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<td>0.820</td>
<td>0</td>
<td>5.303</td>
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<td><strong>INDEPENDENT VARIABLES</strong></td>
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<td>0</td>
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<td>Manufacturing sector</td>
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<td>Annual unemployment rate change (%)</td>
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<tr>
<td>Annual population change (%)</td>
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<tr>
<td>GDP/h (€)</td>
<td>23604.53</td>
<td>4537.7</td>
<td>15625</td>
<td>35905</td>
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### Table 2

Variance inflation factor (VIF) and Pearson’s Correlation Matrix of independent and control variables

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</table>

**Significance levels are based on a two-tailed test for all tests and coefficients.** * p< 0.10, ** p< 0.05, *** p< 0.001.
Table 3
Nested regression results predicting entrepreneurial growth aspirations\(^a\)

<table>
<thead>
<tr>
<th>MODEL 1</th>
<th>MODEL 2</th>
<th>MODEL 3</th>
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<tr>
<td><strong>INDIVIDUAL-LEVEL VARIABLES</strong></td>
<td><strong>INDIVIDUAL-LEVEL VARIABLES</strong></td>
<td><strong>INDIVIDUAL-LEVEL VARIABLES</strong></td>
</tr>
<tr>
<td>Age</td>
<td>-0.006 (0.002) **</td>
<td>-0.006 (0.002) **</td>
</tr>
<tr>
<td>Gender</td>
<td>-0.120 (0.081)</td>
<td>-0.120 (0.082)</td>
</tr>
<tr>
<td>Opportunity perception</td>
<td>0.139 (0.082) *</td>
<td>0.135 (0.083)</td>
</tr>
<tr>
<td>Fear of failure</td>
<td>0.080 (0.065)</td>
<td>0.083 (0.066)</td>
</tr>
<tr>
<td>Spanish nationality</td>
<td>0.075 (0.091)</td>
<td>0.089 (0.094)</td>
</tr>
<tr>
<td>Know an entrepreneur</td>
<td>0.038 (0.053)</td>
<td>0.036 (0.054)</td>
</tr>
<tr>
<td>Family size</td>
<td>-0.040 (0.021) *</td>
<td>-0.042 (0.020) **</td>
</tr>
<tr>
<td>Entrepreneurship by necessity</td>
<td>0.033 (0.089)</td>
<td>0.029 (0.087)</td>
</tr>
<tr>
<td>Manufacturing sector</td>
<td>0.187 (0.082) **</td>
<td>0.192 (0.082) **</td>
</tr>
<tr>
<td>Education: post-secondary</td>
<td>0.091 (0.060)</td>
<td>0.088 (0.060)</td>
</tr>
<tr>
<td>Owner-manager of existing business</td>
<td>-0.734 (0.066) ***</td>
<td>-0.719 (0.072) ***</td>
</tr>
<tr>
<td>Entrepreneurship training</td>
<td>0.142 (0.067) **</td>
<td>0.147 (0.068) **</td>
</tr>
<tr>
<td><strong>REGIONAL ECONOMIC-LEVEL VARIABLES</strong></td>
<td><strong>REGIONAL ECONOMIC-LEVEL VARIABLES</strong></td>
<td><strong>REGIONAL ECONOMIC-LEVEL VARIABLES</strong></td>
</tr>
<tr>
<td>Population density</td>
<td>2.2e-04 (9.1e-05) **</td>
<td>-1.9e-05 (1.4e-04)</td>
</tr>
<tr>
<td>Annual unemployment rate change</td>
<td>-3.3e-04 (0.001)</td>
<td>-1.4e-04 (0.001)</td>
</tr>
<tr>
<td>Annual population change</td>
<td>0.025 (0.047)</td>
<td>0.027 (0.048)</td>
</tr>
<tr>
<td>GDP/h</td>
<td>-1.1e-05 (6.3e-06) *</td>
<td>-1.4e-05 (6.5e-06) **</td>
</tr>
<tr>
<td><strong>INTERACTIONS</strong></td>
<td><strong>INTERACTIONS</strong></td>
<td><strong>INTERACTIONS</strong></td>
</tr>
<tr>
<td>Density * Education: post-secondary</td>
<td>2.7e-04 (1.1e-04) **</td>
<td></td>
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<tr>
<td>Density * Owner-manager of existing business</td>
<td>1.9e-04 (1.0e-04) *</td>
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<tr>
<td>Density * Entrepreneurship training</td>
<td>1.3e-04 (1.3e-04)</td>
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</tr>
<tr>
<td>N of observations</td>
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<td>643</td>
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<tr>
<td>N of groups</td>
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<td>48</td>
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<tr>
<td>F</td>
<td>39.02 ***</td>
<td>51.07 ***</td>
</tr>
<tr>
<td>R(^2)</td>
<td>0.283</td>
<td>0.293</td>
</tr>
</tbody>
</table>

\(^a\) Table reports non-standardized \(\beta\) coefficients. Robust standard errors are in parentheses. Significance levels are based on a two-tailed test for all tests and coefficients. * \(p < 0.10\), ** \(p < 0.05\), *** \(p < 0.001\).