107C

FACTORS THAT INFLUENCE FEMALE ENTREPRENEURSHIP IN THE EUROPEAN UNION

Lilit Hayrapetyan

Master Student – IPB' Master in Management

Escola Superior de Tecnologia e Gestão do Instituto Politécnico de Bragança

Campus de Santa Apolónia

Alcina Nunes

Professora Coordenadora na Escola Superior de Tecnologia e Gestão do Instituto Politécnico de Bragança

Escola Superior de Tecnologia e Gestão do Instituto Politécnico de Bragança

Karine Khachatryan

Professor in the Management Department of the National Polytechnic University of Armenia

Management Department of the National Polytechnic University of Armenia

Scientific Area: Management and Administration

Keywords: Entrepreneurship, gender, panel data, European Union

Factors that Influence Female in the European Union

Abstract

This research work aims to discuss the gender issue concerning entrepreneurship in European Union countries in a period of nine years, from 2007 to 2015, identifying the factors which drive females to be entrepreneurs. The study mainly concentrates on identifying and quantifying the personal, social, political and economic features which are motivating women, to be entrepreneurs, as well as the main difficulties they feel during the process of business creation. In order to explore the entrepreneurial activity across a set of developed countries the econometric methodology of panel data (in particular the fixed effects and random effects models) is applied to a data set of entrepreneurial statistical indicators calculated and made available by the Global Entrepreneurship Monitor.

1. Introduction

In the last decades, the importance of the entrepreneurial activity has been highlighted in many researcher works. The entrepreneurship has been found as a vehicle for economic growth and innovation, job creation and career opportunity (Wennekers & Thurik, 1999; Wong, Ho, & Autio, 2005; Agarwal, Audretsch, & Sarkar, 2007; Szirmai, Naudé, & Goedhuys, 2011; Drucker, 2014), regardless of gender. In spite female entrepreneurship legged behind from male entrepreneurial activity, during the last years is registered the growth of women entrepreneurs and female entrepreneurship had been identified as a stimulus for innovation and job creation (Orhan & Scott, 2001), economic development and poverty reduction (Kreide, 2003).

In 2008, the European Commission started to adopt regulations, services and networks which allowed to extend the number of new enterprises created by women. For example, in 2009, the Commission launched the European Network of Female Entrepreneurship Ambassadors as a promoter for potential women entrepreneurs and, in 2011, the European Network of Mentors for Women Entrepreneurs and the European Network to Promote Women's Entrepreneurship (WES) (Adema et al., 2014). Furthermore, some European Union countries implemented their own policies for enhancing female entrepreneurship. Having in attention the previous explained framework, especially the issues faced by women entrepreneurs and the European Union countries policies (both as an economic block and as individual economies) to enhance not only entrepreneurship, in general, but female entrepreneurship, in particular, the objective of this research is to analyse the gender issue and entrepreneurship in EU countries - in the period from 2007 to 2015 - identifying the factors which drive women, to be entrepreneurs. The study mainly concentrates on identifying and quantifying the personal, social, legal and economic features which are motivating women to be entrepreneurs, as well as the main difficulties they face during the process of business creation.

To reach the objective proposed, the study focuses on the female early-stage entrepreneurial activity variable which was created, calculated and publicised by the Global Entrepreneurship Monitor (GEM), in order to measure female entrepreneurial activity in a given economy. This

variable –applied to analysed female entrepreneurial activity - is the one that the study will try to explain using as explanatory variable another set of indicators divide in three main types: the ones related to individual aspirations, the ones related to the individuals' attitudes and perceptions towards entrepreneurship and the last ones related to the economic, legal, political and social business environment of an economy. The set of explanatory variables are also created, calculated and publicised by the Global Entrepreneurship Monitor.

The study results will be obtained using as the data treatment methodology, the panel data econometric methodology. As mentioned, for the models estimation is used the GEM's data available for twenty five EU countries in the time period from 2007 to 2015. Panel data (or longitudinal data) are characterized by a set of observations in two dimensions - time and individuals. In this particular work, time refers to the period of 9 years between 2007 and 2015 and individuals refer to the 25 EU countries in analysis. Due to this two dimensions, the panel data methods allow to control variables that cannot be observed or measured, like cultural factors or differences in business practices across countries or variables that change over time but not across individuals (i.e. national policies and regulations or international agreements). It also allows to combine the diversity of individual behaviour (in this case, countries entrepreneurial behaviour) with temporal adjustment dynamics even if they differ among countries.

The work is organized as follows. In section 2 is discussed the literature on entrepreneurship, in general, and female entrepreneurship, in particular. Are presented the factors and motives that influence on the individuals' (especially the women) decision to become an entrepreneur. In section 3 is presented the objective of the study, the GEM dataset and variables and the panel data econometric methodology used to reach the objective. Section 4 presents the results of the regression method. At the same time is made the discussion of such results. The work concludes with the main findings

2. Literature review

Entrepreneurship literature had proved the phenomenon became, during the last decades, an important factor for economic growth and development, innovation, employment creation and career opportunity for both man and woman (Wennekers & Thurik, 1999; Wong et al., 2005; Agarwal et al., 2007; Szirmai et al., 2011; Drucker, 2014), independently of gender issues. However, this may be particularly true if the issue is female entrepreneurship. In 2001, Orhan and Scott (2001) concluded that female entrepreneurship had been identified as a stimulus for innovation and job creation. In 2003, Kreide (2003) referred the importance of female entrepreneurship on economic development and poverty mitigation.

Despite the importance given to female entrepreneurship, regarding to the previous macroeconomic topics, two opposite perspectives argue about the relationship between gender and entrepreneurial performance in a more microeconomics perspective. The 'constraint driven gap' perspective considers that restrictions of the performance of female entrepreneurs are a reality. These restrictions or barriers relate to obstacles that women might face in obtaining credit, cultivating business networks or dealing with government policies. By contrast, the 'preference-driven gap' perspective rejects the existence of differences in business performance between male- and female-owned businesses (Bardasi, Sabarwal, & Terrell, 2011). Klapper and Parker (2011) also supported the view of gender based gaps in entrepreneurial performance between female and male entrepreneurs.

In the beginning of the twenty-first century, Cowling (2000) estimated that female self-employment rates considerably differ in the European Union (EU), from just over 20% in the United Kingdom (UK), Ireland, and Sweden to 40% in Belgium and Portugal. Four years later

Acs, Arenius, Hay, and Minniti (2004), using the data of the Global Entrepreneurship Monitor (GEM), estimated that around the world men are involved in entrepreneurial activity twice often than women, only one years later, the number increased for a rate, where women represent more than one third of all people involved in entrepreneurial activity (Minniti et al., 2005). More recently, Minniti and Naudé (2010) noticed that women entrepreneurs' embeddedness in entrepreneurial activity tended to become higher compare with men. One of the causes was that in recent years, many researchers focused on women entrepreneurship as an important 'untapped source' of economic growth and development. According to Xavier, Kelley, Kew, Herrington, and Vorderwulbecke (2012) men made up 52% of all entrepreneurial activity compared to 48% of women entrepreneurs. In fact, women had outpaced men in the rate of new business they formed (Minniti & Naudé, 2010).

Women created ventures for personal freedom, independence, job satisfaction, and/or security (Klapper & Parker, 2011), however they did not start the same types of businesses as their male counterpart. According to Nosek, Banaji, and Greenwald (2002 cited by Gupta, Turban, Wasti, & Sikdar, 2009) men often were involved in activities related to math and science, while women mainly inclined to arts and languages activities. Moreover, concentrated in the service sector and part-time work, women tended to establish small businesses, which increased the probability of difficulties in securing a bank loan compared to men (Thurik & Verheul, 2001), despite women needed more financial and accounting support than men (Ferk et al., 2013).

Regardless of motivations that drive male or female entrepreneurs, or the size of the created businesses, the literature is also rich to results related to business performance gender-based differences. Compare to men-led businesses, women-led ventures present lower sales, lower income, lower venture survival and employment growth (Kepler & Shane, 2007; Fairlie & Robb, 2009; Ferk et al., 2013). For instance, Bardasi et al. (2011) quoting a work from Robb and Wolken (2002) showed that, on average, women-owned businesses generated only 78% of the profits of comparable male-owned. The author also used previous research works to state that, comparing with men, women produce less sales turnover, even if they operate in the same industrial sector, and their ventures have a lower survival rate. Citing Lohmann and Luber (2004), Bardasi and his co-authors referred that, a decade ago, in Germany after 5 years survival only 42% of self-employed women continued their business, while for male entrepreneurs the percentage was 63. Bosma, Praag, Thurik, and Wit (2004) referred that the survival rate of male entrepreneurs' businesses was greater than that of their female counterparts in Dutch businesses.

Kobeissi (2010), presenting the results of some previous literature, discussed that cultural factors supported and motivated people to create new firms, however, when it referred to women, the influence of social and cultural factors on female entrepreneurship might not be positive - usually these factors forced women to keep away from entrepreneurship. Researchers clarify that the most important socio-cultural factors are the fear of failure, the perceived capabilities and opportunities and the role models (Arenius & Minniti, 2005; Koellinger et al., 2007; Noguera et al., 2013). Fear of failure has been defined as an important deterrent for new business creation mainly in case of women (Wagner, 2006; Langowitz & Minniti, 2007; Minniti & Nardone, 2007; Díaz-García & Jiménez-Moreno, 2009; BarNir, Watson, & Hutchins, 2011; Noguera et al., 2013; Koellinger, Minniti, & Schade, 2013). Simultaneously, perceived capabilities are consider as a crucial step for achieving business success. Various studies have shown that usually women undervalue their entrepreneurial skills (Noguera et al., 2013) and this thought prevent women to start their own business. The authors showed that the fear of failure acted on entrepreneurship negatively, while perceived capabilities presented a positive influence.

Social skills and networks are defined another important factor of business achievement. According to Baron (2007), entrepreneurs with well-developed social skills are able to present wider and higher quality social networks than people with less developed skills. Ozgen and Baron (2007) pointed out that entrepreneurs use their social networks as a source of information that promote acknowledge opportunities. Moreover, women have different types of social networks than men (Kepler & Shane, 2007; Fairlie & Robb, 2009). Minniti et al. (2005) alerted the fact that women have limited network and geographic mobility, which reduce their abilities to follow role models, obtain resources and confidence for using and improving their entrepreneurial skills. Moreover, Díaz-García and Jiménez-Moreno (2009) stressed that women have fewer female role models which might attracted them less to entrepreneurship.

Another partition of the most important factors that can induce and enhance female entrepreneurial activity are defined as "Push" and "Pull" factors (Apergis & Pekka-Economou, 2010; Vossenberg, 2013). Push factors are associated with low family income, difficult work conditions, divorces, job dissatisfaction and losses, high unemployment conditions, economic recession and financial reasons. Pull factors are related to the need of independence and self-achievement, financial gains, increased profit and wealth, personal development, social status and power (Apergis & Pekka-Economou, 2010; Kobeissi, 2010). In recent years female entrepreneurial activities are not only developed by just push or pull factors, but also by some combination of the two factors (Apergis & Pekka-Economou, 2010).

In many cases unemployment "pushes" both men and women into entrepreneurship by necessity. However, according to European Commission (2005) Eurostat survey of entrepreneurs across fifteen EU countries, the start-up motivations present gender differences. For 58% of women, comparing with only 42% of men, avoidance of unemployment situation is considers a strong motive for starting an own business (Klapper & Parker, 2011). The authors gave the example of Italy where men tended to enter self-employment for career progression, while women prone to self-employment to avoid inactivity. If females seem to be mainly pushed by necessity, other studies mention that women are more motivated (pulled) than men by personal fulfilment, flexibility and autonomy than income growth or profits (Klapper & Parker, 2011). Greece is an example of a European economy, where women usually start their new business in order to get self-fulfilment, achieve creativity, autonomy and independence (Sarri & Trihopoulou, 2005). Usually, in the process of creating their own ventures, women trust the ability to combine work and private life, while for men more vital is the desire to make money, achieve wealth and perform a challenging job (Kepler & Shane, 2007; Klapper & Parker, 2011; Maes et al., 2014; Hazudin et al., 2015). Supporting the existing literature, Apergis and Pekka-Economou (2010), argued that the flexible working schedule offers a significant motivation for female entrepreneurs. For women, to become self-employed is a way to balance work and family demands (Kepler & Shane, 2007; Kobeissi, 2010; Minniti & Naudé, 2010; Ferk et al., 2013; Hazudin et al., 2015).

Vossenberg (2013) confirmed the evidence, citing a study of Williams (2004), where the author argued that in Europe the existence of children negatively influenced on the business success of female entrepreneurs. Family support was therefore a factor considered as an important determinant of entrepreneurship activity, especially for women. Experience in family business allowed to get new business skills and opportunities, confidence for achieving ambitions and business (Fairlie & Robb, 2009; Vossenberg, 2013).

The salary gap accounts as an important one when studying female entrepreneurship. Kobeissi (2010) supported that gender inequality in earning has a positive influence on women's decision to create their own business. Research, made across developed and developing countries, highlighted that in developed countries women earn around 77% of men earnings and only 73% in developing countries. The same research found that in low-income countries with high

fertility rates the likelihood of female entrepreneurship is higher (Arenius & Minniti, 2003). Among developed countries have been found mix effects. By one side, a positive relationship between per capita income and entrepreneurship (Carree, Stel, Thurik, & Wennekers, 2002; Verheul et al., 2006). By the other side, a U-shaped relationship between entrepreneurial activity and *per capita* income for both female and male (Carree et al., 2002; Wennekers, Wennekers, Thurik, & Reynolds, 2005; Verheul et al., 2006).

Fairlie and Robb (2009) showed that educational background is an important determinant of business outcomes for both female and male entrepreneurs. Many women start their business with lack of previous experience what is considering a barrier to run successful businesses (Verheul et al., 2006). This evidence was found in many studies which explain the low number of female entrepreneurs (comparing with the number of male entrepreneurs) with the lack of managerial skills, work experience, financial difficulties and gender discrimination, both in education and in the labour market (Carter, Brush, Greene, Gatewood, & Hart, 2003; Langowitz & Minniti, 2007; Kobeissi, 2010; Klapper & Parker, 2011). According to Huarng et al. (2012), women with widely managerial skills overcome obstacles and problems easily at the beginning of their entrepreneurial activity.

Klapper and Parker (2011), based in several empirical studies, argued that men and women start their entrepreneurial activity in different industries due to capital restrictions, skills ability, preferences, discrimination and/or educational level. Women entrepreneurs are over-represented in industry sectors such as sales, retail, and services, while men conduct their business in high-technology sectors (Díaz-García & Jiménez-Moreno, 2009).

Finally, credit and start-up costs are still counted as significant financial barrier for both women and men (Verheul et al., 2006; Klapper & Parker, 2011; Hazudin et al., 2015). Financial costs, and often the discrimination faced by female, are problems to start a business, but they assume a bigger importance for women. These faced financial obstacles are bigger for women than for men (Verheul et al., 2006) and programmes, like the ones that allow and smooth access to micro-credit, affect women decision-making process (Minniti & Naudé, 2010). In conjunction, the regulatory environment of a country can promote entrepreneurship by declining start-up costs (Naudé, Gries, Wood, & Meintjies, 2008; Gries & Naudé, 2009; Minniti & Naudé, 2010).

In 2008 the European Commission started adopt regulations, services and networks which allowed to extend the number of new enterprises created by women. For example, in 2009, the Commission launched the European Network of Female Entrepreneurship Ambassadors as a promoter for potential women entrepreneurs and, in 2011, the European Network of Mentors for Women Entrepreneurs and the European Network to Promote Women's Entrepreneurship (WES). In September 2011, the European Parliament applied a resolution on women's entrepreneurship in small and medium-sized enterprises (SME) which acknowledges that "promoting women's entrepreneurship is a long-term process that requires time to change structures and attitudes in society" and recommendations in the areas of financial and educational support, network opportunities, and information and communication technologies (Adema et al., 2014).

According to the European Commission, women constitute 52% of the total EU population, but only 34.4% of the EU women are self-employed and only 30% are start-up entrepreneurs. In 2008, women entrepreneurs made up 29% of all entrepreneurs in Europe (11.6 million) which increased by 3% in 2012 (European Commission, 2016). Out of all European women entrepreneurs, 78% were solo entrepreneurs preferring to set up businesses in the area of health, social-work activities, services or education and only 22% employers. At a national level numbers are uneven. In 2012, around 30% of all entrepreneurs in Greece or Estonia were women, in Spain the number increases to 33%. Since 2008, the number of women entrepreneurs in Greece has decreased by 5%, in Estonia by 3% and in Spain by 7%. However

in the UK had been observed a positive evolution: from 12 % in 2000 to 14% in 2008 and 20% in 2012 (European Commission, 2014; Panteia, 2014a, 2014b, 2014c, 2014d).

The different female entrepreneurship rates at the EU national level demanded the intervention of important national institutions which promote equal legal rights, access to education, networks, technology, capital, social norms, values and expectations. The overall national business environment in terms of laws, regulations and business stability affect businesses' ability to prosper and grow.

3. Methodology and objective of the study

The main goal of this research work addresses the issue of gender and entrepreneurship in EU countries over the last years (more precisely from 2007 to 2015). In the spotlight is the goal to identify and quantify the personal, social and economic features that are motivating women to be entrepreneurs, in 28 different developed countries, as well as the main difficulties they feel during the process of business creation. The identification of such features allows the policy makers to develop more effective public policies towards the entrepreneurial activity, managing the economic scarce resource more efficiently in order to enhance the entrepreneurship impact on economic growth and development, innovation and employment creation. In a microeconomic point of view, it allows possible prospective entrepreneurs, particularly women, to understand the economic impact of their social, political and economic environment in their potential entrepreneurial activity.

In order to achieve the objective of the study, identifying and quantifying the factors which have significant influence on female entrepreneurial activity in the EU, the econometric methodology of panel data is applied. For model estimation is used the GEM's data available for (25) EU countries (except Bulgaria, Cyprus and Malta) in the time period from 2007 to 2015.

The GEM is a key study about entrepreneurship all over the world. The GEM had been launched in 1997 by the London Business School (UK) and the Babson College in Wellesley (USA) as a research program which included annual assessments regarding to entrepreneurial activity in various countries (Reynolds et al., 2005; Sternberg & Wennekers, 2005). Starting from 1999 with ten developed countries, GEM had grown and in 2010 it had already included a set of fifty nine countries (Kelley, Bosma, & Amorós, 2011).

In this research work the female early-stage entrepreneurial activity, which measures the percentage of female 18-64 years old population who are either nascent entrepreneurs or owner-managers of a new business, will be used as the dependent one, this is, the one that the work tries to explain. The factors that may drive this variable, are presented in the Tables below (Table 1 and Table 2). These variables are divided in three types: the ones related to individual aspirations, the ones divided by the individuals' attitudes and perceptions towards entrepreneurship and the ones related to the economic, legal, political and social country's business environment.

Table 1. Variables presentation and definition: dependent variables and independent variables related to aspirations, attitudes and perceptions.

Variables	Abbreviation	Unit of measure	Definition
Dependent variables			
Total early-stage Entrepreneurial Activity (TEA)	Teayy		Percentage of 18-64 population who are either nascent entrepreneur or owner-manager of a new business
Female early-stage Entrepreneurial Activity	Teayyfem	%	Percentage of female 18-64 population who are either nascent entrepreneur or owner-manager of a new business
Male early-stage Entrepreneurial Activity	Teayymal		Percentage of male 18-64 population who are either nascent entrepreneur or owner-manager of a new business
Independent variables: aspirations			
Growth Expectation early-stage Entrepreneurial Activity	TEAyyjg5		Percentage of TEA who expect to employ at least five employees five years from now
International Orientation early-stage Entrepreneurial Activity	TEAyyint	%	Percentage of TEA who indicate that at least 25% of the customers come from other countries
New Product early-stage Entrepreneurial Activity	TEAyynwp		Percentage of TEA who indicate that their product or service is new to at least some customers
Independent variables: attitudes and perceptions			
Entrepreneurial Intention	Futsupno		Percentage of 18-64 population (individuals involved in any stage of entrepreneurial activity excluded) who are latent entrepreneurs and who intend to start a business within three years
Entrepreneurship as Desirable Career Choice	Nbgoodyy		Percentage of 18-64 population who agree with the statement that in their country, most people consider starting a business as a desirable career choice
Fear of Failure Rate	Frfailop		Percentage of 18-64 population (individuals involved in any stage of entrepreneurial activity excluded) who indicate that fear of failure would prevent them from setting up a business
High Status Successful Entrepreneurship	Nbstatyy	%	Percentage of 18-64 population who agree with the statement that in their country, successful entrepreneurs receive high status
Know Startup Entrepreneur Rate	Knoentyy		Percentage of 18-64 population who personally know someone who started a business in the past two years
Media Attention for Entrepreneurship	Nbmediyy		Percentage of 18-64 population who agree with the statement that in their country, you will often see stories in the public media about successful new businesses
Perceived Capabilities	Suskilyy		Percentage of 18-64 population (individuals involved in any stage of entrepreneurial activity excluded) who believe they have the required skills and knowledge to start a business
Perceived Opportunities	Opportyy		Percentage of 18-64 population (individuals involved in any stage of entrepreneurial activity excluded) who see good opportunities to start a firm in the area where they live

Source: Own construction based on GEM (2016).

Table 2. Variables presentation and definition: independent variables related to the business environment.

Variables	Abbreviation	Unit of measure	Definition
Independent variables: business environment			
Financing for entrepreneurs	Finance		The availability of financial resources - equity and medium enterprises (SMEs) (including grants and subsidies)
Governmental support and policies	Support		The extent to which public policies support entrepreneurship - entrepreneurship as a relevant economic issue
Taxes and bureaucracy	Taxes		The extent to which public policies support entrepreneurship - taxes or regulations are either size-neutral or encourage new and SMEs
Governmental programs	Programs		The presence and quality of programs directly assisting SMEs at all levels of government (national, regional, municipal)
Basic-school entrepreneurial education and training	B_education	Likert 5-point scale, where 1 = least positive and 5 = most positive	The extent to which training in creating or managing SMEs is incorporated within the education and training system at primary and secondary levels
Post-school entrepreneurial education and training	P_education		The extent to which training in creating or managing SMEs is incorporated within the education and training system in higher education such as vocational, college, business schools, etc.
R&D transfer	R&D		The extent to which national research and development will lead to new commercial opportunities and is available to SMEs
Commercial and legal infrastructure	C_Infrastructure		The presence of property rights, commercial, accounting and other legal and assessment services and institutions that support or promote SMEs
Internal market dynamics	M_dynamics		The level of change in markets from year to year
Internal market openness	M_openness		The extent to which new firms are free to enter existing market
Physical and services infrastructure	P_Infrastructure		Ease of access to physical resources-communication, utilities, transportation, land or space- at a price that does not discriminate against SMEs
Cultural and social norms	Norms		The extent to which social and cultural norms encourage or allow actions leading to new business methods or activities that can potentially increase personal wealth and income

Source: Own construction based on GEM (2016).

Panel data (or longitudinal data) are characterized by a set of observations in two dimensions - time and individual. In this particular work, time refers to a period of 9 years between 2007 and 2015 and individuals refer to the 25 EU countries identified in the previous section. Due to this two dimensions, the panel data methods allow to control variables that cannot be observed or measured, like cultural factors or difference in business practices across countries, or variables that change over time but not across entities (i.e. national policies and regulations or international agreements). It also allows to combine the diversity of individual behaviour (in this case countries entrepreneurial behaviour) with temporal adjustment dynamics, even if they differ between countries. According to Hsiao (2003), the panel data econometric method offers many advantages, among which: (i) controls for the possible heterogeneity among the economies in the study; (ii) allows to use a larger number of observations, increasing the number of degrees of freedom and decreasing multicollinearity between the independent variables (since the data between individuals has different structures) making inferences more robust and more reliable; and, (iii) permits to identify and measure effects that are not possible to detect using only cross-sectional or time series analysis of data.

Within the available panel data models the most commonly are the fixed effects (FE) model and the random effects (RE) model. The FE model seeks to control the effect of omitted variables (not present in the model) that vary between individuals and remain constant over time. The RE model is based on the same assumptions considered in the FE model, however the RE model is estimated parameters which are constant for all subjects and all time periods - the differences are unobservable random parameters.

FE and RE models are estimated in order to explain the female early-stage entrepreneurial activity rate. The first models (fixed and random) try to identify which "aspiration" factors drive female entrepreneurial activity. This explanatory variable includes factors like growth expectations, international orientation of the entrepreneurial activity and the possibility to create a new product and the equations for the fixed and random panel data models are the following ones:

Aspirations FE model:

$$Teayyfem_{it} = \alpha_i + \beta_1 TEAyyjg5_{it} + \beta_2 TEAyyint_{it} + \beta_3 TEAyynwp_{it} + \varepsilon_{it}$$

(1)

Aspirations RE model: (2)

$$Teayyfem_{it} = \alpha + \beta_1 TEAyyjg5_{it} + \beta_2 TEAyyint_{it} + \beta_3 TEAyynwp_{it} + (\varepsilon_i + \varepsilon_{it})$$

The second models (fixed and random) try to identify which "attitudes and perceptions" factors drive female entrepreneurial activity. This is the explanatory variable, which includes factors like perceived capabilities, perceived opportunities, fear of failure rate, entrepreneurial intention, the rate of knowledge of start-up entrepreneur, the desire to choose a career of entrepreneur, the high status given by successful entrepreneurship and the media attention for entrepreneurship. So, the equations for the fixed and random panel data models are the following ones:

Attitudes and perceptions FE model:

$$\begin{aligned} Teayyfem_{it} = \alpha_i &+ \beta_1 Suskilyy_{it} + \beta_2 Opportyy_{it} + \beta_3 Frfailop_{it} \\ &+ \beta_4 Futsupno_{it} + \beta_5 Knoentyy_{it} + \beta_6 Nbgoodyy_{it} + \beta_7 Nbstatyy_{it} \\ &+ \beta_8 Nbmediyy_{it} + \varepsilon_{it} \end{aligned}$$

(3)

Attitudes and perceptions RE model:

$$Teayyfem_{it} = \alpha + \beta_1 Suskilyy_{it} + \beta_2 Opportyy_{it} + \beta_3 Frfailop_{it} + \beta_4 Frfailop_{it} \quad (4)$$
$$+ \beta_5 Frfailop_{it} + \beta_6 Frfailop_{it} + \beta_7 Frfailop_{it} + \beta_8 Frfailop_{it}$$
$$+ (\varepsilon_i + \varepsilon_{it})$$

The third models (fixed and random) try to identify which economic, legal and political environmental characteristics impact on female entrepreneurial activity. This explanatory variable includes factors like the environment regarding to entrepreneurs financing, governmental support and policies, taxes and bureaucracy, governmental programs, basic-school entrepreneurial education and training, post- school entrepreneurial education and training, R&D transfer, commercial and legal infrastructure, internal market dynamics, internal market openness, physical and services infrastructure, cultural and social norms. So, the equations for the fixed and random panel data models are the following ones:

Environment FE model:

$$Teayyfem_{it} = \alpha_i + \beta_1 Finance_{it} + \beta_2 Support_{it} + \beta_3 Taxes_{it}$$
$$+ \beta_4 Programs_{it} + \beta_5 B\_education_{it} + \beta_6 P\_education_{it} + \beta_7 R\_D_{it} \quad (5)$$
$$+ \beta_8 C\_Infrastructure_{it} + \beta_9 M\_dynamics_{it} + \beta_{10} M\_openness_{it}$$
$$+ \beta_{11} P\_Infrastructure_{it} + \beta_{12} Norms_{it} + \varepsilon_{it}$$

Environment RE model:

$$Teayyfem_{it} = \alpha + \beta_1 Finance_{it} + \beta_2 Support_{it} + \beta_3 Taxes_{it}$$
$$+ \beta_4 Programs_{it} + \beta_5 B\_education_{it} + \beta_6 P\_education_{it} + \beta_7 R\_D_{it} \quad (6)$$
$$+ \beta_8 C\_Infrastructure_{it} + \beta_9 M\_dynamics_{it} + \beta_{10} M\_openness_{it}$$
$$+ \beta_{11} P\_Infrastructure_{it} + \beta_{12} Norms_{it} + (\varepsilon_i + \varepsilon_{it})$$

Finally, the last models put together all the previous models offering an overall model:

Overall FE model:

$$Teayyfem_{it} = \alpha_i + \beta_1 TEAyyjg5_{it} + \beta_2 TEAyyint_{it} + \beta_3 TEAyynwp_{it}$$
$$+ \beta_4 Suskilyy_{it} + \beta_5 Opportyy_{it} + \beta_6 Frfailop_{it}$$
$$+ \beta_7 Futsupno_{it} + \beta_8 Knoentyy_{it} + \beta_9 Nbgoodyy_{it} + \beta_{10} Nbstatyy_{it} \quad (7)$$
$$+ \beta_{11} Nbmediyy_{it} + \beta_{12} Finance_{it} + \beta_{13} Support_{it} + \beta_{14} Taxes_{it}$$
$$+ \beta_{15} Programs_{it} + \beta_{16} B\_education_{it} + \beta_{17} P\_education_{it} + \beta_{18} R\_D_{it}$$
$$+ \beta_{19} C\_Infrastructure_{it} + \beta_{20} M\_dynamics_{it} + \beta_{21} M\_openness_{it}$$
$$+ \beta_{22} P\_Infrastructure_{it} + \beta_{23} Norms_{it} + \varepsilon_{it}$$

Overall RE model:

$$Teayyfem_{it} = \alpha + \beta_1 TEAyyjg5_{it} + \beta_2 TEAyyint_{it} + \beta_3 TEAyynwp_{it}$$
$$+ \beta_4 Suskilyy_{it} + \beta_5 Opportyy_{it} + \beta_6 Frfailop_{it}$$
$$+ \beta_7 Futsupno_{it} + \beta_8 Knoentyy_{it} + \beta_9 Nbgoodyy_{it} + \beta_{10} Nbstatyy_{it} \quad (8)$$
$$+ \beta_{11} Nbmediyy_{it} + \beta_{12} Finance_{it} + \beta_{13} Support_{it} + \beta_{14} Taxes_{it}$$
$$+ \beta_{15} Programs_{it} + \beta_{16} B\_education_{it} + \beta_{17} P\_education_{it} + \beta_{18} R\_D_{it}$$
$$+ \beta_{19} C\_Infrastructure_{it} + \beta_{20} M\_dynamics_{it} + \beta_{21} M\_openness_{it}$$
$$+ \beta_{22} P\_Infrastructure_{it} + \beta_{23} Norms_{it} + (\varepsilon_i + \varepsilon_{it})$$

In the FE model, it is admitted that the estimated effect for each selected independent variable is constant over the EU countries and over time. If it is believed the individual effects (this is the location effects) result from a higher number of no random factors, this specification is the most logical. This model could be the suitable when the aim is to estimate the country's effect on the entrepreneurial activity (Baltagi, 2013; Longhi & Nandi, 2015). The RE models assumes the countries' specific entrepreneurial behaviour over time is unknown. Therefore, if exists a country's non observable specific behaviour, and that behaviour persists over time, such individual or time specific effects may be represented by a random variable. This way, the heterogeneity is captured through the error term and not by the constant as in the FE model (Wooldridge, 2002; Baltagi, 2013; Longhi & Nandi, 2015). The choice between the two models' results is made using the Hausman test.

4. Results

The results of the panel data estimation (FE and RE models) are presented in Table 3. In the table is presented the estimated coefficient for each independent variable and the indication of the respective significance level. For each model is also presented the result of the Hausman test that allows to choose between FE and RE estimations. Additionally, even if is not common to present post estimation measures in panel data applications since the results are slightly different for the traditional Ordinary Least Squares estimation (Verbeek, 2008), here are presented the following. The R^2 (within, between and overall), that although not coincident with the Ordinary Least Squares coefficient of determination (and therefore not having the exact same meaning) are possible approaches to model goodness-of-fit measures (Verbeek, 2008), the joint significance test F (for the FE models) and the joint significance Wald test (for the RE models), that if statistical significant indicate the independent variables' estimated coefficients, together, are nor equal to zero and therefore the model is a good one (Baltagi, 2013; Longhi & Nandi, 2015). A note for the different number of observations include in each model – 177 observations for the aspirations models, 162 for the attitudes and perceptions models, 171 for the environmental models and 157 for the overall models. The difference is due to the fact that for some variables in some moments in time there is no information.

According to the Hausman test for the aspiration models, attitudes and perceptions models and environmental models, applied to women that started a business, should be chosen the results of the FE models. If all the variables are put together in the same model the RE model is the one that fits better.

The overall model is the one that presents the highest overall R^2. For the random effects' overall model, the changes in the female entrepreneurial activity are explained in approximately 60% by the variations occurred in the explanatory variables of that model. This value drops till 0.2% for the aspiration model, indicating a low explanatory power of only this variables in the determination of factors that drive female entrepreneurship, and to almost 2% for the environmental model, also indicating that the use of only environmental variable has a low explanatory power to explain the phenomenon of female entrepreneurship in EU countries. The value of the overall R^2 is 32% for the attitudes and perception model, which means the changes in only this factors to explain female entrepreneurship, explain its variation in almost 32%. However, because for the attitudes and perceptions model is selected the FE's estimation results, that admit the existence of constant observable female entrepreneurship drivers within the EU countries and over time, the within R^2 is the best indicator for the model explanatory power. The observable differences between attitudes and perceptions towards female entrepreneurship, in each one of the EU countries analysed, that persist over time, explain approximately 41% of the variations in the rate of female entrepreneurship in those countries.

Table 3. Panel data estimation results: female early-stage entrepreneurial activity.

Independent Variables	Aspiration model		Attitudes and perception model		Environment model		Overall model	
	Fixed effect	Random effect	Fixed effect	Random effect	Fixed effect	Random effect	Fixed effect	Random effect
Constant	3.087 ***	3.192 ***	-0.623	-0.385	4.928 ***	4.899 ***	0.460	2.490
TEAyyjg5	0.002	0.014	-	-	-	-	-0.034 *	-0.019
TEAyynwp	0.042 **	0.034 **	-	-	-	-	0.035 **	0.005
TEAyyint	-0.010	-0.005	-	-	-	-	-0.022	-0.012
Suskilyy	-	-	0.076 *	0.067 ***	-	-	0.084 *	0.075 ***
Opportyy	-	-	0.011	0.018	-	-	0.018	0.027 **
Frfailop	-	-	0.046 *	0.038 *	-	-	0.035	0.009
Futsupno	-	-	0.160 ***	0.166 ***	-	-	0.153 ***	0.186 ***
Knoentyy	-	-	-0.006	-0.007	-	-	-0.015	-0.044 **
Nbgoodyy	-	-	0.005	-0.007	-	-	0.002	-0.024 *
Nbstatyy	-	-	-0.034	-0.018	-	-	-0.042	-0.021
Nbmediyy	-	-	0.009	0.005	-	-	0.012	0.009
Finance	-	-	-	-	0.692	0.472	0.012	-0.148
Support	-	-	-	-	0.184	-0.309	-0.534	-1.036 **
Taxes	-	-	-	-	0.882	1.319 **	0.179	1.324 ***
Programs	-	-	-	-	0.034	-0.538	0.604	-0.421
B_education	-	-	-	-	-0.009	-0.334	-0.140	-0.321
P_education	-	-	-	-	0.409	0.820	-0.099	0.196
R_D	-	-	-	-	-0.432	-1.114	-0.401	-1.256 *
C_Infrastructure	-	-	-	-	-0.425	-0.421	0.462	0.575
M_dynamics	-	-	-	-	0.102	0.017	0.069	-0.589 **
M_openness	-	-	-	-	-1.983 **	-1.229 *	-0.693	0.096
P_Infrastructure	-	-	-	-	0.366	0.454	0.012	0.473
Norms	-	-	-	-	0.114	0.749	0.247	0.905 **
Statistics								
Nº of observation	177		162		171		157	
Hausman test	3.32		2.36		10.25		46.68 ***	
R2 Within	0.051	0.0465	0.4103	0.4071	0.1006	0.0708	0.4834	0.3637
R2 Between	0.000	0.0139	0.3233	0.3725	0.0223	0.3247	0.277	0.6758
R2 Overall	0.002	0.0129	0.32	0.3688	0.0197	0.172	0.3145	0.6038
F test	2.65 *	n.a.	11.31 ***	n.a.	1.25	n.a.	4.47 ***	n.a.
Wald test	n.a.	7.26 *	n.a.	103.66 ***	n.a.	20.36 *	n.a.	202.72 ***

Notes: * indicates that the coefficient is statistical significant at the 10% significance level, ** indicates that the coefficient is statistical significant at the 5% significance level, *** indicates that the coefficient is statistically significant at a significance level of 1%. n.a. means not applicable.

The explanatory power of these variables, are enhanced by the environmental variables and, even if less, by the aspiration variables. The selection of a RE model, suggesting that a non-observable behaviour between countries that remains over time, influences the results, maximises the between R^2 showing that all the variables is study may explain in almost 68% the variations on the female entrepreneurial activity in EU countries in the last 9 years.

So, regarding to the aspirations model only the variable related to the creation of a new product is important (statistically) for explaining of the rate of female entrepreneurship in EU countries over the last years. If the firm creates a new product or service, the probability of being a women-owner of the firm is positive. Regarding to the attitudes and perceptions model, the variables that measure the perceived capabilities, the fear of failure and the entrepreneurial intention have significant statistical influence on the level of female entrepreneurship. The variables measuring the perceived capabilities and the entrepreneurial intention remain statistical significant in the overall model, what shows their importance in the explanation of female rate of entrepreneurial activity. The results of the third model, alone, do not present

statistical significance in the explanation of this female activity but together with aspirations and perceptions are important drivers as shown by the results of the overall model.

Variables that measure the perceived capabilities, the perceived opportunities, the entrepreneurial intention, the rate of knowledge regarding to the entrepreneurial activity of others, the entrepreneurship activity as a desirable career choice, the level of governmental support and policies, the level of taxes and bureaucracy, the level of R&D, the level dynamism of the internal market and the level of cultural and social norms, are found to be statistically significant drivers of female entrepreneurship in EU countries.

For example, with a 99% confidence level, and remaining all the other factors constant, it is possible to state that if the rate of perceived capabilities increase in 1%, in an EU country, the rate of female entrepreneurial activity increases 0.075%. While, if the rate of perceived opportunities increases also 1%, remaining all the other variables constant, the rate of female entrepreneurial activity increases 0.027%. Both these variables present a positive impact on the rate of female entrepreneurship as mentioned in the literature. Entrepreneurial intention also has positive impact on the rate of female entrepreneurship. If the rate of entrepreneurial intention increases in 1%, remaining all the other variables constant, the rate of female entrepreneurship increases 0.186%. With a 90% confidence level, if the rate of knowledge of other start-up entrepreneur increases 1% in the EU countries, the rate of female entrepreneurs' decreases 0.044%. The literature indicates a positive influence of role models on the female entrepreneurial activity but that seems to be not so important in the European Union developed countries. At the same time, 1% of increment of the desire to choose a career as an entrepreneur, decreases the rate of female entrepreneurship in 0.024%. These results support the literature: females start their own venture forced by mainly by necessity and not by opportunity or desire.

The governmental support and policies also negatively influence the rate of female entrepreneurial activity decreasing its' rate by more than1%. The literature mentions the existence of several institutions that support female entrepreneurship in EU countries, however, these results show that such policies and the governmental support may be not effectively implemented in EU countries. The biggest negative impact on the rate of female entrepreneurs is found for R&D transfer. As females are more involved in commercial sectors such as sales, retail and services, new opportunities in R&D area (more related to industrial and manufacturing sectors of activity) decrease the number of female entrepreneurs in 1.256%. Note that this results was expected since had been already identified in the literature. Changes in the dynamics of the internal market also negatively influence on the rate of female entrepreneurship. Most of female business owners balance family and business and because of that they are not so much willing to take risks or acquired new knowledge and/or experience for engaging in a business activity, as mentioned in the literature.

As noted by the literature review the impact of social and cultural norms might not be positive in case of female entrepreneurs. The result here obtained for the variable that is called social-cultural norms confirms the literature. GEM experts give a higher value to an environment where social and cultural norms encourage entrepreneurship, so in the 25 analysed EU countries, if social-cultural norms that encourage women increase by 1 point the rate of female entrepreneurial activity increases by 0.905%. Indeed, social and cultural aspects are important explanatory factors for female entrepreneurship, even in countries more developed and more aware of the importance of women in society.

Also for women, policies that make taxes less important and facilitate bureaucracy and consequently encourage new and SMEs have a positive impact on female entrepreneurship. Less taxes and bureaucracy (1 point more in the value of the variable) make the number of female entrepreneurs bigger, increasing it 1.324%.

According to the results of the estimated models for the subgroup of female population, in EU countries, the perceived capabilities and opportunities, the entrepreneurial intention, lower tax burden and bureaucracy and supporting social-cultural norms seem to be the most important drivers of female entrepreneurship in the last 9 years.

5. Conclusions

This work intended to analyse the phenomenon of female entrepreneurship in European Union over the last years. For reaching the objective, a literature review was presented, in order to offer a framework for the issue in question and an empirical analysis was conducted based on a set of data collected for EU countries (from 2007 to 2015) by the Global Entrepreneurship Monitor (GEM). From the literature review was selected a set of variables considered important to describe the phenomenon in EU countries over time. According to the literature, women are less entrepreneurial than men and exist many inequalities in the gender access to an entrepreneurial activity. Push and pull factors may explain the female entrepreneurial rates and several obstacles may influence on it negatively. Some of these pull and push factors and the limitations were empirical analysed for a set of 25 EU countries and important findings were found.

After analysing the empirical results, it is possible to state that the knowledge of other start-up entrepreneurs negatively influence on the female entrepreneurs. This results was not expectable but may occur because women entrepreneurs have fewer female role models which might not attract them so much to entrepreneurship. Another variable that presents a non-expectable result refers to the governmental support and policies. In the literature had been referred that EU, in general, and many other specific institutions and organizations are implementing different programs and policies in order to enhance female entrepreneurship, however, that seems not positively influence on the rates of female entrepreneurial activity. Or these measures are not being effective and need to be changed and/or improved or other factors are even more important to define the level of female entrepreneurship in European Union countries.

The variable measuring women's desire to choose the career of entrepreneurs influence negatively on their entrepreneurial activity rate. As mentioned in the literature, in the process of establishment a new firms, women are forced by necessity, whilst men choose the career of entrepreneurs because it is a challenging activity that offers to them an increase in the personal wealth and income (Kepler & Shane, 2007; Klapper & Parker, 2011; Maes et al., 2014; Hazudin et al., 2015). The rate of female entrepreneurial activity decreases cause of the new opportunities of the R&D area. Explanation of this unexpected result is that women are involved in commercial sectors such as sales, retail and services (according to literature), while new opportunities of R&D area are more related to industrial and manufacturing sectors where men are more involved.

Changes in the dynamics of internal markets is defined, in this study, as an obstacle for female in the process of business creation. According to many other studies, women become self-employed for balancing work and family demands (Kepler & Shane, 2007; Kobeissi, 2010; Minniti & Naudé, 2010; Ferk et al., 2013; Hazudin et al., 2015). So, if they observe many changes can occur in the market that may force them to keep away from entrepreneurship in order to avoid problems caused by possible failures. Indeed, many scholars highlight the negative influence of the fear of failure. In the EU economies, a set of developed high income economies, this factor do not shows any direct influence which may be explained by the level of confidence that women have in European Union institutions and the overall economies. If

female fail on their entrepreneurial activity they are able to find other solutions to increase their income.

Even, if in European Union countries various barriers may force women not to create their own businesses, many other factors drive and encourage them in the process of business creation. Skills and knowledge, offered to them in the education system and through training, help women to run successful business and increases the rate of female entrepreneurial activity. According to Huarng et al. (2012) women with widely managerial skills overcome obstacles and problems easily at the beginning of their entrepreneurial activity and that seems to be happening in EU. So, the perceived opportunities together with an effective entrepreneurial intention, that was found a significant statistical indicator, are drivers of female entrepreneurship. Policies that reduce taxes and bureaucracy are found as another stimulus for women to start their ventures, while this factor do not have significant effect in the case of men entrepreneurs. Social-cultural norms that encourage the entrepreneurial activity are defined also as significant drivers of female entrepreneurship in European Union countries.

References

Acs, Z. J., Arenius, P., Hay, M., & Minniti, M. (2004). *Global entrepreneurship monitor 2004 executive report*. Retrieved from http://www.emekin.net/documentos/eu/GEM_2004_Exec_Report.pdf

Adema, W., Ali, N., Frey, V., Kim, H., Lunati, M., Piacentini, M., & Queisser, M. (2014). Enhancing women's economic empowerment through entrepreneurship and business leadership in OECD countries. Retrieved April 9, 2016, from http://docplayer.net/5676496-Enhancing-women-s-economic-empowerment-through-entrepreneurship-and-business-leadership-in-oecd-countries.html

Agarwal, R., Audretsch, D., & Sarkar, M. B. (2007). The process of creative construction: knowledge spillovers, entrepreneurship, and economic growth. *Strategic Entrepreneurship Journal*, *1*(3–4), 263–286. http://doi.org/10.1002/sej.36

Amorós, J. E., & Bosma, N. (2014). *Global Entrepreneurship Monitor 2013 global report*. Retrieved from http://www.babson.edu/academics/centers/blank-center/global-research/gem/documents/gem%202013%20global%20report.pdf

Apergis, N., & Pekka-Economou, V. (2010). Incentives and female entrepreneurial activity: evidence from panel firm level data. *International Advances in Economic Research*, *16*(4), 371–387. http://doi.org/10.1007/s11294-010-9277-9

Arenius, P., & Minniti, M. (2003). *Women in entrepreneurship. The entrepreneurial advantage of nations: first annual global entrepreneurship symposium*. United Nations Headquarters. Retrieved from http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.471.7819&rep=rep1&type=pdf

Arenius, P., & Minniti, M. (2005). Perceptual variables and nascent entrepreneurship. *Small Business Economics*, *24*(3), 233–247. http://doi.org/10.1007/s11187-005-1984-x

Baltagi, B. H. (2013). *Econometric analysis of panel data* (5th ed.). West Sussex: Wiley.

Bardasi, E., Sabarwal, S., & Terrell, K. (2011). How do female entrepreneurs perform? Evidence from three developing regions. *Small Business Economics*, *37*(4), 417–441. http://doi.org/10.1007/s11187-011-9374-z

BarNir, A., Watson, W. E., & Hutchins, H. M. (2011). Mediation and moderated mediation in the relationship among role models, self-efficacy, entrepreneurial career intention, and gender.

Journal of Applied Social Psychology, *41*(2), 270–297. http://doi.org/10.1111/j.1559-1816.2010.00713.x

Baron, R. A. (2007). Behavioral and cognitive factors in entrepreneurship: Entrepreneurs as the active element in new venture creation. *Strategic Entrepreneurship Journal*, *1*(1–2), 167–182. http://doi.org/10.1002/sej.12

Bosma, N., Praag, M. van, Thurik, R., & Wit, G. de. (2004). The value of human and social capital investments for the business performance of startups. *Small Business Economics*, *23*(3), 227–236. http://doi.org/10.1023/B:SBEJ.0000032032.21192.72

Carland, J. W., Hoy, F., Boulton, W. R., & Carland, J. A. C. (1984). Differentiating entrepreneurs from small business owners: A conceptualization. *Academy of Management Review*, *9*(2), 354–359. http://doi.org/10.5465/AMR.1984.4277721

Carree, M., Stel, A. van, Thurik, R., & Wennekers, S. (2002). Economic development and business ownership: an analysis using data of 23 OECD countries in the period 1976–1996. *Small Business Economics*, *19*(3), 271–290. http://doi.org/10.1023/A:1019604426387

Carter, N., Brush, C., Greene, P., Gatewood, E., & Hart, M. (2003). Women entrepreneurs who break through to equity financing: the influence of human, social and financial capital. *Venture Capital: An International Journal of Entrepreneurial Finance*, *5*(1), 1–28. http://doi.org/10.1080/1369106032000082586

Cowling, M. (2000). Are entrepreneurs different across countries? *Applied Economics Letters*, *7*(12), 785–789. http://doi.org/10.1080/135048500444804

Díaz-García, M. C., & Jiménez-Moreno, J. (2009). Entrepreneurial intention: the role of gender. *International Entrepreneurship and Management Journal*, *6*(3), 261–283. http://doi.org/10.1007/s11365-008-0103-2

Drucker, P. (2014). *Innovation and entrepreneurship*. Routledge.

European Commission (2005). *Europe in figures: Eurostat yearbook 2005*. Retrieved from http://ec.europa.eu/eurostat/documents/3217494/5662531/KS-CD-05-001-EN.PDF/751b319f-9bec-4eab-8b55-4dec31789b23

European Commission (2014). *Encouraging female entrepreneurship: United Kingdom. Exchange of good practices on gender equality: summary report*. Retrieved from http://ec.europa.eu/justice/gender-equality/files/exchange_of_good_practice_uk/summary_report_uk_2014_en.pdf

European Commission (2016). *Growth, internal market, industry, entrepreneurship and SMEs, promoting entrepreneurship, who we work for, female entrepreneurs*. Retrieved April 20, 2016, from http://ec.europa.eu/growth/smes/promoting-entrepreneurship/we-work-for/women/index_en.htm

Ferk, M., Quien, M., & Posavec, Z. (2013). Female vs. male entrepreneurship - is there a difference? *Studies of Organisational Management & Sustainability*, *1*(1), 67–77. Retrieved from http://soms.ismai.pt/index.php/SOMS/article/view/4/6

Gries, T., & Naudé, W. (2009). Entrepreneurship and regional economic growth: towards a general theory of start-ups. *Innovation-The European Journal of Social Science Research*, *22*(3), 309–328. http://doi.org/10.1080/13511610903354877

Gupta, V. K., Turban, D. B., Wasti, S. A., & Sikdar, A. (2009). The role of gender stereotypes in perceptions of entrepreneurs and intentions to become an entrepreneur. *Entrepreneurship Theory and Practice*, *33*(2), 397–417. http://doi.org/10.1111/j.1540-6520.2009.00296.x

Hazudin, S. F., Kader, M. A. R. A., Tarmuji, N. H., Ishak, M., & Ali, R. (2015). Discovering small business start-up motives, success factors and barriers: a gender analysis. *Procedia Economics and Finance*, *31*, 436–443. http://doi.org/10.1016/S2212-5671(15)01218-6

Hsiao, C. (2003). *Analysis of panel data* (2nd ed.). Cambridge: Cambridge University Press.

Huarng, K.-H., Mas-Tur, A., & Yu, T. H.-K. (2012). Factors affecting the success of women entrepreneurs. *International Entrepreneurship and Management Journal*, *8*(4), 487–497. http://doi.org/10.1007/s11365-012-0233-4

Kelley, D., Bosma, N., & Amorós, J. E. (2011). *Global Entrepreneurship Monitor 2010 global report*. Retrieved from http://entreprenorskapsforum.se/wp-content/uploads/2011/02/GEM-2010-Global-Report.pdf

Kepler, E., & Shane, S. (2007). *Are male and female entrepreneurs really that different?* The Office of Advocacy, US Small Business Administration. Retrieved from http://econpapers.repec.org/paper/sbawpaper/07ekss.htm

Klapper, L. F., & Parker, S. C. (2011). Gender and the business environment for new firm creation. *The World Bank Research Observer*, *26*(2), 237–257. http://doi.org/10.1093/wbro/lkp032

Kobeissi, N. (2010). Gender factors and female entrepreneurship: International evidence and policy implications. *Journal of International Entrepreneurship*, *8*(1), 1–35. http://doi.org/10.1007/s10843-010-0045-y

Koellinger, P., Minniti, M., & Schade, C. (2007). "I think i can, i think i can": Overconfidence and entrepreneurial behavior. *Journal of Economic Psychology*, *28*(4), 502–527. http://doi.org/http://dx.doi.org/10.1108/02683949910287912

Koellinger, P., Minniti, M., & Schade, C. (2013). Gender differences in entrepreneurial propensity. *Oxford Bulletin of Economics and Statistics*, *75*(2), 213–234. http://doi.org/10.1111/j.1468-0084.2011.00689.x

Kreide, R. (2003). Self-employment of women and welfare-state policies. *International Review of Sociology*, *13*(1), 205–218. http://doi.org/10.1080/0390670032000087069

Langowitz, N. S., & Minniti, M. (2007). The entrepreneurial propensity of women. *Entrepreneurship Theory and Practice*, *31*(3), 341–364. http://doi.org/10.1111/j.1540-6520.2007.00177.x

Lohmann, H., & Luber, S. (2004). Trends in self-employment in Germany: different types, different developments? In Arum, R., & Muller, W. (Eds.), *The reemergence of self-employment. A comparative study of self-employment dynamics and social inequality* (pp. 36–74). Princeton University Press.

Maes, J., Leroy, H., & Sels, L. (2014). Gender differences in entrepreneurial intentions: a TPB multi-group analysis at factor and indicator level. *European Management Journal*, *32*(5), 784–794. http://doi.org/10.1016/j.emj.2014.01.001

Minniti, M., Langowitz, N. S., & Arenius, P. (2005). *Global Entrepreneurship Monitor: 2004 report on women and entrepreneurship*. University of Illinois at Urbana-Champaign's Academy for Entrepreneurial Leadership Historical Research Reference in Entrepreneurship. Retrieved from http://papers.ssrn.com/abstract=1509263

Minniti, M., & Nardone, C. (2007). Being in someone else's shoes: The role of gender in nascent entrepreneurship. *Small Business Economics*, *28*(2–3), 223–238. http://doi.org/10.1007/s11187-006-9017-y

Minniti, M., & Naudé, W. (2010). What do we know about the patterns and determinants of female entrepreneurship across countries? *European Journal of Development Research*, *22*(3), 277–293. http://doi.org/10.1057/ejdr.2010.17

Naudé, W., Gries, T., Wood, E., & Meintjies, A. (2008). Regional determinants of entrepreneurial start-ups in a developing country. *Entrepreneurship & Regional Development*, *20*(2), 111–124. http://doi.org/10.1080/08985620701631498

Orhan, M., & Scott, D. (2001). Why women enter into entrepreneurship: an explanatory model. *Women in Management Review*, *16*(5), 232–247. http://doi.org/10.1108/09649420110395719

Ozgen, E., & Baron, R. A. (2007). Social sources of information in opportunity recognition: effects of mentors, industry networks, and professional forums. *Journal of Business Venturing*, *22*(2), 174–192. http://doi.org/10.1016/j.jbusvent.2005.12.001

Panteia (2014a). *Statistical data on women entrepreneurs in Europe*. Retrieved from http://ec.europa.eu/DocsRoom/documents/7481/attachments/1/translations/en/renditions/native

Panteia (2014b). *Statistical data on women entrepreneurs in Europe: Estonia*. Retrieved from http://www.praxis.ee/wp-content/uploads/2015/04/Statistical-Data-on-Women-Entrepreneurs-in-Europe_Estonia.pdf

Panteia (2014c). *Statistical data on women entrepreneurs in Europe: Greece*. Retrieved from http://www.isotita.gr/var/uploads/ANNOUNCEMENTS/2014/Greece%20Women%20entrepreneurs%20in%20Europe.pdf

Panteia (2014d). *Statistical data on women entrepreneurs in Europe: Spain*. Retrieved from http://viaemprende.es/sites/default/files/estadisticas/Spain%20Women%20entrepreneurs%20in%20Europe.pdf

Reynolds, P., Bosma, N., Autio, E., Hunt, S., Bono, N. D., Servais, I., … Chin, N. (2005). Global Entrepreneurship Monitor: data collection design and implementation 1998–2003. *Small Business Economics*, *24*(3), 205–231. http://doi.org/10.1007/s11187-005-1980-1

Robb, A., & Wolken, J. D. (2002). Firm, owner, and financing characteristics: differences between female- and male-owned small businesses (FEDS Working Paper No. 2002–18). Retrieved from http://papers.ssrn.com/abstract=306800

Sternberg, R., & Wennekers, S. (2005). Determinants and effects of new business creation using global entrepreneurship monitor data. *Small Business Economics*, *24*(3), 193–203. http://doi.org/10.1007/s11187-005-1974-z

Szirmai, A., Naudé, W., & Goedhuys, M. (2011). *Entrepreneurship, innovation, and economic development*. Oxford University Press.

Thurik, R., & Verheul, I. (2001). Start-up capital: Does gender matter? *Small Business Economics*, *16*(4), 329–346. http://doi.org/10.1023/A:1011178629240

Verbeek, M. (2008). *A guide to modern econometrics*. John Wiley & Sons.

Verheul, I., Stel, A. V., & Thurik, R. (2006). Explaining female and male entrepreneurship at the country level. *Entrepreneurship & Regional Development*, *18*(2), 151–183. http://doi.org/10.1080/08985620500532053

Vossenberg, S. (2013). Women entrepreneurship promotion in developing countries: What explains the gender gap in entrepreneurship and how to close it (Maastricht School of Management Working Paper No. 2013/08). Retrieved from ftp://ftp.repec.org/opt/ReDIF/RePEc/msm/wpaper/MSM-WP2013-08.pdf

Wagner, J. (2006). What a difference a Y makes-female and male nascent entrepreneurs in Germany. *Small Business Economics*, *28*(1), 1–21. http://doi.org/10.1007/s11187-005-0259-x

Wennekers, S., & Thurik, R. (1999). Linking entrepreneurship and economic growth. *Small Business Economics*, *13*(1), 27–56. http://doi.org/10.1023/A:1008063200484

Wennekers, S., Wennekers, A. van, Thurik, R., & Reynolds, P. (2005). Nascent entrepreneurship and the level of economic development. *Small Business Economics*, *24*(3), 293–309. http://doi.org/10.1007/s11187-005-1994-8

Williams, D. R. (2004). Effects of childcare activities on the duration of self-employment in Europe. *Entrepreneurship Theory and Practice*, *28*(5), 467–485. http://doi.org/10.1111/j.1540-6520.2004.00058.x

Wong, P. K., Ho, Y. P., & Autio, E. (2005). Entrepreneurship, innovation and economic growth: evidence from GEM data. *Small Business Economics*, *24*(3), 335–350. http://doi.org/10.1007/s11187-005-2000-1

Wooldridge, J. M. (2002). *Econometric analysis of cross section and panel data* (2nd ed.). MIT Press.

Xavier, S. R., Kelley, D., Kew, J., Herrington, M., & Vorderwulbecke, A. (2012). *Global Entrepreneurship Monitor 2012 global report*. Retrieved from http://www.cise.es/wp-content/uploads/2013/03/10_GEM-Global_2012.pdf