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**Economic Crisis and Female Entrepreneurship:
Evidence from European countries**

Supervisor: Panagiotis Konstantinou, Assistant Professor

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Abstract

Inspired by the stream of research that studies the impact of the economic crisis on entrepreneurship, the current dissertation aims to examine whether and how female entrepreneurship in European countries was affected by the crisis or other factors. We have used panel data for 28 EU economies for an eleven year time span ranging from 2006 – 2016. Our results indicate that the economic crisis seems not to be significantly correlated to the creation of businesses run by women. According to our model, an increase in educational levels, leads the number of businesses which are run by females to increase as well. The economic crisis negatively affects the creation of new businesses run by women; though this effect is not found to be statistically significant. In addition, unemployment is found to be negatively correlated and statistically significant meaning that increases in unemployment might not worked as a catalyst for the creation of businesses by females during the decade studied. Being a woman entrepreneur is not an easy task as it still represents a relative disadvantage in almost all of the economies worldwide. Women are still in a weaker relative position than men both in society and in the business environment. The role of policy makers when supporting and strengthening female entrepreneurship is of great importance. Strengthening female entrepreneurship and entrepreneurship in general could have a beneficial effect on countries' economic growth rates. In turn, this effect would have other positive effects on citizens' welfare and would improve the country's relative position worldwide.



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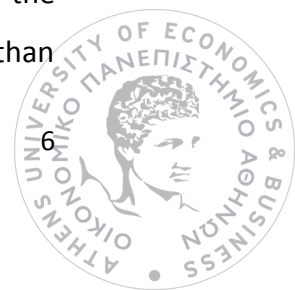
1. Introduction and Literature Review

The recent great recession and economic crisis with its peak in 2008 has seriously affected the world economy and was quickly spread in several European countries. Its consequences were severe not only at an economic level but at social and political level as well. The financial markets were dominated by uncertainty, GDP fell, unemployment has risen, wages were cut and services were eliminated. Undoubtedly, the economic crisis had detrimental consequences on the countries' labor markets. Lots of people have lost their jobs, work hours reduced, wages decreased significantly and working conditions worsened. Entrepreneurship levels affected as well.

The present study aims to explore whether and how female entrepreneurship was affected by the crisis. Female entrepreneurship needs to be studied for two main reasons; firstly because it has been recognized as an important untapped source of economic growth during the last decade and secondly due to the fact that self-employment is an important career alternative for women in almost all economies. On top of these reasons, it is of utmost importance to examine if the recent economic crisis worked as a contextual factor contributing to the increase of entrepreneurship rates among women.

Hatfield (2015) finds that the self-employment rate in France, the Netherlands, Sweden and the UK has increased steadily throughout the past decade; however, female self-employment rate lags behind the male equivalent in every EU country, with the largest difference found in Ireland, Sweden and Denmark and the smallest in Luxembourg and Portugal.

Existing literature suggests that women were significantly hit by the crisis while they face a lower demand for their services and shortage in credit for business (*Pines et al, 2010*). The authors examine the effect of the global economic crisis on female entrepreneurship. The perspectives of equality, diversity and inclusion are included in their study. Using data from 43 countries during the period 2007-2008, the authors find that the participation rate in entrepreneurship for females is lower than



the corresponding participation rate for males. Furthermore, the shows the role of inequality in women's entrepreneurship.

Women are often the hardest victims of an economic shock. *Klapper and Love (2011)* find that most countries experienced a sharp drop in new firm registration during the 2008 global financial crisis using panel data for 93 countries. The decrease was more pronounced though, in countries with higher levels of financial development which were more affected by the crisis.

Paul and Sarma examine the impact of the economic crisis on female entrepreneurship across 30 transition countries of Eastern Europe and Central Asia (EECA) that were hit hard by the crisis. They also aim to answer whether women have started a business as a "household coping strategy" due to the crisis. Their results indicate that the crisis may indeed worked as a contextual factor leading women to become entrepreneurs by necessity in order to ease household finances during the difficult times of the crisis. It is worth mentioning that according to the results, prior entrepreneurial activity at the household level, plays a very important role for such female necessity entrepreneurship.

El-Hamidi (2011) tries to explain the differences between men's and women's owned MSEs in terms of human, financial and performance. Author used data from Micro and Small Enterprises in Egypt during the period 2003. Moreover, she found that women's was in disadvantage comparison with men's in human and financial capital. Nevertheless, women's have better performance than men's in generating revenues. Finally, women's and men's have similar results about the employment growth or the efficiency of their business.

Nikolova et al. (2012) highlight access to capital as the biggest barrier for those willing to start their own enterprise; and especially during the financial crisis the severity of this barrier increased adversely.

Orwa, Tiagha and Waiguchu (2014) investigate the performance of SMEs which are either owned or managed by females. The authors use 354 questionnaires from four different industries of Nairobi. Their results indicate that the entrepreneurship



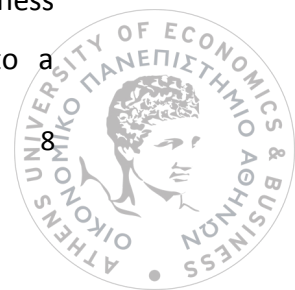
scorecard is correlated with performance, technology and innovation as well as business planning.

Devece et al. (2016) identify the combinations of fundamental entrepreneurial factors that drive the growth of new businesses under different economic conditions. Using data from the Global Entrepreneurship Monitor (GEM) survey, the study focuses on two moments in Spain's recent economic cycle: the 2008 economic crisis and the economic boom prior to this downturn. The authors find that necessity-driven entrepreneurship is ineffective during recessions. They also prove that both innovation and opportunity recognition are considered as success factors during periods of recession rather than during periods of prosperity. Nevertheless, the entrepreneur's perception of opportunities may be misleading in strong economies.

The rest of the paper is organized as follows: section 2 describes the European framework for female entrepreneurship including the relevant legislation and directives. Section 3 discusses the obstacles, barriers and discriminatory effects that may hinder women's entrepreneurship, including access to finance in the European Union. The current trends as well as future challenges on women entrepreneurship vis-à-vis the economic crisis the European Union has faced in the past few years are analyzed in section 4. Section 4 also presents the evolution of female entrepreneurship in Greece. The econometric model and the data used in our analysis are presented in section 5. The main results are discussed in section 6. Finally, section 7 concludes and provides some policy recommendations to support and strengthen female entrepreneurship further.

2. European framework for female entrepreneurship

Entrepreneurship is widely known as the process of designing, launching and running a new business. This process entails high risks; these risks are associated and occur in all stages i.e. the development, the organization and the management of a business venture. The entrepreneur should be able to transform an invention into a



commercially viable and innovative product or service. On top of all, entrepreneurship is a key driver for job creation, competitiveness, economic growth and one of the ways out of the crisis.

Even if there is not yet a common definition and concord among EU member states of what female entrepreneurship is, the European Commission states that female entrepreneurship refers to businesses in which 50% of the property belongs to a woman and the management is carried out by a woman. Within this framework, several new policy approaches to supporting women in entrepreneurship are starting to emerge. Many countries are exploring the potential of using public procurement to open up market opportunities for women and providing more support for growth-oriented women entrepreneurs with dedicated business incubator and business accelerator programmes and the creation of an infrastructure for risk capital.

Women's entrepreneurship is a key policy agenda for the European Commission. The European Union has an important role to play in raising awareness of the importance of entrepreneurship and in particular female entrepreneurship in society. To this end, the European Commission came out with an action plan to unleash Europe's entrepreneurial potential, to remove existing obstacles and to revolutionise the culture of entrepreneurship in Europe. The 'Entrepreneurship 2020 action plan' as is called, was drafted to unleash Europe's entrepreneurial potential, to ease the creation of new businesses by removing existing obstacles and to create a much more supportive environment for existing entrepreneurs to thrive and grow and is based on three pillars: entrepreneurial education and training, the removal of existing administrative barriers and the development of targeted measures for senior, young people, migrants and unemployed people.

One of the main messages of the third pillar is that female entrepreneurship should be further boosted. A better integration of women in the labour force is a key element not only to tackle unemployment but to promote development in Europe as well. Women were and will be an important and considerable part of the workforce.



In the past few decades, the contribution and role of women's entrepreneurship to, economic growth, society and sustainable development has been widely recognised. To this end and for reasons of equity as well, both the European Union and individual economies encourage and support female entrepreneurship through targeted actions and special programs. These programs are not limited to women but may be targeted to other parts of the population such as people with disabilities, young people, long-term unemployed, immigrants or other special groups.

At this point, is very important to refer to the EU legislation relevant to female entrepreneurship. EU legislation includes mainly directives concerning the equal treatment between men and women engaged in self-employment. Since the Treaty of Amsterdam came into force in 1999, new EC laws, or Directives, have been enacted in the area of anti-discrimination. In particular, Directive 2010/41/EU of the European Parliament enables Member States to adopt positive measures to promote equality. The Directive also creates conditions for the social protection rights (e.g. unemployment benefits) of a self-employed person to be extended to that person's spouse or partner. The Directive also extends the right to maternity benefits to self-employed women or spouses, or partners of those who are self-employed. The overall effect of the Directives is to ensure that self-employment is treated the same as standard employment in terms of access to social protection.

The EU Directive 2004/113/EC is part of the European anti-discrimination law and sets a frame of minimum rules for ensuring gender equality in the access to and supply of goods and services.¹ The principle of equal treatment is fully applicable to financial services as well. According to this Directive, all Member States should inform and ensure that banks and other financial institutions are aware of their obligations over equality of treatment. The Commission recently reviewed the application of Directive 2004/113/EC in 2015. The Directive specifies that both direct and indirect discrimination is prohibited; however, indirect discrimination exist but is

¹ Full text of the directive can be found in the following link: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32004L0113&from=EN>



difficult to prove.² According to this Directive, direct discrimination occurs in the case where one person is treated less favourably, on grounds of sex, than another is, has been or would be treated in a comparable situation. Indirect discrimination takes place when an apparently neutral provision, criterion or practice would put persons of one sex at a particular disadvantage compared with persons of the other sex.

A number of other policies and programmes implemented by the EU are relevant. The 2008 Small Business Act (EC, 2008)⁴ was intended to support entrepreneurship in the EU and included a mentoring network in 17 EU Member States. The aim of the Mentoring Scheme is to promote, support and encourage female entrepreneurship. The Competitiveness and Innovation Framework Programme (CIP) aims to facilitate venture capital investments and provide guarantees for lending to small and medium-sized enterprises (SMEs). This may be particularly relevant for women entrepreneurs given the already documented difficulties they face in accessing finance.

At the same time, networks such as the European Network to Promote Women's Entrepreneurship (WES), the European Network of Female Entrepreneurship Ambassadors, and the European Network of Mentors for Women Entrepreneurs are extensively used in order to promote, support and provide valuable help women entrepreneurs and mainly aim to inspire more women to become entrepreneurs in different EU Member States.

3. Obstacles, barriers and challenges

Even though female entrepreneurship has evolved significantly during the past few years, there are numerous barriers that inhibit its further development. However, we should not only review the general conditions that affect female entrepreneurship, but we also have to analyse how these conditions are transformed into barriers – smaller and bigger ones – women may face when doing

² Similarly, the Council Directive 2000/43/EC stipulates the principle of equal treatment between persons irrespective of racial and ethnic origin.

business. Being engaged in the entrepreneurial process, women meet certain general and more specific obstacles.

Starting a business can be done by anyone. However, starting a business that will succeed and continue to flourish is not an easy task. Undoubtedly, having the financial capacity to own a business is absolutely crucial. There is no way of starting a business without start-up capital, the total amount of money that is needed to open the doors for business, and to keep them open until sufficient revenue can be depended on. Operating capital including expenses such as salaries, wages, rent, expenses, supplies, utilities, advertising, depreciation, and interest payments or in other words the amount of money in order to keep the business going. Business knowledge is of equal importance. To start a business, someone has to be knowledgeable about many different aspects of business and have many different skills or find and hire the people who have the necessary skills. Conducting a detailed research and creating a sound business plan beforehand are going to be two of the most important components of starting a business.

Access to capital and funding in general is one of the biggest barriers for those willing to start their own enterprise; this is true for potential entrepreneurs - both men and women. Especially during the deep economic and financial crisis this barrier became even more prominent than before. However, women entrepreneurs and employers face significantly greater barriers and challenges than men in obtaining credit and gaining access to capital and financial services with respect to their male counterparts (*Stefani and Vacca, 2013, Cesaroni and Sentuti, 2016*).

Family obligations usually do not leave the room for women to work full-time and engage in a career. Most of the times, women actually sacrifice their careers in order to dedicate their time, energy and attention to their families and children by putting aside their professional life. In turn, the range of possible work opportunities for women is significantly decreased. After all, part- time jobs which are the jobs that women often engage to are usually low paid and do not provide a sound basis for professional success.

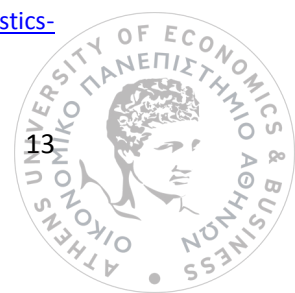
This phenomenon is of course more apparent in developing economies. According to the World Bank's Global Findex database 2017³, even though financial inclusion is improving around the world, women are still missing out. In developing countries, the gap in financial inclusion between men and women has stalled at nine percentage points; though the gap is wider in the Middle East and North Africa. Women are 20 percent less likely than men to have an account at a formal financial institution⁴ and 11 percent less likely than men to have access to credit when is needed. Even if women have or can gain access to a loan, they often lack access to other financial services, such as savings, digital payment methods, and insurance. Lack of financial education can also limit women from gaining access to funding and benefitting from financial services.

Historically, women have been more affected by unemployment than men. In 2000, the unemployment rate for women in the EU-28 was around 10 %, while the rate for men was below 8 %. However, by the end of 2002, this gender gap had narrowed. Since the first quarter of 2008, when they were at their lowest levels of 6.3 % and 7.4 % respectively, the male and female unemployment rates in the EU-28 converged, and by the third quarter of 2009 the male unemployment rate was higher. Since 2011, the two rates have risen at the same pace until mid-2013, when they reached their highest value of 10.9 % for men and 11 % for women. By the end of 2013 both the male and the female rates began to decline and reached respectively 7.1 % and 7.6 % at the end of 2017.⁵ However, unemployment rates among males and females may differ across the EU economies. Both females and males are found to experience approximately the same rates of long-term

³ <https://globalfindex.worldbank.org/>

⁴ Restrictions on opening a bank account, such as requirements for a male family member's permission, restrict women's access to accounts even more. Married women often need their husband's written authorization to open bank accounts, get loans, register businesses, enter into contracts, and initiate legal proceedings. There is also the possibility that even though accounts might be opened in the name of a woman, a husband or a male relative is charged with the decision-making process around the use of those funds.

⁵ Source: Eurostat, Unemployment Statistics, http://ec.europa.eu/eurostat/statistics-explained/index.php/Unemployment_statistics#Male_and_female_unemployment



unemployment across the EU countries during the period 2007-2017. Therefore, unemployment is considered a barrier to entrepreneurship for both sexes in EU in general. Of course, the situation may be different in certain countries within or outside the EU. Nevertheless, unemployment may act as an incentive for both women and men to set up their own business; the so-called “entrepreneurship by necessity”⁶.

Another barrier to entrepreneurship - even though not widely known and recognized - is the lack of role models. *Deaux and Lafrance (1998)* state that individuals are influenced by other individual of the same sex. These “other” individuals act as role models. Role models are people that establish the desirability and credibility of a choice for an individual by their personalities, behaviours, attitudes, and finally by their actions. Thus, individuals are affected by people of the same sex that became entrepreneurs. Of course, most of the times individuals are affected by successful examples and these examples incentivize them in order to set up their own businesses. Various empirical studies also provide evidence that individuals whose parents were entrepreneurs are more likely to choose to follow self-employment and entrepreneurship as a career path compared to people whose parents were not entrepreneurs (*Delmar and Gunnarsson, 2000b*). In addition, entrepreneurs whose parents were self-employed obtained capital from them. It is also possible that parents had their children participate in their business by making them co- owners. Under these cases, entrepreneurs whose parents were self-employed were benefited more than individuals without self-employed parents.

Past experience also accounts for entrepreneurship. Individuals who gain significant experience on a certain field or sector are more likely to establish a new business on that specific field or sector. These individuals might have also gained important managerial skills which in combination with their valuable experience can have a significant positive impact on their businesses’ future and revenues.

Recent research on developed economies has identified another significant obstacle when it comes to women’s entrepreneurship. Women with high education and

⁶ [Nikolova et al. \(2012\)](#).



training mainly select not to follow entrepreneurship as a career path. This usually happens as they have a variety of advanced career options which may offer them higher wages, social status and other important benefits. Entrepreneurship may therefore be a choice for unskilled women or very skilled and already wealthy women. Countries usually provide people with incentives in order to start a business; some of them provide more incentives to women. For instance, in the UK there are several grant types such as grants for capital investment, research and development grants, business solution grants, targeted grant programs that fund the requisite training for business growth. Women can apply for these grants by checking which scheme they fit in and then make their grant proposals. Another alternative suggests that women should be trained and educated in order to succeed in doing business. If women are relatively less skilled than their male counterparts, *ceteris paribus*, then the firms they will establish will have a lower probability to succeed and develop over time than firms created by men.

Burt (2000) provides evidence that women do not participate in social networks as much as men do. The type of networks women form is also different than the networks their male counterparts form. In other words, women have less access to critical resources, information and support needed to successfully set up and manage a new firm.

External finance is sometimes subject to sex discrimination. Sexual discrimination occurs when an action is taken based upon the sex of the person. In this case, women have a lower probability to receive external funding because of their sex. Banks and other lending institutions' discriminatory attitude towards potentially women entrepreneurs is driven by the fact that women usually control less capital to be used as collateral than men, and thus must secure additional resources in order to exploit a new business opportunity. Banks and other lending institutions' attitude is sometimes negative.

Lenders' scepticism is based on the fact that they don't consider start-ups founded by females a success. Women usually engage in sectors and industries which are considered "feminine" such as personal care services. These sectors are often sectors that banks and financial institutes are not familiar with and thus are not used

to handle. As funding from personal networks is concerned, sex discrimination is also present as women hardly find financial resources to set up their own business. Nevertheless, this barrier is diminishing as financial institutions become more aware of gender issues and start to consider women entrepreneurs as a possible source of income.

As mentioned before, in many countries and especially in developing ones, women still have important problems to obtain finance because of their weak social position. They sometimes are not even allowed to seek finance as individuals, and their husbands or other male family members must seek it in their place instead (*Mayoux, 2001*). Micro-financing is considered a solution to the aforementioned difficulties as it can overcome obstacles related to getting finance. Micro-finance got its popularity and fame back in the 1970s from Mohammad Yunus, who began experimenting with lending to rural poor women in Bangladesh, during his tenure as a professor of economics at Chittagong University. In 2006, he won the Nobel Peace prize for setting the foundations of microfinance and establishing the so called Grameen Bank in 1983. Since then, various types of microfinance programs have been implemented in many countries around the world. Generally speaking, micro-finance or micro-credit includes financial lending services especially in the form of microloans provided to unemployed and low-income individuals and groups of people in poor and developing regions who have no other means of getting financial services. These microloans are usually combined with other financial services such as saving facilities, training, health services, networking, and peer support. According to Morduch (1999), micro-finance offers a “win-win” solution, where both financial institutions and poor clients-borrowers benefit.

The backbone of this service is that a significant part of poverty could be alleviated by providing financial services to low-income households or poor entrepreneurs and small businesses lacking access to banking and related services. In other words, the beneficiaries of microfinance are no others than those who are excluded from the formal banking sector. The majority of the borrowers aim to finance self-employment activities and pursue successful entrepreneurial projects. In addition, the majority of the borrowers borrow relatively small loans which are to be repaid

within some months or a year. Nevertheless, there is a part of these loans that requires collateral, excluding potential entrepreneurs with low level of assets to escape positions as labourers or farmers. The last 30 years have shown that micro-finance is a development tool capable of providing a vast number of the poor, particularly women, with sustainable tailored financial services that enhance their welfare. This tool enables poor women to engage in income-generating activities that help them become financially independent, strengthening their decision-making power within the household and society. Therefore, micro-finance has the potential to deteriorate gender inequality significantly.

Apart from the obstacles related to starting a business, there are also significant barriers related to the management of a firm. Women entrepreneurs like their male peers aim to grow their businesses as time goes by. The success of their job is built on relationships with clients, suppliers, banks and other institutions. However, all these personal relations are not always easy. However, women sometimes have to cope with stereotypic attitudes on a daily basis. A specific problem of women entrepreneurs for example is their “inability” to achieve sales growth mainly due to the discrimination they face by potential clients. Furthermore, the management of a business is not an easy task either. Being a manager of a business is not easily combined with taking care of a family and children. The cases where women are heavily involved in family businesses are not limitless. However, experience shows that their role in the management and evolution of the family firm even though is very important, most of the times are not explicitly recognised.

Even women who may appear to be in a rather advantageous position for starting up in business, such as those who are active in STEM (Science, Technology, Engineering and Mathematics) fields, can face barriers related to gender. Women who work in STEM fields often have many entrepreneurial opportunities given the innovative nature of the field. However, they can face discrimination based on gender since these fields are widely perceived to be largely “masculine”. As part of a minority group, women in STEM feel pressured to over-perform. They make frequent adjustments for their “unusual” status in the industry and perceived assimilation in terms of becoming an “honorary man”, occasionally in attitude, but primarily by

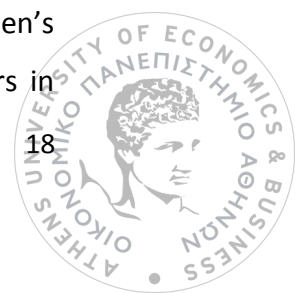
proof of expertise (*Martin et al., 2015*). While male business owners are accepted “on face value” as skilled entrepreneurs, women face additional challenges in gaining credibility.

4. Evolution of female entrepreneurship during the crisis

This chapter aims to analyse current trends as well as future challenges on women entrepreneurship vis-à-vis the economic crisis the European Union has faced in the past few years. The economic crisis that began in 2008 shook the world’s economies and brought numerous changes both at macro-structural level as well as in the everyday lives of people. However, the long-term impact of the crisis hit some countries harder than others. As regards the European Union, the counties of the South and their citizens – both women and men - were the ones that suffered the harder consequences of the crisis. Countries such as Greece, Spain, Italy and Slovenia experienced a dramatic spike in unemployment accompanied by decreasing output, very high debt, higher taxes, lack of wage growth and a drop in living standards for many.

The promotion of entrepreneurship is included in the EU 2020 strategy. The Vice President of the European Commission Antonio Tajani, Commissioner for Industry and Entrepreneurship, said: "it is clear that female creativity and entrepreneurial potential are one of the most underexploited source of economic growth and new jobs that should be further developed in Europe” highlighting that If more women can be motivated to start up and lead companies, this could generate growth and create new jobs across the European Union. The promotion and strengthening of female entrepreneurship will also lead to women economic and social empowerment.

The European Commission has established several networks in order to promote actively female entrepreneurship. The European Network to Promote Women’s Entrepreneurship aims to evaluate support measures for female entrepreneurs in



different EU countries. The European Ambassadors' Network provides inspirational role models to encourage women to consider entrepreneurship as a viable career option. The European Mentors' Network gives practical advice to women who have recently launched their own businesses. The Commission has also supported the creation of an e-platform that aims to help women become entrepreneurs and run successful businesses. The ESF provides targeted support to women entrepreneurs while the 2014-2020 funding instrument COSME has a special focus on promoting entrepreneurship for women.

According to a recent study⁷ conducted by the European Commission, while European women are at least as well educated as men, only a few decide to set up a company in the fifteen years following their graduation. Lack of take-up can partly be explained by the difficulties they encounter in reconciling private and professional activities. In addition, existing business set-up support systems are not always tailored to women's specific needs. Concerns faced by potential women entrepreneurs include greater difficulty accessing financing, professional networks and training and a possible lack of confidence due to the absence of appropriate role models. Women also tend to be cautious and take more calculated risks and often grow their businesses slowly and only if their family situation allows them to work more hours with a good probability of success.

In the last few years female entrepreneurs have increased, especially in the tech industry and start-ups. However, the entrepreneurship world is still overwhelmingly male.

Number and proportion of total entrepreneurs

Women constitute 52% of the total European population but only 32.57% of the EU self-employed and 30% of start-up entrepreneurs. In 2017, there were around 10 million women entrepreneurs active in EU-28 compared to around 20.5 million men

⁷ http://eige.europa.eu/resources/20121017-014611_DGent_Women_enterpr_Oct12pdf.pdf

entrepreneurs. The percentages of women entrepreneurs in the total number of entrepreneurs varies considerably between European countries. With 41.84%, Luxembourg had the highest percentage of women entrepreneurs, followed by Latvia (41.53%), Lithuania (38.25%) and Switzerland (38.23%). On the other hand, Turkey had the lowest percentage (16.01%) followed by FYROM (19.74%) and Malta (22.87%). In EU-28 the percentage of women entrepreneurs as a percentage of the total number of entrepreneurs is 32.57% whereas the percentage of men entrepreneurs is twice this percentage (67.43%). See Figure 4.1 below.

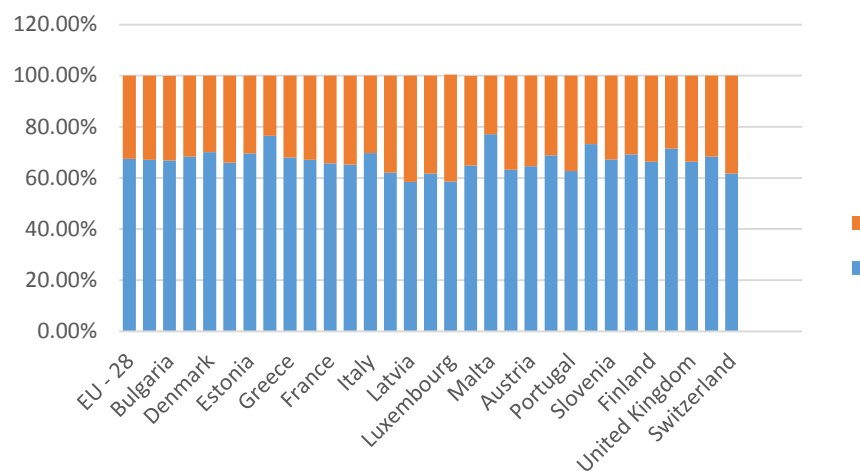


Figure 4.1: Self-employment by sex as a % of total self-employment, 2017, Source: Eurostat

As it can be seen from figure 4.2 below, female entrepreneurship in the European Union presents a steady increase from 2005 until 2017. Despite the serious economic crisis that the Union has experienced in the past few years, we can observe that the crisis positively affected the business setting-up by female entrepreneurs. In particular, female entrepreneurship was 29.73% in 2005 and reached 32.57% in 2017. However, this is not the case as regards to male entrepreneurship, which according to the data presents a slight decline between 2005 and 2017. More specifically, in 2005 male entrepreneurship in the EU was 70.27% as a percentage of total entrepreneurship and reached 67.43% in 2017. See figure 4.3 below.

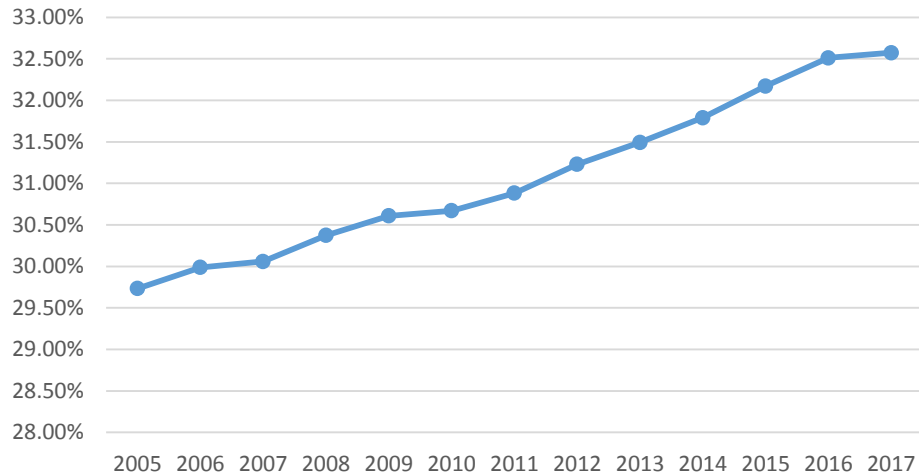


Fig. 4.2: Evolution of female self-employment in the EU as a percentage of total employment, 2005-2017, Source: Eurostat

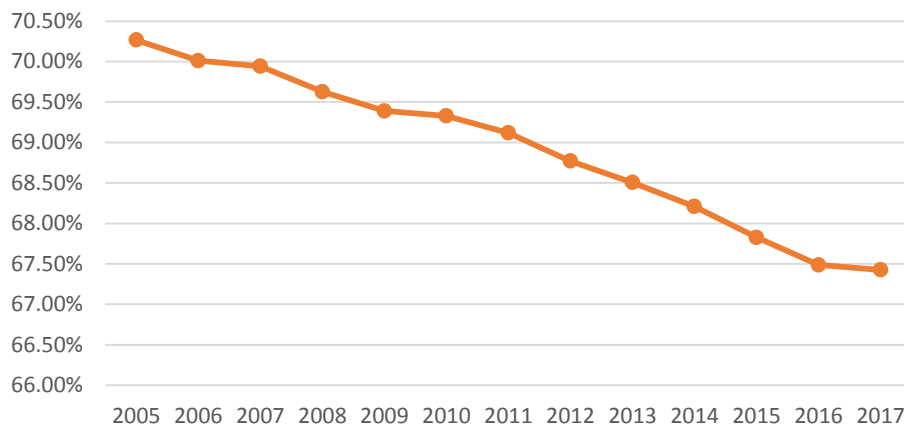


Fig. 4.3: Evolution of male self-employment in the EU as a percentage of total employment, 2005-2017, Source: Eurostat

Figure 4.4 presents the change in female entrepreneurship (in %) between 2008 and 2017. The data indicate that the countries that experienced the highest increase in female entrepreneurship are: Luxembourg (104.01%), Malta (84.4%), Slovenia (47.08%), United Kingdom (45.49%) and Slovakia (42.96%). On the contrary, the countries that experienced the largest decreases in female entrepreneurship (in %) are: Croatia (44.04%), Portugal (41.38%), Romania (18.08%), Poland (12.05%) and Bulgaria (11.83%).

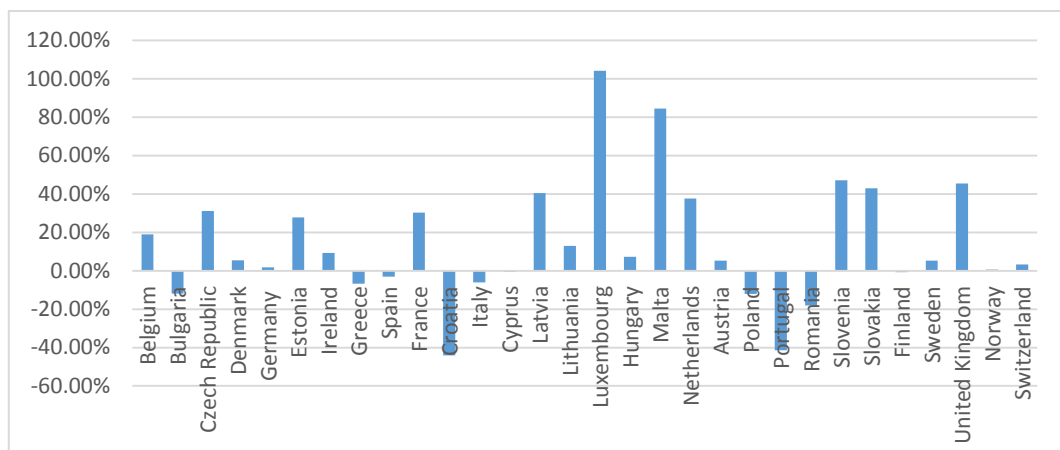


Fig. 4.4: Change of female entrepreneurship between 2008 and 2017 (in %), Source: Eurostat

Rate of entrepreneurship

The entrepreneurship rate is a good indicator to compare the entrepreneurial level of women and men within and between countries. The entrepreneurship rate expresses the percentage of entrepreneurs in the total active labour force. In 2017, the entrepreneurship rate for women (percentage of women entrepreneurs in the total number of women in the active labour force) was almost 9% for EU-28. On the other hand, the entrepreneurship rate for men was higher at 16%. The entrepreneurship rates for women and men by country are presented in Figure 4.5 below.

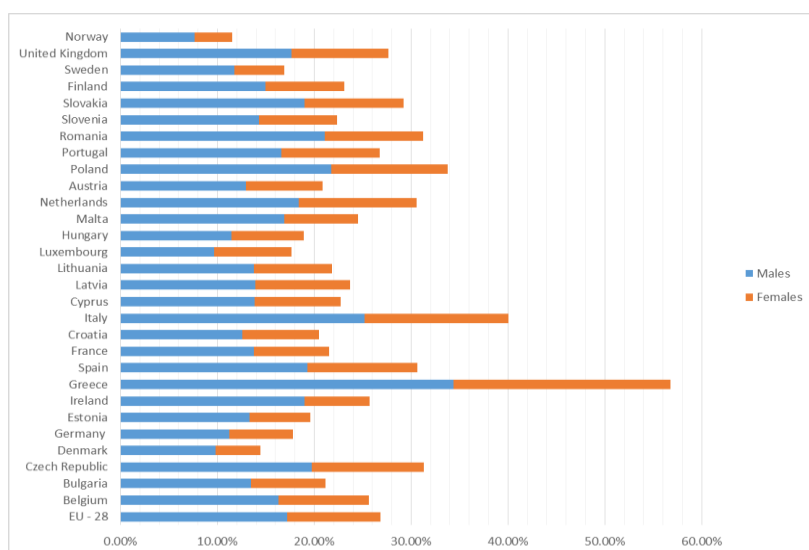


Fig.4.5: Percentage of entrepreneurs in the active labour force (entrepreneurship rate) by gender and country in EU-37, 2017, Source: Eurostat

According to the graph, in 2017, the top five countries with the highest entrepreneurship rates for women in the EU-28 were Greece, Italy, Netherlands, Poland and Czech Republic while the countries with the lowest rates were Norway, Denmark, Sweden, Estonia and Germany. The entrepreneurship rate for men was higher than that for women in all countries in the EU-28. As it can be seen in the graph, the rate of male entrepreneurship in certain countries is two times the relevant percentage of female entrepreneurship or more (e.g. Norway, Denmark, Estonia, Malta, Ireland, Sweden).

Age distribution of entrepreneurs

The age distribution of men and women entrepreneurs in 2009 and 2017 is presented in the figure below. Based on the data available, four age groups were defined as 15 to 24 years, 25 to 49 years, 50 to 64 years, and over 65 years.

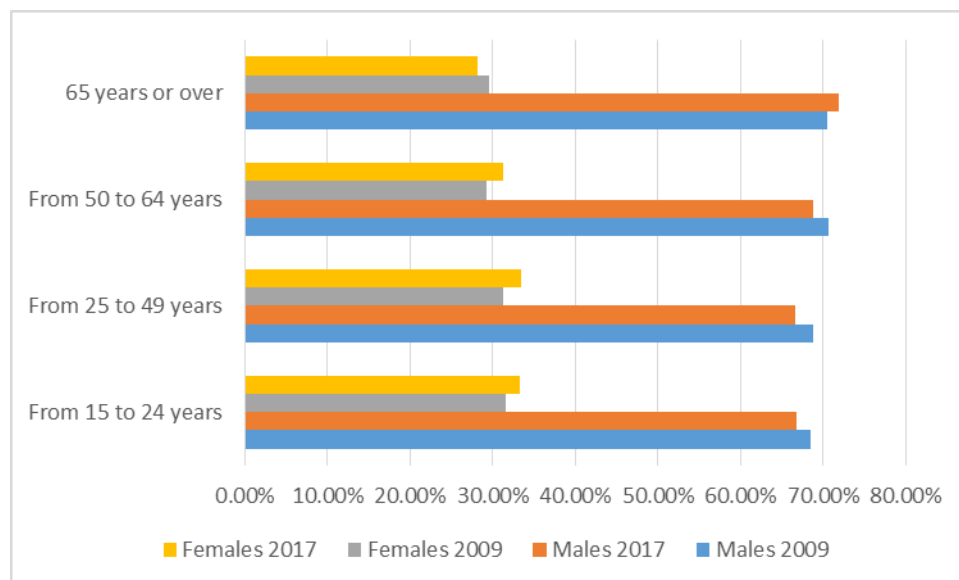


Fig.4.6: Percentage of entrepreneurs by age and gender in EU-28 in 2009 and 2017, Source: Eurostat

Women entrepreneurs in EU-28 were on average slightly younger than men entrepreneurs. In particular, in 2009, there were higher proportions of women than

men entrepreneurs in the age group 25–49 years while the proportions of men entrepreneurs in the age groups 15–24 years, 50–64 years and over 65 years older were slightly higher. We observe almost the same distribution in 2017 as well. In 2017, there still is a higher proportion of women than men entrepreneurs in the age group 15–24 years and a slightly higher proportion of women than men entrepreneurs in the age group 15–24 years. Most both males and females entrepreneurs were between the ages of 25 and 49 years. However, these percentages declined in 2017 compared to those of 2009. More specifically, in 2009 men entrepreneurs were 59.31% while in 2017 were 52.81% of the total number of men entrepreneurs. Women entrepreneurs were 61.32% in 2009 while this percentage decreased to 55.86% in 2017.

As expected, the percentage of entrepreneurs in the age group 15–24 years was relatively smaller for both men and women, largely due to the fact that many people under 25 years are still studying. In EU-28, the percentage of female entrepreneurs was higher than male entrepreneurs in the age group 25–49 years, and lower in the age group 50–64 years.

Educational level

Based on the International Standard Classification of Education (ISCED), three levels have been chosen to group our data. Low education level for entrepreneurs who attained pre-primary, primary and lower secondary education (ISCED levels 0–2), middle education level for those who attained upper secondary and post-secondary non-tertiary education (ISCED levels 3 and 4); and high level of education for first and second stage of tertiary education (ISCED levels 5 and 6). Data show the highest education level attained by an entrepreneur.

Education levels vary significantly between countries. The top five countries with the highest tertiary education level of women entrepreneurs in 2009 were Ireland (54%), Belgium (49%), Estonia (46%), France (45%), Cyprus and Germany (44%) while the countries with the lowest tertiary education level were Romania (6%), Portugal (11%), Croatia (12%) and Malta (17%). We can also observe that there are countries

such as Portugal where almost 80% of women entrepreneurs had only attained pre-primary, primary and lower secondary education. Romania (50%), Malta (47%), Croatia (44%), Greece (43%) and Spain (42%) follow. Upper secondary and post-secondary non-tertiary education levels are higher in Czech Republic and Slovakia (72%), Lithuania (70%), Poland (69%) and Hungary (65%) while these levels are lower in Portugal (8%) and Spain (23%). In the rest of EU countries upper secondary and post-secondary non-tertiary education levels range between 30 and 50%.

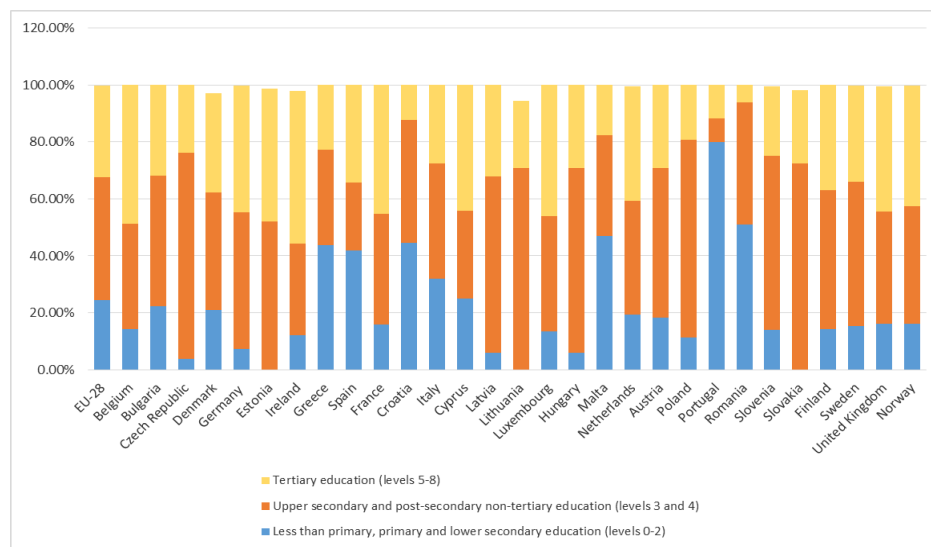


Fig. 4.7.: 4.8: Educational level of females entrepreneurs by country in EU-28, 2009,
Source: Eurostat

In 2017, the image resembles that of 2009 but the percentages are much higher; the five countries with the highest tertiary education level of women entrepreneurs are Ireland (63%), Belgium (60%), Cyprus (59%), France (58%) and Estonia (54%). Most of EU countries have decreased the levels of pre-primary, primary and lower secondary education attainment significantly; Portugal still has the highest level of lower education but the percentage is lower than that of 2009 (52%). Romania (39%), Malta (35%), Greece and Spain (32%) follow. Croatia managed to achieve a significant reduction of 30 percentage points in the level of low education attainment, having reached 14%.

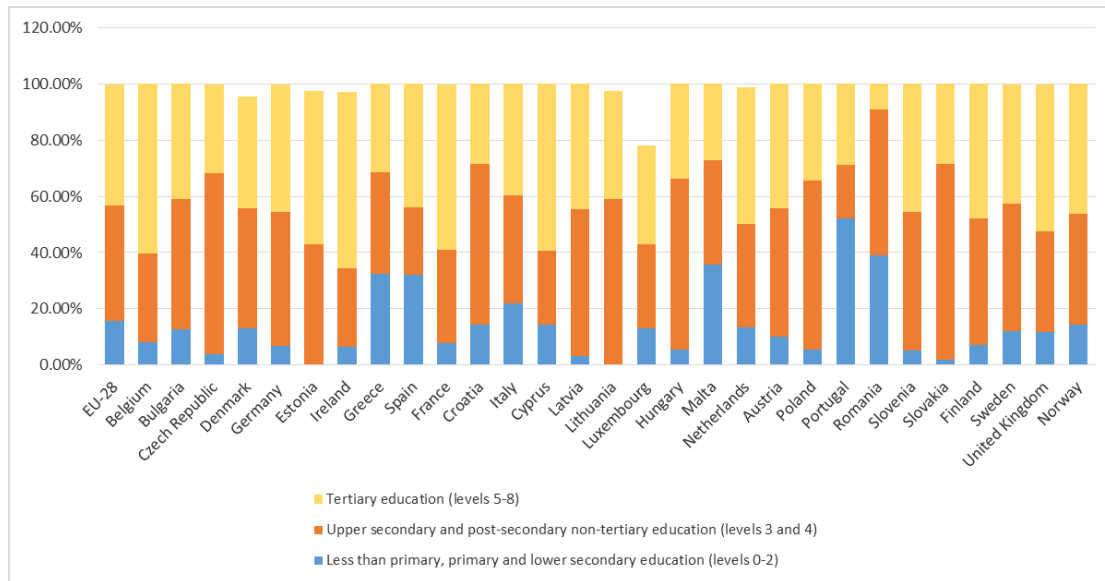


Fig.4.8: Educational level of females entrepreneurs by country in EU-28, 2017, Source: Eurostat

Female entrepreneurship by occupation and economic activity

In 2017, women entrepreneurs in EU-28 were more active in sectors such as wholesale and retail trade, professional, scientific and technical activities, human health and social work activities, agriculture and other service activities (see Figure

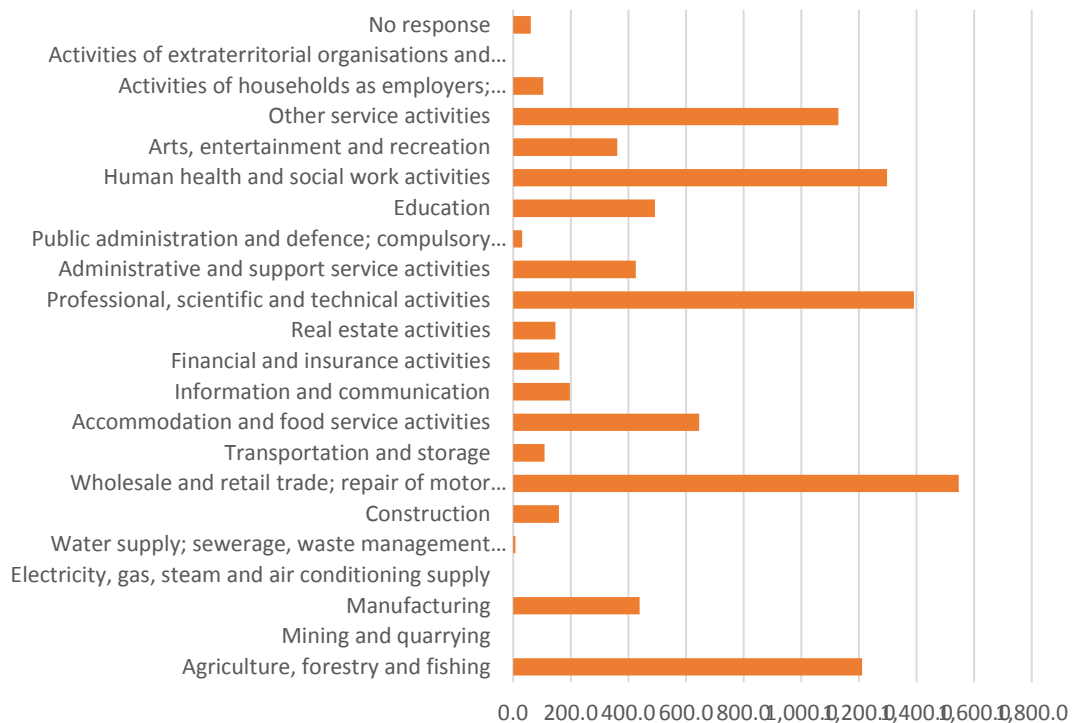


Fig.4.9: Economic Activity in EU-28 in 2017, females, Source: Eurostat

4.9 below).

Figure 4.10 shows the distribution of entrepreneurs by gender and sector in EU-28 in 2017. The percentages of women entrepreneurs in the EU-28 in the sector groups activities of households as employers; undifferentiated goods- and services-producing activities of households for own use (77.41%), other service activities (69.59%), human health and social work activities (65.88%) and education (58.68%) were higher than the percentages of men entrepreneurs. On the other hand, women a lower percentage in activities such as construction (3.95%), transportation and storage (9.09%), water supply; sewerage, waste management and remediation activities (13.10%) and information and communication (19.41%). The percentage of men entrepreneurs in all NACE activities is 32.57%, approximately half of the corresponding percentage of women entrepreneurs' percentage (67.43%). The

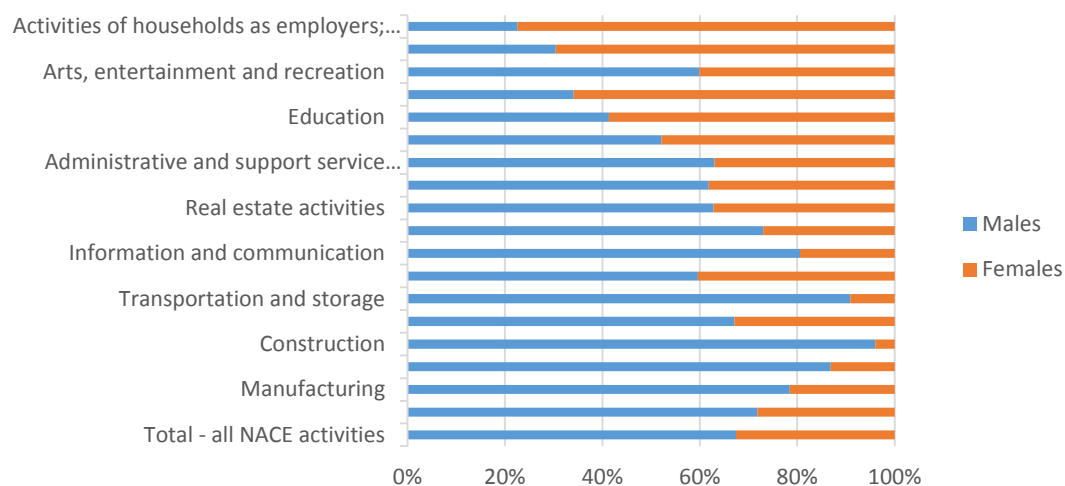


Fig.4.10: Percentage of entrepreneurs by gender and sector in EU-28, 2017, Source: Eurostat

sector distribution of entrepreneurs by gender in 2009 (Figure 4.11) is very similar to the sector distribution of entrepreneurs by gender in 2017.

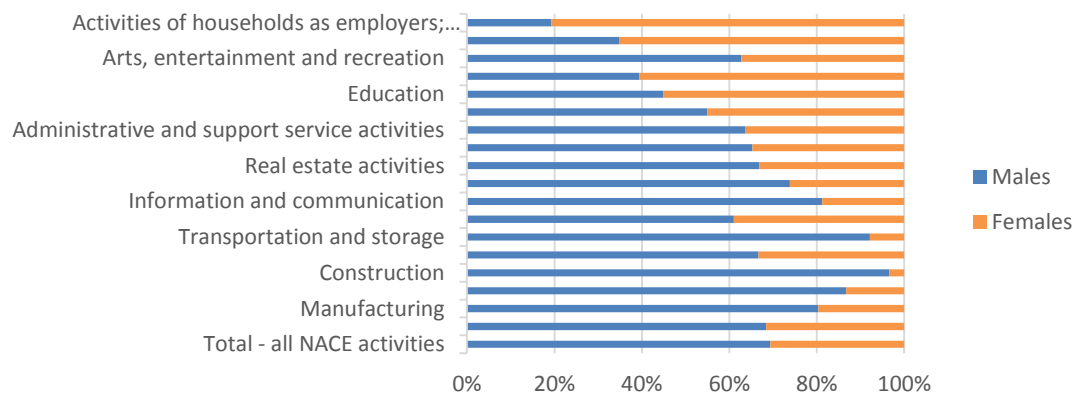


Fig. 4.11: Percentage of entrepreneurs by gender and sector in EU-28, 2009, Source: Eurostat

Figure 4.12 below presents the distribution of entrepreneurship by occupation in 2017 in EU-28. According to the graph, with 28% of total female entrepreneurship, professionals are the largest category. Service and sales workers follow with a percentage of 27%.

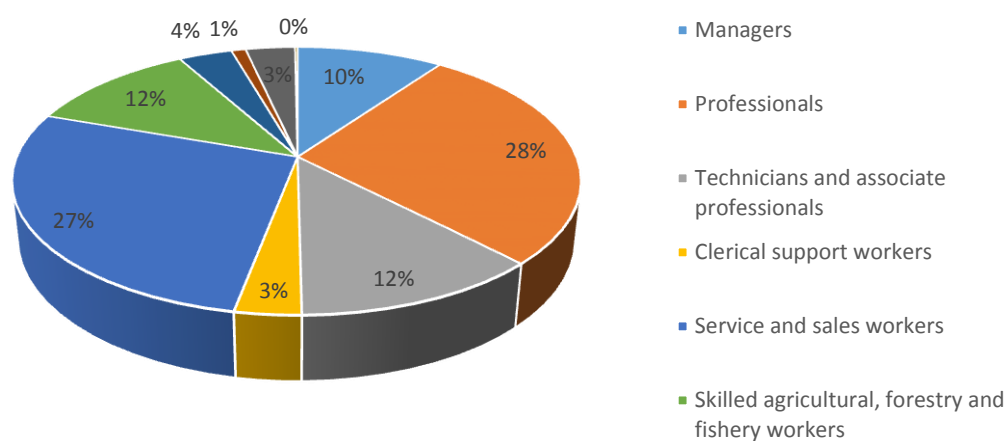


Fig. 4.12: Distribution of entrepreneurship by occupation in EU-28 in 2017, Source: Eurostat

Female entrepreneurship in Greece

Small and medium sized enterprises are the backbone of the Greek economy and contribute significantly to its overall economic activity. They also constitute one of the main sources for the creation of new jobs.⁸ Today, more than ever before more and more women choose to start up their own businesses. Therefore, the development of female entrepreneurship play a key role in the growth and development of SMEs. Especially after the economic crisis broke up in 2008, female owned businesses are considered as one of the emerging trends in entrepreneurship while female entrepreneurship is now strongly encouraged.

Women entrepreneurs in Greece started to appear gradually during the 1970s and more systematically during the 1980s. Most of them used to invest in the services sector and mostly in the retail and services area. Nowadays, a self-employed woman in Greece is estimated to be approximately 1/3 over total self-employed population. This rate is almost the same as the average rate of the EU-28. In particular, in 2017, women entrepreneurs were 32.01% over total entrepreneurs. In 2008, before the economic crisis begun women entrepreneurship was 28.84%. However, even though the number of men entrepreneurs slightly decreased after the crisis both in Greece and in the EU-28, we can observe that the number of women entrepreneurs has increased from 2008.

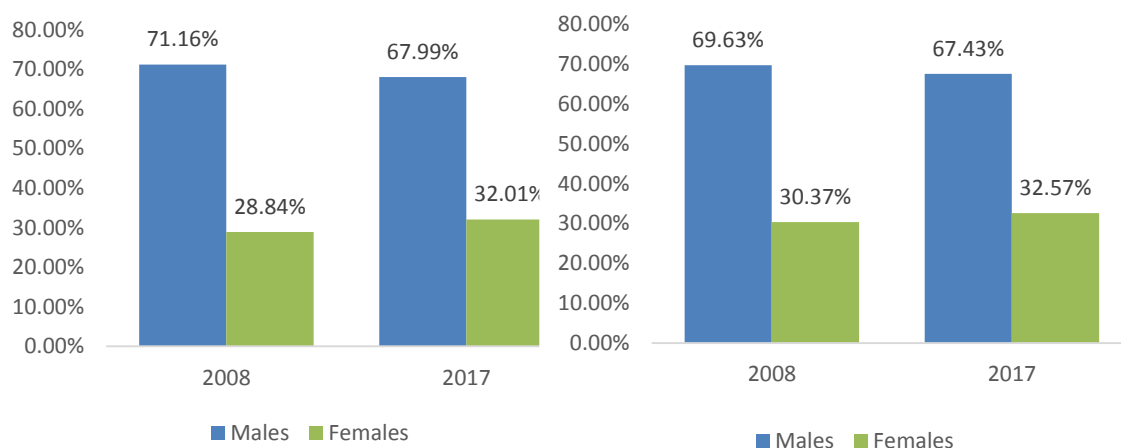


Fig.4.13: Male and female entrepreneurship in Greece in 2008 and 2017, Source: Eurostat

⁸ https://www.gsevee.gr/press/mme_eng.pdf

It is worth seeing the evolution of female entrepreneurship in Greece over time and how it compares to the corresponding evolution of male entrepreneurship. Female entrepreneurship presents a stable pattern over the years and no significant alteration is observed between 2005 and 2017 independently of the economic crisis that hit the country severely in 2008. On the contrary, the total number of men entrepreneurs presented a significant decline after 2009. In particular the total number of men entrepreneurs experienced a reduction of 19.67% between 2008 and 2017. The total number of self-employed persons in Greece was reduced from 1,286.2 in 2008 to 1,081.5 in 2017 or by 15.92%. It is worth mentioning that the reformation of the insurance/pension policies by law 4387/2016 contributed to this reduction (see Figure 4.14 below).

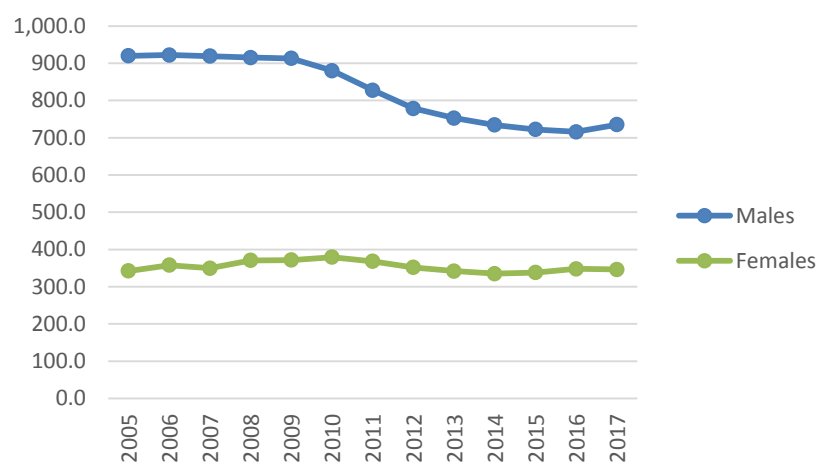


Fig.4.14: Evolution of self-employment in Greece by gender, 2005-2017 (in thousands), Source: Eurostat

The rates of self-employed persons with and without employees in Greece for the years 2008 and 2017 are presented in figure 4.15 below.

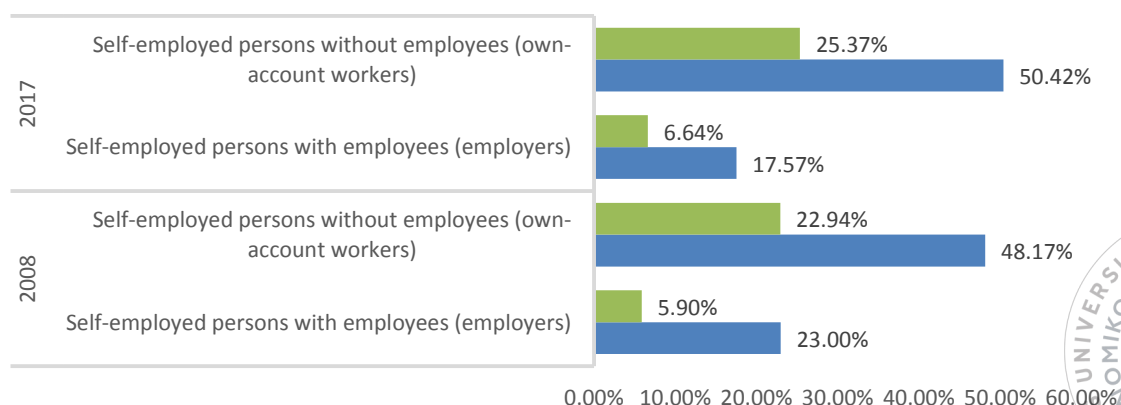
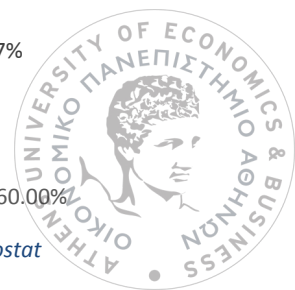


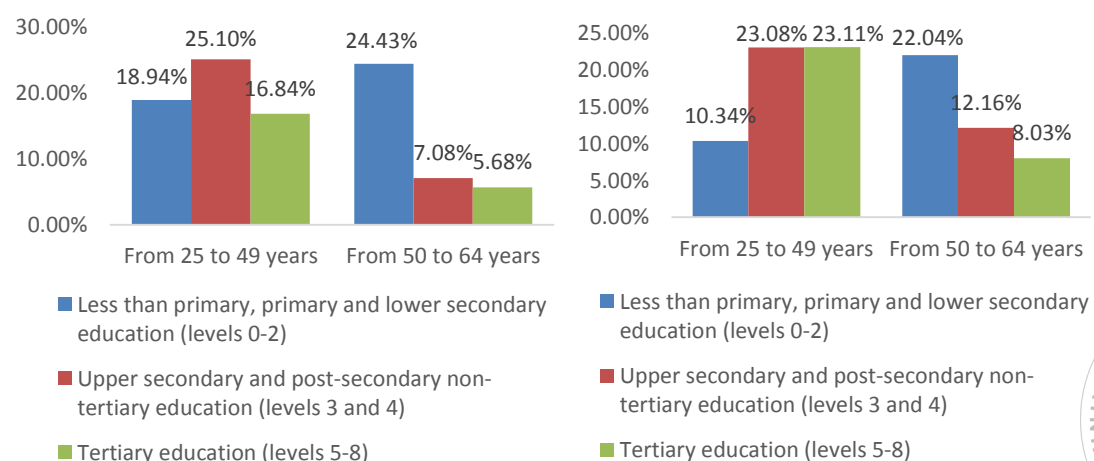
Fig.4.15: Self-employed population rates with and without employees, Greece, 2008 and 2017, Source: Eurostat



Based on the International Standard Classification of Education (ISCED), three levels have been distinguished. Low education level for entrepreneurs who attained pre-primary, primary and lower secondary education (ISCED levels 0-2), middle education level for those who attained upper secondary and post-secondary non-tertiary education (ISCED levels 3 and 4), and high level of education for first and second stage of tertiary education (ISCED levels 5 and 6). In 2009, the largest group of women entrepreneurs in Greece had attained less than primary, primary and lower secondary education (levels 0-2). However, in 2017, the largest group of women entrepreneurs in Greece had achieved the middle education level.

The proportion of women entrepreneurs with a low level of education was lowest in the age group 25-49 years in both 2009 and 2017². The percentage of men entrepreneurs with a low educational level was higher than the proportion for women in the age group 25 to 49 years but lower than the corresponding proportion for women in the age group 50 to 65 years. The percentage of women entrepreneurs with a high educational level was higher than the proportion for men in the age group 25 to 49 years by approximately 7%.

Between 2009 and 2017, the proportion of women in Greece in the low education level decreased significantly but increased in the high education group. Overall, female entrepreneurs were more educated than male entrepreneurs and this was also the case in EU-28. In particular, the period 2009 to 2017, the proportions of both men and women entrepreneurs that attained a low level of education decreased and the proportion of entrepreneurs that attained a high level of education increased. Overall the educational level of both women and men entrepreneurs increased during this period.



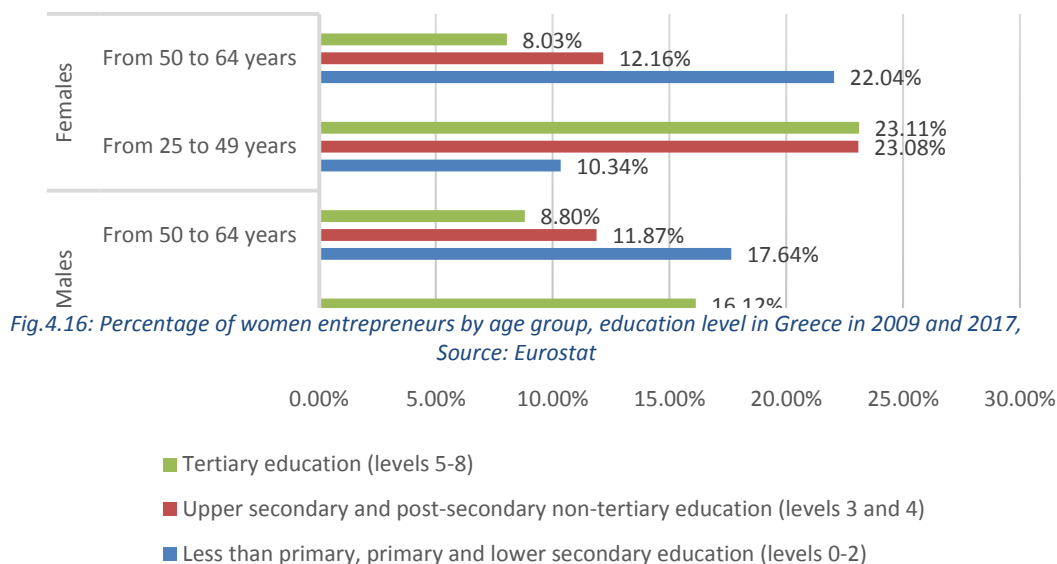
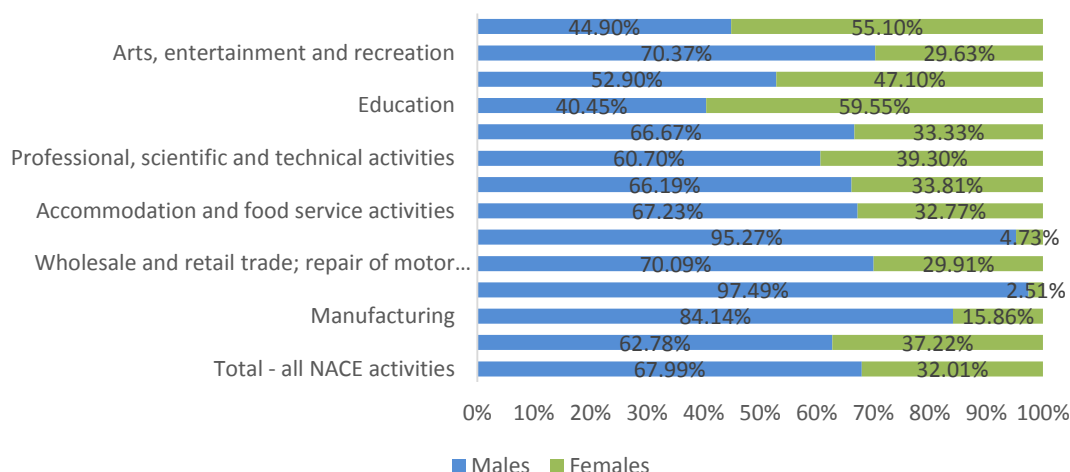


Fig.4.16: Percentage of women entrepreneurs by age group, education level in Greece in 2009 and 2017, Source: Eurostat

Fig. 4.17: Percentage of entrepreneurs by age group, education level and gender in Greece, 2017, Source: Eurostat

Figure 4.18 below presents the percentage of entrepreneurs by gender and economic activity in Greece in 2017. The percentages of women entrepreneurs in the sector groups education (59.55%), other service activities (55.10%) and human health and social work activities (47.10%), were higher than the corresponding percentages of men entrepreneurs. The percentages of women entrepreneurs in the sector groups construction (2.51%), transportation and storage (4.73%) and manufacturing (15.86%), were significantly lower than the corresponding percentages of men entrepreneurs.



The sector distribution of women entrepreneurs changed very little between 2009 and 2017. The distribution of women entrepreneurs per economic activity in Greece and EU-28 is included in the following figure (4.19). According to this graph, women entrepreneurs are more than their EU counterparts in the sectors: agriculture, financial and insurance activities, education and professional, scientific and technical activities. Greece precedes in women's self-employment among all member states of the European Union. In particular, 2016 data shows that 29,50% of total working women

Fig. 4.18: Percentage of entrepreneurs by gender and economic activity in Greece in 2017, Source: Eurostat

only 11,80%.

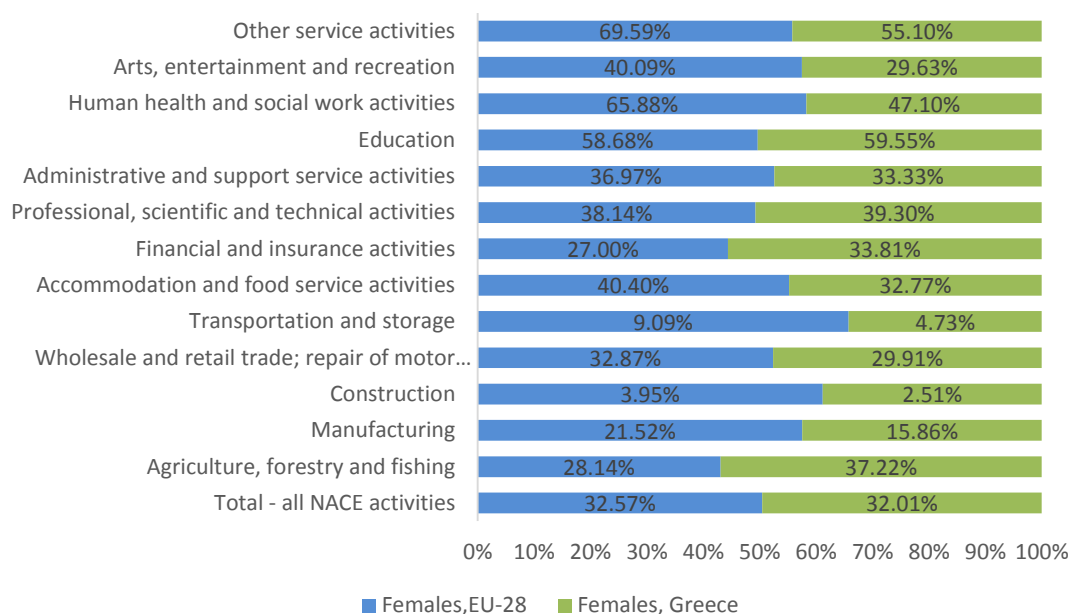
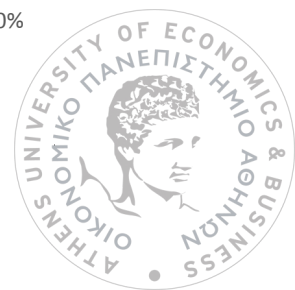


Fig.4.19: Percentage of women entrepreneurs by economic activity in Greece and EU-28 in 2017, Source: Eurostat



According to the most recent Annual Report for Entrepreneurship in Greece 2016-2017 conducted by the Foundation for Economic and Industrial Research (IOBE)⁹, female early stage entrepreneurship decreased at 4.8% (about 168 thousand women) against 6% in 2015, whereas male early-stage entrepreneurship dropped at 6.6% (about 200 thousand men) from 7.5% in 2015. Despite the decline of female entrepreneurship rates after three years of increase, the percentage of women in early stage entrepreneurship remains high (42%). This outcome is related to the higher unemployment rate and/or the need to supplement income in households where possibly male have lost their jobs. Besides, Greek women are more likely than men to become entrepreneurs by necessity.

The National Strategic Reference Framework (NSRF) provides funding to boost female entrepreneurship. Programs under the NSRF usually fund women and help them to set up their own businesses. The General Secretariat for Industry that falls under the Hellenic Ministry of Economy and Development run several programs targeted exclusively at female entrepreneurs. The Hellenic Manpower Employment Organization (OAED) which acts as the Greek Public Employment Service supported by the Greek Ministry of Labour, Social Security and Social Solidarity also runs several programs targeted at potential females entrepreneurs who are registered unemployed for short or longer periods of time. An evaluation committee assesses the business plans submitted for approval and funding by potential candidates. These programs aim to promote women's self-employment, entrepreneurship and business activity, especially in response to the new dire labour market conditions created as a result of the severe economic and financial crisis the country has experienced in the last few years. Financial support is usually accompanied by training seminars, individualized advice and guidance and monitoring of the implementation of the business plan and the progress of the business on a regular basis.

⁹ http://iobe.gr/docs/research/en/RES_02_18122017_PRE_ENG.pdf



Campaigns and capital support programs have been supporting female entrepreneurship in Greece in the past few years, but results are not very obvious yet. A case in point is the Greek Association of Women Entrepreneurs (SEGE)¹⁰, a non-governmental, non-profit organization for business women in Greece, aiming to provide them with the necessary environment to develop their businesses, improve recognition of their achievements and promote the growth of female-owned businesses through research and information.

The main obstacles in business activity in Greece are associated with the lack of a broader framework of national policies for entrepreneurship, the inefficient policies with regard to the taxation of new businesses, bureaucracy and other factors such as the inefficient operation of public bodies supervising the establishment of new businesses. Entrepreneurship is also hindered from difficulties in accessing finance, high entry barriers and the broader political and social environment. Among the main motives for entrepreneurship can be the upgrading of the educational level, mainly with regard to business development, and the implementation of actions that encourage entrepreneurship and provide incentives for start-up businesses. Therefore, actions and strategies should focus on schemes that support entrepreneurship -from public and private programs- as well as targeted initiatives for entrepreneurs, women and young unemployed, and the development of modern alternative financial instruments.

Entrepreneurship is also associated with unemployment. Unemployment can lead both women and men to various forms of entrepreneurship. In the 4th quarter of 2017, women's unemployment rate in Greece reached 25,46% (548.600 people) against 17,27% (458.300 people) for men.¹¹ According to the Foundation for Economic and Industrial Research's last report for entrepreneurship¹², there is one form of entrepreneurship which is called "necessity-driven entrepreneurship" and is

¹⁰ <http://www.sege.gr>

¹¹ Source: Hellenic Statistical Authority (ELSTAT), <http://www.statistics.gr/en/statistics/-/publication/SJO01/2017-Q4>

¹² http://iobe.gr/docs/research/en/RES_02_18122017_PRE_ENG.pdf



observed when someone is pushed to entrepreneurship due to lack of other employment options. In Greece, because of the high unemployment rates, starting a new business is more a survival option than a chance to take advantage of a business opportunity. The Greek economic crisis has undoubtedly increased the number of Greek female start-ups as in many cases this was the only option these women had¹³. Apart from the difficulty in getting suitable jobs, the desire for social recognition also was a driving factor that motivate women towards entrepreneurship.¹⁴

Women's start-ups in the period 2014-2015 have increased from 5,8% to 6% (210.000 start-ups), while men's start-ups have decreased from 9,9% to 7,5% (250.000 start-ups).¹⁵ As was previously mentioned, the fact that women undertake more caring responsibilities than men, is a crucial factor that limits women's capability of lobbying, vocational training, keeping track of the new trends and generally involving in any activity to evolve and enhance their businesses.

According to a survey conducted by ICAP in 2017¹⁶ showed that women are steadily gaining ground as business leaders and entrepreneurs, with the percentage of women executives in Greece totaling 23.06% in 2016, up from 22.40% a year earlier. The survey finds that women mainly lead small or very small companies (with a turnover of less than 2 million). In particular, 25,4% of very small companies run by a woman CEO, managing director or manager whereas only a percentage of 11, 6% of large companies (with a turnover of more than 50 million) run by female executives.

According to the survey, the number of women who pursue careers in technical occupations has increased considerably pointing out that female employment is

¹³ http://iobe.gr/docs/research/en/RES_02_18122017_PRE_ENG.pdf

¹⁴ https://www.ijebe.com/documents/papers/2014_1_p2.pdf

¹⁵ [E-bulletin of the Observatory of the General Secretariat for Gender Equality \(GSGE\), available at http://www.isotita.gr/wp-content/uploads/2017/12/Observatory-13th-e-bulletin-Womens-Entrepreneurship.pdf](http://www.isotita.gr/wp-content/uploads/2017/12/Observatory-13th-e-bulletin-Womens-Entrepreneurship.pdf)

¹⁶ <https://www.icap.gr/Default.aspx?id=10532&nt=146&lang=1>



moved away from traditional occupations and roles and is directed towards new directions and jobs which are more compatible with their personal skills and aspirations. The survey also highlighted that governments around the world are trying to encourage business activity among women, through plans, incentives and promotion actions and stated that even though the number has recently increased, women still remain a minority among business leaders.

The main problems and obstacles women entrepreneurs faced during their professional lives, are presented in the following graph (4.20). As can be seen family obligations is the most common obstacle women face (64%). 55% of women asked argued that they lack support by their male peers. Sex discrimination (53%) is considered a very important barrier in Greek society and even though significant steps and measures have been taken during the last decades, there is still room for

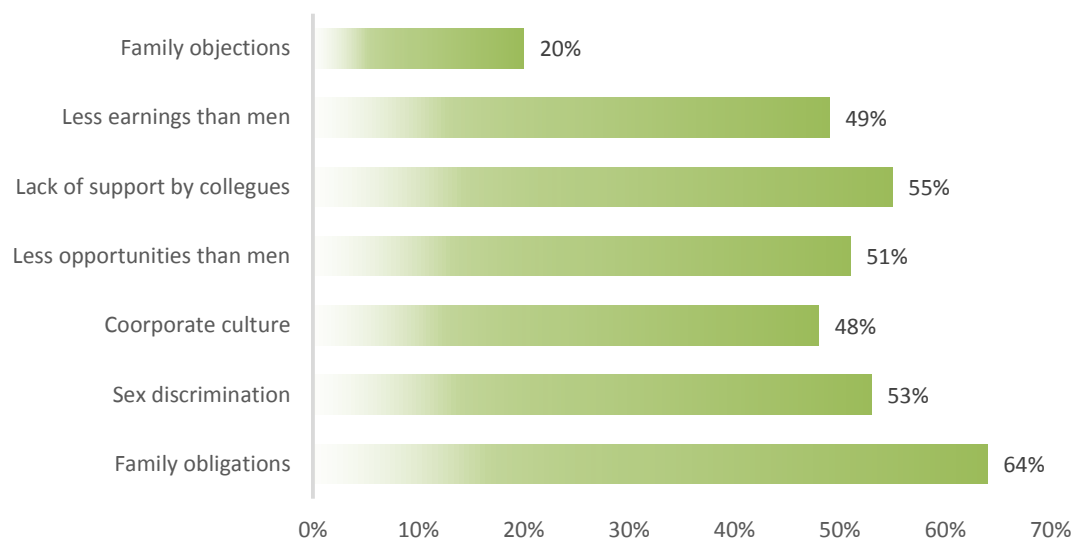
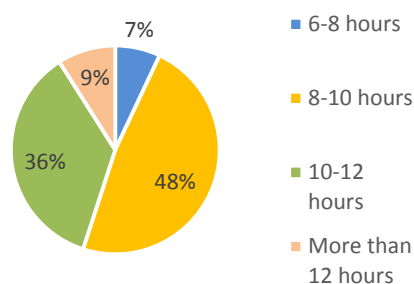


Fig.4.20: Main obstacles women entrepreneurs faced during their professional lives in 2016, Source: ICAP (2017)

improvement towards the total elimination of this phenomenon. In addition, half of the interviewees alleged that they are given less opportunities than men.

Other question women were asked was about how many hours on average they spend a day working for their business.

The majority is results indicate that the large working beyond the regular



eighth hours, while 50% remain in their office for more than 10 hours. Nonetheless, the fact that only 6% work less than 8 hours per day is striking (Figure 4.21).

*Fig.4.21: Average working daily hours,
Source: ICAP (2017)*

According to the survey, the main features that distinguish female top managers are persistence, willingness to work, and creativity. Women entrepreneurs also rely on their moral principles and integrity when taking business decisions. Communication is also a very important feature of women entrepreneurs: females have the ability to effectively manage any crises in their workplace. On the other hand, women are not so willing to undertake risks, are less competitive and ambitious and they seem to be less confidence for their abilities than men.

Fafaliou and Salamouris (2014) conducted an on-line national questionnaire survey from 2012 to 2013, using a sample of 300 women entrepreneurs. According to their findings, the majority of the participants feel strong, successful, proud and well respected due to practicing entrepreneurship. The majority of the participants argue that entrepreneurship is gender free and in order to become a successful entrepreneur someone should possess specific qualities. Determination, vision, education, leading qualifications, persistence, as well as communication abilities, patience, and responsibility are the main characteristics that contribute positively towards a successful entrepreneurship path.

Some success stories of women entrepreneurs are really encouraging and inspiring: Niki Koutsiana, a pharmacist set up with her husband, also a pharmacist and beekeeper, one of the leading natural cosmetic brands in Europe, “[Apivita](#)”. Today, after over 35 years, Koutsiana is at the head of a fast-growing cosmetics company, which holds an important position in Greece and many subsidiaries abroad, with around 30% of its total sales being exports. Tina Sklavolia-Kyriakis set up “[Alternative Athens](#)”, a company which organizes alternative thematic tours and activities in

Greece. Her company has been awarded Tripadvisor's Certificate of Excellence and has been featured in countless publications, including CNN Travel, National Geographic, The Guardian, Le Monde and The Independent. Xenia Kourtoglou is the co-founder of "[e-satisfaction](#)", a company that aims to help e-businesses learn how customers feel, inspire them to act based on customer feedback and encourage them to invest on true customer needs to become profitable. "E-satisfaction" received the 2014 Hellenic Entrepreneurship Award and the Gold Evolution Award in 2016 and 2017.

5. The Econometric Model

5.1. Data

For the purpose of the current analysis, we use data on female self-employment for 28 EU countries (listed in the [Data Appendix](#)) for the period from 2006 to 2016. The data used is taken from the European Union Labour Force Survey (EU-LFS); a large cross-sectional and longitudinal household sample survey that is collated by Eurostat from data provided by the EU member states, three EFTA countries and three EU-candidate countries. The EU-LFS database constitutes an important source for European statistics as it provides observations not only on labour market participation but also on persons outside the labour force.

Our main aim is to investigate whether and how the recent economic crisis affected entrepreneurial efforts among women in the European economies. To serve this purpose, we consider "women in self-employment" being the dependent variable of our model. The control variables we use are the following: types of occupations, different levels of education, unemployment rate, working hours. In order to capture the effects of the economic crisis, we have added the dummy variable "crisis" which takes the value of one if the country was hit by the economic crisis and zero otherwise. Table 5.1 that follows summarizes the main statistics of our sample variables. All variables are measured in thousands except for the variable "working hours". The variable "working hours" denotes the average number of actual weekly hours of work for both sexes in main job when self-employment is considered their

main occupation. Using this variable will allow to capture the impact of the work schedule on female entrepreneurship.

Table 5.1: Summary of main statistics

VARIABLES	Obs	Mean	Std. Dev.	Min	Max
<i>Women self-employment</i>	308	41.4	425.6	2.600	1,550
<i>Manager occupation of total population</i>	308	187.1	272.7	0.700	1,419
<i>Professionals of total population</i>	308	189.1	290.7	1.400	1,298
<i>Technicians and associate professionals of total population</i>	302	132.0	220.6	1.500	1,005
<i>Clerical support workers of total population</i>	220	24.38	35.12	0.500	142.1
<i>Service and sales workers of total population</i>	305	137.9	198.1	0.900	915.6
<i>Skilled agricultural, forestry and fishery workers of total population</i>	308	173.2	278.4	1	1,396
<i>Craft and related trades workers of total population</i>	305	183.9	253.9	0.600	1,029
<i>Plant and machine operators and assemblers of total population</i>	283	47.62	62.66	0.800	272.6
<i>Elementary occupations¹⁷ of total population</i>	271	43.36	77.25	0.500	331.7
<i>Primary education of total population</i>	308	3,496	4,750	89.40	19,006
<i>Tertiary education of total population</i>	308	2,768	3,767	30.90	15,561
<i>Hours (working) of total population</i>	308	42.11	3.864	34.70	52.40
<i>Crisis</i>	308	0.227	0.420	0	1
<i>Unemployment rate</i>	308	9.227	4.482	2.700	27.70

¹⁷ According to the International Standard Classification of Occupations 2008 (ISCO-08), an international classification managed by the International Labour Organisation (ILO), occupations such as cleaners and helpers, agricultural, forestry and fishery labourers, labourers in mining, construction, manufacturing and transport, food preparation assistants, street and related sales and service workers and refuse workers and other elementary workers are grouped into a broader category called “elementary occupations” (ISC09).

According to the data, female self-employment levels are higher in Italy, Germany, United Kingdom, Poland and Spain. On the other hand, lower levels of female self-employed are reported in Malta, Luxembourg, Estonia, Cyprus and Slovenia (see figure 5.1 below).

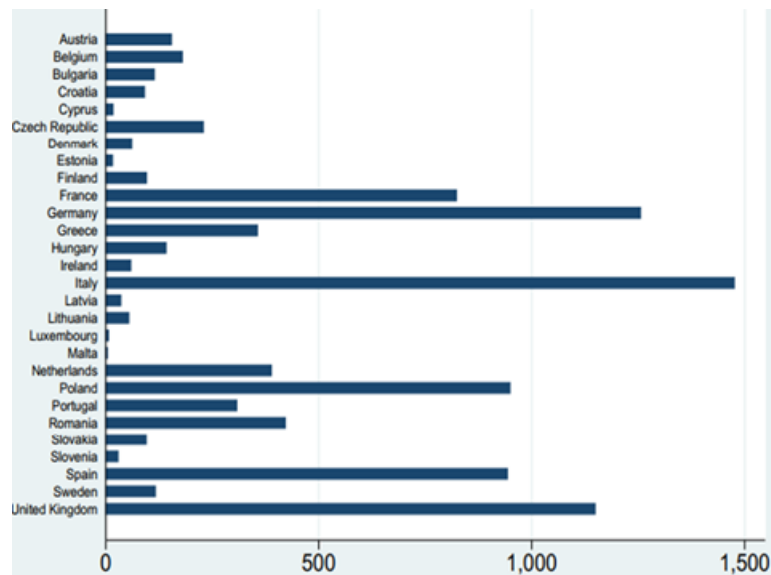


Fig. 5.1: Women in self-employment (mean)

The average unemployment rates among European economies during the period studied are depicted in Figure 5.2 below. According to the graph, the highest unemployment rates among the EU countries were observed in Spain, Greece and Croatia. Slovakia, Latvia, Portugal and Ireland follow. It is worth mentioning that despite the fact that Spain appears to be one of the top five countries with the higher number of women who are engaged in self-employment, is also the country with the highest unemployment rate among all European economies.

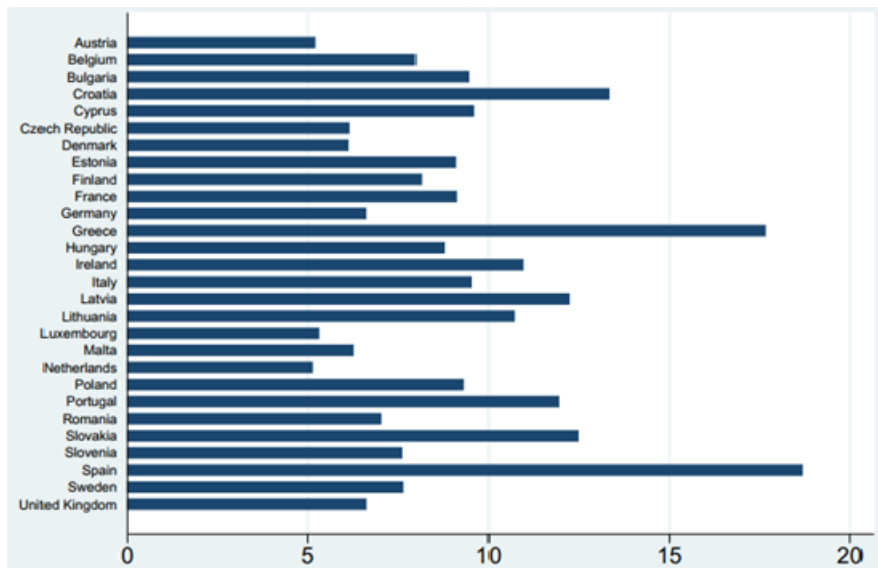


Fig. 5.2: Unemployment rate (mean)

Table 5.2 presents the pairwise correlations between the independent variables that we employ in our model. Pairwise correlations uncover that some of the independent variables we used are highly pairwise correlated, hence multicollinearity may be present. Multicollinearity is a problem in regression analysis that occurs when two independent variables are highly correlated, e.g. $r = 0.90$, or higher. In order to address the problem of multicollinearity, we shall check the independent variables and to decide which ones to use and which of them we should omit. Table 5.3 represents the final list of variables that we employ in our analysis. The selected variables were checked and no multicollinearity issues arose.

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
(1) Women in self-employment	1.000															
(2) Managers	0.097*	0.873*	1.000													
(3) Professionals	0.203*	0.904*	0.749*	1.000												
(4) Technicians & associate prof	0.107*	0.907*	0.825*	0.908*	1.000											
(5) Clerical support	0.050	0.893*	0.754*	0.911*	0.864*	1.000										
(6) Service & sales	0.084	0.843*	0.576*	0.810*	0.752*	0.767*	1.000									
(7) Skilled agricultural etc.	0.165*	0.520*	0.329*	0.245*	0.228*	0.210*	0.381*	1.000								
(8) Craft & related trades	0.047	0.952*	0.870*	0.853*	0.880*	0.884*	0.783*	0.347*	1.000							
(9) Plant & machine	-0.042	0.849*	0.756*	0.688*	0.666*	0.794*	0.745*	0.398*	0.876*	1.000						
(10) Elementary occupations	-0.106*	0.667*	0.528*	0.502*	0.514*	0.826*	0.420*	0.446*	0.693*	0.610*	1.000					
(11) Unemployment	0.052	-0.143*	-0.179*	-0.134*	-0.096*	-0.127*	-0.080	-0.116*	-0.123*	-0.122*	0.041	1.000				
(12) Hours working	0.043	0.054	0.158*	0.069	0.069	-0.142*	0.078	-0.026	0.071	-0.022	-0.371*	-0.354*	1.000			
(13) Crisis	0.009	0.159*	0.161*	0.020	0.087	0.065	0.098*	0.266*	0.120*	0.151*	0.205*	0.070	-0.091	1.000		
(14) Less Primary	0.917*	0.108*	0.102*	0.148*	0.073	0.005	0.026	0.157*	0.060	-0.041	-0.063	0.131*	0.083	-0.027	1.000	
(15) Tertiary	0.865*	0.319**	0.262*	0.438*	0.299*	0.183*	0.249*	0.212*	0.221*	0.079	-0.070	0.029	0.214*	-0.030	0.800*	1.000

Table 5.2: Pairwise correlation matrix;
*, ** and *** denote statistical significance at 10%, 5% and 1% levels respectively.

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1) <i>Women in self-employment</i>	1.000									
(2) <i>Managers</i>	0.097*	1.000								
(3) <i>Service & sales</i>	0.084	0.576*	1.000							
(4) <i>Skilled agricultural etc.</i>	0.165*	0.329*	0.381*	1.000						
(5) <i>Elementary occupations</i>	-0.106*	0.528*	0.420*	0.446*	1.000					
(6) <i>Unemployment</i>	0.052	-0.179*	-0.080	-0.116*	0.041	1.000				
(7) <i>Hours working</i>	0.043	0.158*	0.078	-0.026	-0.371*	-0.354*	1.000			
(8) <i>Crisis</i>	0.009	0.161*	0.098*	0.266*	0.205**	0.070	-0.091	1.000		
(9) <i>Less Primary</i>	0.917*	0.102*	0.026	0.157*	-0.063	0.131*	0.083	-0.027	1.000	
(10) <i>Tertiary</i>	0.865*	0.262*	0.249*	0.212*	-0.070	0.029	0.214*	-0.030	0.800*	1.000

Table 5.3: Pairwise correlation matrix;
*, ** and *** denote statistical significance at 10%, 5% and 1% levels respectively.

5.2. Methodology

The main objective of this study is to provide empirical evidence on the effects of the global economic crisis on female entrepreneurship. To determine empirically the relationship between the crisis and female entrepreneurship, we use panel data for 28 EU countries for the period 2006-2016.

Panel data analysis or longitudinal data set is a combination of time series and cross-section analysis. Our dataset is considered a Balanced Panel due to the fact that each panel member includes all elements observed in all time frame.

The basic specification of the main regression for the i th country can be formulated as follows:

$$y_{it} = \alpha_i + x'_{it}\beta_{it} + e_{it} \quad \text{for } i=1,2,\dots,28 \text{ and } t=2006,\dots,2016$$

In the above equation, y represents our dependent variable, x represents a vector of observations on the independent variables of size $(1 \times k)$, β is the corresponding coefficient vector of size $(k \times 1)$ and α is the intercept. Unobservable and random factors are captured by the error term e .

For the purposes of our analysis, we estimate the β coefficients using two methods; the Ordinary Least Square Method (OLS) and the Method of Fixed Effects. In each of the two methods, two models are tested; the baseline model and an augmented one.

The analytical expressions of the two methods used are presented below:

Ordinary Least Square Method (OLS)

$$wselfemp_{it} = \alpha_i + \beta_1 Manager_{it} + \beta_2 Services \& sales_{it} + \beta_3 Agricultural_{it} + \beta_4 Elementary_{it} + \beta_5 Unemployment\ rate_{it} + \beta_6 Hours\ working_{it} + \beta_7 Crisis + \beta_8 Less\ than\ primary_{it} + \beta_9 Tertiary_{it} + \varepsilon_{it}$$

Fixed-Effect Method

The basic specification of the main regression for the i th country can be formulated as follows:

$$y_{it} = \alpha_i + x'_{it}\beta_{it} + \mu_i + e_{it}$$

In the above equation, y represents our dependent variable, x represents a vector of observations on the independent variables of size $(1 \times k)$, β is the corresponding coefficient vector of size $(k \times 1)$ and μ_i captures the country-specific fixed effects (unobserved country-specific factors which do not vary over time and may be correlated with the explanatory variables x'_{it}), α is the intercept while the error term e captures the unobservable and random factors.

$$\begin{aligned} wselfemp_{it} = & \alpha_i + \beta_1 Manager_{it} + \beta_2 Services \& sales_{it} + \beta_3 Agricultural_{it} \\ & + \beta_4 Elementary_{it} + \beta_5 Unemployment\ rate_{it} + \beta_6 Hours\ working_{it} \\ & + \beta_7 Crisis + \beta_8 Less\ primary_{it} + \beta_9 Tertiary_{it} + \mu_i + \varepsilon_{it} \end{aligned}$$

6. Empirical Results

6.1. OLS Results

VARIABLES	Model coefficients
<i>Managers</i>	-0.020 (0.021)
<i>Services and sales workers</i>	-0.006 (0.027)
<i>Skilled agricultural, forestry and fishery workers</i>	0.008 (0.019)
<i>Elementary occupations</i>	-0.486*** (0.083)
<i>Unemployment rate</i>	-9.438*** (2.619)
<i>Hours working</i>	-14.66*** (2.619)
<i>Crisis</i>	3.605 (17.74)
<i>Less primary</i>	0.068*** (0.003)
<i>Tertiary</i>	0.047*** (0.003)
<i>Constant</i>	739.4*** (131.9)
<i>Number of Observations</i>	271
<i>R-squared</i>	0.924

Table 5.4: OLS results, robust standard errors in parentheses;

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Female entrepreneurship is positively correlated with education; the coefficients of the variables *less primary education* and *tertiary education* are both found to be statistically significant at the 1 percent level. This result indicates that an improvement in educational levels has a positive impact on female entrepreneurship.

Once we extend the set of controls by including several types of occupations, we observe that the variable *elementary occupations* is statistically significant at the 1 percent level; though the relationship between this variable and our dependent variable is negative. According to the International Standard Classification of Occupations (ISCO-08), elementary occupations (ISCO09) include occupations such as cleaners and helpers, agricultural, forestry and fishery labourers, labourers in mining, construction, manufacturing and transport, street and related sales and service workers, food preparation assistants. These jobs are usually considered to require limited education and training.

The variable *working hours* is negatively correlated with female entrepreneurship; however is found to be statistically significant at the 1 percent level. In other words, an increase in working hours have a negative effect on female entrepreneurship.

Nevertheless, *unemployment rate* is found to be significant at the 1 per cent level but has a negative correlation with female self-employment, meaning that an increase in unemployment levels will lead female self-employment to decrease. Thus, we can understand that increases in unemployment might not worked as an incentive for the creation of businesses by females during the years studied.

The dummy of *crisis* is not considered statistically significant. However, is found to be positively correlated with our dependent variable i.e. female entrepreneurship. This result can be explained by the fact that we have incorporated various types of occupations and each one of those might have affected our model differently.

We also observe a high R-squared value (R^2) which explains over 90% of the variability of the response data. This shows that our model fits the data used considerably well.

6.2. Fixed –Effect Results

VARIABLES	Model
<i>Managers</i>	-0.195** (0.084)
<i>Services and sales workers</i>	-0.107 (0.092)
<i>Skilled agricultural, forestry and</i>	-0.170

<i>fishery workers</i>	(0.275)
<i>Elementary occupations</i>	1.135** (0.504)
<i>Unemployment rate</i>	-2.370* (1.225)
<i>Hours working</i>	-6.137 (3.737)
<i>Crisis</i>	-0.775 (6.547)
<i>Less primary</i>	0.003* (0.016)
<i>Tertiary</i>	0.079*** (0.024)
<i>Constant</i>	375.6 (227.2)
<i>Observations</i>	271
<i>R-squared</i>	0.53
<i>Number of countries</i>	27

Table 5.5: Fixed effects results, robust standard errors in parentheses;
(***) $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

The results when the method of fixed effects is used are presented in Table 5.5 above. Based on these results, we can assure that not all professions are statistically significant. *Managers* and *elementary occupations* are found to be statistically significant at the 5 percent level of significance. In contradiction with the OLS results, on the one hand though, *managers* is found to be negatively correlated with our dependent variable but on the other, *elementary occupation* has a positive impact on women entrepreneurship.

Unemployment rate is found again to be statistically significant. Similarly to the previous case where the OLS method was used, unemployment rate is negatively correlated with female self-employment, meaning that an increase in unemployment levels will lead female self-employment to decrease. Thus, we can confirm our initial argument that the creation of businesses by females didn't speed up due to increases in unemployment rates during the years studied.

Finally, both *tertiary* and *less primary* education are found to be positively correlated with female entrepreneurship and statistically significant at the 10% level and at the 1% level respectively.

7. Main conclusions, policy measures and recommendations to support and strengthen female entrepreneurship

The main objective of the present study is to provide empirical evidence on the effects of the recent global economic crisis on female entrepreneurship. In order to serve this purpose, we use panel data for 28 EU countries for the period 2006-2016. Our results indicate that education is found to be positively correlated with female entrepreneurship and statistically significant. Therefore, an increase in educational levels, leads the number of businesses which are run by females to increase as well.

Nevertheless, unemployment rate is found to be significant at the 1 per cent level but has a negative correlation with female self-employment, meaning that an increase in unemployment levels will lead female self-employment to decrease. Thus, we can understand that increases in unemployment might not work as a catalyst for the creation of businesses by females during the decade studied.

Another interesting result is that although elementary occupations were found to be negatively correlated with female self-employment and statistically significant at the 1 percent level, this relationship doesn't seem to hold when the method of fixed effects is used. In that case, the relationship between this variable and female self-employment is turned out to be positive.

The dummy of *crisis* is not considered statistically significant neither in the case of the OLS model nor in the case of the method of fixed-effects. This result can allow us to argue that the recent economic crisis doesn't seem to have a significant effect on female entrepreneurship. However, when the OLS method was used, the variable crisis was found to be positively correlated with our dependent variable. On the other hand, when the method of fixed effects is incorporated which captures the crisis effect more accurately, the

relationship is found to be negative. Therefore, the economic crisis negatively affects the creation of new businesses run by women; though this effect is not found to be statistically significant.

The role of policy makers when supporting and strengthening female entrepreneurship is of great importance. It is common knowledge that competition leads to economic development and growth. Strengthening female entrepreneurship and entrepreneurship in general could therefore have a beneficial effect on countries' economic growth rates. In turn, this effect would have other positive effects on citizens' welfare and would improve the country's relative position worldwide.

As we have already stated in the previous chapters, being a woman entrepreneur is not an easy task as it still represents a relative disadvantage in almost all of the economies worldwide. In other words, women are in a weaker relative position than men both in society and in the business environment. Entrepreneurship is sometimes a one-way road as when there are no other alternatives and depending on the economic conditions, women are forced into this professional path.

Fore and foremost, creating better possibilities for women entrepreneurs and potential female entrepreneurs as well is the first key recommendation. The women should be enabled to dynamically participate in the active labour force and this can be done by increasing their ability to do so. Policy makers should ensure the availability of affordable child care and equal treatment in the work place. The improvement of women's rights and their role in society so they can access all levels of education increase their personal income and enhance the quality of their own life and the life of their children will also have a positive impact in terms of women's entrepreneurship.

Another challenge that most economies face today is the economic role of ethnic minorities and the role the women play there. Certain economies such as the EU, the US, Canada have already identified and taken measures towards this challenge. Nevertheless, this challenge is most likely to be observed in transitioning and emerging economies such as Israel, Brazil and others that have large ethnic minorities. This is a very important challenge as women belonging in such minorities are usually marginalized in the economy and therefore they

don't have enough chances to engage in entrepreneurship. In most of the cases, these minorities have a significantly low economic and social status. However, there are some exceptions; certain ethnic minorities enjoy higher economic and social benefits. Therefore, policy makers should take into account the specific needs of the ethnic minorities they try to support when designing policy.

More generally, benefits in terms of women's entrepreneurship will be achieved when equal opportunities will be given to anyone independently of sex and other discriminatory criteria and will be applied to all sectors of the economy. Facilitating entry, development and exit of women-owned businesses. Effective policy towards supporting women's entrepreneurship involves measures for boosting both the demand and the supply side of entrepreneurship. Political, legal and tax structures and conditions could potentially be ameliorated. It is indicative that democratic countries with political stability, free markets and strong and effective legal institutions, tend to have the highest levels of entrepreneurship. In addition, lower taxes combined with a high general income level seem to have a positive impact on female entrepreneurship.

The creation of public offices to promote and facilitate female entrepreneurship could be a very important step as well. These offices could be also charged with listening to the problems and obstacles that women entrepreneurs face. Such offices could provide women's business centers, organizing information seminars and meetings and web-based information to women who are already entrepreneurs and who have important insights into the changes needed to improve women's entrepreneurship in general.

Within this framework, the development of female entrepreneur networks could very useful as these networks are usually the main source of knowledge and information about issues related to women's entrepreneurship and can provide valuable tools for both its support and promotion. Co-operation and partnerships between national and international networks can facilitate entrepreneurial endeavors by women in a global economy.

Another important measure is the overall assessment of the effectiveness of the aforementioned and other policy measures. Monitoring and evaluation systems that will often monitor and evaluate the impact of such policies as regards to the success of women-owned businesses and the extent to which such businesses take advantage of them. These systems could allow for the retaining of certain measures and for improving the existing ones. Best international practices from other countries should also be taken into consideration by policy makers who design policies.

Appendix

Types of occupations (males and females)

Managers

Professionals

Technicians and associate professionals

Clerical support workers

Service and sales workers

Skilled agricultural, forestry and fishery workers

Craft and related trades workers

Plant and machine operators and assemblers

Elementary occupations

Armed forces occupations

Countries (EU-28)

Austria

Italy

Belgium

Latvia

Bulgaria

Lithuania

Croatia

Luxembourg

Cyprus

Malta

Czech Republic

Netherlands

Denmark

Poland

Estonia

Portugal

Finland

Romania

France

Slovakia

Germany

Slovenia

Greece

Spain

Hungary

Sweden

Ireland

United Kingdom

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