ASSOCIAÇÃO DE POLITÉCNICOS DO NORTE **(APNOR)**

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Factors that drive Female Entrepreneurship in Armenia

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Bragança, July, 2016.

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Abstract

Entrepreneurs play a key role in any economy. Entrepreneurship includes creativity, innovation, risk taking, planning and management and is described as transferring ideas into action. Female entrepreneurship, in particular, is considered an important tool in enabling female empowerment and emancipation. In the light of recent world events, this has become a crucial area to study and understand, especially with respect to motivations, obstacles, constraints and consequences of female entrepreneurship. Having the previous framework in attention, this thesis focuses on female entrepreneurship in a developing country - Armenia – and proposes a conceptual framework of the phenomenon. A joint cooperation between the World Bank and the European Bank for Reconstruction and Development allowed to conduct an enterprise survey in the country and from that survey a microeconomic dataset was released and applied in this research study. A logistic regression econometric method is applied to the dataset to identify and measure the relationship between female entrepreneurship and several factors such as the location, size, legal status, market and obstacles faced by Armenian firms. The study concludes that women entrepreneurs in Armenia share many common features and obstacles with their male counterparts. Moreover, gender of the top managers, the firm's location, size, main market type, the number of competitors and full-time employees, the adoption of new marketing methods, the access to land, the tax administration system and an inadequately educated workforce are found to be statistical significant factors in the explanation of female entrepreneurship in Armenia.

Keywords: Entrepreneurship, Female entrepreneurship, World Bank Enterprises Survey, Logistic regression, Armenia.

Resumo

Os empreendedores desempenham um papel fundamental em qualquer economia. O empreendedorismo implica criatividade, inovação, assumir riscos, planeamento e gestão e é, frequentemente, descrito como a transferência de ideias para a ação. O empreendedorismo feminino, em particular, é considerado uma ferramenta importante para permitir a emancipação feminina e a sua capacitação. À luz dos recentes acontecimentos mundiais, este fenómeno tornou-se uma área crucial para estudar e compreender, especialmente no que diz respeito às motivações, obstáculos, limitações e consequências do empreendedorismo feminino. Tendo o enquadramento anterior em atenção, este trabalho concentra-se em compreender o empreendedorismo feminino numa economia em transição – a Arménia - propondo um quadro conceitual do fenómeno. A cooperação conjunta entre o Banco Mundial e o Banco Europeu para a Reconstrução e Desenvolvimento permitiu a realização de um inquérito às empresas no país sendo que a partir desse levantamento um conjunto de dados microeconómicos foi disponibilizado e aplicado neste trabalho de investigação. O método econométrico de regressão logística é aplicado ao conjunto de dados disponíveis para identificar e medir a relação entre o empreendedorismo feminino e vários potenciais fatores explicativos, como a localização, dimensão, estatuto jurídico, e o tipo de mercado das empresas assim como os e obstáculos enfrentados pelas empresas arménias. O estudo conclui que as mulheres empresárias na Arménia partilham muitas características comuns e obstáculos com os seus homólogos masculinos. Além disso, o sexo dos principais gestores, a localização, dimensão, tipo principal do mercado da empresa, o número de concorrentes e funcionários em tempo integral, a adoção de novos métodos de marketing, o acesso à terra, o sistema de administração tributária e uma força de trabalho adequadamente qualificada são fatores indicados como fatores estatisticamente significativos na explicação do empreendedorismo feminino na Arménia.

Palavras-chave: Empreendedorismo, empreendedorismo feminino, *World Bank Enterprises Surveys*, regressão logística, Arménia.

Նախաբան

Ձեռնարկատերերն առանցքային դեր ունեն տնտեսությունում: Ձեռնարկատիրական գործունեությունը իր մեջ ներառում է նորարարություն, ռիսկայնություն, պլանավորում ու կառավարում և այն սահմանվում է որպես գաղափարը իրականությանը վերածելու գործունեություն: Կանանց ձեռնարկատիրությունը կարևորագույն գործիք է, որը հնարավորություն է տալիս հզորացնել ազդեցիկությունն ու էմանսիպացիան: Համաշխարհային վերջին զարգացումներին համահունչ, կանացի ձեռնարկատիրությունը դարձել է ուսումնասիրման կարևորագույն ոլորտ, շեշտադրելով դրդապատճառների, խոչընդոտների, սահմանափակումների հետազոտումը: Հիմք ընդունելով նախորդ ուսումնասիրությունները, աշխատանքը կենտրոնանում է կանանց ձեռներեցության վրա այնպիսի զարգացող երկրում ինչպիսին է Հայաստանը: Համաշխարհային բանկի և Վերակառուցման և Զարգացման Եվրոպական բանկի միջև համատեղ համագործակցության շնորհիվ հարցում է կատարվել Հայաստանի ձեռնարկատիրական ոլորտում: Վերջինս էլ հանդիսանում է այս հետազոտական աշխատանքի հիմքը:

Լոգիստիկ (կազմակերպչական) ռեգրեսիայի էկոնոմետրիկ մեթոդի կիրառումը թույլատրել է բացահայտել և գնահատել կանացի ձեռներեցության և մի շարք գործոնների միջև փոխազդեցությունը, ինչպիսին են ընկերությունների գտնվելու վայրը, չափն ու իրավական կարգավիճակը, գործունեության շուկան և հայաստանյան ընկերությունների գործունեությունում հանդիպող հնարավոր խոչընդոտները: Ինչպես ցույց են տալիս ուսումնասիրության արդյունքները Հայաստանում կանանց ձեռնարկատիրությունը հանդիպում է նույն հնարավորություններին և խոչընդոտներին, որոնք բնորոշ են ցանկացած ընկերությանը: Ավելին, ընկերության գլխավոր մենեջերների սեռը, գտնվելու վայրը, չափը, հիմնական գործունեության շուկան, մրցակիցների և հիմնական աշխատակիցների քանակը, նոր մարքեթինգային մեթոդների կիրառումը, տարածքի ձեռքբերման հասանելիությունը, հարկային համակարգը և աշխատուժի կրթության մակարդակը հանդիսանում են վիճակագրորեն նշանակալի գործոններ, որոնց շնորհիվ հնարավոր է բացահայտել կանանց դերը և մասնակցությունը Հայաստանի ձեռնարկատիրական գործունեությունում:

Հիմնաբառեր: Ձեռնարկատիրություն, կանացի ձեռնարկատիրություն, Համաշխարհային Բանկի կողմից իրականացվող ձեռնարկությունների հարցում, լոգիստիկ ռեգրեսիայի մեթոդ, Հայաստան:

Resumen

Los emprendedores desempeñan un papel fundamental en cualquier economía. El emprendimiento relacionado con la creatividad, la innovación, la asunción de riesgos, la planificación y la gestión se describe como la transferencia de ideas en acción. La iniciativa emprendimiento femenina en particular, se considera una herramienta importante para permitir el empoderamiento femenino y la emancipación. A la luz de los recientes acontecimientos mundiales, se han convertido en un área crucial para estudiar y emprendimiento femenina.

Tomando como precedente el marco comprender, especialmente con respecto a las motivaciones, obstáculos, limitaciones y consecuencias de la actividad anterior atentamente, ésta tesis se centra en el emprendimiento femenino en un país en desarrollo - Armenia - y propone un marco conceptual de este fenómeno. Un equipo de cooperación entre el Banco Mundial y el Banco Europeo de Reconstrucción y Desarrollo permitieron llevar a cabo una encuesta de empresas en el país y de ella, un conjunto de datos microeconómicos fueron extraídos y se aplican en este estudio de investigación. Un método econométrico de regresión logística se aplica al conjunto de datos para identificar y medir la relación entre el emprendimiento femenino y varios factores tales como la ubicación, tamaño, estado legal, mercado y los obstáculos a los que se enfrentan las empresas de armenios. El estudio concluye que las mujeres empresarias en Armenia comparten muchas características y obstáculos con sus los hombres.

Por otra parte, el género de los principales gestores, la ubicación, el tamaño, el principal tipo de mercado de empresa, el número de competidores y empleados a tiempo completo, la adopción de nuevos métodos de comercialización, el acceso al suelo, el sistema de administración tributaria y una mano de obra con formación inadecuada, resultan ser factores estadísticamente importantes en la explicación de la iniciativa emprendimiento femenina en Armenia.

Palabras clave: Emprendimiento femenino, la iniciativa empresarial femenina, *World Bank Enterprise Surveys*, regresión logística, Armenia

Dedicated to Hasmik Melqumyan for her presence in my life.

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Acronyms

ADB – Asian Development Bank

AYWA – Armenian Young Women's Association

BDS – Business Development Services

BEEPS – Business Environment and Enterprise Performance Survey

EBRD – European Bank for Reconstruction and Development

EU – European Union

GEM – Global Entrepreneurship Monitor

NGO – Non-Governmental Organization

OECD – Organization for Economic Co-operation and Development

OLS – Ordinary Least Squares

OSCE – Organization for Security and Co-operation in Europe

SBS – Small Business Support

SMEs – Small and Medium Size Enterprises

SME DNC – Small and Medium Entrepreneurship Development National Centre

SPYUR – Armenia Business Directory

UK – United Kingdom

US – United States

USAID – United States Agency for International Development

WBCs – Women's Business Centres

WES – Women Entrepreneurship Strategy

WiB –Women in Business

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Introduction

Entrepreneurship is a crucial area for the world economies and plays a key role in economic development. It is a driver for economic growth, employment, innovation and productivity. Entrepreneurship is considered central to the functioning of market economies (OECD, 1998). Entrepreneurship is also considered a way for determining opportunities and developing possibilities (Ferk, Quien & Posavec, 2013). Nonetheless the previous findings, only recently several studies concentrated on the research of new sub-fields of entrepreneurship. Different motivational factors influence on people decision to become an entrepreneurs and this factors are different across the countries, stereotypes, education and gender. Some studies describe motives such as poverty reduction, societal and economic advancement (Bullough, Luque, Abdelzaher, & Heim, 2015) while others refer the increasing income, the desire for autonomy, freedom and independence, satisfaction and self-perception (Benzing, Chu, & Kara, 2009; Parker & Klapper, 2010). While depends on entrepreneur's gender the motivational factors are changed. Female entrepreneurs start their own businesses regarding to various factors such as desire to be independent, support to family, reduce poverty and/or not finding a suitable work (Chelliah & Lee, 2011; Jesurajan & Gnanadhas, 2011; Vossenberg, 2013; Bullough et al., 2015).

Nowadays the phenomenon of female entrepreneurship is becoming a global issue and researchers continue to explore the characteristics, motivations and barriers of female entrepreneurs. Still, despite of the growing number of initiatives and resources to promote and develop female entrepreneurship, women entrepreneurs are in a minority all over the world economies. Different studies identified the reasons of women's low participation on entrepreneurial activity. Some of them found the problem in an uncertain environment, social networks and embeddedness (Minniti 2005) while others thought that in most cases women entrepreneurs are less "visible" (De Bruin, Brush & Welter, 2006). Ahl (2006) and Vossenberg (2013) interpret it as risk-aversion and lack of educational skills.

Entrepreneurship is an important goal in every economy but particularly in transition economies like Armenia. Comparing with more development countries, Armenian entrepreneurs are motivated to start a new business motivated by financial reasons, to be one's own boss, due to the lack of a suitable job and/or the fear to lose one (Kuriakose, 2013). Gender roles and society stereotypes (ADB, 2015), high taxes, sales problems, bureaucratic requirements and corruption (Alanakyan, 2014) are other problems that women in Armenia may face. In spite of existing difficulties and barriers, different organizations, even governmental, cultivate various strategic plans and projects in order to promote and encourage female entrepreneurship in Armenia.

With the significant increase in women-owned businesses and the lack of empirical studies on this specific research topic, particularly in transition economies, the thesis seeks to analyse the phenomena of female entrepreneurship in Armenia, exploring the level of women's participation in country's entrepreneurial activity, identifying and measuring the main factors that motivate and/or obstacle women to run a business based on the existing problems and opportunities. To accomplish the purpose of this dissertation in the work was used microdata of the 2013 World Bank Enterprises Survey for Armenia. A set of 360 establishments in manufacturing and service sectors of the country participated in the survey. This survey does not have as a main purpose to study the issue of female entrepreneurship, however it has a questions about the gender ownership of the enterprise and is the only known survey implemented in Armenia to study the individual characteristics of the business. For these two reasons the database, which is not public in terms of microeconomic data but provided by the World Bank for the purpose of this research, appears as a good starting point to analyse and discuss the issue of female entrepreneurship in Armenia.

Logistic regression was used to mathematically measure the relationship between female entrepreneurship and several factors that can help to explain women entrepreneurial activity in Armenia. This econometric method that can only be applied to microeconomic data, provides a statistical framework that indicates if (and how much) independent variables (gender of top managers, location, size, legal status, market, competition, origin of inputs and social, fiscal, legal and economic obstacles) can adequately predict female entrepreneurship (dependent variable) in the country. The method was chosen because the variable that will be explain is dichotomous – since female entrepreneurship is a variable that cannot be measure it is used a variable that indicates if the firm is owned by a women or not – and the logistic regression is one of the most suitable and common econometric methods used in this situation.

The dissertation is organized as follows. In section 1 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 entrepreneurs. It is also presented the different strategic plans and policies adopted to promote female entrepreneurship across the world. A special subsection is dedicated to review the literature that exists regarding Armenia entrepreneurship

activity, especially the one that refers to women. In section 2 is presented the objective of the study, the World Bank Enterprises Survey dataset and the logistic regression econometric methodology used to reach the objective. Section 3 presents a descriptive analysis of the dataset, with the aim to get acknowledge with the statistical information available, and the results of the logistic regression method. At the same time is made the discussion of such results. The thesis concludes with the main conclusions, limitations and suggestions for further research.

1. Theoretical framework for female entrepreneurship

1.1. Entrepreneurship and its drivers over the world

The entrepreneurship as a subject of scientific research “has flourished in recent years and is evolving rapidly” (Carlsson et al., 2013, p. 913) although the extensive history and tradition of the entrepreneurship term. Indeed, Carlsson and his co-authors (2013) present a comprehensive description of the entrepreneurship concept and its evolution over time, since the origin of the term, used by the French in the medieval age, passing through the seminal work of Schumpeter, that introduce the role of entrepreneurship in economic development, until few decades ago where the concept start to arouse attention of researchers and started to be a highlighted theme in the scientific literature. More recently entrepreneurship research is being developed in new several sub-fields which importance has been assumed just in recent times. It is the case of social entrepreneurship, family entrepreneurship, academic entrepreneurship or female entrepreneurship, for instance.

Independently of the entrepreneurship field of study, its importance is crucial for the world economies. In 1998, the Organization for Economic Co-operation and Development (OECD) declared entrepreneurship as central to the functioning of market economies (OECD, 1998, p. 12). Eight years later, in 2006, the European Union (EU) declared that entrepreneurship “includes creativity, innovation, risk taking, planning and management and is described as transferring ideas into action. It is also about identifying opportunities and developing possibilities taking into account moral values and ethical standards” (Ferk et al., 2013). Both organizations stress the importance of business creation as a central theme in the entrepreneurship research recognizing “that entrepreneurship and entrepreneurs are important drivers of economic growth, employment, innovation and productivity” (Ahmad & Hoffmann, 2008, p. 2).

However, a variety of factors influence the complex decision of starting a new business. As Benzing et al. (2009) found the motivating factors may differ across countries due to differences in income levels and employment opportunities. Bullough et al. (2015), for example, refer that people engage in entrepreneurship to effectively generate value, overcome poverty and promote societal and economic advancement confirming the findings of Benzing et al. (2009). These authors observed that increasing income, and therefore providing security for themselves and their family, motivate Turkish as well as Chinese, Vietnamese or some African entrepreneurs. However, according to the authors, the creation of employment opportunities, economic growth and the personal satisfaction were also present within the factors that drive the creation of firms among the populations they observed – Turkey, Vietnam, Romania, Kenya or Ghana. The desire for autonomy, freedom and independence, ally to income increase, were also referred in countries analysis like India or Uganda. Others, like Parker and Klapper (2010), also refer factors like personal freedom, independence, satisfaction, self-perception and/or security reasons as motivating factors for running a business in such different economies as United States (US), Singapore, Norway, Germany or Pakistan. Nevertheless, like Benzing et al. (2009) concluded, in general, entrepreneurs in low-income countries are more likely to be motivated by income needs, whereas those in higher income countries are driven by higher order needs like self-esteem and self-realization.

1.1.1. The particular case of female entrepreneurship drivers

The drivers of described entrepreneurship are shared by both genders however it seems that females are most likely driven by the possibility to increase their income that they use to support the household and family goals improving their family standards of living and gaining autonomy (Bullough et al., 2015). This conclusion just stresses the conclusion of Minniti (2010) who identifies female entrepreneurship as a way of poverty reduction.

“Female entrepreneurs are defined as those who use their knowledge and resources to develop or create new business opportunities, (...) who are actively involved in managing their businesses, are responsible in some way for the day-to-day running of the business, and have been in operation for longer than a year” (Anwar & Rashid, 2011, p. 6). In the opinion of Debroux (2010, p. 5) women entrepreneur is a “women who is a *de facto* owner or co-owner of a business, is involved in its daily management and is a key decision maker for devising the business strategy”. However, the definition of female entrepreneurship is slightly different from country to country, as states Debroux (2010). In South Korea female entrepreneurial activity is defined as a company owned by a women. In India, women entrepreneurship is based on women participation in equity and employment of a business enterprise. “An enterprise owned and controlled by a women having a minimum financial interest of 51% of the capital and giving at least 51% of the employment generated by the enterprise to women” (Sharma, 2013, p. 9). McAdam and Roper (2013) support the definition of female entrepreneurship quoting Marlow, Carter and Shaw (2008, p. 339). According to them, in United Kingdom (UK), a women-owned business

is “one that is either wholly or majority owned by one or more women“. According the same study, quoting the US Census Bureau (2002), a women-owned business in US is the one where the owner or the majority of shareholders are female and the female owners/shareholders own at least 51% of the business.

Women entrepreneurs do business for daily food, pleasure for work and free time benefits. In developing countries, the vast majority of women are engaged in entrepreneurial activity driven by pure survival – out of necessity rather than opportunity – because there are no jobs or any other options for income generation. In high-income countries women start a business because they see opportunities or want to be independent (Vossenberg, 2013). Eyupoglu and Saner (2011) divide women entrepreneurs into two types: women who have business experience and women who do not have it. Their research results show that women who have business experience and skills are motivated by becoming economically free and managing their own lives while the women who do not have business experience are motivated by financial needs.

In a way to summarize the factors that drive female entrepreneurship, it is possible to claim the different set of reasons and motivating factors stimulating women to start up a new business depends on countries, cultures and stereotypes. According to Akehurst, Simarro and Mas-Tur (2012) like their male counterparts, women establish entrepreneurial activity for many reasons: extrinsic, intrinsic or transcendental nature. Motivation of intrinsic and transcendental nature dominate among women, whilst extrinsic reasons are motivated men to create a business.

Intrinsic and transcendental factors include desire for independence, self-realization and internal control, perseverance and an interest in taking up the challenges posed by creating a new firm, the opportunity to develop their personal skills and experience and the chance to influence their own destinies (see, for example, the results of the studies conducted by Schwartz (1976), Scott (1986) or Lee and Rogoff (1997) in different periods of time). Nelson and Cengiz (2005) support the same motives and also find a significant relationship between innovativeness, risk taking propensity and perseverance with women motivation. A desire for self-fulfilment, job satisfaction and self-determination/independence are also crucial reasons for women to start a business (Bennett & Dann, 2000; Kepler & Shane, 2007; Walker & Webster, 2007). Buttner and Moore (1997) and Wilson, Kickul and Marlino (2007) found that self-efficacy affects entrepreneurial intention and it is stronger for women than for men.

The extrinsic nature that drive more men than women to start up a business is characterized by self-employment and the desire to avoid unemployment. However in some economies they may be as important as other reasons. For example, as noted Idrus, Pauzi and Munir (2014) the business owners in Turkey might be more motivated by extrinsic factors (such as increasing income and creating a job for themselves) than by intrinsic or independence motives, while Watkins and Watkins (1984) observed new business creation as a strategy of women who leave the job market for family reasons and McGowan et al. (2012) observed entrepreneurship as an alternative form of female employment.

Another important division of the factors that drive female entrepreneurship is presented by Ali and Mahamud (2013). The factors that incentive women to start a new business can be distributed into “push” and “pull” factors. Pull factors encourage women to start a business and push factors force women to start business (Mordi, Simpson, Singh, & Okafor, 2010). Lacob and Nedelea (2014) associate push factors with necessity and pull factors with possibility to lead. Push factors are determined by financial needs (Jesurajan & Gnanadhas, 2011), dissatisfaction with the current job, difficulty in finding work and the need for flexible work (Chelliah & Lee, 2011). Pull factors are associated with independence, achievement, and desire for wealth, social status and power.

According to Vossenberg (2013, p. 10) “push factors that drives men or women into entrepreneurship are survival, unemployment (especially in transitional countries and emerging economies), the idea that self-employment provides flexibility and enables a good balance between work and family care responsibilities, dissatisfaction with current job, frustration with the “glass ceiling” in salaried careers. Pull factors are mostly shaped around the pursuit for satisfaction and independence: autonomy, creativity, status attainment, financial gains and personal success”. Women whose are “pulled” in the entrepreneurship are much more liable to be oriented towards growth than women that are “pushed” in entrepreneurship by external circumstances (Lacob & Nedelea, 2014). These last type of women are from low income families and they do not have formal education. Meanwhile women whose are driven by pull factors have basic education and wealthy family background.

Finally, Akehurst et al. (2012) define external and internal factors, which may affect female entrepreneurship. The external factors are observed firm expansion and financing and internal factors include the demographic characteristics of age, marital status, number and existence of young children and the importance and influence of the family.

1.2. Female entrepreneurship: facts and obstacles

The phenomenon of female entrepreneurship is becoming increasingly global. Still, women entrepreneurs are in a minority all over the world economies and there is worldwide evidence that women are less likely to engage in entrepreneurial activities than their male counterparts.

To prove the abovementioned fact, Estrin and Mickiewicz (2011) quoting Minniti (2005) that used data form the Global Entrepreneurship Monitor (GEM), refer that in 2002 only between 25 to 33% of formal sector business around the world were created by women. The same authors, quoting Parker (2009) that used the same dataset, show that 7 years after the number estimated by Minniti (2005) the variation of female entrepreneur rates had been between 1.2 in Japan, 20% in UK, Sweden and Ireland, 39% in Peru and 40% in Belgium and Portugal, showing the phenomenon is evolving over time in all types of economies. According with data from US Census Bureau, Coleman and Robb (2009), cited by Parker and Klapper (2010), estimated that in 2002 there were 6.5 million privately women-owned firms in US,

being women entrepreneurs a minority not only in the country but also in Europe. Sabarwal and Terrell (2008), using a 2005 firms level data for 26 countries in Eastern Europe and Central Asia, reported that the average share of female entrepreneurs in the region was 28%, varying from over 40% in Latvia and Hungary to less than 15% in Armenia and Albania.

Using the GEM database, Vossenberg (2013, p. 2) described, as follows, the level of female entrepreneurship in 2012. In "Latin America and the Caribbean the overall level of entrepreneurship is high, including that of women. Generally, countries in the Middle East and North Africa have the fewest women entrepreneurs. (…) A relatively low rate of women entrepreneurs can also be found in Eastern Europe. The exception is Russia, where women represent 44% of total entrepreneurs. In contrast, in Sub-Saharan African economies women make up close to or more than half of entrepreneurs, whereas general levels of entrepreneurship are also high. Asia and Western Europe have both low and high relative levels of women's participation." In 2014, as described by Rhodes (2015), businesses that were, at least, partially led by women accounted for 38% (around 2.0 million) of all SMEs (Small and Medium Size Enterprises) in 2014. According to Kelley, Singer, and Herrington (2016), in 2015-2016 the highest female entrepreneurship rate is recorded in Senegal (37% of working women are starting or running new businesses). In Vietnam, Philippines, Thailand, Malaysia, Peru and Indonesia women have equal or higher entrepreneurship rates than men and the highest participation rates among the 25–34 and 35–44 years old.

"Despite of growing number of initiatives and resources to promote and develop women's entrepreneurship in developing countries, women still own and manage fewer businesses than men, they earn less money with their businesses that grow slower, are more likely to fail and women tend to be more necessity entrepreneurs" (Vossenberg, 2013, p. 1). In 2005, according to Minniti (2005) the lower participation and decision making process of women in entrepreneurship could be due to various factors such as uncertain environment, social networks and embeddedness. In that period, the press and media insist that women were less capable and less entrepreneurial but, according to De Bruin et al. (2006), in most cases women entrepreneurs were just less "visible". One of the reason was the need to take care for families and support the "burden" of child care and education for entrepreneurship. The author found that the relatively low level of education and skill training of female entrepreneurs plus lack of career guidance are main obstacles in business growth. Additionally, the combination of the business with family responsibilities may undermine the success of the business (Vossenberg, 2013). The low experiences in handling business management, including insufficient information on business development, lack of networking abilities and business trainings, combined with child and family care and responsibilities are significant obstacles for doing business among women (Roomi, Harrison, & Beaumont-Kerridge, 2009; Vossenberg, 2013; Hazudin, Kader, Tarmuji, Ishak, & Ali, 2015).

The development of education, training and skills women get before establishment a business starts to become a motivation for female entrepreneurs (Ali & Mahamud, 2013). Indeed, Huarng, Mas-Tur and

Yu (2012) show that only a small number of women business owners have a prior business expertise to starting their new company defending that prior business experience of women entrepreneurs has a positive influence on starting up a new business. In her work, Minniti (2010) already referred a work from Cowling and Taylor (2001) concluding that the overall level of education of women entrepreneurs was significantly higher than that of women in other occupations. Managerial skills and experience are positively linked to motivation and push women towards starting their own businesses and the subsequent business performance (Hazudin et al., 2015). Nevertheless, women entrepreneurs with the best managerial skills might feel some fears dealing with increasing difficulties and issues involving business start-up (Huarng et al., 2012).

Still, many studies referred by Akehurst et al. (2012) underline that the greatest obstacle for women to create a new business is the balance between family and working live. Although the same authors found also other studies, like the one published by Sullivan, Halbrendt, Wang and Scannell (1997), that suggest that the desire to effectively combine work and family obligations often motivate women to start their own business. This could be the especially true for women with young children which look to find a work with free work-schedule (Stiroh & Sichel, 2000; Mattis, 2004; Bardasi, Sabarwal, & Terrell, 2011; Noor & Malcolm, 2014). Mattis (2004, p. 159) refers that “women business owners are not so much seeking reduced hours (…). Rather they are seeking more control over the hours they work”. At the same time the main part of women choose to start a business to earn much more and balance work responsibilities with domestic and family responsibilities.

Many studies prove significant relation between marital status and the motivation to become a business owner (Rees & Shah, 1986; Caputo & Dolinsky, 1998; DeMartino & Barbato, 2003; Hinz, 2004). Although Carter and Rosa (1998) suggest that firms are more successful when women do not try to combine work with family. Children seem to be an important factor in the analysis of female entrepreneurship (Rønsen, 2012), but existing evidence support both directions on theirs impact. Women interrupt their careers more times for reasons link to maternity and taking care of the family or home negatively affecting their business performance (Huarng et al., 2012; Akehurst et al., 2012). Other authors find no relation between the activity of the business owner and having young children (Akehurst et al., 2012).

As shown by Hazudin et al. (2015) environmental factors such as family, friends and other relatives can have significant positive influence on business success. Akehurst et al. (2012) describe a set of published research that conclude that family support to business owner is a primary key for success, women are twice motivate to start their own business if the husband is already a business owner and almost 50% of women entrepreneurs have parents who had run businesses. Vossenberg (2013, p. 5) states that “women rely on support from husbands, partners and relatives in order to successfully start and grow a business”.

By opposition , as Vossenberg (2013, p. 5) adds, “the lack of government support in terms of policy, laws and services” is a serious obstacle to foster female entrepreneurship. Indeed, many entrepreneurship

researches indicate that regulations, taxation and legal barriers can pose serious obstacles for running and starting a business. Benzing et al. (2009) demonstrated, for example, that the most critical problem faced by Turkish women when creating business is the unstable and uncertain state policies. Also Blenker and Dreisler (2003) analysed several ways to promote entrepreneurship among women and found that the lack of information and education were common problems faced by them. Stanger (2004) found that the use of government services as a source of training and assistance by women was generally low. Mel, McKenzie and Woodruff (2014) suggested business training as a promoting policy to help women to start enterprises and improve the management and profitability of the businesses. In US, for example, many organizations support women's entrepreneurship. For instance Women's Business Centres (WBCs) offer courses in entrepreneurship, networking events and other programs to support women entrepreneurs. Furthermore, other governmental agencies, including the White House and the Secretary of State and the Commerce Department, are engaged politically and institutionally with programs and events. Another example, is the 'New Innovative Entrepreneurship' program launched in 2011 by Greek government in order to support the opportunity of entrepreneurship - mainly the innovative entrepreneurship, by providing grants to young entrepreneurs who do not have access to the market and prospective women entrepreneurs (Markatou, 2015). Discrimination policies against female entrepreneurs are also an important obstacle in several world economies. For instance, according to Estrin et al. (2011, p. 398) "restrictions of female freedom of movement have a significant negative effects on the likelihood that women will become 'high aspiration entrepreneurs'."

Financing is another external factor that influences female entrepreneurship in a negative way. Akehurst et al. (2012) quote: (i) Storey (1994) to explain that smaller amounts of initial capital negatively affect the entrepreneur's ability to obtain money from banking institutions; (ii) Hills, Lumpkin and Singh (1997) to defend that, in most cases, families with high and low income take the risk to start a new business, while families in a middle range income rarely take the risk of starting up a new business; (iii) Pellegrino and Reece (1982) to argue that female entrepreneurs face many difficulties to obtain financial resources and in more difficult conditions than their male counterparts; and, finally, (iv) Brush (1992) and Stoner, Hartman and Arora (1990) to claim that women perceive the existence of discriminatory treatment from banks. Bardasi et al. (2011) also identify barriers in access to bank credit as a most common hamper faced by women entrepreneurs. Indeed, Akehurst et al. (2012, p. 2493) conclude that "it is harder for women entrepreneurs to access financial resources to initiate their chosen business activity, and that they encounter credibility problems when dealing with financial institutions". Using data from Europe and Central Asia, Muravyev et al. (2009) found that female-managed firms have a 5.4% lower probability of securing a bank loan than male-managed firms and 0.6% higher interest rates than their male counterparts.

Over the last decades it is also observed that, generally, firms created by women have a small-size mainly at the micro and small levels. Because the firm's size is considered as a basis for measuring the firm's performance, the small size of female businesses it is seen as a weakness. Many studies identify

the reasons why the firms created by women are small-sized. Akehurst et al. (2012) listed the difficulties related with the access to finance, the lack of specific knowledge and training and the fear of taking risk. The Asian Development Bank [ADB] (2015) found that women constitute only a small number of start-ups and make up (considerably less than half of all business owners). Various barriers discourage women from starting and expanding businesses: limited business knowledge, skills (especially marketing skills) and confidence, exclusion from business networks and the difficulty of balancing family responsibilities with business. These factors are also a reason why women run small-scale businesses concentrated in trade, services, small scale production and home-based production.

Woman entrepreneurs' main strengths are innovativeness, determination and persistence that they have in order to achieve their goals. "Although due to less risk taking abilities and cultural context, women are still strengthening their position as entrepreneurs and even though there are still some stereotypes of female entrepreneurs, in the area of project management and especially in managing EU funds, women have a strong position" (Ferk et al., 2013, p. 73).

1.3. Female entrepreneurship in Armenia

Entrepreneurship is an important goal in every economy, however many financial, bureaucratic, and social barriers obstruct to start a new business particularly in countries with transition economies (Atasoy, 2015). As suggested by the author underdeveloped financial markets, perceptions of administrative complexity, political and economic instability and lack of trust in institutions are important barriers which effects on creation and development of business. In transition countries, female entrepreneurship presents a core factor for their development (Ferk et al., 2013). Still, Zwan, Atasoy, Tiongson and Sanchez-Paramo (2013) and Kuriakose (2013) found that women less likely become active entrepreneurs as their male counterparts. "Despite the fact that women in transition economies have similar levels of education, training, and skills as men, they are less likely to become entrepreneurs" (Kuriakose, 2013, p. 13).

Armenia is a typical example of a transactional economy. "Armenia's entrepreneurial culture is built largely on the very strong math and science foundation established during the Soviet era" (Kuriakose, 2013, p. 3), nevertheless there are several factors and barriers which hinder business growth and entrepreneurship. The economic activity of the country is concentrated in Yerevan (the capital), so the regions suffer from limited exposure to markets, new technologies and business services. The services related to entrepreneurship, business training, marketing, technology development and information are available only in Yerevan (Alanakyan, 2014). SMEs traditionally play an important role in the economic growth, employment generation and poverty reduction. As states Kuriakose (2013, p. 29) "business owners in Armenia reported the top two reasons as sensing an opportunity to make more money and wanting to be one's own boss". Another important reasons for starting a business are not finding a suitable job and fearing to loss it. Gender roles and stereotypes have significant impact on Armenian

society, mainly notions about “permissible” roles for women and men. Despite women’s achievements in several fields, strong perceptions related to the private and family sphere are still prevalent for Armenian women, and in most cases limit their opportunities for self-realization in public life. Gender stereotypes contribute to women’s lower levels of representation in politics, in formal employment and as business leaders (ADB, 2015).

Despite the existence of some research on entrepreneurship, in general, in Armenia there exists a lack of data about female entrepreneurship. The situation is changing and during the last years international and national studies put emphasis for more comprehensive understanding of women’s position. In Armenia there is a no legal definition of “woman’s enterprise,” but, in practice, the term has several meanings. The national SME strategy defines a “woman’s business” as “an enterprise managed by woman or with a capital of at least 30% investment by women” (ADB, 2015, p. 52). Under the ADB technical assistance grant to the Small and Medium Entrepreneurship Development National Centre (SME DNC) for women’s entrepreneurship support, women’s micro and SMEs are defined as enterprises that fit any of the following categories: (i) at least 50% of enterprise ownership is controlled by women, (ii) at least 60% of senior managers are women, or (iii) at least 50% of the registered employees of the enterprise are women.

As was reported by Wältring (2013, p. 7) “55% of women and 73% of men are economically active in Armenia. When it comes to the analysis of women as entrepreneurs the statistical data refers to 32% of women as registered owners of enterprises. This percentage does not, according to studies, represent the reality”. One of the probable reasons is that in Armenia is common practice for men to register a business in the name of a female family member, usually the wife, in order to hide their current business and also reduce the risks of debt payments. In reality, these female “business owners” are not controlling the operation of the business or participating in decision making process. Officially, women have a business registered in their name, “but [they] are not even aware of its activity”. Even specific lines of credit established for women’s businesses are taken by women but used by men (ADB, 2015, p. 51).

Women engaged in business, especially at the micro level and outside of large cities even in Armenia. “Women in Berd and Goris (the cities of Armenia) who had experience with home production of vegetables and fruits explained that it is very time-consuming to sell home-grown products, and because they cannot access larger markets, they found it easier to sell their products to a distributor with lower price“ (ADB, 2015, p. 57). In Goris, one of correspondent (who started a jam-making venture) mentioned that little knowledge of market constraints, licensing and taxes are too prohibitive to continue the business. Monopolies also play a role in limiting women’s ability to sell their products in certain stores. Hospitality is a promising sector for Armenia’s businesswomen for several reasons. According to a United States Agency for International Development (USAID) assessment, women continue to dominate in only one value chain in Armenia: hospitality. In 2011, women represented 53.9% of employees working in accommodation and food service activities, which is a close proxy for employment in the tourism industry

(ADB, 2015). Networking and marketing opportunities in tourism industry are easier for women: flexible hours are more often the norm; and big business does not yet dominate. In rural areas, in particular, tourism-related businesses are often home-based (e.g., running a guesthouse or making souvenirs to sell on tourist routes), which allow them to divide their time between work and family responsibilities.

In a study conducted by Alanakyan (2014), based on the SME DNC[1] databases accompanied with the State Register database, the results show that in Armenia the main obstacles for women in running business are high taxes, sales problems and cost and quality of the utilities. Male and female entrepreneurs certainly face many common problems such as unfavourable tax rates, bureaucratic requirements and corruption. Nevertheless predominating gender norms also play a crucial role in obstructing women's ability to start and run a business. According to the ADB (2015) the most common obstacles to starting a business in Armenia are tax issues (including complicated regulations, frequent changes in legislation and high tax rates) and financial problems (including lack of resources, high interest rates for loans and unstable income). Local regulations and high taxes, combine with corrupt practices, are detrimental to small businesses.

As mentioned above, women are mostly represented in micro and small enterprises so they may be particularly vulnerable. Women participating in a focus group under an Organization for Security and Co-operation in Europe (OSCE) project considered businessmen as having more resources and networks to avoid corruption and to take advantage of tax enforcement of the law. Whilst "women in business generally believed that the men did not follow the law and took special illegal advantages, which were not open to them" (Wistrand, 2007, p.14). On the other hand, prevailing gender norms may make it difficult for male officials to approach female entrepreneurs and request payments, and so this may insulate women from corruption.

The hard economic situation and the high level of emigration, resulting in decreasing number of clients, are the most concerning issues for all sectors and groups of businesses independently of the business owner's gender. Among gender-specific issues, societal attitudes and lack of confidence toward Armenian women entrepreneurs are also identify as a barrier.

As referred in the previous section, in many countries women have to overcome traditional societal attitudes (namely the prevailing mentality within families), less available time and limited access to resources like markets, education, training and credit. In Armenia, according to Alanakyan (2014, p. 36), "sometimes women face lack of confidence from their male colleagues, partners and suppliers, especially in case of start-up entrepreneurs. This consequently may lead to the lack of self-confidence and risk aversion. However, most of the women consider themselves as risk-takers and told about

[1] Fund established by the government in 2002. The non-governmental organization (NGO) provides valuable services to women like: (i) conducting training programs; (ii) supporting advocacy campaigns; (iii) carrying out surveys and research; and, (iv) serving as an important gateway for donors supporting women in different levels of economy.

importance of risk taking". Furthermore, according to Armenian law, women and men have equal rights to ownership and use of land and other property, while in practice, women are the minority of registered property owners. It is based on traditions of registering property in the name of male family members and passing it down to male heirs. Also, women's earning power is less than men's, limiting their opportunities to independently purchase property such as land, homes, buildings or vehicles.

Another crucial obstacle for female entrepreneurs is limited access to commercial loans. There is misconception that women cannot access credit regarding to lack of business experience, high interest rates and personal aversion to taking on risk (ADB, 2015). When women have joint ownership, or even full legal ownership, it is common for "the father, the brother and then the husband [to] take care of the property which by law is owned by the woman/wife" (ADB, 2015, p. 55). Participants form Ashtarak identified that bank loans are generally not available for start-ups and borrower must show 6 months of experience. Participants in several regions stated that also interest rates are very high—about 24%—and they "kill businesses." Besides of high rates, the repayment period is very short, and this is incompatible with the type of women business (ADB, 2015).

In spite of the low level of female entrepreneurship in the country there are many national organizations which support and promote women entrepreneurs.

In 2010, the Armenian government promoted a strategic plan regarding to Gender Policy 2011-2015. The project aimed to finance female projects and help to increase the volume of credit programs for women leading SMEs. Another mission of the project was to increase the number of female businesses and qualified female employment opportunities. Following a systemic framework of analysis the strategy started to consider the role of women in the economic development in Armenia. Then a research has been conducted to, at first, find the women's weaknesses to run a business in Armenia and, secondly, promote ways to smooth female entrepreneurship in the country. The research results show that Armenian women run their businesses in areas with low entry barriers and often with a lack of long-term competitiveness and low specialisation. They enter into markets with a relatively high saturation and high price competition. In particular were found the common business fields of Armenian women: (i) services related with beauty, repair/tailoring, catering, design and gym or educational; (ii) trade of food, household items, clothing, cosmetics or hygienic products; (ii) agriculture; and, (iv) production of clothing, confectionery or bakery. Indeed, women's businesses occupy specific sectors that are traditionally considered "female" specializations. The majority of female entrepreneurs are most often involved in service-providing businesses, generally in familiar areas or spheres which cater to other women: tailoring, beauty salons, entertainment, hospitality and tourism (e.g., running guesthouses), education (e.g., child care, private kindergartens or tutoring), culture (e.g., dance or music lessons), and consulting.

In regions of Armenia women undertake food production such as cheese making, milk processing, growing herbs, drying fruits and baking[2].

In 2011, the National Agency for the Promotion of Small and Medium-sized Entrepreneurs has developed a comprehensive strategy directed to SMEs. The strategy entailed a chapter on women entrepreneurship report (Wältring, 2013). In 2013, the same agency, supported by the ADB, started to develop the Women Entrepreneurship Strategy (WES). The purpose of the project is to increase women's participation into businesses as qualified employees as well as entrepreneurs since women are considered a great untapped entrepreneurial resource (Atasoy, 2015). At the same time, the government has sponsored national awards for female entrepreneurs, an important step toward developing a positive image of businesswomen and promoting their successes to the wider society[3].

Apart from national and international organisations (both governmental and non-governmental) there are also donors who have started to support the economic and political empowerment of women. According to Wältring (2013, p. 11) the OSCE has started to promote Women's Resource Centres Network in Syunik providing resources and supporting women to start a business. Parallel to offering training and consultation the centre also conducts various surveys and assessments, co-operates with different agencies and offers low cost services to local women. From 1992 Armenia started to cooperate with European Bank for Reconstruction and Development (EBRD). During the last years EBRD - through 'Small Business Support' (SBS) and 'Women in Business' (WiB) projects - has sponsored women economic development in Armenia. They provided several services for new and young female businesses like coaching, mentorship or business trips. EBRD has also started to extend Business Advisory Services, with the support of financial institutions that provide support to female businesses. Armenian Young Women's Association (AYWA) is another important stakeholder who is also expressing female business interests. The association has a strong role in promoting female businesses and networks in the rural areas outside Yerevan.

Despite the creation of public organizations and the continuous work of several donors, the institutional infrastructure of such organisations and Business Development Services (BDS) are still very weak. SME DNC, for example, support training on start-up promotion, business planning, tax advice and accounting but, despite its efforts, cannot satisfy the general demand of SMEs and the particular demand of female entrepreneurs. These difficulties coexist with the lasting dominant social stereotypes deeply rooted in the belief that business development is mainly the responsibility of men. In simultaneous many women do

[2] For example, in Berd women engage in individual sometimes informal business activities, such as traveling to Georgia to purchase goods that they resell in Armenia (shuttle trade) or collecting local plants that they sell locally.

[3] In 2012, the Ministry of Economy launched a pilot award for female entrepreneurs and women's micro, small, and medium-sized enterprises. In 2013 was announced the Best Female Entrepreneur Award in order to inspire female entrepreneurs contributing to the county's economic development and to publicly acknowledge and support businesswomen in Armenia. Women were nominated in six categories: (i) best female employer; (ii) best female innovator; (iii) best philanthropist; (iv) best brand developed by a female entrepreneur; (v) best young female entrepreneur; and, (vi) best start-up. These strategy is an ongoing one.

not see themselves as entrepreneurs due to a lack of self-confidence. For both of these reasons their businesses are settled dominantly in traditional activity areas, where the role of women is both accepted and recognised by society. However, this mind-set is changing in the larger cities like, for example, Yerevan where behaviour stereotypes are different from other regions. Traditional roles are being an object of mentality change and, as explained above, various public and private organizations are promoting an easier access of women to entrepreneurship and business skills development. The main challenges for women entrepreneurship promotion in Armenia go through the development of more knowledge intensive services, the increase of the value added in production sectors (like e.g. advance processing of agricultural products) as well as the development of new and more processed products in the manufacturing sector. So it will increase the business opportunities particularly the sustainability of female businesses.

For the previous mentioned reasons, and because the literature findings on female entrepreneurship are still limited and the path of female entrepreneurship it is believed to be a hard and long journey, a continuous theoretical and empirical research process is crucial in this theme.

2. Methodology and objectives of the research study

2.1. Objective of the study

The main purpose of this thesis is to analyse the phenomena of female entrepreneurship in Armenia identifying and quantifying the factors that drive female entrepreneurship in a country in economic transition.

Reaching this general objective, the research work hopes to accomplish several specific objectives. The first one is to identify the level of Armenian women's participation in the country's entrepreneurial activity, for which the analysis of the existent literature and the country's available data is fundamental. The lack of statistical information is a problem when analysing this phenomena but, due to the efforts of the World Bank Enterprise Survey, is possible to shed some light on the theme using a cross-sectional database collected in 2013. The second objective is to identify the main factors that drive women to run a business. This objective is the most important one since it has made this research work different from others made in Armenia or about female entrepreneurship in the country. To reach the objective the microdata of the 2013 World Bank Enterprise Survey for Armenia was made available for the specific purpose of this dissertation – the availability of a cross-section microeconomic database allows to implement a logistic regression method and identify the factors that may impact on the female entrepreneurship and the strength of that impact. Reaching the second objective is possible to outline the crucial obstacles and potentialities that Armenian female face during their entrepreneurial activity comparing with their male counterparts and, finally as the last objective, cultivate ways to promote female entrepreneurship in Armenia based on the existing problems and opportunities. The more and better knowledge of this thematic allows not only the promotion of more effective public policies, many of them financed by international donors, but also to promote policies that at a microeconomic level allow potential entrepreneurs (especially women) to understand the business environment that may determine the creation and success of a business owned by a women.

2.2. The World Bank Enterprise Survey in Armenia[4]: database and variables

An Enterprise Survey is a firm-level survey associated to the private sector of the economy. The surveys have been conducted since 1990 by different units within the World Bank. Since 2002, the World Bank is collecting data through face-to-face interviews with top managers and business owners in over 130,000 companies in 135 economies. Since 2005-2006 the data collection efforts have been focused within the Enterprise Analysis Unit. The Enterprise Surveys are considered the world's most comprehensive company-level data in emerging markets, transition and developing economies. In cooperation with business organizations and government agencies also promotes job creation and economic growth in the country. The Enterprise Surveys performed in Eastern Europe and Central Asia, also known as a Business Environment and Enterprise Performance Survey (BEEPS), present as the main objective to clear up firms perception regarding to current business environment they faced[5].

The Enterprise Surveys are answered by business owners and top managers of the firms. However, sometimes company accountants and human resource managers also participate in interviews to answer questions related to the sales and labour sections of the survey.

The Enterprise Surveys Unit uses two types of questionnaire: the Manufacturing Questionnaire and the Services Questionnaire. The majority of questions relate to the characteristics of a country's business environment while others assess the surveys respondents' opinions about the obstacles to firm growth and performance. The surveys, although that is not their primary objective, include questions related with gender and because of this is one of the most powerful and reliable tools that offer data on the female entrepreneurial activity in the kind of economies mentioned above. Is possible to cite some examples of the importance of the database to the study of this issue. Using data from the World Bank Group Enterprise Surveys made in 2008-09, Amin (2010) found that in six developing African countries (Burkina Faso, Cameroon, Cape Verde, Côte d'Ivoire, Madagascar and Mauritius) female owned businesses smaller in size but so productive and efficient as their male counterparts owned. These surveys also allowed to conclude that while informal or unregistered female-owned firms in Argentina and Peru have smaller size they present a lower labour productivity and are less likely to use equipment such as machinery and vehicles (World Bank, 2011).

In strong cooperation with the World Bank and the EBRD a survey was conducted in Armenia, from November 2012 to July 2013. The objective of the survey, to private Armenian enterprises in manufacturing and services sectors, was to develop ways to overcome obstacles to economic growth, to increase employment and the productivity of the country, to impact on the country's business environment and on its international competitiveness.

[4] Enterprise Surveys (http://www.enterprisesurveys.org), The World Bank.
[5] For more information about the World Bank Enterprises Surveys and the data they collect is suggested the webpage of the project: http://www.enterprisesurveys.org/. There is possible to find a more complete explanation about the project, the data collected and several publications made using the information collected by the surveys.

The sampling methodology used by the World Bank Enterprise Surveys corresponds to a stratified random sampling, which allows all members of the population to have the same probability of being selected for the observations. For the sample stratification was used variables like industry, firm's size and region. Industry was stratified into manufacturing and service sectors (retail, and other services). Size stratification was defined regarding to the number of employees: small (5 to 19 employees), medium (20 to 99 employees), and large (more than 99 employees). Regional stratification was defined in 4 regions: Yerevan, North, South West and South East. From the stratified random sample, 360 establishments from Armenia Business Directory (SPYUR), with five or more employees, were selected. Then, the Enterprise Surveys followed a two-stage procedure. In the first stage, a screener questionnaire was implemented over the phone to determine eligibility and to make appointments; in the second stage, a face-to-face interview took place with the managers, owners, directors of the firms and, sometimes, also with accountants and human resources workers.

The collection of information is a very comprehensive process and is directed to several issues related with enterprises in Armenia. For example, addresses issues like access to finance, corruption, infrastructure, crime, competition, and performance measures. Because the objective of this work is centred on the female entrepreneurial activity, several variables from the study had been selected. The selection was made having as basis the literature review and the personal knowledge of the economic, social, financial and legal environment not forgetting the objective of the study – identify and quantify the factors that may drive female entrepreneurship. Table 1 presents the selected variables.

The dependent variable (the one that will try to be explain) is called female entrepreneurship and measures the number of firms that are owned by a woman or one of the owners is a women. The variable is a dummy one since admits only two answers – a positive (represented by 1) if the firm has some female ownership and a negative (represented by 0) if the firm does not have female owner. The opposite represents the male entrepreneurial activity and the results will be counterpart of women's results.

The independent variables (or the ones that may explain the female entrepreneurial activity), are representatives of factors like the gender of the top manager in the firm, the region where the firm is located, the firm's size, its legal status, the origin of the products (external and internal). All the explanatory variables are dummy variables with the exception of full time employees, domestic material, foreign material, competitors that are continuous variables.

Table 1. Dependent and independent variables: identification and description.

Variables	Description
Dependent Variable	
Female	The variable is equal to 1 if the firm has, at least, a female owner and 0, otherwise
Independent variables	
Gender of the firms' top manager	
Female	The variable is equal to 1 if the firm has female top manager and 0, otherwise
Male	The variable is equal to 1 if the firm has male top manager and 0, otherwise
Region where the surveyed firm is located	
Yerevan	The variable is equal to 1 if the respondent firm is located in Yerevan and 0, otherwise
North	The variable is equal to 1 if the respondent firm is located in North and 0, otherwise
South West	The variable is equal to 1 if the respondent firm is located in South West and 0, otherwise
South East	The variable is equal to 1 if the respondent firm is located in South East and 0, otherwise
Firm size according to the number of employees of the surveyed firm	
Small	The variable is equal to 1 if the surveyed firm has 5-19 workers and 0, otherwise
Medium	The variable is equal to 1 if the surveyed firm has 20-99 workers and 0, otherwise
Large	The variable is equal to 1 if the surveyed firm has more than 100 workers and 0, otherwise
Legal status of the firm according to the current legal status of the firm during the survey	
Shares traded	Shareholding company with shares traded publicly in the stock market.
Non-traded	Shareholding company with not traded shares or only traded privately.
Sole proprietorship	A sole proprietorship is a business owned and operated by one individual person, who pays personal income tax from business profits.
Other	Firm's legal status does not mention in the list.
Full time employees	Continuous variable that counts the full-time employees of the firm at the beginning of the establishment (including all employees and managers)
Domestic material	Continuous variable that measures, for 2012, the proportion of all of the material inputs or supplies purchased with a domestic origin
Foreign material	Continuous variable that measures, for 2012, the proportion of all of the material inputs or supplies purchased with a foreign origin
Market	Main market for the main product/service, in 2012, regarding to local, national or international location
Local	The variable is equal to 1 if the main market of the firm is local and 0, otherwise
National	The variable is equal to 1 if the main market of the firm is national and 0, otherwise
International	The variable is equal to 1 if the main market of the firm is international and 0, otherwise
Competitors	The count of competitors for the main market where the firm sold its main product/service in 2012
Licensed technology	Counts the amount of firm that uses technology licensed from a foreign-owned company
Yes	The variable is equal to 1 if the firm has technology licensed from a foreign-owned company and 0, otherwise
New product/service	Counts the amount of firm that introduced new or significantly improved products or services during the last three years
Yes	The variable is equal to 1 if the firm introduced new product/services over last 3 years and 0, otherwise
New production methodology	Counts the amount of firm that introduced any new or significantly improved methods for the production or supply of products/services during the last three years
Yes	The variable is equal to 1 if the firm introduced new production/supply methods over last 3 years and 0, otherwise

Source: Own elaboration base on World Bank Group Enterprise Survey Armenia (2013).

Table 2. Independent variables (continuation): identification and description.

Variables	Description
Independent Variable (continuation)	
New management practices	Counts the amount of firm that introduced any new or significantly improved organizational or/management practices/structures during the last three years
Yes	The variable is equal to 1 if the firm introduced new organisational/management practices/structures over last 3 years and 0, otherwise
New marketing methods	Counts the amount of firm that introduced new or significantly improved marketing methods during the last three years
Yes	The variable is equal to 1 if the firm introduced new or significantly improved marketing methods over last 3 years and 0, otherwise
Expenditure on R&D	Counts the amount of firm that spend on research and development activities (R&D), either in-house or contracted with other companies (outsourced) during the last three years
Yes	The variable is equal to 1 if the firm spend on R&D or outsourcing over last 3 years and 0, otherwise
Business Enviroment	Counts the number of firms that indicated a given environmental obstacle as the main one faced by the firm
Access to finance	The variable is equal to 1 if the access to finance is the biggest obstacle faced by the respondent firm and 0, otherwise
Access to land	The variable is equal to 1 if the access to land is the biggest obstacle faced by the respondent firm and 0, otherwise
Licensing and permits	The variable is equal to 1 if the licensing and permits is the biggest obstacle faced by the respondent firm and 0, otherwise
Corruption	The variable is equal to 1 if the corruption is the biggest obstacle faced by the respondent firm and 0, otherwise
Courts	The variable is equal to 1 if the curst system is the biggest obstacle faced by the respondent firm and 0, otherwise
Crime	The variable is equal to 1 if the crime is the biggest obstacle faced by the respondent firm and 0, otherwise
Customs and trade regulation	The variable is equal to 1 if the customs and trade regulation is the biggest obstacle faced by the respondent firm and 0, otherwise
Electricity	The variable is equal to 1 if the electricity is the biggest obstacle faced by the respondent firm and 0, otherwise
Inadequately educated workforce	The variable is equal to 1 if the inadequately educated workforce is the biggest obstacle faced by the respondent firm and 0, otherwise
Labor regulation	The variable is equal to 1 if the labor regulation is the biggest obstacle faced by the respondent firm and 0, otherwise
Political instability	The variable is equal to 1 if the political instability is the biggest obstacle faced by the respondent firm and 0, otherwise
Practices of competitors	The variable is equal to 1 if the practices of competitors is the biggest obstacle faced by the respondent firm and 0, otherwise
Tax administaton	The variable is equal to 1 if the tax administaton is the biggest obstacle faced by the respondent firm and 0, otherwise
Tax rate	The variable is equal to 1 if the tax rate is the biggest obstacle faced by the respondent firm and 0, otherwise
Transport	The variable is equal to 1 if the transport is the biggest obstacle faced by the respondent firm and 0, otherwise

Source: Own elaboration base on World Bank Group Enterprise Survey Armenia (2013).

2.3. Logistic Regression method

“Logistic regression was proposed in the 1970s as an alternative technique to overcome limitations of Ordinary Least Square (OLS) regression in handling dichotomous outcomes“ (Peng, Lee, & Ingersoll, 2002, p. 31). If the objective of both models is the same, this is, to find the best fitting model to describe the relationship between one or more explanatory variables and one dependent variable, the logistic model differs due to the dichotomous characteristic of the dependent variable.

Indeed, the key difference between the models is that in the linear regression model the outcome variable is assumed to be continuous, while in the logistic regression model the variables that is trying to be explained as a dichotomous nature. The dependent variable is a dummy variable represented by only two values, 0 and 1. If occurs a given event, that is represented by one (1). If the event not happens, the result is zero (0). So, due to this characteristics of the dependent variable the predicted values of the model are probabilities and are restricted to the set of values (0, 1). The variables can be characterised by a Bernoulli distribution for each is possible to observe the probabilities of occurrence. The probability of an event occurrence and its inverse are given by the following equations, respectively:

$$\mathrm{P}(\mathrm{Y}=1)=\mathrm{p} \tag{1}$$

$$\mathrm{P}(\mathrm{Y}=0)=1-\mathrm{p} \tag{2}$$

So, by definition, the proportion of situations where it is observable the occurrence of the event, this is, $Y = 1$, will be given by the following expression:

$$E(Y)=1\times p+0\times(1-p) \tag{3}$$

Let Y be the variable that a researcher wants to explain (the dependent one) and X the set of variables that explain the behaviour of the first (the independent variables), the model that relates them, with β_0 the constant coefficient, $\beta_{1,2,\dots,n}$ the coefficients of the independent variables $X_{1,2,\dots,n}$ and, ε is the error of prediction that expresses the observation’s deviation from the conditional mean, is represented by

$$\mathrm{Y}=\beta_0+\beta_1\mathrm{X}+\varepsilon, \text{ if the model has only one explanatory variable} \tag{4}$$

And,

$$\mathrm{Y}=\beta_0+\beta_1X_1+\beta_2X_2+\cdots\beta_nX_n+\varepsilon, \text{ if the model has } n \text{ explanatory variable} \tag{5}$$

Since for dependent dichotomous variables, $0\leq E(Y|X)=P(Y=1|X)\leq 1$, it had been proved that should be adopted a logistic function that, graphically, is represented by an S-shaped curve with increasing values in the range [0, 1] (Hosmer, Lemeshow, & Sturdivant, 2013) and, algebraically, should be represented by:

$$\mathrm{P(Z)} = {e^{Z}}/{(1 + e^{z})} \tag{7}$$

With, in the case of the model with multiple explanatory variables:

$$\mathrm{Z} = \mathrm{logit(p)} = \ln\frac{\mathrm{p}}{1-\mathrm{p}} = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \cdots + \beta_n X_n + \varepsilon \tag{8}$$

The relation between the probabilities of an event occurrence and the event no occurrence is known as the odds ratio of probabilities, this is, with $p = P(Y = 1)$, the odd-ratio is given by the mathematical expression (Joseph, Nicholas, & Cox, 2000):

$$odds\ ratio = {\mathrm{p}}/{1-\mathrm{p}} \tag{9}$$

When, the model has only one explanatory variable, the odds ratio is equal to $exp(\beta)$, or sometimes written as e^{β}. This is, if one takes the exponential function and raise it to the power of β one gets the odds ratio that, in logistic regression empirical analysis, are the results economically interesting to analyse.

The logistic regression method is often used in many scientific studies to explore the phenomena of entrepreneurship. For instance DeMartino and Barbato (2003) investigate the motivations of women and men entrepreneurs – with similar work experience at similar stages in their careers – using the logistic regression to measure the relationship between career motivators and gender and taking into account marital status and the presence of dependent children. Other study, uses the same econometric method, to identify the impact of firm and entrepreneurial characteristics on SMEs access debt finance in South Africa (Fatoki & Asah, 2011). Brooks, Huang, Kearney, and Murray (2014) also applied the logistic regression to investigated gender gap in entrepreneurship and empirically showed how the entrepreneur's gender influence investment choices. The same method was likewise applied by Urbano and Alvarez (2013), that found institutional dimensions – such as regulative, normative and cultural-cognitive – impact on the probability of becoming entrepreneur, and Yang and Aldrich (2014) who investigate gender inequalities between entrepreneurial groups taking into account competitiveness of relationships between merit and gender.

3. Descriptive analysis and logistic regression findings and discussion[6]

3.1. Descriptive statistics

Before applying the econometric method to identify the variables that may influence the female entrepreneurship in Armenia and quantify the impact of that influence is important to understand the absolute and relative distribution of the 360 observations that compose the dataset, by the selected variables and their respective categories. When the variables are continuous, several measures of central tendency and variability will be used to describe those variables.

In a first stage (Table 3 and Table 4) the statistical description of the variables will be presented for the all sample. In a second stage (Table 5, Table 6 and Table 7), the statistical description will be made considering the division of the observations by the gender of the firm's owner – male or female.

Next table (Table 3) shows how the 360 absolute observations (nº) are divided by each category of a variable. For several variables some answers cannot be attributed to one of the variables' categories – in these cases a category called NA (meaning not applicable) is created and the observations are attributed to it. After, the relative distribution of observation (%) is calculated and presented. Table 4, presents the minimum, maximum, mean, median and standard deviation statistics for the continuous variables selected for the study.

[6] All the results presented in this research work have been obtained using the econometric software package Stata, version 12.0.

Table 3. Absolute and relative distribution of observations between variables and their categories.

Variables	Observations	
	n	%
Gender_owner		
Female	85	23.61
Male	272	75.55
NA	3	0.84
Gender_top manager		
Female	49	13.61
Male	310	86.11
NA	1	0.28
Region		
Yerevan	276	76.67
North	17	4.72
South West	26	7.22
South East	41	11.39
Firm size		
Small	167	46.39
Medium	175	48.61
Large	18	5.00
Market		
Local	112	31.11
National	231	64.17
International	17	4.72
Legal status		
Shares traded	6	1.67
Non-traded	343	95.28
Sole proprietorship	4	1.11
Other	7	1.94
Licensed technology		
Yes	69	19.17
No	290	80.56
Don't know	1	0.28
New product/service		
Yes	57	15.83
No	303	84.17

Variables	Observations	
	n	%
New production methodology		
Yes	21	5.83
No	339	94.17
New management practices		
Yes	25	6.94
No	335	93.06
New marketing methods		
Yes	43	11.94
No	317	88.06
Expenditure on R&D		
Yes	17	4.72
No	343	95.28
Business Enviroment		
Access to finance	26	7.22
Access to land	7	1.94
Licensing and permits	5	1.39
Corruption	15	4.17
Courts	2	0.56
Crime	2	0.56
Customs and trade regulation	29	8.06
Electricity	2	0.56
Inadequately educated workforce	13	3.61
Labor regulation	4	1.11
Political instability	34	9.44
Practices of competitors	19	5.28
Tax administaton	60	16.67
Tax rate	74	20.56
Transport	4	1.11
Don't know	6	1.67
Refused	1	0.28
Doesn't apply	57	15.83

Source: Own construction base on the World Bank Enterprise Surveys (Armenia, 2013).

As it is possible to observe from Table 3, in Armenia (according to the Enterprise Surveys, 2013) only 85 firms (23.61% of the all sample) with female ownership participated in the survey, while firms with female top-managers represented 49 of the 360 observations of the sample (13.61%). This result was expectable regarding to literature. Moreover, the economic activity of the country is concentrated in Yerevan and the result of this empirical research supports current literature – a considerable part of the surveyed firms (76.67%) were placed in the capital. Concerning firm size almost half of respondent firms (48.61%) had 20-99 workers, this is a medium size or a small size (with 5-19 workers) (46.39%). Taking into account the existence of an economic crisis and the high level of emigration the country is becoming "empty" during the years, so these can be the a significant reason of managers to run small and medium

firms in Armenia. However this situation is not very different from other economies (namely developed ones) where firms are being created and growing smaller. Note, that according to the survey results, 231 surveyed firms – 64.17% of all respondents – produced and delivered their products/services to the national market, a number almost two times bigger when compared with the number of firms that produces to the local market.

Regarding the firms' legal status, 95.28% of respondent firms had a non-traded shares status. In the same time-interval 290 firms did not have technology licensed from a foreign-owned company. Over the last 3 years before the survey (2010-2012), 303 firms (84.17%) did not introduce a new or significantly proved product or service and 339 of them (94.17%) did not implement a new technologically improved production or supply methods. It is important to state, from these last results, that if the firms do not change this type of strategic behaviour it will decrease their competitiveness and limit the opportunities to earn more profits. In the period between 2010 and 2012, in Armenia, 93.06 % of the surveyed firms (335 firms) did not even apply new organizational or management practices. Plus, 317 of them (88.06%) did not introduce new marketing methods and, in addition, 343 firms (95.28%) did not spend monetary resources on R&D. It is seen, that the majority of all surveyed firms do not have developed production, management and structure which is, probably, related to firm's primary goals and strategic plan: firms tend to improve their production, increase sales, expand the activity tending to enter international market or they only run business for covering current financial obligations.

Regarding to the business environmental obstacles point out by the surveyed firms, as show the results the prevalent and most crucial obstacle, pointed by the sample firms in Armenia, is the tax rate (indicated as the main obstacle by 74 respondents, this is, 20.56% of the all sample). The second most mentioned obstacle for Armenian entrepreneurs is the tax administration (approximately 17% of surveyed firms which corresponds to 60 firms) which supports the literature. Other results, presented in the table, follow the literature review that had been presented in the first section. Obstacles like the political instability (9.44%), the customs and trade regulations (8.06%), the access to finance (7.22%) and the corruption are (4.17%) also indicated as obstacles for firms in Armenia. Nevertheless, in the opinion of 57 respondents (15.83%) there is no obstacle to entrepreneurial activity.

The following table (Table 4) presents some statistical descriptive results for the continuous variables: number of full time employees and competitors, the percentage of inputs that have a domestic or a foreign origin.

Table 4. Descriptive analysis for continuous variables.

Variable	Obs.	Mean	Std. Dev.	Min	Max
Full time employees	329	26.1	111.1	1	1500
Domestic material	111	45.1	39.5	0	100
Foreign material	111	54.9	39.5	0	100
Competitors	322	6.0	9.2	0	100

Source: Own construction base on the World Bank Enterprise Surveys (Armenia, 2013).

The number of observations for the four variables is lower than 360, because for some enterprises the question does not apply or did not answer. The variable with a higher variability is the one that counts the number of full time employees. The number of employees in per business could go from 1 to 1500, but in average each one of the 329 firms have 26 employees. The variable with a lower standard deviation is the one that measures competition. In average each company for which this variable applies has six competitors, but the number can reach 100. In terms of the origin of inputs the 111 firms that answered the question state that they use in average 45% of domestic materials and 55% of foreign materials.

Tables 5, 6 and 7, next, present the same analysis as the previous two tables but making the division of observations by the ownership. The objective is to verify if the conclusions obtained for the all sample are the same when the owner of the firm has a specific gender. In particular, the idea is to understand a firm owned by women has the same characteristics as a firm owned by men. Note that in the percentage column, two values appear – the first represent the percentage of observations in each one of the categories and the second represent the percentage of observations of each gender in each one of the categories in which the variable is divided.

Table 5. Absolute and relative distribution of observations between variables and their categories, by the ownership gender.

Variables	NA	Female		Male	
	n	n	%	n	%
Region					
Yerevan	3	75	27.17	198	71.74
			88.24		72.79
North		4	23.53	13	76.47
			4.71		4.78
South West		0	0	26	100
			0		9.56
South East		6	14.63	35	85.37
			7.06		12.87
Firm size					
Small	3	45	26.95	121	72.46
			52.94		44.49
Medium		39	22.29	134	76.57
			45.88		49.26
Large		1	5.56	17	94.44
			1.18		6.25
Legal status					
Shares traded	3	2	33.33	4	66.67
			2.35		1.47
Non-traded		79	23.03	261	76.09
			92.94		95.96
Sole proprietorship		2	50	2	50
			2.35		0.74
Other		2	28.57	5	71.43
			2.35		1.84
Market					
Local	3	33	29.46	77	68.75
			38.82		28.31
National		49	21.21	181	78.35
			57.65		66.54
International		3	17.65	14	82.35
			3.53		5.15
Licensed technology					
Yes	2	17	24.64	50	72.46
			20.00		18.38
New product/service					
Yes	1	15	26.32	41	71.93
			17.65		15.07
New production methodology					
Yes		4	19.05	17	80.95
			4.71		6.25
New management practices					
Yes		7	28.00	18	72.00
			8.24		6.62

Source: Own construction base on the World Bank Enterprise Surveys (Armenia, 2013).

Table 6. Absolute and relative distribution of observations between variables and their categories, by the ownership gender (continuation).

Variables	N/A	Female		Male	
	n	n	%	n	%
New marketing methods					
Yes		16	37.21	27	62.79
			18.82		9.93
Expenditure on R&D					
Yes		5	29.41	12	70.59
			5.88		4.41
Business Enviroment					
Access to finance		7	26.92	19	73.08
			8.24		6.99
Access to land		4	57.14	3	42.86
			4.71		1.10
Licensing and permits		1	20.00	4	80.00
			1.18		1.47
Corruption		4	26.67	11	73.33
			4.71		4.04
Courts		1	50.00	1	50.00
			1.18		0.37
Crime		1	50.00	1	50.00
			1.18		0.37
Customs and trade regulation	3	4	13.79	25	86.21
			4.71		9.19
Electricity		0	0.00	2	100.00
			0.00		0.74
Inadequately educated workforce		9	69.23	4	30.77
			10.59		1.47
Labor regulation		1	25.00	3	75.00
			1.18		1.10
Political instability		11	32.35	22	64.71
			12.94		8.09
Practices of competitors		5	26.32	14	73.68
			5.88		5.15
Tax administaton		9	15.00	51	85.00
			10.59		18.75
Tax rate		17	22.97	57	77.03
			20.00		20.96
Transport		1	25.00	3	75.00
			1.18		1.10
Does not apply	2	10	17.54	45	78.95
			11.76		16.54
Refused		0	0.00	1	100.00
			0.00		0.37
N/A		0	0.00	6	100.00
			0.00		2.21

Source: Own construction base on the World Bank Enterprise Surveys (Armenia, 2013).

Table 7. Descriptive analysis for continuous variables by the ownership gender.

Variable	Obs.	Mean	Std. Dev.	Min	Max
Female					
Full time employees	75	59.1	221.6	1	1500
Domestic material	25	27.8	38.3	0	100
Foreign material	25	72.2	38.3	0	100
Competitors	77	7.9	13.4	0	100
Male					
Full time employees	252	16.4	34.9	1	300
Domestic material	86	50.2	38.6	0	100
Foreign material	86	49.8	38.6	0	100
Competitors	242	5.4	7.3	0	60

Source: Own construction base on the World Bank Enterprise Surveys (Armenia, 2013).

As observed in Tables 5 and 6, from the 360 surveyed firms, 38 firms owned by women have female top managers, which consist of 77.55% of all surveyed firms and 44.71% of the respondent firms with female owner, while only 11 male owned firms have female top managers consisting an 22.45% of all respondent firms and 4.04% of all male owned firms. Moreover, only 47 male owned firms have female top managers consisting 15.16% of all observation. As show the result 75 establishments are owned by women operating in Yerevan. This represents 27.17% of all respondent firms and 88.24% of the respondent firms owned by women. Just to compare, in Yerevan were surveyed 198 male owned firms – 71.74% of all respondent firms in Yerevan and 72.79% of all male entrepreneurs. The conclusion is that even in Yerevan, the most development city of the country, women have a lower entrepreneurial role.

Regarding to the firm's size the majority of surveyed female owned businesses in Armenia (45 firms) have a small size – the female owned firms consist of 26.95% of all small sized respondent firms and 52.94% of all female owned firms. For their male counterparts the results are very different. Most part of the firm's owned by men (134 firms) have a medium size – they represent 76.57% of all medium sized firms and 49.26% of the male owned firms. This result is supported by the current literature. According to various factors (e.g. finance, family obligation or taxes) female owned firms have a smaller sized and seems that these is also true for Armenian women entrepreneurs.

Regarding firm's legal status in Armenia, the majority of firms assumes a non-trade share legal status and this result is independent of gender. Also regardless gender ownership the Armenian firms produce their products and offer their services essentially to the national market. The same for new product/service, production methodologies, management practices, marketing methods and expenditure

on R&D. Over the three years till the survey only a little part of surveyed firms included in their entrepreneurial activity such kind of businesses behaviours, regardless of the entrepreneurs' gender. Concerning the use of licensed technology, only 17 firms (20%) with female entrepreneurs uses technology licensed from a foreign-owned company, while for their male counterparts the result is a little difference - about 18.38% of male owned firms (50 firms) uses it.

As shows Table 7 firms owned by men are the ones that answer less to the questions in the table. Women firms present for number of employees and competitors a higher variability than men. For the origin of the inputs female firms present a smaller variability but the difference regarding to men is residual. The number of employees in female owned firms can vary from 1 to 1500 and, in average, each enterprise has 59 employees. Also in average, male owned firms have 16 employees and the amount of employees if it starts from 1, as their counterpart, can reach 300. In average each female owned firm has 8 competitors, while male owned firms have 5, nevertheless it can reach 100. Concerning the origin of inputs, the 25 firms with female owners mentioned that they use, in average, 27% of domestic materials and 72% of foreign materials, whereas 86 male owned firms used both types with the same proportion (50%). The result supports the literature, according which Armenian women are involved in shuttle trade and travel to neighbour countries to buy products in order to resell it in Armenia, subsequently they mainly use foreign material inputs.

Like in every country in the world, also in Armenia female entrepreneurs face many obstacles some of them are shared by male entrepreneurs too. As shown in Tables 5 and 6, for 20% of female entrepreneurs the biggest obstacle to their activity is the tax rate. This obstacle is also crucial among male entrepreneurs (20.96%). These results prove the observations of Alanakyan (2014) and ADB (2015) according which entrepreneurs in Armenia faced many common obstacles such as taxes, financing and corruption. The second biggest obstacle pointed by women entrepreneurs is the political instability (12.94%). For men, the second biggest obstacle is the tax administration (18.75%) being the political instability presented as the fifth main obstacle for men. Should be noticed that 11.76% of female entrepreneur's did not mentioned a particular obstacle to their activity. The remaining women refer as obstacles to their activity: tax administration (10.59%), inadequately educated workforce (10.59%) and access to finance (8.24%). For men, is observed that, 16.54% of Armenian male entrepreneurs do not mention a particular obstacles. The remaining one refer: customs and trade regulations (9.19%), political instability (8.09%) and finance (6.99%).

3.2. Logistic method results and analysis

In the following tables it is possible to find the logistic regression estimation results. Each table presents the results of a simple stochastic equation where the probability of occurrence of the dependent variable – in this research work the female entrepreneurship measured by a proxy that measures the number of

women that own a firm – is explained by a single independent variable. Both dependent and independent variables are defined in the subsection 2.2 and statistical described in the previous subsection.

All the variables (both dummy as continuous variables) were used as explanatory variables and the respective regression logistic models were estimated using a standard error robust estimation to avoid problems of heteroscedasticity. Due to space economy, only the tables for the statistical significant independent variables will be presented (the results for all the others are presented in Annex A). Among the variables with no statistical significance and, therefore, without a statistical significant explanatory value for explaining the female entrepreneurship in Armenia are the following: small and medium sized firms and obstacles like the access to finance, the observed tax rate and the corruption.

For the variables with statistical significance (observable through the p-value) is presented the estimated logistic coefficient (with a mathematical but no economic real meaning) and the odd-ratio - this is, the ratio between the probability of an event occurrence (or the success of the event) and the probability of its no occurrence (or the failure of the event) – which presents an easier interpretation of the results. The odd-ratio indicates how the probability of a 'success' changes with a one unit change in the independent variable. In general, if the odd-ratio is equal to 1, 'success' and 'failure' are equally likely, if the odd-ratio is bigger than 1, 'success' is more likely than 'failure' and if the odd-ratio is smaller than 1, 'success' is less likely than 'failure'. Besides the results of the estimation, and the number of observations used in each estimation, are also presented several post estimation results which intend to show the level of adjustment precision: A Pseudo-R^2, the Wald χ^2, the percentage of observations correctly classified and the ROC curve.

When estimating a logistic regression, a statistic equivalent to the well-known ordinary least square model (OLS) R^2 does not exist. The estimated results of a logistic regression are maximum likelihood estimates obtained through an iterative process, and not calculated to minimize variance, so only a Pseudo-R^2 had be developed. But, even ranging from 0 to 1, it cannot be interpreted intuitively as the traditional OLS R^2 and its value is, normally, very small (Long & Freese, 2014). The Wald χ^2 test, with one degree of freedom, is retrieved when the logistic regression estimation is applied using robust standard errors. This tests if the estimated coefficient is not equal to zero (null hypothesis). When the statistics is statistical significant the null hypothesis is rejected and it is accepted the importance of the estimated coefficient admitting its value in significantly different from zero.

Finally, using a cut-off point of 0.5 (or 50% of the predicted probability) it also appears in the table the total percentage of correctly predicted cases – the value indicates how many observations are correctly classified (in this particular as female or male firm owners) using a given variable as an explanatory one (Hosmer et al., 2013; Liu, 2016). In close relation with the classification results, the ROC curve analysis also allows to evaluate the estimation power of the logistic regression model. In the graph that shows the ROC curve, and for this particular work, the sensitivity measures the probability that a firm with a female owner observation is classified as such, while specificity measures the probability that a firm with

a male owner is also classified as it should. The power of prediction would be perfect if classifying observations has 100% sensitivity and 100% specificity. In graphical terms that will lead to a ROC curve which goes close to the top left corner of the plot (by opposition, a model with lower power of prediction will have an ROC curve which tends to the 45 degree diagonal line). Analytically, in the ROC curve the power of the model's predicted values is quantified by the area under the curve which varies from 0.5 (the power of prediction is no better than chance) to 1.0 (that indicates a perfect prediction power) (Hosmer et al., 2013).

The previous explanation allows now to understand the tables' results.

Table 8 shows the results of the simple model that helps to explain the probability of female entrepreneurship using as explanatory variable the gender of firm's top manager, in this particular case, the female top managers. The simple logistic equation estimated is the follow:

$$P = logit(P) = In\frac{P}{1-P} = \beta_0 + \beta_1 Female\ top\ manager + \varepsilon \quad (10)$$

With, $\mathrm{P} = \mathrm{E}(\text{Female entrepreneurship} = 1|\text{Female top manager})$

Table 8. Estimation and post estimation results for female top managers.

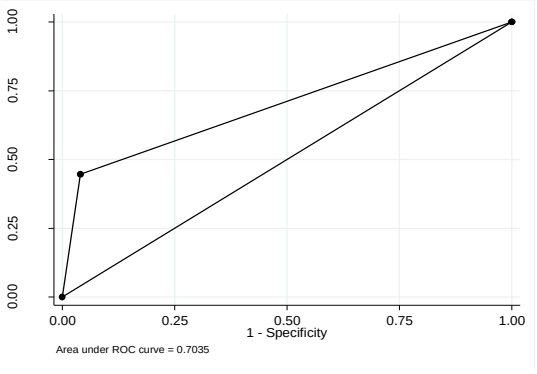
Variable	Coefficient	Odd-ratio	P-value	
Top Manager				
Female	2.97	19.40	0.001	***
const	-1.73	0.18	0.001	***

n = 360

Pseudo R2 = 0.1962

Wald chi2(1) = 61.63***

Correctly classified observations = 83.89%



Notes: *** indicates that the coefficient is statistically significant at a significance level of 1%.

The result of odd ratio show, that in Armenia women have 19.4 times more probability to own firms with female top managers than male. Regarding to p-value the result is statistically significant for a 1% level of significance. The Wald test proves the significance of the estimated coefficient. The Pseudo-R^2 is about 0.2 and the model correctly classifies near 84% of the gender ownership. The ROC curve is small 0.7, but still bigger than in the next models, which means that this variable does not have enough power to predict the value of observations correctly. The fact the model just include one variable is a clear limitation to the prediction power of the model. However, this variable is significant and important to

analyse female entrepreneurship in Armenia. As noted in the current literature, the vast part of female entrepreneurs are involved, generally, in familiar areas which cater to other women such as beauty salons, entertainment, education, culture and consulting. Consequently, this might be a reason to have more female top managers in these spheres than males.

The results of the simple model with the explanation of the probability of female entrepreneurship using as explanatory variable the gender of firm's top manager, particularly the male top manager, are presented in Table 9. The simple logistic equation estimated is the follow:

$$P = logit(P) = In\frac{P}{1-P} = \beta_0 + \beta_1 Male\ top\ manager + \varepsilon \quad (11)$$

$$\text{With, } \mathrm{P} = \ \mathrm{E}(\text{Female entrepreneurship} = 1|\text{Male top manager})$$

Table 9. Estimation and post estimation results for male top managers.

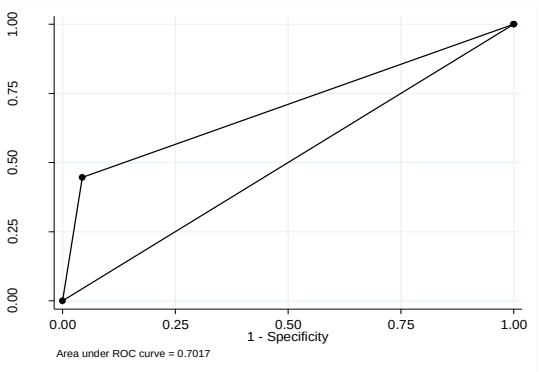
Variable	Coefficient	Odd-ratio	P-value	
Top Manager				
Male	-2.87	0.06	0.001	***
const	1.15	3.17	0.001	***

n = 360

Pseudo R2 = 0.1896

Wald chi2(1) = 61.17***

Correctly classified observations = 83.61%



Notes: *** indicates that the coefficient is statistically significant at a significance level of 1%.

Odd-ratio results show, that females in Armenia have a 99.04% lower probability to own a firm with male top managers than women. The result is statistically significant, like in previous model, for a 1% level of significance (so the result is trustful with 99% of confidence). The Wald test confirms the significance of the estimated coefficient. The model correctly classifies about 84% of the observations. The area under the ROC curve again is the same 0.7 which not a good results to predict the observations and the power of the model correctly. As show the results, gender of the firm's top managers is a crucial and essential factor for identifying female entrepreneurship in Armenia. As was noted in the literature, Armenian women run small and/or medium enterprises in trade and service providing their services and products mostly to women and probably taking account this factor and existing stereotypes in the country women prefer to run businesses with female top managers.

In the next table (Table 10), are presented the results of the simple model that tries to explain the probability of female entrepreneurship using as explanatory variable the location of firm owners in the capital city of Armenia – Yerevan. The simple logistic equation estimated is the follow:

$$P = logit(P) = In\frac{P}{1-P} = \beta_0 + \beta_1 Yerevan + \varepsilon \quad (12)$$

$$\text{With, } \mathrm{P} = \ \mathrm{E}(\text{Female entrepreneurship} = 1|\text{Yerevan})$$

Table 10. Estimation and post estimation results for region – Yerevan.

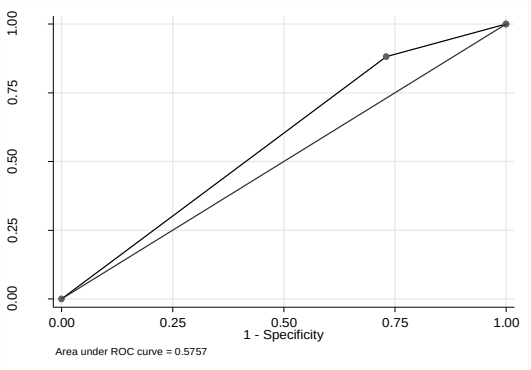
Variable	Coefficient	Odd-ratio	P-value	
Region				
Yerevan	1.02	2.76	0.005	***
const	-2.00	0.14	0.001	***

n = 360

Pseudo R2 = 0.0236

Wald chi2(1) = 7.80***

Correctly classified observations = 76.39%



Notes: *** indicates that the coefficient is statistically significant at a significance level of 1%.

Odd-ratio results show, that women in Yerevan have 2.76 times more probability of becoming entrepreneurs then the women living in other regions of Armenia. The result is statistically significant for 1% level of significance (which means the result is trustful with 99% of confidence). The Wald test confirms the significance of the coefficient estimated. The Pseudo-R^2 is small, but as explained before was not expected a big value. The model correctly classifies near 76.5% of the gender ownership. The area under the ROC curve is, approximately, 0.58 which not being a very good results shows some capacity of the explanatory variable to predict the result. The fact the model just include one variable is a clear limitation to the prediction power of the model.

In economic terms, the table results show that location of firms is a factor that determines the probability of a women to become an entrepreneur in Armenia as was mentioned in the literature review. Indeed the entrepreneurial activity of the country is concentrated in Yerevan, therefore women entrepreneurs are more probable to meet there. In addition, as was referred also, the stereotypes are indicated as one of the main obstacles that women faced in Armenia. Indeed, Yerevan is the most develop city of the country and, therefore, the more cosmopolitan one and the one where the stereotypes are changing readily over time.

In Table 11 are presented the results of the simple model with the explanation of the probability of female entrepreneurship using as explanatory the variable that measures the large size firms. The simple logistic equation estimated is the follow:

$$P = logit(P) = In\frac{P}{1-P} = \beta_0 + \beta_1 Large + \varepsilon \quad (13)$$

$$\text{With, P} = \ \text{E}(\text{Female entrepreneurship} = 1|\text{Large})$$

Table 11. Estimation and post estimation results for firm's size – large firm size.

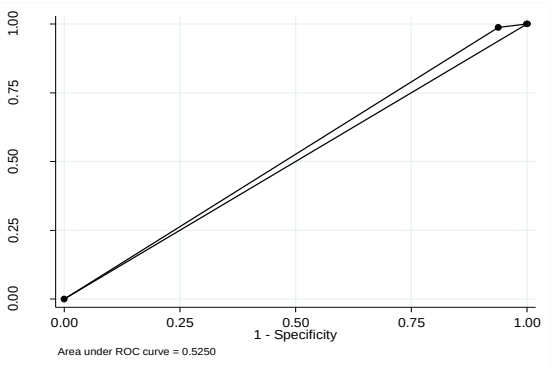
Variable	Coefficient	Odd-ratio	P-value	
Firm size				
Large	-1.71	0.18	0.099	*
const	-1.12	0.33	0.001	***

n = 360

Pseudo R2 = 0.0114

Wald chi2(1) = 2.72*

Correctly classified observations = 76.39%



Notes: * indicates that the coefficient is statistically significant at the 10% significance level and *** indicates that the coefficient is statistically significant at a significance level of 1%.

Odd-ratio results show, that females in Armenia have an 82% lower probability of own a large size firm than other types of firm's size. Definitively the size of the company affects the female entrepreneurial activity in Armenia. The result is statistically significant for a 10% level of significance (i.e., the result is trustful with 90% of confidence). The Wald test confirms the significance of the estimated coefficient. The model correctly classifies near 76.5% of the observations. The area under the ROC curve is, approximately, 0.53 which not being a good results shows some capacity (even if not big) of the explanatory variable to predict the result. Again, the fact the model just include one variable is a clear limitation to the prediction power of the model. For this and the previous model results, the same will occur, probably in the next models too. As show the results, firm's size is a crucial factor for identifying the probability of a women to become an entrepreneur in Armenia. Evidently, and as was mentioned in literature review, women run business mainly with small and/or medium size and Armenian women are not an exception.

Table 12 expresses the results of the simple model that has an explanation of the probability of female entrepreneurship the variable that counts the full-time employees that firm had at the beginning of the establishment. The simple logistic equation estimated is the following one:

$$P = logit(P) = In\frac{P}{1-P} = \beta_0 + \beta_1 Full\text{-}time\ employees + \varepsilon \quad (14)$$

$$\text{With, P} = \ \text{E(Female entrepreneurship} = 1|\text{Full-time employees)}$$

Table 12. Estimation and post estimation results for the number of full-time employees.

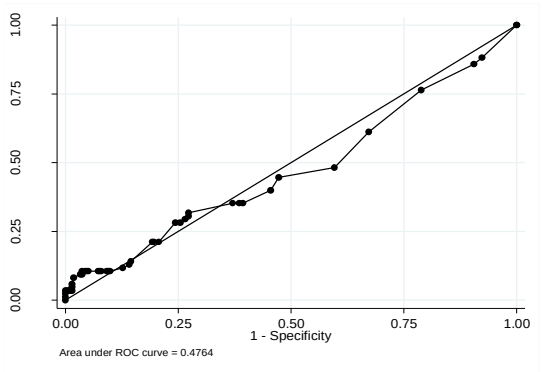
Variable	Coefficient	Odd-ratio	P-value	
Full time employee	0.003	1.00	0.002	***
const	-1.25	0.29	0.001	***

n = 360

Pseudo R2 = 0.0169

Wald chi2(1) = 10.04***

Correctly classified observations = 77.22%



Notes: *** indicates that the coefficient is statistically significant at a significance level of 1%.

The observation of the odd-ratio result together with the positive value of the estimated coefficient show that the increase in the number of employees has a positive impact on the probability of a women to be the owner of a firm in Armenia. However that impact is so small that is nearly equal to zero. One employee does not increase the probability very much. The increase of such probability will be just noticeable if the number of employees increased by a large number. The result is statistically significant for 1% level of significance. But, although the model correctly classifies near 77.5% of the gender ownership, the area under the ROC curve is, approximately, 0.48 almost equal to the 0.5 limit and, sometimes, below the 45º line which indicates the variable may present explanatory problems. So the results should be read carefully. According to the results, in one hand, full-time employees may be consider as an important and valuable variable for interpreting female entrepreneurship in Armenia. On the other hand, full-time employees include all employees and managers of the firms in manufacturing and service sector where the majority of employees are women. This might be a reason why this variable is significant to describe the women entrepreneurial role in the country.

Table 13, illustrates the results of the simple model that analyses the influence of the explanatory that counts the proportion of all material inputs/supplies purchased with a domestic origin on the probability of female entrepreneurship. The simple logistic equation estimated is the follow:

$$P = logit(P) = In\frac{P}{1-P} = \beta_0 + \beta_1 Domestic\ material + \varepsilon \quad (15)$$

$$\text{With, } \mathrm{P} = \ \mathrm{E}(\text{Female entrepreneurship} = 1|\text{Domestic material})$$

Table 13. Estimation and post estimation results for the use of domestic inputs.

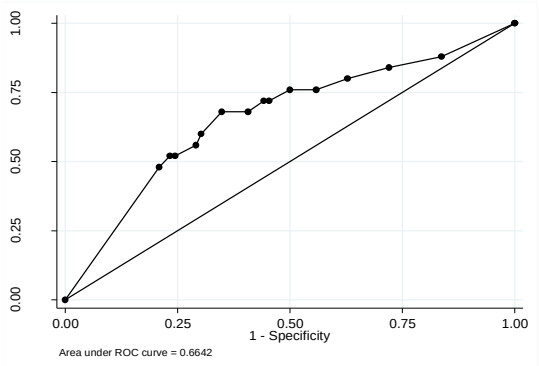
Variable	Coefficient	Odd-ratio	P-value	
Domestic material	-0.02	0.98	0.025	**
const	-0.63	0.53	0.047	**

n = 360

Pseudo R2 = 0.0549

Wald chi2(1) = 5.05**

Correctly classified observations = 77.48%



Notes: ** indicates that the coefficient is statistically significant at the 5% significance level.

According to the results of the estimated coefficient and the odd-ratio, the use of domestic material as firm's inputs presents a negative influence on probability of female ownership. Based on results, the replacement of foreign materials by domestic materials in all material inputs tend to decrease the probability of Armenian women to own a firm. In spite of negative impact the result is statistically significant and trustful with 95% of confidence. The Pseudo-R^2 is small near to 0.06 and model correctly classifies 77.5% of the gender ownership. The ROC curve area is small, but still bigger than in previous models, 0.66 which means that this variable does have potential to predict correctly the value of observations. This result does not indicate that the use of domestic materials is an obstacle for Armenian women entrepreneurs, this just means that women in Armenia are more engage in activities that depend on foreign materials and the country is not able to produce the inputs that women need in their entrepreneurial activities. As highlighted by the current literature, Armenian women run their businesses mainly in trade and service sectors and probably a considerable part of the firms in these spheres mostly use foreign type of material inputs then the others.

In Table 14 are presented the results of the simple model, which helps to explain the probability of female entrepreneurship depends on the consumption of foreign material in the firms' entrepreneurial activity. The simple logistic equation estimated is the follow:

$$P = logit(P) = In\frac{P}{1-P} = \beta_0 + \beta_1 Foreign\ material + \varepsilon \quad (16)$$

$$\text{With, P} = \text{E(Female entrepreneurship} = 1|\text{Foreign material)}$$

Table 14. Estimation and post estimation results for the use of foreign inputs.

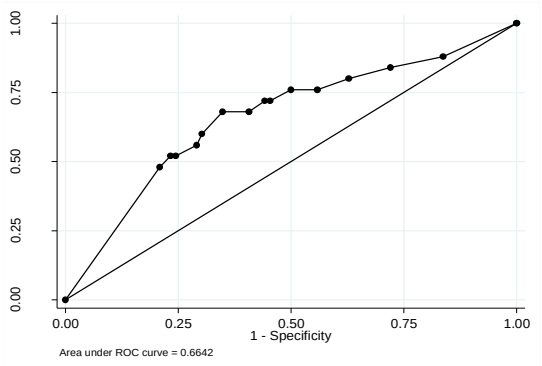
Variable	Coefficient	Odd-ratio	P-value	
Foreign material	0.02	1.02	0.025	**
const	-2.19	0.11	0.001	***

n = 360

Pseudo R2 = 0.0549

Wald chi2(1) = 5.05**

Correctly classified observations = 77.48%



Notes: ** indicates that the coefficient is statistically significant at the 5% significance level and *** indicates that the coefficient is statistically significant at a significance level of 1%.

In comparison to domestic material, the results of odd-ratio for foreign materials have a positive impact on female ownership. Regarding the result, increasing the proportion of foreign material in firms' material inputs will drive women to an entrepreneurial activity with a 1.02 times more probability. The result of model is statistically significant for a 5% level of significance. The Wald test confirms the significance of explanatory variable. Again, the model classifies near 77.5% of the gender ownership. The ROC curve result presents, also, the same value as found for domestic inputs – near 0.66. Again comparing the results from the previous model it seems noticeable that in Armenia the use of foreign material characterises firms owned by women. As was suggested in the literature review, in many cases Armenian women are involved in shuttle trade – they travel to neighbour countries to purchase goods and raw materials in order to resell it in Armenia.

Table 15 shows the results for the model that explains the probability of female entrepreneurship using as explanatory variable the type of market where products and services were sold, in this particular case, the local market. The simple logistic equation estimated is the follow:

$$P = logit(P) = In\frac{P}{1-P} = \beta_0 + \beta_1 Local\ market + \varepsilon \quad (17)$$

With, P = E(Female entrepreneurship = 1|Local market)

Table 15. Estimation and post estimation results for local market.

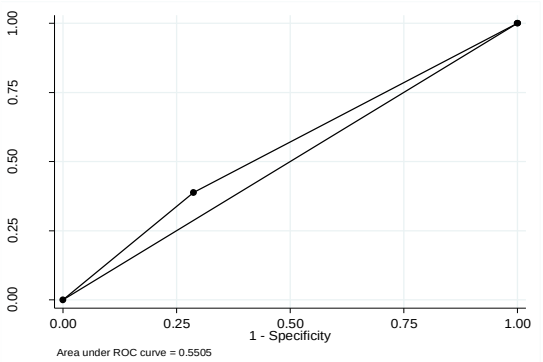
Variable	Coefficient	Odd-ratio	P-value	
Market				
Local	0.45	1.57	0.081	*
const	-1.33	0.27	0.001	***

n = 360

Pseudo R2 = 0.0076

Wald chi2(1) = 3.05*

Correctly classified observations = 76.39%



Notes: * indicates that the coefficient is statistically significant at the 10% significance level and *** indicates that the coefficient is statistically significant at a significance level of 1%.

The results show that Armenian women have 1.57 times more probability to own firms which deliver their products and services locally then nationally or internationally. As it was mentioned for the previous model, Armenian women are involved in shuttle trade in order to after resell in local markets. The result is statistically significant for a 10% level of significance. The Pseudo-R^2 is again near zero, whilst the model correctly classifies near 76.5% of the gender ownership. The ROC curve is near 0.55 which as in previous models is not a powerful result. Although significant, is important to analyse the results of this model carefully. Having the statistical issues in consideration, in an economic perspective the table results show that the type of the market is a valuable factor to determine the probability of a women to become an entrepreneur in Armenia. According to the result of descriptive analysis entrepreneurs in Armenia offer their products and/or services essentially to national market, while as show the model's result local market has more significant influence on probability of women to become an entrepreneurs. The result is also supported by the current literature on Armenian female entrepreneurship: most of them create small businesses, therefore they offer their services and products mostly in local markets, even if they go abroad to buy the inputs used in production, and they do not have additional support (namely financial) to expand to a bigger market. Additionally, most of women become entrepreneurs to guarantee their own and their families' daily subsistence and to avoid unemployment – these can be guarantee by a local market activity.

In the next table (Table 16) are shown the results of the model that explains the probability of female entrepreneurship using as an explanatory variable the variable that counts the number of competitors of the firm for its main market. The simple logistic equation estimated is the follow:

$$P = logit(P) = In\frac{P}{1-P} = \beta_0 + \beta_1 Competitors + \varepsilon \quad (18)$$

$$\text{With, } \mathrm{P} = \ \mathrm{E}(\text{Female entrepreneurship} = 1|\text{Competitors})$$

Table 16. Estimation and post estimation results for firms' competitors.

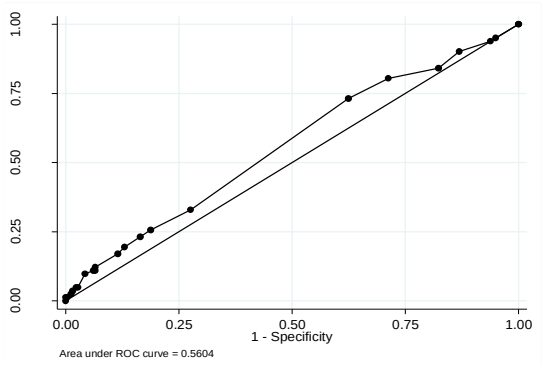
Variable	Coefficient	Odd-ratio	P-value	
Competitors	0.02	1.02	0.054	*
const	-1.28	0.28	0.001	***

n = 360

Pseudo R2 = 0.0086

Wald chi2(1) = 3.71*

Correctly classified observations = 76.09%



Notes: * indicates that the coefficient is statistically significant at the 10% significance level and *** indicates that the coefficient is statistically significant at a significance level of 1%.

According to the estimated coefficient and the odd-ratio, the amount of competitors has a positive impact (even if not very strong) on female firms' ownership. An increasing number of firms' competitors for the main product/service in the main market make Armenian women to be entrepreneurs with 1.02 times more probability. The result of the model is statistically significant with 90% of confidence and correctly classifies 76.1% of the gender ownership. The area under the ROC curve is equal to 0.56. These results are consistent with the previous analysis that shows that women own firms that trade on local markets traditionally more competitive. Additionally, as literature review shows, Armenian women are mainly involved in the trade and service sector which do not present significant (financial, legal or economics) barriers to enter. Indeed, the model's results prove that the existence of competitors is a statistical significant factor that determines the probability of a woman to become an entrepreneur in Armenia.

The results of the model, which explains the probability of female entrepreneurship using as the explanatory variable the number of firms which introduced new marketing methods over the 3 years before the survey are presented in Table 17. The simple logistic equation estimated is the follow:

$$P = logit(P) = In\frac{P}{1-P} = \beta_0 + \beta_1 N\_marketing + \varepsilon \quad (19)$$

With, P = E(Female entrepreneurship = 1|N_marketing)

Table 17. Estimation and post estimation results for the application of new marketing methods.

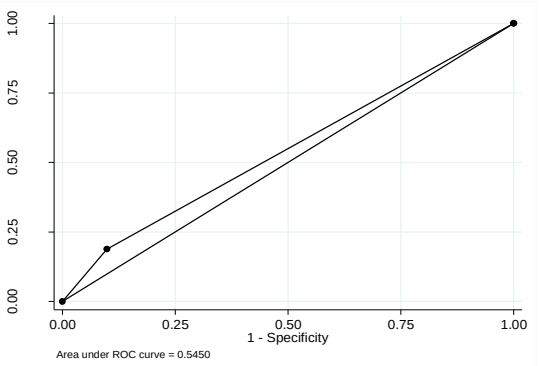
Variable	Coefficient	Odd-ratio	P-value	
N_marketing				
Yes	0.76	2.13	0.028	**
const	-1.28	0.28	0.566	

n = 360

Pseudo R2 = 0.0116

Wald chi2(1) = 4.83**

Correctly classified observations = 76.39%



Notes: ** indicates that the coefficient is statistically significant at the 5% significance level.

As it is possible to observe, Armenian women have 2.13 times more probability to become entrepreneurs in the case of new marketing methods are introduced in the entrepreneurial activity of the firm. The result is statistically significant for a 5% level of significance and the model correctly predicts 76.5% of the gender ownership. The area under the ROC curve is very similar to the ones obtained in the former estimated models. As show the results implementation of new marketing methods has a positive impact on women entrepreneurship and here is presented as a significant factor in female entrepreneurial activity of the country. There is no evidence on the literature about a relation between the adoption of new marketing methodologies but this result is an important one because may indicate that women are more open to adopt new methods for promotion of their businesses and probably they are even more open to it than men.

Besides the analysis of factors that may drive women to run a new business, in Armenia, in this research are likewise examined business environment obstacles to understand if they have an effective impact (negative as it is expected or positive, for some special reason) on women entrepreneurial activity and how much important is that impact. Next tables show the results for the obstacles that presented a statistical significant result

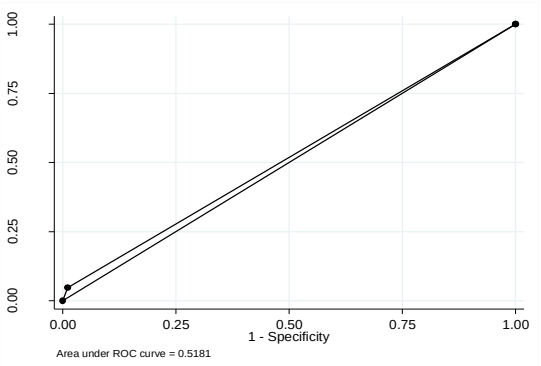
Table 18 illustrates the results of the model that explains how the access to land impact on the probability of women to become entrepreneurs. The simple logistic equation estimated is the follow:

$$P = logit(P) = In\frac{P}{1-P} = \beta_0 + \beta_1 Access\ to\ land + \varepsilon \quad (20)$$

With, $\mathrm{P} = \mathrm{E}(\text{Female entrepreneurship} = 1|\text{Access to land})$

Table 18. Estimation and post estimation results for the access to land obstacle.

Variable	Coefficient	Odd-ratio	P-value	
Enviroment obstacle				
Access to land	1.50	4.48	0.053	*
const	-1.21	0.30	0.001	***
n = 360				
Pseudo R2 = 0.0094				
Wald chi2(1) = 3.74*				
Correctly classified observations = 76.67%				



Notes: * indicates that the coefficient is statistically significant at the 10% significance level and *** indicates that the coefficient is statistically significant at a significance level of 1%.

The ease of access to land increases the probability of women to become entrepreneurs 4.48 times more comparing with other obstacles mentioned. The result of the model is statistically significant for a 10% level of significance and the model classifies 76.7% of the gender ownership. Note, however, that the result of the ROC curve is very small, 0.52, which makes the results weaker in terms of explanatory power. Note, also, that in the descriptive analysis this obstacle is one of the less mentioned both for men and women which may indicate that this is not a major obstacle regardless of gender. Indeed other obstacles like the access to finance, the corruption, the tax rate and/or the political instability are mentioned as more common but not have a special impact on driving women to an entrepreneurial activity.

The impact of an inadequately educated workforce on the probability of female ownership is presented in Table 19. The simple logistic equation estimated is the follow:

$$P = logit(P) = In\frac{P}{1-P} = \beta_0 + \beta_1 Inadequately\ educated\ workforce + \varepsilon \quad (21)$$

With, $\mathrm{P} = \mathrm{E}(\text{Female entrepreneurship} = 1|\text{Inadequately educated workforce})$

Table 19. Estimation and post estimation results for inadequately educated workforce obstacle.

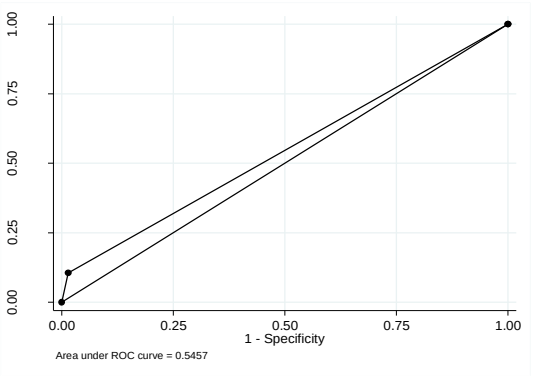
Variable	Coefficient	Odd-ratio	P-value	
Enviroment obstacle				
Inadequately educated workforce	2.08	8.02	0.001	***
const	-1.27	0.28	0.001	***

n = 360

Pseudo R2 = 0.0322

Wald chi2(1) = 11.44***

Correctly classified observations = 77.78%



Notes*** indicates that the coefficient is statistically significant at a significance level of 1%.

As it is possible to see, when the existence of an inadequately educated workforce is mentioned the probability of a firm to be owned by a women is 8.02 times bigger. Regarding the estimated p-value, the result is 99% trustful. The model correctly classifies 77.8% of the ownership gender. The area under the ROC curve is again small. These empirical results indicate the type of businesses women run do not employ a qualified workforce which is consistent with the previous findings – women more probably run small local businesses in local markets with a high number of competitors. It is normal that this kind of business do not employ a qualified workforce.

Table 20 presents the results of the simple model that helps to understand the probability of female entrepreneurship concerning tax administration. The simple logistic equation estimated is the follow:

$$P = logit(P) = In\frac{P}{1-P} = \beta_0 + \beta_1 \text{Tax administration} + \varepsilon \quad (22)$$

$$\text{With, P} = \text{E(Female entrepreneurship} = 1|\text{Tax administration)}$$

According to the literature review, the tax administration system is consider a common but important obstacle faced by women in every country, including Armenia. The results of the model estimation, below, show (with 90% of confidence) that the tax administration system obstacles decrease in 48% the probability of a woman to be involved in an entrepreneurial activity. The model correctly predicts 76.5% of the gender ownership even if the area under the ROC curve is small (0.54).

Table 20. Estimation and post estimation results for the tax administration obstacle.

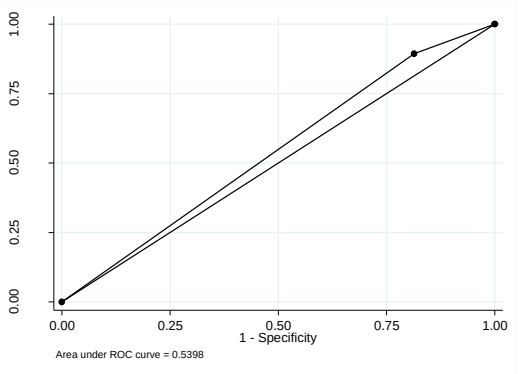
Variable	Coefficient	Odd-ratio	P-value	
Enviroment obstacle				
Tax administaton	-0.65	0.52	0.09	*
const	-1.08	0.34	0.001	***

n = 360

Pseudo R2 = 0.0082

Wald chi2(1) = 2.87*

Correctly classified observations = 76.39%



Notes: * indicates that the coefficient is statistically significant at the 10% significance level and *** indicates that the coefficient is statistically significant at a significance level of 1%.

The results prove the importance of the tax administration burden in the rate of female entrepreneurship in Armenia. The impact of such a burden is negative for women entrepreneurial activity in Armenia. The results prove too the observations made in the literature.

After presenting the findings regarding the variables for which was possible to verify the existence of statistical significant results some notes should be presented regarding some other variables – some of the non-statistical ones. According to many scientific studies a considerable share of women in the world, with Armenia being no exception, run small and/or medium sized firms. This variables were not statistical significant in this empirical study what may be explained by the fact that in Armenia firms are, generally, established with a small and/or a medium size regardless of the owners gender. So, these characteristics are not specially observed for women and, therefore, they are not main drivers of female entrepreneurship. Another variable crucial in the female entrepreneurship literature is the access to finance. Here such obstacle do not have a statistical significant interpretation for Armenian women. The existence of an economic crisis makes this factor to be common for both women and men affecting, therefore, not only females in particular. In addition, as was suggested by ADB (2015), in Armenia bank loans require 6 months of entrepreneurial experience, a high interest rates (24%) and a very short repayment period – these conditions that make more difficult the access to credit affect equally both gender owners.

Conclusions, limitations and future research lines

The purpose of this thesis was to explore the phenomena of female entrepreneurship in Armenian. In particular, the objective was to identify and measure the main factors that drive them to start and/or extend current business. As mentioned in the literature review the difficult access to finance, the environmental/societal issues, the tax policies, the corruption and other factors create an unfriendly environment in which female entrepreneurs face different difficulties, despite having clear motivations and goals. At the same time, as shows the study of Kuriakose (2013) the main motives to own a business in Armenia are: (1) the opportunity to earn more money and (2) the desire to be one's own boss. Not finding a suitable job and fearing to loss it also motivate Armenian entrepreneurs to run a new establishment.

Gender roles and stereotypes also have a significant impact on Armenian society. Despite the women participation in the country's entrepreneurial activity, the strong perceptions related to the private and family sphere are still prevalent for Armenian women. Gender stereotypes contribute to women's lower levels of representation in politics, in formal employment and, consequently, as business leaders (ADB, 2015). Another fact, that describes the women role and participation in the country's entrepreneurial activity, is the practice for men to register a business in the name of a female family member in order to hide their current business and also reduce the risks of debt payments (Wältring, 2013). A summary of the explored studies about female entrepreneurship in Armenia show that male and female entrepreneurs certainly face many common problems such as unfavourable tax rates, financing restrictions and corruption (ADB, 2015).

In spite the low participation of female in the entrepreneurial activity many international organizations, different donors and associations cultivate different promotion policies and projects to support and promote it in Armenia. However the reality shows the vulnerability of their work and support. The institutional infrastructures and BDS services of this organisations are still very weak even if over time

the traditional roles and stereotypes are changing women start to be more involved in entrepreneurship and business development.

The empirical analysis, carried out in this research work, tried to find empirical evidence that supports (or not) the literature. The description of the sample used, shows that female owned firms consist of a quarter of all observations and about 45% of them has a female top managers. Moreover a huge part of them is concentrated in Yerevan in trade and service sectors. Most of all businesses run by Armenian women have small and/or medium size. Whilst, sometimes, the amount of employees can reach till 1500 with 59 employees, in average. Having a non-traded shares legal status and using essentially foreign inputs they offer their products/services in national market. According to the survey, from 2010 till 2012, only a few women businesses in Armenia had technology licensed from a foreign-owned company, introduced new or significantly proved product/service or implemented a new technologically improved production, introduced new marketing methods or management practices and/or spend monetary resources on R&D. Consequently, the majority of Armenian women firms did not followed the strategy for growth and development and possibly limiting their business opportunities and income. In every country entrepreneurs faced different environmental obstacles. As show, the biggest and crucial obstacle among Armenian women entrepreneurs is the tax rate. The second most important and prevalent obstacle, in women's opinion is political instability. The tax administration, the inadequately educated workforce and the access to finance were also mentioned as biggest obstacles among Armenian businesswomen. Nevertheless some of the surveyed firms with female owners mentioned that they do not face any barriers.

With the logistic regression was intended to identify which variables are really drivers of female entrepreneurship in Armenia and how they impact on the probability of women to run a business. A selected set of variables was used as explanatory variables in logistic regression simple models. From those the following ones were found statistically significant. The female top managers, the location of firms in the capital city, the amount of full-time employees, the foreign type of material inputs, the local market, the amount of competitors, the implementation of new marketing methods, the access to land and inadequately educated workforce are variables with a positive statistical impact. The male top managers, the large size of the firm, the domestic type of material inputs and the tax administration work as obstacles for women if they intend to start or develop an entrepreneurial activity. As prove the findings of logistic regression, women entrepreneurs in Armenia have a bigger probability to run their businesses with female top managers and mainly in Yerevan. According to firm's size, was proved that this factor is crucial on influencing the probability of women to become entrepreneurs in Armenia. When firms are created big they more probably are not owned by woman. Indeed was observed that women entrepreneurs mainly run small and/or medium sized firms. The variable related with the smallest size of firms had no statistical influence on female entrepreneurship in Armenia. Probably because, in general, Armenian enterprises are created with a small and/or a medium size regardless of owners' gender and this factor does not drive specifically women entrepreneurs. Other pivotal factors that influence on the

decision of Armenian women to engage in an entrepreneurial activity are the number of employees, the origin of material inputs, the local market, competition and implementation of new marketing methods.

Environmental obstacles such as the access to land and inadequately educated workforce have a positive influence on the probability of women to involve in entrepreneurship, while the tax administration is found as the vital burden for Armenian women. According to the reviewed literature, finance is one of the most crucial obstacles for women entrepreneurs in the world however, for Armenian women, this obstacle did not presented a significant statistical impact. Probably problems with the access to finance exist for the entrepreneurial activity of the country regardless of owner's gender.

During the research some limitations appeared which may restrict the comparability and generalization of the findings. The study was confined by a small amount of observations. Only 360 firms, with some of them with female owners, participated in the survey. The representability of the sample is guaranteed by the sampling methodology of the World Bank Enterprises Surveys but the number of observations is still limited if a more ambitious econometric method had to be applied. The number of observations allowed to estimate simple logistic regression models but was not possible to estimate multiple regression models where a set of explanatory variables are join to explain a given phenomenon. The study relies on a cross section database, which means only one year was used in the analysis – in a country where changes are being made and policies are being applied, a study over time would be more complete and reliable. However no other dataset exists to Armenia that allows to study the gender issue on the entrepreneurial activity. Another limitation of this study that goes together with its value added, concerns the fact that no other econometric study exists – with the same dataset - to compare with the obtained results. Moreover, the studies in the gender issue on entrepreneurship are scarce for the Armenian economy which limits the comparability of results. The possibility of repeat the analysis for other years and the access to other datasets, namely to a dataset collected for the specific purpose of a gender study application, will allow to confirm (or not) the results now found and discuss how the behaviour changes and the policies that are being applied really affect the female participation on the Armenia entrepreneurship process.

Despite the several limitations, the core value of the thesis is its uniqueness. Being the first known research which examines female entrepreneurship in Armenia, trying to identify and measure the drivers for it, the thesis could be considered as a guide for start-up female entrepreneurs in Armenia and also a beneficial source for further and more detailed researches on the phenomenon of female entrepreneurship in the country. Aware of the work limitations the value added by the thesis relies on the fact that, even if small, the knowledge added calls the attention of policy makers, academicians, managers and public, in general, for an issue that is being discussed, financed and debated all over the world.

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Annex A

Table A1. Estimated coefficients, odd-ratio and p-values for the no statistical significant variables.

Variable	Coefficient	Odd-ratio	P-value
Region			
North	0,00	1,00	0,994
South West	0,00	1,00	---
South East	-0,65	0,52	0,157
Firm size			
Small	0,34	1,41	0,167
Medium	-0,14	0,87	0,565
Legal status			
Shares traded	0,49	1,63	0,576
Non-traded	-0,60	0,55	0,252
Sole proprietorship	1,19	3,29	0,238
Other	0,26	1,30	0,756
Market			
National	-0,36	0,70	0,153
International	-0,38	0,68	0,556
Licensed technology			
Yes	0,07	1,07	0,824
N_product			
Yes	0,17	1,19	0,601
N_production			
Yes	-0,29	0,75	0,613
N_management			
Yes	0,25	1,28	0,594
R&D			
Yes	0,31	1,37	0,566
Enviroment			
Access to finance	0,19	1,21	0,681
Licensing and permits	-0,21	0,81	0,849
Corruption	0,17	1,19	0,776
Courts	1,18	3,26	0,406
Crime	1,18	3,26	0,406
Customs and trade regulation	-0,71	0,49	0,203
Electricity	0,00	1,00	-
Labor regulation	0,08	1,08	0,948
Political instability	0,49	1,63	0,211
Practices of competitors	0,15	1,17	0,776
Tax rate	-0,04	0,96	0,885
Transport	0,08	1,08	0,948

Source: Own construction base on the World Bank Enterprise Surveys (Armenia, 2013).