

GENDER DIFFERENCES IN ENTREPRENEURSHIP: EVIDENCE FROM GEM DATA

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Abstract. *Being a significant component of the contemporary business world, female entrepreneurial activity is considered a key element of economic growth worldwide, and especially in emerging markets. The present study explores gender differences in efficiency-driven countries based on the GEM data through correlation and regression analyses. An important finding of the paper is that training on starting a new business as a common factor, has a greater influence on female entrepreneurial activity. Therefore, training should be considered an essential issue when designing government policies and stimulating entrepreneurial activity in general, of both female and male entrepreneurs.*

Key words: *gender differences, GEM, entrepreneurship, efficiency-driven countries.*

Introduction

In recent years, women's entrepreneurial activity has been recognized as a possible significant component to economic development. According to Global Entrepreneurship Monitor (GEM) research (Allien et al., 2007; Bosma et al., 2008), women's entrepreneurial activity has been the key contributor to economic growth in a number of countries, especially in emerging markets. Entrepreneurship is also becoming an increasingly important source of employment for women across countries. While a number of research studies reveal a growing number of women entrepreneurs and women-owned businesses, findings show that the level of male entrepreneurial activity is still higher compared to that of women. Cross-national empirical studies report significant differences in female and male entrepreneurial activity, with various factors affecting small business performance across countries. Such gender differences are significantly and systematically observed, and they vary across countries in GDP and region. In general,

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women-owned businesses are of smaller size compared to those of their male counterparts. Women tend to possess less business experience, and their businesses are usually undercapitalized. Their business growth is slower, suggesting a preference for lower risk and lower confidence (Langowitz & Minniti, 2007; Verheurl et al., 2006).

This paper focuses on gender differences in entrepreneurial activity. The object of the paper is female and male entrepreneurs from efficiency-driven countries according to Global Entrepreneurship Monitor project. Though the differences in female and male entrepreneurial activity are widely recognized and researched in the literature, the reasons for the existence of gender differences are not clearly understood; therefore we aim to evaluate the factors influencing differences in entrepreneurial activity between the two genders. The objectives of this study are to determine factors influencing the gender differences through designing a conceptual framework of factors; to investigate whether the revealed factors influence male and female entrepreneurial activity in a different way; and to provide explanation for the gender differences in entrepreneurial activity across a number of countries selected for our sample.

The structure of this paper is as follows. The first part reviews literature on entrepreneurial activity and gender differences in entrepreneurship. We further present the Global Entrepreneurship Monitor and prior main empirical research based on GEM data related to gender. We then propose a framework of factors influencing differences between female and male entrepreneurial activity. The framework is composed of economic, technology, socio-demographic, financial, and perceptual factors. We formulate hypotheses based on the influence we assume each factor wields on female and male entrepreneurial activity. The next part is a descriptive section of our empirical research and analysis of results. When testing the hypotheses, we use the Global Entrepreneurship Monitor survey for 2008 as the main source, and we discuss limitations of available data. Finally, the paper concludes with findings and reasoning of gender differences in entrepreneurial activity indicating future research implications.

1. Literature review

There are three main directions in literature on entrepreneurship that investigate the role of the individual in creating a new business and in the entrepreneurial process.

The first stream explores questions related to the role of entrepreneur and determinants of entrepreneurship. These studies raise only general factors influencing individuals in starting a new business, emphasizing the need for country-level investigations on gender differences in general. Research in the 1990s (e.g. Shane et al., 1991) concluded that reasons for starting a new business that apply equally to female and male entrepreneurs across countries are difficult to identify and thus are limited. The second large body of empirical work focuses on females as a labour resource. These studies examine characteristics of women in the labour market, their decisions to enter and opportunities in the job market (Verheul et al., 2006). Implementing equal opportunities for males and females and for gender equality is an important issue in the

global economy. According to Carter (2000) and Startien & Remeikien (2008), gender differences in the business environment remain an issue at the global level, and for the European community in particular. The studies further note a difference in salary level between males and females and that the stereotypical female role in the family still exists to some extent, negatively affecting greater integration of females into the labour market and starting their own businesses.

Finally, the third stream of literature examines aspects of entrepreneurship connected to gender issues, which is of particular interest for the present paper. The number of research studies on gender differences has grown progressively during the last few years, particularly the research on women entrepreneurs, which could be explained by the increased number of women-led businesses. While being a driving force in global economy, the number of enterprises owned by women has increased persistently (Greene et al., 2003), yet many business sectors remain dominated by males, presenting a challenge to women entrepreneurs (Godwin et al., 2006). However, some studies (e.g. Chaganti & Parasuraman, 1996; Fischer et al., 1993; Kalleberg & Leicht, 1991) provide evidence that female-run businesses perform relatively well in comparison with male-run companies. Taking the above into account, we should point out that despite the recent growing interest in female entrepreneurship, the majority of the research examines entrepreneurship in terms of men when making assumptions and judgements of characteristics of women-led businesses and women entrepreneurship, both in research and in practice.

A growing number of studies also consider significant gender differences between entrepreneurs vis-à-vis aspects of personal and business profile: they start and run businesses in different manners, have different experiences and backgrounds, aim at different goals, and structure their businesses in different ways (Verheul et al., 2006). In general, businesses led by females underperform in a number of areas (Verheul et al., 2003) and are characterized as smaller in size compared to those led by male counterparts (Carter et al., 1997; Hill et al., 2006). This can be related to the sector their businesses are in, which is more likely to have low entry barriers, low profit margins, and high competition (cf. Verheul & Thurik, 2001). Females tend to have less business experience (Fischer et al., 1993) and their businesses are usually undercapitalized (Carter, 2000; Marlow & Patton, 2005). In terms of business age, companies led by females are generally “younger” than those led by males (Hill et al., 2006). Moreover, several studies indicate that females prefer to grow their businesses slowly and are less likely to seek growth, which reflects the size of their businesses (Jennings & Cash, 2006).

There is a common conclusion among a number of researchers that female-owned businesses are concentrated in service and retail sectors (Coleman, 2002). According to Swinney et al. (2006), American women-owned businesses are concentrated mainly in services, wholesale and retail sectors, and then finance, insurance, real estate, construction, and manufacturing. However, one study on British entrepreneurs (Hill et al., 2006) shows that the majority of females who participated in this particular study had businesses in high-tech sectors.

Though differences between female and male entrepreneurs are widely recognized and researched, reasons for gender differences are not so clearly defined. Despite the growing number of female-led companies globally, male-owned companies continue to demonstrate better performance than female-owned firms. Swinney et al. (2006) assume that lower performance in women-owned firms can be explained by women's greater preferences for avoiding risk, although empirical findings on this issue differ. Prior research on American entrepreneurs (Sonfield et al., 2001) reached the contrary conclusion: females are no more risk-averse than men. Females are less willing to risk personal assets and are more conservative in selecting growth strategies (Coleman, 2007). Some researchers note that women entrepreneurs have less confidence in their own capabilities (Verheul & Thurik, 2001). A study by Verheul et al. (2003) on American entrepreneurs' self-perceptions concludes that there is a tendency among female entrepreneurs to underrate personal performance and skills in comparison to male business owners. The study argues that gender affects entrepreneurial activity and that females often do not take credit on their personal success in entrepreneurial activities, taking it as luck or some external factors.

The majority of existing studies note that females tend to demonstrate a higher probability to engage in entrepreneurship than males (cf. Verheul et al., 2006). However, other studies (e.g. Verheul et al., 2003, Grilo & Irigoyen, 2006) provide evidence that female entrepreneurs select different activities than men, and are less likely to see themselves as entrepreneurs. Grilo & Irigoyen (2006) further conclude that females are less likely to progress in entrepreneurial process and risk-aversion is a more important factor for them than for male entrepreneurs. Fear of failure is estimated as a barrier for women in entrepreneurial activities and committing as entrepreneurs in general.

Females compared to males are also less likely to seek for external financial support (Heilbrunn, 2005; Muravyev, 2007). Recent studies of this issue have shown that obtaining financial support is relatively more difficult for women (Buttner, 2001; Carter, 2000; Coleman, 2002). As one respondent in Hill et al. (2006, p. 173) noted, "At start-up financing was very difficult. For the first couple of years it was very scary." Another female in this same study noted a belief that seeking financing is so difficult that it is even not worth setting up a new business. Reasons for this come from structural barriers when acquiring equity capital. Also, as a part of their strategy, females do not want to use this type of capital (Greene et al., 2001). Additionally, Buttner (2001) claims females start their businesses in sectors that are not attractive for external funding. In studies of external funding for entrepreneurs, Muravyev (2007) noted financial constraints that new entrepreneurs face. Two factors are taken into consideration: probability of obtaining external financial support and interest rates applied. Muravyev (2007) stresses that female entrepreneurs face discrimination when obtaining bank loans: the probability of obtaining a loan is 5.4 percent lower for female entrepreneurs than for men, and interest rates are 0.6 percent higher for women than for men.

Overall, scholars agree that as female-led businesses tend to be smaller in size, they are "cheaper" to finance than those led by male counterparts (Hill et al., 2006). Some

studies on external financial funding also show that female entrepreneurs are less active in seeking external support, as they are comparatively less experienced in self-employment — and this also influences their perception of the entrepreneurial environment (Verheul et al., 2008). Studies by Hill et al. (2006) and Coleman (2002) show negative experience of entrepreneurs with banks. “The company is not interested in bank finance because banks are risk averse and don’t understand the needs of small businesses” (Coleman, 2002, p. 171), as one respondent commented. One conclusion is that relatively few women seek external financing from banks.

Among possible constraints that female business owners face, Coleman (2002) suggests education and training background are important. She points out that females are less likely to have business degrees or prior business experience. Another possible constraint is higher level of risk aversion by female business owners (Swinney et al., 2006; Coleman, 2002). Work by Verheul & Van Stel (2007) suggests that when level of education, in direct correlation with individual knowledge and skills, increases, it also leads to an increase in entrepreneurial income and productivity. Based on differences in educational background, Verheul et al. (2005) also indicate that men are more likely to have earlier entrepreneurial experience, financial management and application of modern technologies, while women get experience in administration, sales and personal services. According to Coleman (2002), women are less likely to have business degrees and employment experience in business. Research by Swinney et al. (2006) shows that business performance in male-led companies was higher than in their female-run counterparts, with the same level of education until female owners receive a college degree. They further argue that male business owners do not show improvement in business performance with an increase in level of the owners’ education. Wilson et al. (2007) in their study on entrepreneurial self-efficacy recognize the importance of education in terms of increasing self-perception, which is seen to be higher for women than for men.

2. Hypotheses development

Having analyzed a wide range of empirical research on gender differences among female and male business owners, and findings indicating the existence of gender differences in entrepreneurship, we further arrange factors that influence entrepreneurial activity and create gender differences into a framework. The framework aims at structuring a number of factors that affect women and men when doing business, as well as providing support for analysis of factors influencing entrepreneurial behavior of women and men when they start and develop their businesses, and subsequently, investigation of the existence of reasons for gender differences.

Evidently, there is a broad spectrum of factors that could possibly affect entrepreneurial activity, and consequently distinguish gender differences between female and male entrepreneurial activity. As the main source of empirical data for the present research, we use Global Entrepreneurship Monitor data (2008), which has certain limi-

tations in selection of variables that might have some effect on entrepreneurial activity for which statistical data is available, and as a result, create prerequisites for gender differences. The revealed factors are grouped into the following five categories: economic factors, technological development factors, socio-demographic factors, financial factors and perceptual factors. The mentioned factors may have differential influence on female and male entrepreneurial activity. The influence of these factors on entrepreneurship will be discussed further and appropriate hypotheses will be drawn in respect of each factor.

Economic factors

Unemployment. The connection between entrepreneurship and unemployment is not certainly defined by researchers. On a micro level, unemployment has a positive influence on entrepreneurship. Unemployed people could engage in entrepreneurial activities and start their own business to have a source of income. According to the classification of necessity entrepreneurs and opportunity entrepreneurs introduced in the GEM report 2007, with the increase of unemployment, rates of necessity entrepreneurship activity increase (Reynolds et al., 2005). One can conclude that increase of necessity entrepreneurs would positively influence the total number of entrepreneurs. Further, Verheul et al. (2006) consider that entrepreneurship decreases unemployment as entrepreneurs raise their human capital by hiring other people. They further conclude that competition on the market caused by entrepreneurial activities encourages better performance, and high level of unemployment could be connected to lost business opportunities and therefore, on a macro level, it could be said that unemployment influences entrepreneurial activity in such a manner that it reduces entrepreneurship level. In terms of gender differences, as previously mentioned studies indicate, females are represented mostly in service and retail industries (Coleman, 2002; Swinney et al., 2006; Verheul & Thurik, 2001); in general, unemployment has a greater influence on female than on male entrepreneurs. Following this logic we further formulate the following hypothesis:

Hypothesis 1: Across all countries in our sample, unemployment has a greater (negative) influence on female entrepreneurial activity rather than on activity of male entrepreneurs.

Service sector share. The growth of the service industry has a positive effect on the level of entrepreneurial activity. In this sector of economy, low entry barriers and low start-up capital can stipulate favorable conditions for new business venture start-up. Businesses located in service sector of economy are typically described as small sized companies (Carter, 2000). Furthermore, as females are mostly represented in service and retail sectors, this industry could be considered as a more influencing factor on female entrepreneurship than on their male counterparts. Thus, the following hypothesis could be formulated:

Hypothesis 2: Across all countries in our sample, service sector share has no influence on male entrepreneurial activity and a positive influence on female entrepreneurial activity.

Technological factors

High-tech sector share. Generally, high-tech sector is considered to positively influence small businesses as they gain an advantage of creating new products and using new services or techniques. Employing new technologies and innovative methods may eventually cause transformation into new products and services, which further can create a potential for starting up a new venture (Wennerkers et al., 2005; Wennerkers, 2006). Besides, implementing information technologies and high-technology means of communication helps to reduce costs, which gives small businesses an opportunity to increase their competitiveness.

Furthermore, based on the literature review, many researchers consider female-led businesses to be less likely to be engaged in technology development and high-technology sector. They further state that female-led businesses are mostly represented in services and retail sectors of economy (Coleman, 2002; Swinney et al., 2006; Verheul & Thurik, 2001). Based on research assumptions and conclusions stated above, we further conclude that technology has a significant influence on male entrepreneurial activity and as female businesses are mostly present in service and retail sectors of economy, the high technology sector must have little to no influence on female entrepreneurs compared to their male counterparts. The following hypothesis is formulated:

Hypothesis 3: Across all countries in our sample, high-tech sector share has a positive influence on male entrepreneurial activity and no influence on entrepreneurial activity of females.

Socio-demographic factors

Education and training. Among the variety of factors influencing entrepreneurial activity, education level of business owners has some influence. Education and training background is seen as one of possible constraints when obtaining external financial support (Coleman, 2002) and informal investments in particular. According to Verheul & Stel (2007), increase in education level of entrepreneurs leads to an increase in entrepreneurial income and productivity. Moreover, education is claimed to be an important factor when starting entrepreneurial activity. Educational level of entrepreneurs has been researched by a wide range of researchers. Several studies such as Bosma et al. (2004), Swinney et al. (2006) and Verheul & Stel (2007) distinguished a positive relationship between high level of education of business founder or owner and overall performance of the business.

Females though are less likely to have business degrees, special trainings and employment experience in business (Coleman, 2002). The research of Swinney et al. (2006) indicated that business performance in male-led companies was higher than in their female-run counterparts with the same level of education till female owners received a college degree. Training is considered as an important element in someone's performance increase and professional growth. For those getting into starting or

developing a new business, additional training on starting a new business could provide a necessary support and give additional confidence. In relation to entrepreneurial activity and observed peculiarities of female entrepreneurs, trainings on starting a new business are seen to be a valuable asset. Hence the following hypothesis:

Hypothesis 4: Across all countries in our sample, training on starting a new business has a greater (positive) influence on entrepreneurial activity of women than on entrepreneurial activity of men.

Financial factors

Availability of financial capital. Availability of financial capital is one of the main issues when starting and growing own business. Entrepreneurs often face the fact that financial institutions are unwilling to lend money to nascent and early-stage businesses mainly due to high risks involved and lack of information available on the profitability of small businesses (Verheul et al., 2006). As females tend to have businesses smaller in size and possess less business experience, it should involve certain difficulties for them when obtaining external financial support (Bird & Brush, 2002; Carter, 2000; Coleman, 2002); moreover, they are less likely to search for external funding compared to males (Heilbrunn, 2005). Muravyev (2007) points out two factors that create constraints when getting external funding: the probability of obtaining a bank loan and the interest rate for the loan. According to this research, female business owners are less likely to receive a bank loan and when they obtain one, they are more likely to be charged a higher interest rate. In addition to these, according to Brush (1992), females start their businesses in less attractive sectors for external funding. The following hypothesis is formulated:

Hypothesis 5: Across all countries in our sample, lack of financial capital has a greater (negative) influence on female rather than on male entrepreneurial activity.

Perceptual factors

Life satisfaction. The level of satisfaction influences entrepreneurial activity and, based on observations on country level in Europe made by Noorderhaven et al. (2004), the share of entrepreneurs seems to be higher in those countries where people are less satisfied with the society they live in and their lives in general. Furthermore, the less people are satisfied with life and society they live in, the higher is the probability that they would seek the opportunity to start their own businesses, considering that there are good conditions for a business start-up. Those not satisfied who become entrepreneurs tend to get to a higher level of satisfaction afterwards. In terms of gender differences, Verheul et al. (2006) point out that those males who are not satisfied with their jobs and life are more probable to make a start towards creating their own business than females who are not satisfied. Further, they conclude that in a positive manner, life satisfaction influences females more; female entrepreneurial activity is more influenced by the level of satisfaction with life, society and further, conditions acceptable for a business start-up, rather than male. This leads to the following hypothesis:

Hypothesis 6: Across all countries in our sample, life satisfaction has a greater (positive) influence on female than on male entrepreneurs.

Lack of confidence. Lack of confidence is often seen as one possible constraint for women starting their own businesses. Some researchers also see fear of failure as a possible barrier in entrepreneurial activity and committing as entrepreneur in general. In terms of gender differences, Grilo & Irigoyen (2006) conclude that females are less likely to progress through the entrepreneurial process, and thus, risk-aversion is a more important factor for female than for male entrepreneurs. In general, female entrepreneurs are less willing to take risk and are more conservative in selecting growth strategies (Coleman, 2002) and therefore, they are probably less confident in their own capabilities to become an entrepreneur (Verheul & Thurik, 2001). Based on the issues discussed above, we further formulate the following hypothesis:

Hypothesis 7: Across all countries in our sample, lack of confidence has a greater (negative) influence on female entrepreneurial activity than on entrepreneurial activity of males.

Self-perception. Entrepreneurial self-perception is widely discussed in the literature. Based on their study on the US entrepreneurs, Verheul et al. (2003) indicate a tendency among female entrepreneurs to underestimate their personal performance and skills compared to male business owners. Women often do not take credit on the personal success they achieve in their entrepreneurial activity. Such underestimation of personal performance, skills and knowledge they have, is often a crucial factor when pursuing the opportunity for a business start-up. Based on the above, we formulate the following hypothesis:

Hypothesis 8: Across all countries in our sample, among those stated they have required knowledge or skills to start business, men are more likely to start their own business compared to their women counterparts.

3. Method

Data and sample

The present study is based on the data drawn from the 2008 Global Entrepreneurship Monitor (GEM), a non-profit academic research consortium. GEM is the world largest survey-based study of entrepreneurial activity, covering the data for more than 60 countries since it was established in 1999. Launched initially in 1997, the first GEM report was published in 1999 when data were collected from ten countries, and with a continuous expansion of the number of countries (including Russia since 2006), Global Entrepreneurship Monitor presented 43 countries in 2008, which are grouped into three broad categories depending on the level of GDP per capita as well as the degree at which countries are factor-driven in terms of the primary goods export shares in total exports. Factor-driven economies are characterized by a large agricultural sector. Economic growth is often connected to natural resource extraction and migration to

these regions, creating self-employment opportunities. Economic growth in efficiency-driven countries corresponds to banking sector development, providing support and opportunities for small and medium sized businesses. As technology is not playing a great role in the economy of these countries, it is brought from the outside. Mature economy and increased wealth distinguish innovation-driven countries, supplemented by expansion of service sector and intensive research and development, which create a large concentration of small and medium sized innovative companies as major drivers of economic growth.

Russia is represented in the group of efficiency-driven economies, therefore we will further concentrate on this group of countries and restrict our sample to efficiency-driven countries, which include Argentina, Brazil, Chile, Dominican Republic, Jamaica, Latvia, Macedonia, Mexico, Peru, Romania, Serbia, South Africa, Turkey and Uruguay. Though Croatia and Hungary are listed in this group, these two countries are in a transition stage from efficiency-driven to innovation-driven economies. We therefore exclude these countries from the final sample. In the resulting sample, composed of 32,295 observations from 15 countries, the number of observations in each country varies from 1,645 in Uruguay to 4,068 in Chile. Observations obtained from the Global Entrepreneurial Monitor are restricted to the range of people aged between 18 and 64 years old. As our study aims to explain the gender differences between entrepreneurs in a number of countries in our sample, we further draw a table on female and male entrepreneur activity rates (see Table 1).

TABLE 1. Male entrepreneurial activity rates, female entrepreneurial activity rates, and total entrepreneurial activity rates (2008) (in percent)

| | male | female | total |
|--------------------|-------|--------|-------|
| Peru | 27.53 | 23.59 | 25.57 |
| Dominican Republic | 25.02 | 15.48 | 20.35 |
| Argentina | 17.20 | 15.88 | 16.54 |
| Jamaica | 16.93 | 14.37 | 15.63 |
| Macedonia | 20.30 | 8.56 | 14.47 |
| Mexico | 14.37 | 11.89 | 13.09 |
| Chile | 15.65 | 10.31 | 12.97 |
| Brazil | 13.04 | 11.02 | 12.02 |
| Uruguay | 15.28 | 8.58 | 11.90 |
| South Africa | 9.58 | 5.93 | 7.76 |
| Serbia | 9.99 | 5.23 | 7.59 |
| Latvia | 9.57 | 3.68 | 6.53 |
| Turkey | 9.38 | 2.44 | 5.96 |
| Romania | 5.89 | 2.10 | 3.98 |
| <i>Russia</i> | 4.51 | 2.55 | 3.49 |

In Table 1, countries from our sample are sorted by the highest total entrepreneurial activity rate. Entrepreneurial activity is based on the Total Entrepreneurial Activity (TEA) index derived from the Global Entrepreneurial Monitor (2008) and is described as the number of adults 18 to 64 years old per 100 involved in starting a new business or managing a business less than 3.5 years old (if doing both, still counted as one active person). Female entrepreneurial activity (FEA) and Male entrepreneurial activity (MEA) are also derived from the Global Entrepreneurial Monitor (2008). MEA is described as the number of males of 18 to 64 years old per 100 involved in starting a new business firm or managing a business less than 3.5 years old (if doing both, still counted as one active person). FEA is the number of females 18 to 64 years old per 100 involved in starting a new business or managing a business less than 3.5 years old (if doing both, still counted as one active person).

The top countries by total entrepreneurial activity are Peru (25.6), Dominican Republic (20.4) and Argentina (16.5), while Turkey (5.9), Romania (3.9) and Russia (3.5) are at the bottom of this ranking. As for female entrepreneurial activity, at the top is Peru (23.6), followed by Argentina (15.9) and Dominican Republic (15.5). Russia (2.6), Turkey (2.4) and Romania (2.1) are at the bottom. We see that male entrepreneurial activity is of the highest level in Peru (27.5), Dominican Republic (25.0) and Macedonia (20.3); and the lowest in Turkey (9.4), Romania (5.9) and Russia (4.5). Interestingly, Peru is at the top of three rankings: by total, female and male entrepreneurial activities. Russia has the lowest rates of total entrepreneurial activity and male entrepreneurial activity in the group of fifteen efficiency-driven countries. As for female entrepreneurial activity rates, Russia is still at the bottom of the list, leaving only Turkey and Romania behind.

Variables

In Table 2, we present a list of dependent and independent variables used in the present study. Female entrepreneurial activity and male entrepreneurial activity are taken as dependent variables for Hypotheses 1–8. The rates are presented in Table 1.

For Hypothesis 1, unemployment females and unemployment males are independent variables. Rates were calculated as a percentage of unemployed females and unemployed males respectively in the economically active population, based on data from the *Global Market Information Database* (Source: <http://www.portal.euromonitor.com/portal/server.pt>).

The independent variable for Hypothesis 2 is service sector. The survey question in the GEM Adult Population Survey is, “What kind of business is this? What will it be selling? How would it be listed in a business directory, such as the phone book yellow pages?” The respondent is expected to provide a statement that clearly describes the nature of the product or service as well as the primary customer base. The description provided by respondents allows to determine what kind of product is manufactured,

TABLE 2. Description of variables

| Name | Type | Description |
|----------------------------|-------------|--|
| FEA | Dependent | Share of females in age group of 18 to 64 years who are actively engaged in the start-up process or managing a business less than 42 months old in 2008 (in percent) |
| MEA | Dependent | Share of males in age group of 18 to 64 years who are actively engaged in the start-up process or managing a business less than 42 months old in 2008 (in percent) |
| Lack of capital | Independent | Share of adults in age group of 18 to 64 years who finished their entrepreneurial activity due to the problems getting finance (in percent) |
| Training females | Independent | Share of females in age group of 18 to 64 years who received any kind of training on starting a new business (in percent) |
| Training males | Independent | Share of males in age group of 18 to 64 years who received any kind of training on starting a new business (in percent) |
| Life satisfaction females | Independent | Share of females in age group of 18 to 64 years who are satisfied with the conditions for a business start-up in the area they live (in percent) |
| Life satisfaction males | Independent | Share of males in age group of 18 to 64 years who are satisfied with the conditions for a business start-up in the area they live (in percent) |
| Knowledge/skills females | Independent | Share of females in age group of 18 to 64 years who have required knowledge and skills for a business start-up (in percent) |
| Knowledge/skills males | Independent | Share of males in age group of 18 to 64 years who have required knowledge and skills for a business start-up (in percent) |
| Lack of confidence females | Independent | Share of females in age group of 18 to 64 years, not confident to start a new business (in percent) |
| Lack of confidence males | Independent | Share of males in age group of 18 to 64 years, not confident to start a new business (in percent) |
| Service sector | Independent | Percentage of all entrepreneurial business entities that report business activity in Consumer Services. |
| High-tech sector | Independent | Percentage of all entrepreneurial business entities that report business activity in a technology sector |
| Unemployment females | Independent | Share of unemployed females in economically active population (in percent) 2008 from the Global Market Information Database |
| Unemployment males | Independent | Share of unemployed males in economically active population (in percent) 2008 from the Global Market Information Database |

produced in agriculture, extracted in mining, created in construction, type of transportation or utility provided, what is traded at the wholesale or retail level, and the specific nature of service delivered, e.g. repair, financial, business, medical, educational or social services.

For Hypothesis 3, high-tech sector is the independent variable. As for the previous hypothesis, the same open-ended question is used (“What kind of business is this? What will it be selling? How would it be listed in a business directory, such as the phone book yellow pages?”).

Independent variables for Hypothesis 4 are lack of training females and lack of training males, based on the following question from the GEM Adult Population Survey: “Have you ever taken part in training on starting a business at primary or secondary school?” The selected percentage “yes” on this question covers two groups of people who received any kind of training in starting a business either before or after school, separated by gender.

For Hypothesis 5, the independent variable, lack of financial capital is derived from the GEM Adult Population Survey as the answer “problems in getting financing” to the question “What is the most important reason for quitting this business?” This question is designed to find out what the respondent thinks is the single most important reason for closing a business given the list of possible answers (which include opportunity to sell the business, the business was not profitable, another job and business opportunity, retirement, personal reasons, the exit was planned in advance, an incident, other reasons).

For Hypothesis 6, life satisfaction females and life satisfaction males are independent variables. The relevant question from the GEM Adult Population Survey is: “In the next six months will there be good opportunities for starting a business in the area where you live?” The percentage of women who answered “yes” is selected as life satisfaction of women variable and the percentage of males who answered “yes” is selected as life satisfaction of men variable, indicating two gender groups of people who are satisfied with the conditions of the area they live in for a business start-up.

For Hypothesis 7, lack of self-confidence females and lack of self-confidence males are independent variables, based on the share of respondents answered positively to the following question in the GEM Adult Population Survey: “Would fear of failure prevent you from starting a business?” The answers are sorted by the respondent’s gender.

For Hypothesis 8, the independent variable for self-perception is based on knowledge/skills of female entrepreneurs and knowledge/skills of male entrepreneurs respectively, which describe the percentage of respondents who gave a positive answer to the question “Do you have knowledge, skills and experience required to start a new business?” Answers are separated by gender. The focus of this question is on the respondents’ capacity to start a new business, not their interest or motivation, which is important for our research as respondents may have capacity and skills for a business start-up but may not consider that suitable opportunity exists.

We tested the hypotheses using correlation and regression analyses. For the hypotheses to be accepted, the following criteria applied. The influence of a variable on female share and male share should be significant at the .05 level. We use one-tailed tests as all hypotheses.

4. Results of analysis

Correlation coefficients for major variables used in the present study, as well as means and standard deviations are presented in Table 3.

TABLE 3. Correlation coefficients between dependent and independent variables

| | FEA | MEA | Service sector | Life satisfaction females | Life satisfaction males | Knowledge/skills females | Knowledge/skills males |
|---------------------------------|---------|---------|----------------|---------------------------|-------------------------|--------------------------|------------------------|
| FEA | 1 | 0.894** | 0.639** | 0.754** | 0.636** | 0.843** | 0.653** |
| MEA | 0.894** | 1 | 0.465* | 0.734** | 0.682** | 0.852** | 0.796** |
| Service sector | 0.639** | 0.465* | 1 | 0.471* | 0.516* | 0.533* | 0.348 |
| Life satisfaction females | 0.754** | 0.734** | 0.471* | 1 | 0.910** | 0.858** | 0.745** |
| Life satisfaction males | 0.636** | 0.682** | 0.516* | 0.910** | 1 | 0.799** | 0.762** |
| Knowledge /skills females | 0.843** | 0.852** | 0.533* | 0.858** | 0.799** | 1 | 0.909** |
| Knowledge/skills males | 0.653** | 0.796** | 0.348 | 0.745** | 0.762** | 0.909** | 1 |
| Lack of self-confidence females | -0.280 | -0.393 | -0.287 | -0.502* | -0.373 | -0.530* | -0.577* |
| Lack of self-confidence males | -0.337 | -0.514* | -0.225 | -0.508* | -0.423 | -0.622** | -0.699** |
| High-tech sector | -0.040 | 0.166 | -0.145 | 0.140 | 0.114 | -0.047 | 0.091 |
| Lack of capital | -0.232 | -0.225 | 0.049 | -0.467* | -0.295 | -0.515* | -0.607** |
| Training females | 0.380 | 0.404 | -0.103 | 0.100 | -0.182 | 0.320 | 0.266 |
| Training males | 0.500* | 0.526* | 0.014 | 0.252 | 0.033 | 0.444* | 0.444* |
| Unemployment females | 0.095 | 0.316 | 0.096 | 0.337 | 0.466* | 0.235 | 0.329 |
| Unemployment males | -0.193 | 0.121 | -0.226 | 0.076 | 0.191 | -0.022 | 0.203 |
| Mean | 9.44 | 14.28 | 49.55 | 39.25 | 44.34 | 47.0244 | 59.9360 |
| Standard deviation | 6.14 | 6.54 | 13.94 | 11.80 | 11.38 | 18.43194 | 18.84712 |

n=32,295

** Correlation is significant at the 0.01 level;

* Correlation is significant at the 0.05 level

TABLE 3. Correlation coefficients between dependent and independent variables (continued)

| | Lack of self-confidence females | Lack of self-confidence males | High-tech sector | Lack of capital | Training females | Training males | Unemployment females | Unemployment males |
|---------------------------------|---------------------------------|-------------------------------|------------------|-----------------|------------------|----------------|----------------------|--------------------|
| FEA | -0.280 | -0.337 | -0.040 | -0.232 | 0.380 | 0.500* | 0.095 | -0.193 |
| MEA | -0.393 | -0.514* | 0.166 | -0.225 | 0.404 | 0.526* | 0.316 | 0.121 |
| Service sector | -0.287 | -0.225 | -0.145 | 0.049 | -0.103 | 0.014 | 0.096 | -0.226 |
| Life satisfaction females | -0.502* | -0.508* | 0.140 | -0.467* | 0.100 | 0.252 | 0.337 | 0.076 |
| Life satisfaction males | -0.373 | -0.423 | 0.114 | -0.295 | -0.182 | 0.033 | 0.466* | 0.191 |
| Knowledge / skills females | -0.530* | -0.622** | -0.047 | -0.515* | 0.320 | 0.444* | 0.235 | -0.022 |
| Knowledge/ skills males | -0.577* | -0.699** | 0.091 | -0.607** | 0.266 | 0.444* | 0.329 | 0.203 |
| Lack of self-confidence females | 1 | 0.952** | -0.042 | 0.505* | -0.361 | -0.358 | -0.389 | -0.236 |
| Lack of self-confidence males | 0.952** | 1 | -0.032 | 0.510* | -0.379 | -0.369 | -0.428 | -0.298 |
| High-tech sector | -0.042 | -0.032 | 1 | -0.196 | 0.103 | 0.151 | 0.085 | 0.145 |
| Lack of capital | 0.505* | 0.510* | -0.196 | 1 | -0.392 | -0.481* | 0.178 | 0.120 |
| Training females | -0.361 | -0.379 | 0.103 | -0.392 | 1 | 0.927** | -0.060 | -0.099 |
| Training males | -0.358 | -0.369 | 0.151 | -0.481* | 0.927** | 1 | 0.006 | -0.048 |
| Unemployment females | -0.389 | -0.428 | 0.085 | 0.178 | -0.060 | 0.006 | 1 | 0.810** |
| Unemployment males | -0.236 | -0.298 | 0.145 | 0.120 | -0.099 | -0.048 | 0.810** | 1 |
| Mean | 40.0517 | 33.0280 | 4.3294 | 18.5713 | 14.2502 | 17.9597 | 5.6747 | 5.8361 |
| Standard deviation | 9.63239 | 7.43136 | 1.75956 | 9.64957 | 8.83719 | 10.21561 | 3.89377 | 4.72420 |

n=32,295

** Correlation is significant at the 0.01 level;

* Correlation is significant at the 0.05 level

The performed correlation analysis allowed us to see relations between different variables. We also explored whether certain variables have different influences on male and female entrepreneurship levels. To determine diversity of entrepreneurial activity and observe the determinants influencing female and male entrepreneurial activity, we performed a regression analysis explaining female and male shares in total entrepre-

neural activity. In the regression analyses, for hypotheses to be accepted, the following criteria applied. The influence of a variable on female share and male share should be significant at the 5 percent level. One-tailed tests were used as all hypotheses. For Hypotheses 1–8, when investigating differential influence on female and male entrepreneurial activity, we applied regression analyses on independent variables influencing female and then male entrepreneurial activities. Based on the framework of factors influencing gender differences in entrepreneurship, we further take the sets of eight variables to test the effect on female and then male entrepreneurial activities.

For the female entrepreneurial activity (FEA), the following variables were used: service sector share (*serv*), high-tech sector share (*hitech*), life satisfaction (*lifesatf*), knowledge and skills (*kwslf*), lack of self-confidence (*slconf*), lack of capital (*cap*), trainings and education (*trainf*), and unemployment (*uef*); and a model based on these variables influencing female entrepreneurial activity:

$$FEA = \beta_0 + \beta_1 serv + \beta_2 hitech + \beta_3 lifesatf + \beta_4 kwslf + \beta_5 slconf + \beta_6 cap + \beta_7 trainf + \beta_8 uef + u$$

We further present regression analysis output based on the set of independent variables and dependent variable female entrepreneurial activity (Tables 4a and 4b). In Table 5a, Beta and t values are represented, based on the model taking all eight variables into consideration.

TABLE 4a. Regression analysis output explaining female entrepreneurial activity.

| Variables | Beta value | t value |
|---------------------------------|------------|---------|
| (Constant) | -25.765 | -3.862 |
| Life satisfaction females | 0.274 | 2.107 |
| <i>Knowledge/skills females</i> | 0.134 | 1.397 |
| Lack of self-confidence females | -0.155 | -1.417 |
| Service sector | 0.125 | 1.735 |
| <i>High-tech sector</i> | -0.081 | -0.191 |
| <i>Lack of capital</i> | 0.169 | 1.358 |
| Training females | 0.288 | 2.950 |
| <i>Unemployment females</i> | -0.205 | -0.827 |
| R Square | 0.935 | |
| Adjusted R Square | 0.848 | |
| N | 32,295 | |

We see that knowledge and skills, high-tech sector, lack of capital and unemployment turned out to be non-significant and therefore, were excluded (in italic). The revised model (Table 4b) contains all the four variables which are significant: life satisfaction, lack of self-confidence, service sector share and training:

TABLE 4b. **Regression analysis output explaining female entrepreneurial activity**
(Revised model with insignificant factors omitted).

| Variables | B value | t value |
|---------------------------------|----------|---------|
| (Constant) | -29.049 | -4.953 |
| Life satisfaction females | 0.345*** | 5.122 |
| Lack of self-confidence females | -0.237** | -2.886 |
| Service sector | 0.213*** | 4.052 |
| Training females | 0.347*** | 4.395 |
| R Square | 0.894 | |
| Adjusted R Square | 0.852 | |
| N | 32,295 | |

Where $p < 0.05$ marked with **, and $p < 0.01$ marked with ***.

From Table 4b we see that there are several variables influencing female entrepreneurial activity. These involve life satisfaction, lack of self-confidence, service sector share, and training on starting a new business.

For the male entrepreneurial activity (MEA), the following variables were used: service sector share (*serv*), high-tech sector share (*hitech*), life satisfaction (*lifesatm*), knowledge and skills (*kwsml*), lack of self-confidence (*slconm*), lack of capital (*cap*), training and education (*trainm*), and unemployment (*uem*); and a model based on these variables influencing male entrepreneurial activity:

$$ME A = \beta_0 + \beta_1 serv + \beta_2 hitech + \beta_3 lifesatm + \beta_4 kwsfl + \beta_5 slfconm + \beta_6 cap + \beta_7 trainm + \beta_8 uem + u$$

We further present regression analyses output based on the set of independent variables and dependent variable male entrepreneurial activity (Tables 5a and 5b). In table 5a, B and t values are represented, based on the model taking all the eight variables into consideration.

TABLE 5a. **Regression analysis output explaining male entrepreneurial activity.**

| Variables | Beta value | t value |
|-------------------------------|------------|---------|
| (Constant) | -18.215 | -1.831 |
| Life satisfaction males | 0.156 | 0.968 |
| Knowledge/skills males | 0.251 | 2.059 |
| Lack of self-confidence males | -0.078 | -0.424 |
| Service sector | 0.000 | 0.000 |
| High-tech sector | 0.538 | 1.010 |
| Lack of capital | 0.399 | 2.691 |
| Training males | 0.267 | 2.305 |
| Unemployment males | -0.243 | -0.969 |
| R Square | 0.895 | |
| Adjusted R Square | 0.756 | |
| N | 32,295 | |

TABLE 5b. **Regression analysis output explaining male entrepreneurial activity**
(Revised model with insignificant factors omitted).

| | Beta value | t value |
|------------------------|------------|---------|
| (Constant) | -16.407 | -3.273 |
| Knowledge/skills males | 0.333*** | 6.006 |
| High-tech sector | 0.358*** | 3.233 |
| Training males | 0.227** | 2.445 |
| R Square | 0.831 | |
| Adjusted R Square | 0.785 | |
| N | 32,295 | |

Where $p < 0.05$ marked with **, and $p < 0.01$ marked with ***.

We see that life satisfaction, lack of capital, life satisfaction and unemployment are non-significant and therefore, were excluded (in italic). The revised model contains all the three variables which are significant: knowledge and skills, high-tech sector, service sector share and training (Tables 5b).

From Table 5b we see that there are several variables influencing male entrepreneurial activity, among which we observe knowledge and skills, lack of capital, and training on starting a new business. In comparison to factors influencing female share in total entrepreneurial activity, we see that training influences both female and male entrepreneurial activity. The influence of training is positive on both, female entrepreneurial activity and male entrepreneurial activity. The positive greater influence of training on female entrepreneurial activity provides support for Hypothesis 4.

As we see from Tables 4b and 5b, service sector share influence is significant for female entrepreneurial activity. The positive influence of service sector share on female entrepreneurial activity is in agreement with Hypothesis 2. Service sector also shows no significant influence on male entrepreneurial activity; therefore Hypothesis 2 is fully supported. Life satisfaction has a significantly positive influence on female entrepreneurial activity. Based on the regression analyses outputs, we can conclude that life satisfaction has a greater influence on female entrepreneurial activity, which is in agreement with Hypothesis 6. With respect to knowledge and skills, the influence on male entrepreneurial activity is significantly positive and as there is no significant influence of knowledge and skills on female entrepreneurial activity, we further reach a conclusion that among those stated they have knowledge and skills required for a business start-up, males are more likely to start a new business compared to females which is in agreement with Hypothesis 8. Lack of self-confidence has a significantly negative influence on female entrepreneurial activity. The influence could be described as greater on female entrepreneurship, based on the observation that the effect of this factor is non-existent on male entrepreneurial activity, which in agreement with Hypothesis 7. The influences of lack of capital and unemployment are non-significant on both, female and male share in total entrepreneurial activity. Therefore, Hypotheses 3 and 5 are not

supported. High-tech sector has a significantly positive influence on male entrepreneurial activity and no significant influence on female entrepreneurial activity, which is in agreement with Hypothesis 3.

The results of the conducted regression analysis present an indication of a number of factors influencing entrepreneurial activity. Based on this analysis, we see that except for one factor, female and male entrepreneurial activity is affected by different factors. Female entrepreneurial activity is influenced by such variables as life satisfaction, service sector share and lack of self-confidence, while entrepreneurial activity of males is influenced by knowledge and skills, and high-tech sector share. The revealed common factor of influence is training on starting a new business, which affects both female and male entrepreneurship in a positive manner. What is more, the influence of training is greater on female entrepreneurial activity than on male entrepreneurship. Considered with the side-added negative influence of lack of self-confidence, training is seen as an important factor influencing female entrepreneurial activity, their business performance and income.

Conclusions

The designed framework of factors influencing entrepreneurial activity provided a theoretical basis for formulating eight hypotheses, the analysis of which, based on a set of independent variables, revealed findings on significant effect of several factors.

From the empirical standpoint, the paper observed a group of efficiency-driven countries, based on the Global Entrepreneurship Monitor database, the largest body and source of empirical data that focuses on a systematic collection of data on entrepreneurship worldwide. The majority of studies on entrepreneurial gender differences mainly focus on qualitative research of some small groups of entrepreneurs, and even taking into account a number of studies based on the GEM data, relatively few of those existing focus on developing a framework of factors influencing on gender differences in the context of entrepreneurial activity. The developed regression model is seen as a more appropriate instrument for evaluating the interaction of factors influencing the existence of gender differences of female and male entrepreneurship than seizing the effects of direct correlations.

From a theoretical standpoint, this paper focused on distinguishing the influence of factors affecting the difference in entrepreneurial activity between genders. The study further determined factors influencing the gender differences through designing a conceptual framework of factors; and investigated whether the revealed factors influence in a different way on male and female entrepreneurial activity. Service sector share, high-tech sector share, trainings, life satisfaction, level of confidence, and knowledge and skills were found to be the major factors making influence on entrepreneurial activity.

We observed common and differential influence of the revealed factors on female entrepreneurial activity and entrepreneurial activity of males. Factors exposing differential effect are of particular interest, as influencing one of the two genders, they reveal

non-existence for the other. In particular, female entrepreneurial activity is influenced by life satisfaction, lack of self-confidence and service sector share. The influence of the share of service sector and life satisfaction is positive, while lack of self-confidence has a negative influence on female entrepreneurs. Life satisfaction of women, which also includes personal happiness and welfare, and overall conditions of the place they live in, could be increased by pursuing child care and other important policy issues for women, improving living standards and economic climate in general. As for entrepreneurial activity of men, except for the common factor influence, it is influenced by two other factors, such as knowledge and skills, and high-tech sector share. The effect of both is significantly positive.

The revealed common factor is training on starting a new business, which influences both female and male entrepreneurship, and is positive. Training increases education level in general, and is an important factor influencing entrepreneurial performance and income. For those individuals who decided to start a new business, and also for those who develop an existing one, additional training could provide a necessary support and give additional confidence. Moreover, the influence of training is greater for female entrepreneurial activity than male entrepreneurship. Based on this observation, and especially considering the significant effect of lack of self-confidence on female entrepreneurs, training is one of the most consistent factors affecting female entrepreneurial activity. Male entrepreneurs are also affected by knowledge and skills required for a business start-up, the level of which is likewise to be higher after training on starting a new business. Therefore, training on starting a new business should be perceived as an essential issue when designing government policies and stimulating entrepreneurial activity in general, of both female and male entrepreneurs.

However, the present study still reveals areas deserving further investigation, considering the limited number of observations provided by the GEM database and used in our study, which also explains the limitations in explanatory variables. We also see that in future research, more countries could possibly be taken for the analysis and more variables to investigate possible effect of a variety of factors could be considered. Admittedly, more perceptual factors should be weighed, since satisfaction with life and self-confidence were revealed as being significantly positive to affect entrepreneurial activity and female entrepreneurship in particular.

Heeding the findings of the present study, future research could concentrate on further exploration of training programs on starting a new business as we found a positive significant effect on both, female and male entrepreneurship; and especially for female entrepreneurs. Finally, the availability of more gender-specific factors is required for the future research to ensure the possibility of investigating crosswise effects, and further exploration of factors evaluating the gender differences between male and female entrepreneurs.

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