

WOMEN ENTREPRENEURSHIP IN VISEGRAD REGION AND ITS DRIVERS

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Abstract

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The aim of our paper is to analyze the quantitative aspects of entrepreneurial activity among female population, and to investigate for drivers of women involvement in early-stage entrepreneurial activities in Visegrad countries (i.e. Czech Republic, Hungary, Slovakia and Poland). We employ Global Entrepreneurship Monitor national and individual level data for four consecutive years 2011–2014 (altogether 16,036 respondents). First, we analyze the main indicators of female entrepreneurial activity, including the inclusivity index, using the descriptive statistics methods. Second, we execute logistic regression analysis and look for the factors related to entering the entrepreneurial path among women in our region, while considering the opportunity and necessity motive dichotomy. Our results show that women in V4 region exhibit more sceptic attitudes towards entrepreneurship as well as low inclusion in entrepreneurial activity in all stages, compared to their male counterparts. Further in our analysis, we have identified the most important factors that act as women entrepreneurship drivers, considering its motivation. Our findings therefore unveil the problematic aspects of women entrepreneurship in Visegrad countries and point out the potential solutions. In our paper we further discuss these findings and their implications.

Keywords: entrepreneurship, women, Visegrad countries, GEM, activity, drivers, opportunity, necessity

INTRODUCTION

Women entrepreneurship has become a subject of researchers' and policymakers' interests in last decades. However, the reasons for this interests were changing over time. Originally, the policies aimed at women entrepreneurship development were based on efforts to support equal status and social inclusion of women (Lotti, 2006). Nowadays, the pragmatic concerns about this issue are determined especially by unemployment as one of the key problems faced by governments in the majority of economies worldwide. The need to solve this problem puts entrepreneurship in the position of jobs creation, both in terms of self-employment, as well as in terms of creating new employment opportunities

for others. With this respect, the research on women entrepreneurship has become focused on unveiling the untapped sources of economic growth. Despite the considerable efforts to understand the phenomenon of women entrepreneurship, many questions still remain open. Why do women usually represent only 30 to 40 % of entrepreneurs' population? Why is entrepreneurship perceived as masculine phenomenon? Are there any specifics of women entrepreneurship that could imply comparative advantages as sources of its economic impact? The first above mentioned question is directly related to the issue of inclusive entrepreneurship of women. Inclusive entrepreneurship deals with inclusion of

disadvantaged groups in entrepreneurship process (Pilková *et al.*, 2014a). By disadvantaged we generally mean the groups that face unequal barriers to set up a business or become self-employed, or that are under-represented in entrepreneurship or the labor market. Besides women, these groups also include youth, seniors, ethnic minorities and immigrants, individuals with disabilities or the unemployed. From the policy perspective, the inclusive entrepreneurship policies intend to enable all people, regardless of their personal characteristics or background, an opportunity to start-up and operate in business or self-employment (OECD/EU, 2015).

A deeper understanding in the field of women entrepreneurship in relation to inclusive entrepreneurship concept requires inquiry into women entrepreneurship nature and its specific features. Thus, the main research question of our paper is to find out the state of women entrepreneurship in Visegrad countries, and identify the main drivers of women entrepreneurial efforts from among individual characteristics and perceptions of societal attitudes towards entrepreneurship, while distinguishing between necessity- and opportunity-based activities.

THEORY OVERVIEW

Women entrepreneurship in research

Despite the fact that majority of businesses are still being run by men, there is a consistent opinion among both policy makers and scholars that number of women entering entrepreneurship in last decades has grown considerably (e.g. Davis, 2012; Bjerke, 2013). Thus, research on women entrepreneurship gains on importance.

According to Carter *et al.* (2007), research on female entrepreneurship can be classified into the six main fields. The first area is focused on characteristics and motivations of women entrepreneurs. Many of studies within this field attempted to establish demographic and business characteristics of women involved in running a business. In general, the findings have identified more similarities than differences between female entrepreneurs and their male counterparts (Carter *et al.*, 2007). The second research field considers start-up resources and limitations. In this case, research findings suggest that women face greater problems in resource acquisition during the business start-up as well as in the other phases. Mostly, these problems are attributed to lack of managerial experience, more limited amount of available own financial resources, as well as to particular social norms established in certain societies (Hisrich and Brush, 1986). The third research area is focused on managerial issues of women-owned firms, with core researched issue being the family-business relations in women's business career, especially from the family perspective (Carter *et al.*, 2007).

The fourth area considers finance in women-run businesses. The attention to this issue has been quite extensive, but without clear findings whether finance are really specifically problematic issue or subject to discrimination for female entrepreneurs or not (Carter *et al.*, 2007). The fifth research field is the issue of women's business networks. The former results suggest that networking behavior between male and female is very similar. The main difference is that women prefer usage of networks comprising of other women, while they male counterparts prefer using networks created by men (Carter *et al.*, 2007). Finally, the sixth research area is focused on measuring business performance and growth.

Another study on female entrepreneurship by Jennings and Brush (2013) divides works focused on women entrepreneurs according to the underlying theoretical groundings into two categories, namely research falling into the field of gender studies and employment, and research related to feminist theories. In their work, Jennings and Brush (2013) introduce classification of research problems in women entrepreneurship into four categories that logically overlap with the above mentioned classification. First category includes question whether men and women are equally engaged in entrepreneurship. Second category addresses the question whether male and female entrepreneurs differ in terms of financial resources acquisition. Third category investigates if male and female entrepreneurs tend to apply different strategic, organizational and managerial practices when managing their firms. Finally, the fourth category examines whether men- and women-managed firms achieve same levels of performance. Based on the analysis of key studies researching female entrepreneurship, Jennings and Brush (2013) criticize the insufficient links between their findings and general theory on entrepreneurship. In accordance with their suggestions, we will apply the perspective of general theories linked to entrepreneurship in our analysis, and we will also study and discuss our findings with this respect.

Drivers of women entrepreneurial activity

The most frequently studied drivers of involvement in entrepreneurial activity (whether in gender-specific connotation or not) are the individual entrepreneurship-related attributes, social capital and perception of societal attitudes, and individual demographic characteristics. Since previous studies indicate rather general validity than gender-specific nature of these drivers, we will consider the full scope of these potential factors in our analysis.

Individual demographic characteristics studied for their influence on taking the entrepreneurial path are mainly the age, educational attainment and household income. The role of age as a decision driver at the edge of entrepreneurial career is based on the opportunity costs of time. Generally, with

increasing age the opportunity costs of involvement in an entrepreneurial activity increase (Lévesque and Minniti, 2006). The assumptions about effect of educational attainment is related to the concept of human capital. Individual human intellectual capital represents a knowledge base determining the individual's capacity to recognize and pursue entrepreneurial opportunities (Ramos-Rodríguez *et al.*, 2010). Previous empirical research proved human capital, partially operationalized through educational attainment, to be positively related to business opportunity recognition (Ramos-Rodríguez *et al.*, 2010) and nascent entrepreneurship (Kim *et al.*, 2006). Finally, the role of household income in relation to involvement in entrepreneurial activity can be viewed through the financial resources perspective, especially with the opportunity costs of reducing this income. According to Kim *et al.* (2006), at lower income levels, individuals may consider the opportunity costs of starting business very low, while at higher income levels, individuals may perceive that the loss of their current income outweighs prospective (and still uncertain) gains from a new business.

The most commonly investigated individual attributes regarding the involvement in entrepreneurial activity are the alertness to entrepreneurial opportunities, self-confidence and fear of failure related to starting a business. Perception of good entrepreneurial opportunities is related to individual subjective alertness to good opportunities for starting up and running an enterprise. According to Kirzner (1979), alertness to unexploited business opportunities is a key perceptual characteristic of entrepreneurial behaviour and a necessary precondition for entrepreneurial action. Alertness to good entrepreneurial opportunities has yet been proven by empirical research as an important driver leading individuals towards engagement in enterprising efforts (e.g. Arenius and Minniti, 2005; Koellinger *et al.*, 2007). Individual entrepreneurial self-confidence relates to the concept of self-efficacy. Perceived self-efficacy represents one's judgement of own ability to execute an action and produce designated levels of performance (Bandura, 1994). Thus, it has been established as a reliable predictor of different goal-directed behaviours, including entrepreneurship. Self-efficacy is strongly related to perceived behavioural control and ability (concerning how easily the particular behaviour is controlled), which together with attitude toward behaviour and subjective norm influences the intention, that in turn affects the actual behaviour of an individual (Ajzen, 1991). Previous empirical studies have proven the positive relationship between high levels of self-efficacy and individual entrepreneurial activity (e.g. Arenius and Minniti, 2005; Lukeš *et al.*, 2013; Wong and Lee, 2005). Fear of failure represents a subjective perception regarding the risk of entrepreneurial failure and its possible consequences. Since

the majority of individuals are supposed to be risk-averse by nature, increased fear of failure is expected to act as an inhibitor of entrepreneurial action (Arenius and Minniti, 2005). Empirical research has provided certain evidence supporting these assumptions considering entrepreneurial activity (e.g. Arenius and Minniti, 2005; Lukeš *et al.*, 2013; Wagner, 2007).

Social capital is broadly defined and multidimensional term (Davidsson and Honig, 2003) that generally refers to social networks of an individual that enable to extract benefits from these social structures, networks and memberships through the social exchange (Portes, 1998). It represents an external knowledge provided by other people in the entrepreneur's environment (Ramos-Rodríguez *et al.*, 2010) and which foster the discovery of opportunities, their exploitation as well as the identification, collection and allocation of scarce resources (Davidsson and Honig, 2003). One of the most relevant sources of social capital for early-stage entrepreneurs are other individuals with recent business start-up experience. Such relations may not only directly increase opportunity recognition capacity or provide access to resources, but also enable access to already established social networks of existent entrepreneurs (Ramos-Rodríguez *et al.*, 2010). Empirical research has already identified positive impact of knowing an entrepreneur on involvement in entrepreneurship (Lukeš *et al.*, 2013). Also, previous studies have provided certain evidence that there is no difference between male and female in how they develop and maintain networks and how they are able to benefit from them (Greve and Salaff, 2003).

Perception of societal attitudes towards entrepreneurship represents an individual perception of social norms, values, beliefs and assumptions socially carried by individuals within the society, influence their behaviour. In other words, we speak about institutions (North, 1990) that shape the entrepreneurial activity of individuals (a context-specific type of human behaviour and interaction) who try to adjust their actions to achieve conformity in the environment shaped by these institutions. One of them is the status of successful entrepreneurs in a society. If an individual believes successful entrepreneurs enjoy high levels of social status and respect, he will be generally more likely to find entrepreneurial activity desirable. He would perceive that by joining an entrepreneurial path he would achieve legitimacy by conforming to norms and values within society (Lonsbury and Glynn, 2001).

Opportunity and necessity motives and drivers of women entrepreneurship

Another important question is, how the generally expected relationship between the above described factors and involvement in entrepreneurial activity is moderated by the motive behind the decision to start a business. Various motives can be,

within the Global Entrepreneurship Monitor perspective, generally divided into the two main categories – opportunity and necessity motives (Reynolds *et al.*, 2001). Verheul *et al.* (2010) argue that distinction between opportunity and necessity entrepreneurs is important for several reasons, one of them being the difference between determinants of opportunity and necessity entrepreneurship. Some evidence on relationship between individual characteristics and push/pull entrepreneurship has already been provided by empirical studies, but it is often quite ambiguous. For example, there are no consistent findings on effects of age or educational level on involvement in necessity- and opportunity-driven entrepreneurial activity (Bergmann and Sternberg, 2007; Giacomini *et al.*, 2011; Verheul *et al.*, 2010; Wagner, 2005). Also, while Giacomini *et al.* (2011) identified negative effect of having entrepreneurial relatives on necessity entrepreneurship, Wagner (2005) found positive effect of role models on opportunity entrepreneurs, and Morales-Gualdrón and Roig (2005) found positive influence of knowing an entrepreneur on both types of entrepreneurship. Finally, both Wagner (2005) and Morales-Gualdrón and Roig (2005) found fear of failure acting as inhibitor of necessity as well as opportunity entrepreneurial efforts, while Verheul *et al.* (2010) found no significant effect of this attribute at all.

Based on the above mentioned findings, as well as on theoretical groundings and empirical results on drivers of entrepreneurial activity in general, we suppose the following:

1. Opportunity-driven women entrepreneurship is positively affected by alertness to opportunities, self-confidence, knowing an entrepreneur, perceived high social status of entrepreneurs and educational level, while it is negatively influenced by fear of failure, age and household income.
2. Necessity-driven female entrepreneurship is positively affected by self-confidence, knowing an entrepreneur, perceived high social status of entrepreneurs, while it is inhibited by fear of failure, age, household income and education. Also, we expect no significant effect of alertness to opportunities on necessity-driven activity.

MATERIALS AND METHODS

Sample

We based our analysis on Global Entrepreneurship Monitor (GEM) data. GEM is the largest academic study focused on entrepreneurship in the world. It annually monitors entrepreneurial attributes and activities, and the entrepreneurial environment through two main primary data collection instruments – Adult Population Survey (APS) and National Expert Survey (NES), providing insights on the patterns and trends in entrepreneurship in the analyzed economies (Singer *et al.*, 2015). The APS

collects individual-level data through a standardized survey instrument administered to representative samples of minimum 2,000 individuals from adult populations (18 to 64 years old) in each participating country.

To analyze the quantitative aspects of women entrepreneurship in V4 countries we used the original GEM APS individual level national samples from 2011 to 2014. We kept both female and male respondents in the sample in order to enable comparison of indicators between genders. The total sample employed in our analysis comprised of 31,030 adult working-age population individuals (7,014 from Czech Republic with data available for 2011 and 2013 only, and 8,005 from Hungary, 8,004 from Poland and 8,007 from Slovak Republic). All national samples are representative by gender and age category.

To analyze the drivers of female involvement in early-stage entrepreneurial activity we created a pooled sample using GEM APS individual level data for V4 countries from 2011 to 2014, with female gender as the only selection criteria, resulting to a sample of 16,036 female individuals (3,712 from Czech Republic, 4,139 from Hungary, 4,001 from Slovakia and 4,184 from Poland). In this sample we have identified 977 early-stage entrepreneurs, out of that 591 opportunity-driven business owner-managers, and 362 female individuals who started their businesses out of necessity (remaining 24 refused to indicate the motive). In order to analyze the drivers of opportunity and necessity entrepreneurship we created two subsamples. The first one contained opportunity-driven entrepreneurs and non-entrepreneurs (10,406 individuals), enabling us to identify factors affecting involvement in business activity out of opportunity compared to abstaining from entrepreneurship. Accordingly, the second subsample (10,260 individuals) comprised of early-stage entrepreneurs out of necessity and non-entrepreneurs.

Data and variables

Our analysis of quantitative aspects of female entrepreneurship was based mainly on GEM national-level indicators. Namely, we have used indicators of entrepreneurial self-confidence (% of population that believes to have knowledge, skill and experience required to start a new business), alertness to opportunities (% of population that perceives good opportunities for starting a business in the next six months in the area where they live), fear of failure (% of population indicating that fear of failure would prevent them from starting a business), total early-stage entrepreneurial activity – TEA (% of population actively involved in setting up a business or owning-managing new firms that generate income less than 3.5 years), and established business ownership (% of population that owns-manages business generating income for more than 3.5 years). In addition to the above mentioned indicators, we have constructed an inclusivity index for both

total early-stage entrepreneurial activity as well as established business ownership rate, together with female/male inclusivity ratios for the other analyzed variables. The principle of inclusivity indices and ratios has been introduced in our previous works (Pilková *et al.*, 2014a; Pilková *et al.*, 2014b). Their values are calculated as ratios of female indicator value to male indicator value. Thus, in case of entrepreneurial activity, they express to which extent the involvement of female population is equal with activity of their male counterparts. With this approach, we can exactly see the level of inclusivity. Moreover, these indices are well comparable across countries, since they account for country-specific differences in absolute values of respective underlying indicators. Similarly, female/male indices related to the other variables (in our case representing the aggregate values of perceptions towards entrepreneurship) show the comparison between aggregate levels in female and male population, thus pointing out the similarities or differences between the genders. To improve the robustness of the results, for each country we have used the average values of indicators and indices for years 2011 to 2014.

We relied on GEM variables also for the analysis of entrepreneurial activity drivers. Dependent variables indicated involvement of respondents in opportunity- or necessity-driven early-stage entrepreneurial activity. In GEM, total early stage entrepreneurial activity includes individuals actively involved in setting up a business or owning-managing new firms (less than 3.5 years old). Furthermore, those TEA individuals who indicated having no better choices for work as the main reason for business start-up are considered necessity-driven entrepreneurs, while those whose dominant reason was mainly/partially to take advantage of business opportunity, or who were seeking for better opportunities than in their recent jobs, are classified as opportunity-based entrepreneurs.

The explanatory variables included the following: 1) entrepreneurial self-efficacy – perception of having knowledge, skill and experience required to start a new business (yes = 1, no = 0); 2) alertness to business opportunities – belief in good opportunities for starting a business in the area where respondent lives (yes = 1, no = 0); 3) fear of failure – having a fear of failure would prevent one from starting a new business (yes = 1, no = 0); 4) social capital – knowing personally someone who started a business in recent two years (yes = 1, no = 0); 5) perceived social status of entrepreneurs – agreement that in respondent's country successful new entrepreneurs possess high levels of status and respect (yes = 1, no = 0); 6) age category (18–24, 25–34, 35–44, 45–54 or 55–64 years); 7) education – highest educational attainment; and 8) household income – total annual household income classified for country into one of three ranges (lowest/middle/upper 33rd percentile).

Finally, we also included proxies for country and year of survey as control variables.

Analysis

To analyze the quantitative aspects of female entrepreneurship we used a descriptive analysis of indicators and related inclusivity and female/male indexes. First, we compared the absolute values of variables indicating aggregate levels of entrepreneurial activity and attitudes towards entrepreneurship between female and male populations. Then, we explored the values of indexes showing inclusivity level of women in entrepreneurial activity and levels of the other examined attributes relative to their male counterparts.

To investigate the entrepreneurship drivers within the women population we applied a binomial logistic regression modelling. This model estimates the probability of an event happening. In our case this event was running an early-stage business activity based on necessity or opportunity. Thus, we conducted two regression models analysis with two different dependent variables – opportunity-driven and necessity-driven early-stage entrepreneurial activity. To estimate the parameters of each model we used statistical software R, namely its build-in function for Generalized Linear Models (GLM) which was set on binomial family with logit transformation. The significance of parameters was tested using Wald z-statistics and Maximum likelihood estimations were used to calculate the logit coefficients denoting changes in the log odds of the dependent variable. Correlations between independent variables were tested and proved not to be problematic. The selections of final models were conducted through a stepwise regression function `drop1` using Chi-square goodness of fit test, log-likelihood ratio function and Akaike Information Criterion. The selected final models were then compared to the real observation using Hosmer and Lemeshow goodness of fit (GOF) test, which indicated that the models are well fitted.

RESULTS AND DISCUSSION

In this part of our paper we present and discuss the results of our analysis of the main female entrepreneurial activity indicators in V4 region, as well as our findings on main drivers of female involvement in early-stage entrepreneurial efforts considering their motivation.

Women entrepreneurship in Visegrad countries

The results of our analysis describing the main quantitative attributes of entrepreneurial activity and attitudes towards entrepreneurship among female and male populations in V4 countries, are presented in Tab. I.

As can be seen from the results presented in Tab. I, female and male adult working age

populations in Visegrad countries exhibit different levels of involvement in entrepreneurial activities, as well as differences in attitudes towards entrepreneurship. In our opinion the parallel existence of differences in both these attributes is understandable, as they go hand in hand, because, attitudes towards entrepreneurship considerably determine the involvement in enterprising efforts. Overall comparison of the results shows that, across all four countries, women significantly underperform their male counterparts in involvement in entrepreneurial activity in both analyzed stages, i.e. in early-stage as well as in established entrepreneurial business ownership. At the same time, women exhibit generally less favorable attitudes towards entrepreneurship, with lower aggregate self-confidence in having skills, knowledge and experience required to start a new business, higher aggregate fear of failure preventing from starting a business, and (with exception of Poland), lower perception of favorable business opportunities. The results for particular indicators are described and discussed below.

Alertness to opportunities, i.e. perception of good opportunities to start new businesses in their area in the close future is the attribute where women exhibit the smallest differences from male population. The aggregated level of alertness to opportunities among women, as shown by female/male index, reaches from 78% of aggregated male opportunity perception to even 112% in case of Poland, where women are overall more optimistic

about existence of good business opportunities than men. Thus, alertness to opportunities as important factor for involvement in entrepreneurial activity creates generally slightly negative precondition for female inclusivity in entrepreneurial activity in V4 countries, except of Poland.

Entrepreneurial self-confidence is the attribute where men the most significantly over perform their female counterparts. Women in V4 countries are generally rather sceptic (or perhaps more sober) in self-evaluating own possession of skills, knowledge and experience required to start a business. Across V4 countries, only 3 to 4 in 10 women, but as many as approximately 5 to 6 in 10 men, declare to have the entrepreneurial self-confidence. The female/male index values show that aggregate self-confidence in female population reaches only approximately 60% of the aggregate level of this attribute among men. Such unfavorable disproportion of belief in possession of entrepreneurial capacity creates considerably negative precondition for women inclusivity in entrepreneurial efforts.

Unlike in the previous attributes, V4 women over perform their male counterparts in having a fear of failure that would prevent them from starting a business. However, this is also a negative precondition for business start-up. Across V4 countries, as shown by female/male index values, women overall indicate possession of fear of failure 1.2 (for Poland) to 1.4 (for Slovak Republic) times more frequently. Again, similarly to problematic

I: Women entrepreneurship indicators in V4 countries, 2011–2014 average

Indicator / Country	Czech Republic	Hungary	Poland	Slovak Republic
Alertness to opportunities				
Female	20.42 %	15.91 %	28.93 %	18.28 %
Male	26.51 %	17.84 %	26.53 %	22.01 %
Female/male index	0.78	0.90	1.12	0.83
Self-confidence				
Female	31.61 %	29.12 %	40.69 %	41.10 %
Male	50.00 %	50.37 %	65.48 %	62.98 %
Female/male index	0.63	0.58	0.62	0.65
Fear of failure				
Female	46.67 %	50.88 %	61.45 %	53.66 %
Male	36.15 %	42.16 %	52.28 %	37.97 %
Female/male index	1.29	1.21	1.18	1.41
Early-stage entrepreneurial activity (TEA)				
female	4.14 %	5.61 %	5.86 %	7.39 %
male	10.75 %	11.75 %	12.63 %	15.03 %
Inclusivity index (TEA)	0.39	0.48	0.46	0.51
Established business owner-managers (EB)				
female	2.78 %	3.87 %	3.64 %	3.95 %
male	7.63 %	8.82 %	8.67 %	10.66 %
Inclusivity index (EB)	0.37	0.46	0.42	0.37

Source: own elaboration based on GEM 2011–2014 data

self-confidence, this situation creates rather negative prospects for inclusion of women individuals in business activities, as fear of failure is generally one of the inhibitors of entrepreneurial activity.

Involvement in early-stage entrepreneurial activity (TEA) within female population is considerably lower compared to men. Inclusivity index values in Visegrad countries range from 0.39 (in Czech Republic) to 0.51 (in Slovak Republic), meaning that women start new businesses only 39% to 51% as often as do their male counterparts. This disproportion corresponds with above described differences in attitudes towards entrepreneurship, where women generally lack especially in self-confidence and fear of failure. The importance of these attributes as drivers important for individual involvement in entrepreneurial activity will be investigated further in our analysis. Anyway, the lower involvement of women in starting new business activities is not only problematic itself, but it also means unfavorable prospects for their inclusion in established businesses.

Analogically to early-stage activity, women in Visegrad region also lack in inclusivity in established business ownership. Inclusivity index values ranging from 0.37 (both Czech and Slovak Republic) to 0.46 (Hungary) indicate that female individuals own and manage established businesses only 37% to 46% as often compared to men. Thus,

also established business activity in Visegrad region is merely domain of men. Moreover, low inclusion in starting early-stage businesses implies that this situation will not be improved soon.

From the first part of our analysis we could see the differences between men and women in both attitudes and activity at aggregated national levels. In the following step, we look at the situation at individual level and try to establish the relationship between female involvement in early-stage entrepreneurial activity and its drivers.

Drivers of opportunity-driven women entrepreneurship

The results of binomial logistic regression conducted in order to identify the drivers of women's involvement in opportunity-driven entrepreneurship that six out of eight analyzed variables are significant. Also, one control variable proved its significance (Tab. II).

The coefficients in Tab. II describe the effect of a variable on the odds of engagement in opportunity-driven entrepreneurial activity relative to not being involved in early-stage business at all. If the coefficient is positive, holding all other variables equal, an increase in a variable raises the likelihood of involvement in business out of opportunity. Thus, as can be seen from the results, the odds of starting an opportunity-based business among women is

II: Opportunity-driven entrepreneurial activity drivers (logistic regression results).

	Estimate	Std. error	Z value	Pr (> z)
(Intercept)	-4.3511	1.1956	-3.639	0.00027
Self-confidence	1.8945	0.1505	12.5890	< 2e-16
Alertness to opportunities	0.6131	0.1150	5.3290	9.9E-08
Fear of failure	-0.8074	0.1196	-6.7490	1.5E-11
Social capital	1.2713	0.1249	10.1770	< 2e-16
Age category 18-24	0.0000			
Age category 25-34	-0.0137	0.1662	-0.0820	0.9345
Age category 35-44	-0.2467	0.1788	-1.3800	0.1676
Age category 45-54	-0.5076	0.1929	-2.6320	0.0085
Age category 55-64	-0.9101	0.2164	-4.2050	2.6E-05
Income: lowest 33 rd percentile	0.0000			
Income: middle 33 rd percentile	0.4072	0.1580	2.5770	0.0100
Income: upper 33 rd percentile	0.5759	0.1553	3.7080	0.0002
Country: Hungary	0.0000			
Country: Poland	-0.4010	0.1719	-2.3330	0.0196
Country: Czech republic	-0.1644	0.1765	-0.9310	0.3518
Country: Slovakia	0.0495	0.1616	0.3060	0.7594
Residual deviance				2,633.9
Degrees of freedom				10 390
Akaike Information Criterion				2,665.3
Log-likelihood ratio test				4.1370
p value (Chi-square goodness of fit test)				0.2470
Hosmer and Lemeshow GOF test				0.8382

Source: own calculations in R

positively influenced by having an entrepreneurial self-confidence (with the highest coefficient value in the model), personally knowing someone who had recently started a business, and perception of good business opportunities. On contrary, fear of failure is significantly negatively related to the odds of starting an opportunity-driven business. Our results also suggest that belonging to age categories 45–54 years and especially 55–64 years, in comparison to the base category 18–24 years, significantly decreases the odds of involvement in early stage business out of opportunity. Finally, we observed positive relationships between household income (belonging to middle and especially upper 33rd percentile, compared to the lower 33rd percentile) and odds of being an early-stage opportunity-driven entrepreneur. Regarding the remaining hypothesized variables, our results showed no significance of educational attainment nor for the perceived societal status of successful entrepreneurs. As for our control variables, year of survey proved no significance, and from the analyzed V4 countries, only originating from Poland significantly decreases odds of being an opportunity-driven early-stage entrepreneur among female population.

Drivers of necessity-driven women entrepreneurship

As shown in Tab. III, the results of binomial logistic regression conducted to identify the drivers of women's involvement in entrepreneurial activity out of necessity prove significance of four out of

eight analyzed variables, as well as of one control variable (Tab. III).

As can be seen from results in Tab. III, we found significant positive relationships between entrepreneurial self-confidence and personally knowing an individual who recently started a business, and the odds of starting a necessity-based early-stage entrepreneurial activity among female population. On contrary, fear of failure was observed to have the opposite effect. Our findings also suggest that having the age of 55–64 years, compared to the base category of 18–24 years, significantly decreases the odds of involvement in early stage business out of necessity among female population. As for the remaining hypothesized variables, we found no significant relationships in case of alertness to opportunities, educational attainment, perceived high societal status of those successful in starting a new business, or household income. Regarding our control variables, year of survey showed no significance, and from the analyzed V4 countries, only originating from Czech Republic significantly decreases the odds of becoming involved in early-stage entrepreneurial activity out of necessity among female working age population.

Comparison and discussion of findings

Our findings on drivers of opportunity and necessity entrepreneurship among women in V4 countries identify certain common factors as well as some distinctive features affecting involvement in entrepreneurial activity considering its dominant motivation. They are summarized in Tab. IV and discussed below.

III: Necessity-driven entrepreneurial activity drivers (logistic regression results).

	Estimate	Std. error	Z value	Pr (> z)
(Intercept)	-4.7978	0.2594	-18.4970	< 2e-16
Self-confidence	1.8731	0.1663	11.2630	< 2e-16
Fear of failure	-0.3001	0.1321	-2.2730	0.0231
Social capital	0.7198	0.1352	5.3240	1.01E-07
Age category 18–24	0.0000			
Age category 25–34	0.2150	0.2268	0.9480	0.3430
Age category 35–44	0.1475	0.2327	0.6340	0.5262
Age category 45–54	0.2611	0.2315	1.1280	0.2594
Age category 55–64	-0.6414	0.2764	-2.3200	0.0203
Country: Hungary	0.0000			
Country: Poland	-0.0509	0.1736	-0.2930	0.7696
Country: Czech republic	-0.6461	0.2127	-3.0380	0.0024
Country: Slovakia	-0.2914	0.1825	-1.5970	0.1103
Residual deviance	2 093.0			
Degrees of freedom	10,249			
Akaike Information Criterion	2,115.0			
Log-likelihood ratio test	1.6920			
p value (Chi-square goodness of fit test)	0.1934			
Hosmer and Lemeshow GOF test	0.7383			

Source: own calculations in R

In both cases, having an entrepreneurial self-confidence was identified as the strongest driver, with almost identical strength of the relationship. Also, knowing an entrepreneur proved to be significant in both cases, with stronger relationship in case of opportunity entrepreneurship. Similarly, fear of failure proved its significance as inhibitor of both types of entrepreneurship, again with stronger effect in case of opportunity-driven activity. Age category, particularly belonging to the oldest age group of working population (55 to 64 years), was found to inhibit involvement in both types of entrepreneurship (in case of opportunity-driven activity, belonging to group of 45 to 54 years old was also identified as significantly inhibiting factor). Unlike in case of opportunity entrepreneurship, alertness to opportunities and household income showed no significance for business start-up out of necessity.

Alertness to good business opportunities was found to be significantly related only with opportunity-driven entrepreneurial activity among women. We find this result rather self-explanatory, since opportunity recognition is an important precondition for involvement in opportunity-based business start-up (e.g. Krueger *et al.*, 2000). However, some may argue that also necessity-driven start-up requires perception of certain business opportunity as a possible way out of unfavorable situation. In our opinion, this could be true, and it is well in line with theoretical groundings (Kirzner, 1979; Krueger *et al.*, 2000), but such perception is not necessarily linked with general opinion on existence of favorable opportunities for new businesses.

Self-confidence about having necessary skills, knowledge and experience required to start a business was found the most important driver leading women towards engagement in entrepreneurial efforts, irrespective the motivation behind such decision. Important role of self-confidence corresponds with theory as complementary component that together with opportunity recognition affects perceived feasibility of entrepreneurial act (Krueger *et al.*, 2000). Moreover, universality of this driver is suggested also by almost identical strength of relationship identified in both our models. Thus,

we can conclude that this generally proven driver of entrepreneurial propensity is also valid for female individuals, whether they face start-up motivation based on opportunity or necessity.

Fear of failure that would prevent one from starting a business was found to be a significant inhibitor of involvement of women in both types of entrepreneurial activity. Thus, our findings are in line with several previous similar studies (Wagner, 2005; Morales-Gualdrón and Roig, 2005). However, our results unveil an interesting difference. The strength of this negative relationship in case of opportunity-driven activity is almost three times as high as in case of entrepreneurial activity driven by necessity. To explain this difference, we assume that under the pressure of necessity, women are more likely to overcome the existent fear of failure and make a step out of their “comfort zone” towards starting a business activity, than in case they are not pushed and consider starting a business as a result of recognizing a good business opportunity.

Knowing an entrepreneur with recent start-up experience (our proxy for entrepreneurship-relevant social capital) was found to have significant positive relationship with women's propensity to both necessity- and opportunity-driven entrepreneurial activity, which is in line with above mentioned theoretical implications and empirical findings by Verheul *et al.* (2010). The strength of this relationship is almost doubled in case of opportunity-driven entrepreneurship. Moreover, in our opinion, the nature of this relationship may have different origins in the two types of motives. In case of opportunity, we assume that women benefit from their entrepreneurial network as from channels broadening horizons of business opportunities in terms of their recognition/creation and capacity to their exploitation. On contrary, when women are facing the necessity situation, their entrepreneurial network may encourage them to pursue the entrepreneurial path by showing the way out of necessity in terms of pointing out to existing start-up options or helping to acquire necessary resources.

Regarding age, our results suggest that belonging to 45–54 and 55–64 age categories inhibits involvement in opportunity-driven entrepreneurial

IV: Significance of the hypothesized women entrepreneurship drivers (summary)

Variable	Opportunity entrepreneurship	Necessity entrepreneurship
Self-confidence	Yes (+)	Yes (+)
Alertness to opportunities	Yes (+)	No
Fear of failure	Yes (–)	Yes (–)
Social capital	Yes (+)	Yes (+)
Status of entrepreneurs	No	No
Age	Yes (–)	Yes (–)
Educational attainment	No	No
Household income	Yes (+)	No

Source: own elaboration, (+) = positive relationship, (–) = negative relationship

activity (with stronger effect of the older category), while belonging to age category 55 to 64 is negatively related also to business start-ups out of necessity. This is partially in line with results of Verheul *et al.* (2010), who found an inverted U-shape influence of age on involvement in both types of activity, with turning point higher for necessity than for opportunity entrepreneurs. While in case of opportunity women might be discouraged by high opportunity costs of engaging in business start-up (this is also confirmed by higher strength of effect in older category), this discouragement in 45 to 54 category is probably outweighed by problematic situation in necessity context. The reason could lie in the different social security prospects, where 55+ women are closer to achieve retirement age and thus they are not that strongly forced to keep economically self-sufficient. Also, in the regional specific context, some previous studies pointed out generally problematic inclusion of oldest workforce age category/seniors in early stage activity (e.g. Pilková and Rehák, 2015).

Finally, regarding household income, our results indicate significant positive relationship between household income and involvement in opportunity-driven entrepreneurial activity of women, with highest income category showing

stronger relationship than middle income category. In our opinion, this relationship does not mean causality from income to entrepreneurial activity, but rather in the opposite direction. Put simple, women probably do not start opportunity-driven businesses because of high income of their household, but, vice versa, they perhaps achieve higher income thanks to being involved in opportunity-based entrepreneurship. As for the necessity-based entrepreneurial activities of female population, unlike Giacomini *et al.* (2011) who found negative impact of income level on necessity-driven entrepreneurship, our findings prove no significance of household income on involvement of women in entrepreneurial activity out of necessity. Therefore, we may conclude that household income itself is not the sufficient driver to push women to start a business out of necessity, and also, when considering the opposite way of this relationship, that necessity-driven entrepreneurial activity does not generate income that significantly differentiates female owner-managers of such businesses from non-entrepreneurs.

CONCLUSION

Using the GEM 2011 to 2014 national and individual level data for Visegrad countries we analyzed the quantitative aspects of entrepreneurial activity among female and male populations, aggregate levels of the selected attitudes towards entrepreneurship, and drivers of women entrepreneurship, with distinction between opportunity and necessity motives.

Our findings suggest that women across Visegrad countries are unequally included in entrepreneurial activity in all its stages, i.e. both in starting new business activities as well as in owning-managing established businesses. The unequal inclusion in early-stage activity indicates poor prospects for future improvement in inclusion in established business. Moreover, we have also identified disproportion between male and female populations in aggregate levels of attitudes towards entrepreneurship, such as alertness to opportunities, but especially self-confidence and fear of failure, in favor of men. As we have identified in the analysis of entrepreneurial activity drivers, especially self-confidence and fear of failure are the factors significantly influencing women involvement in starting early-stage entrepreneurial activities irrespective their motives. Thus, we can conclude that such situation is one of the potential explanations why females lack in involvement in business efforts behind their male counterparts.

In our analysis of entrepreneurship drivers, we examined individual entrepreneurship-related attributes, social capital and perception of societal attitudes, and demographic characteristics for their relationship with involvement of female individuals in opportunity or necessity entrepreneurship. So far, there have been several studies distinguishing between different start-up motives, as well as numerous studies looking for factors influencing women's involvement in enterprising efforts in general, but to our knowledge, the empirical analysis of female entrepreneurial activity drivers according to its predominant motivation has been missing.

Our findings suggest there are several similarities together with certain differences in opportunity- and necessity-driven women entrepreneurship drivers. According to our results, self-confidence, alertness to opportunities, fear of failure, knowing an entrepreneur, age category and household income are significantly related to opportunity-driven female entrepreneurship, while self-confidence, fear of failure, knowing an entrepreneur and age category have been identified as significant drivers of entrepreneurial activity arising out of necessity. While self-confidence was in both cases the most important and almost equally strong driver, knowing an entrepreneur and fear of failure showed stronger significant relationships to opportunity-driven activities.

As for limitations of our entrepreneurship drivers' analysis, since all analyzed items originate from the same survey, as well as due to our methodology, an argument that the findings cannot be unambiguously interpreted as causal relationships could occur (Bosma, 2013). However, since our evidence are rather strong and based on solid theoretical arguments, we argue that their qualitative nature is correct. Also, due to the nature of our data, we were not able to inquire deeper into the nature of opportunity or necessity, their combination or change over time. Thus, we recommend these directions to be followed by future research. Also, further directions could expand inquiry on female entrepreneurship from individual to also social and institutional level, using multi-level analytical techniques. Finally, more effort should be definitely put to unveil the origins of differences between male and female populations in their attitudes towards entrepreneurship.

From a policy perspective, we point out the problematic state of women entrepreneurship inclusivity in V4 region, and help to identify the importance of particular factors in relation to support of entrepreneurial activities considering the motivation in behind. Generally, according to our findings, measures should be established to close the gap in attitudes towards entrepreneurship between the genders to relevant and possible extent. Our findings provide partial contribution to the body of knowledge with this respect. According to our results, if policy makers wish to foster opportunity-driven activities among women, emphasis should be put on measures supporting business opportunity recognition, entrepreneurial skills and knowledge, networking and fear of failure reduction. On contrary, if entrepreneurship and economic self-sufficiency should be considered among women population as way out of economic necessity, policy makers should aim to improve their business skills, support formal and informal business networks formation, and increase failure tolerance.

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