

Individual determinants of entrepreneurship in Visegrád countries: Reflection on GEM data from the Czech Republic, Hungary, Poland, and Slovakia

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ABSTRACT

Objective: The article explores the individual determinants driving solo self-employment and employer entrepreneurship in four post-communist economies located in Central Europe (the Czech Republic, Hungary, Poland, and Slovakia).

Research Design & Methods: The article exploits data from the 2013 Adult Population survey, a part of the Global Entrepreneurship Monitor (GEM). Using multivariate logistic regression models, we explore the differences between wage-employed, solo self-employed, and employer entrepreneurs (self-employed with employees), concerning traditional determinants of entrepreneurship, such as gender, age, education, entrepreneurial confidence, and the number of people living in a household.

Findings: The obtained findings show that – regardless of the type of self-employment – there is a strong and positive impact of entrepreneurial confidence on the likelihood of being an established entrepreneur. The impact of remaining variables differed across the type of entrepreneurship.

Implications & Recommendations: This research highlights that self-employed individuals with and without employees should be treated in research and policymaking separately.

Contribution & Value Added: The presented research contributes to the growing body of literature aiming to understand differences between solo self-employed individuals and employer entrepreneurs.

Article type: research article
individual determinants of entrepreneurship; self-employment; job

Keywords: creators; solo self-employed individuals; Global Entrepreneurship Monitor; Czech Republic; Hungary; Slovakia; Poland

JEL codes: L26, L53, P42

Received: 13 April 2020

Revised: 25 June 2020

Accepted: 19 August 2020

Suggested citation:

Dvouletý, O. & Orel, M. (2020). Individual Determinants of Entrepreneurship in Visegrád Countries: Reflection on GEM Data from the Czech Republic, Hungary, Poland and Slovakia. *Entrepreneurial Business and Economics Review*, 8(4), 123-137. <https://doi.org/10.15678/EBER.2020.080407>

INTRODUCTION

The formation of the Socialist Bloc after the end of the Second World War significantly contributed to the mitigation of private ownership and entrepreneurship and resulted in institutional orientation towards the centrally planned economy among its satellite states (Sachs & Woo, 1994; Fischer *et al.*, 1996; Švejnar, 2002). After the break-up of the socialist regime in the 1980s and 1990s, the countries regained their political sovereignty, and they started heading towards an institutional transition from the centrally planned economy to the market-oriented economy (Shama, 1993; Money & Colton, 2000). Decades of Soviet socialist regime and orientation towards central planning have changed the behaviour of people living in the countries and economic agents to the extent that some scholars introduced the term ‘homo sovieticus’ for the population living under the reign of the former regime (Shiller *et al.*, 1992; Morawska, 1999). The process of economic transition and accompanying reforms was led by experts from abroad who helped to re-establish private ownership that was crucial for the future development of entrepreneurship in post-communist economies (Morawska, 1999; Dana & Dana, 2003; Ovaska & Sobel, 2005; Wallace & Latcheva, 2006; Ciešlik & van Stel, 2014; Dana & Ramadani, 2015; Sauka & Chepurensko, 2017; Kirby & Watson, 2017).

Based on their former historical cooperation, four of these post-communist economies located in Central Europe (the Czech Republic, Hungary, Poland, and Slovakia) have established an international organisation called the Visegrád Group on 15th February 1991 (also the Visegrád Four or V4), which aims to strengthen their mutual collaboration at the cultural, political, and economic level. Among other goals, the V4 sought to join the European Union, which they achieved on 1st May 2004. (Polok *et al.*, 2016, Visegrád Group, 2019). The V4 member states are the object of this empirically-oriented study as examples of countries that experienced the process of economic transition.

According to the data from the Labour Force Survey (LFS), the overall level of entrepreneurial activity in the V4 region was on average 13.7%, specifically in individual countries: 15.2% in the Czech Republic, 10.3% in Hungary, 16.6% in Poland and 12.8% in Slovakia (expressed as a percentage share of 15-64 population) during 2005-2017 (c.f. Dvouletý, 2019, p. 4). The entrepreneurship in the region is considered to be an engine of economic growth (Krasniqi & Desai, 2016; Dvouletý, 2017a; 2017b; Zygmunt, 2018; Šebestová & Sroka, 2020); noteworthy, the previous entrepreneurship research in the region was also driven by the willingness of the countries to participate in the Global Entrepreneurship Monitor (GEM). Hungary and Poland joined the GEM initiative as the first countries from the V4 Group in 2003 (Global Entrepreneurship Monitor, 2013). Since then, national GEM teams and other scholars enriched academia about the specifics of entrepreneurship in post-communist economies.

While looking at the previously published studies, the empirical research in the Visegrad region studied many specific aspects of entrepreneurial behaviour. However, we were unable to find a comparable study on the traditional individual determinants of entrepreneurial behaviour described in the literature (e.g. Parker, 2004; Simoes *et al.*, 2016; Muñoz-Bullón *et al.*, 2015; van der Zwan *et al.*, 2016; Mahto & McDowell, 2018; Laguía *et al.*, 2019; Boudreaux *et al.*, 2019). Following Davidsson’s (2015) and Delmar’s (2015) call for replication of empirical research in entrepreneurship studies with a focus on regional context, we conduct a comparative study on understanding the differences between wage-employed, solo self-

employed individuals, and employer entrepreneurs in Visegrád countries. As such, the empirical GEM data analysis was not been conducted in the V4 region, so the presented study marks a high contributing factor to the regional body of knowledge. The article also delivers findings to the current debate on the distinction between self-employed individuals with and without employees (see e.g. Cowling *et al.*, 2004; Petrescu, 2016; Coad *et al.*, 2017; Fairlie & Miranda, 2017; Dvouletý, 2018; Grace, 2018; Dvouletý *et al.*, 2019; Ciešlik & Dvouletý, 2019) from the perspective of four post-communist economies.

The rest of the article proceeds as follows. We begin by briefly reviewing the existing literature on the determinants of entrepreneurship. The following section introduces the GEM dataset and variables selected for the multivariate logistic regression analysis aiming to capture individual drivers of self-employment with and without employees, which is described in the next section. Then, we summarise the obtained empirical results, and the final part of the paper concludes and provides directions for future research.

LITERATURE REVIEW

Although individual determinants of self-employment have been studied in the literature extensively (e.g. Rees & Shah, 1986; Van Praag & Ophem, 1995; Gerber, 2001; Douglas & Shepherd, 2002; Parker, 2004; Ekelund *et al.*, 2005; Block & Sandner, 2009), the current stream of the literature acknowledges (e.g. Simoes *et al.*, 2016; Bögenhold, 2019; Bögenhold *et al.*, 2019; Burke *et al.*, 2019; Van Stel & Van der Zwan, 2019), that there are different types of self-employed individuals in the economy, which should be differently treated empirically. The most fundamental distinction (i.e. segmentation criteria) we may use is whether self-employed individuals have employees or they remain solo and create work only for themselves (e.g. Cowling *et al.*, 2004; Petrescu, 2016; Coad *et al.*, 2017; Fairlie & Miranda, 2017; Dvouletý, 2018; Grace, 2018; Dvouletý *et al.*, 2019).

When it comes to evidence from the Visegrád region, individual characteristics and drivers of nascent, youth, and established entrepreneurship were explored, for example, by Lukeš *et al.* (2013), and Lukeš and Zouhar (2013; 2016) in the Czech Republic; by Szerb and Imreh (2007) and Márkus and Szerb (2013) in Hungary; by Jakubczak and Rakowska (2014), Wach and Wojciechowski (2016), and Głodowska *et al.* (2019) in Poland; and by Holienka (2014), and Pilková and Kovacicova (2015) in Slovakia. There also are comparative studies focused on entrepreneurial behaviour in Visegrád countries. Holienka *et al.* (2016) study youth entrepreneurship and, later (2017), student entrepreneurship. Pilková *et al.* (2016) analyse the specifics of senior entrepreneurship in Visegrád countries. Barcik *et al.* (2017) explore the potential of academic entrepreneurship in the V4 region, while Nowiński *et al.* (2019) examine the entrepreneurial intentions of university students. Finally, Dvouletý *et al.* (2019) explore the earnings of V4 entrepreneurs. Nevertheless, according to our best knowledge, there is no study that dives deeper into the differences between solo entrepreneurs and employer entrepreneurs.

Therefore, in this article we separately study determinants of self-employed individuals with employees (job creators) and self-employed individuals without employees (solo self-employed) as this topic was not explored in the Visegrád region yet. Since the previously obtained empirical evidence on this topic is rather insufficient and inconclusive, our study can be treated rather as an exploratory one.

MATERIAL AND METHODS

Data and Sample

The article exploits data from the Adult Population Survey (APS) which is a part of the annual Global Entrepreneurship Monitor (2019). The APS explores the characteristics, motivations, and ambitions of individuals starting a business, and their attitudes towards entrepreneurship (Global Entrepreneurship Monitor, 2019). The V4 member states were also historically conducting the APS. Hungary and Poland joined the GEM initiative as the first countries from the V4 Group in 2003. The Czech Republic and Slovakia conducted their first GEM studies in 2006. Most active today is Hungary, which conducted GEM continuously from 2001 to 2016, except for 2003. Poland did GEM in 2001, 2002, 2004, and then continuously from 2011 to 2018. Slovakia is active within GEM continually from 2011 to 2018, and the Czech Republic conducted GEM study only in 2006, 2011, and 2013 (Global Entrepreneurship Monitor, 2019).

For the purpose of our empirical analysis, we need to select only samples coming from the same years; otherwise, the country micro datasets would not be comparable. The most recent GEM data are available across Visegrád countries for 2013, and this selection is limited by data availability for the Czech Republic that conducted GEM study only three times. Therefore, we only use data for the year 2013 in our analysis, as this is the latest available year for all Visegrád countries (Global Entrepreneurship Monitor, 2013; 2019). We acknowledge that using a relatively old dataset is a limitation of the study; however, since we use it in a novel way – i.e. by differentiating between self-employed with and without employees – we believe that the following analysis has a value for the scholarly community.

In 2013, the GEM data were collected for the Czech Republic by the team from the University of Economics, Prague (see Lukeš *et al.*, 2014 for details); for Hungary by the team of the University of Pécs (see Márkus and Szerb, 2013 for details); for Poland by the team of the University of Economics in Katowice (see Tarnawa *et al.*, 2014 for details); and for Slovakia by the team of the Comenius University in Bratislava (see Pilková *et al.*, 2014 for details). Country teams have to collect within the APS individual data for at least 2 000 adults; however, there is no requirement concerning the maximum number of collected responses (Global Entrepreneurship Monitor, 2019). The largest sample in 2013 is for the Czech Republic (N=5 009), and the sample size across Visegrád countries is reported in Table 1.

Table 1. Adult Population Survey in V4 countries in 2013: sample size (N)

Country	Sample size (N)	Country report GEM
Czech Republic	5 009	Lukeš <i>et al.</i> (2014)
Hungary	2 000	Márkus & Szerb (2013)
Poland	2 000	Tarnawa <i>et al.</i> (2014)
Slovakia	2 007	Pilková <i>et al.</i> (2014)

Source: STATA 14, own calculations based on Global Entrepreneurship Monitor (2013) data.

The APS tracks working status of all kinds of individuals, including part-time workers, retirees, students, unemployed, and other non-economically active individuals. The objective of our study is to better understand individual determinants of self-employment in Visegrád countries and, thus, we restrict our sample only to people economically active, i.e. in

self-employment or paid employment as typical in the previously published studies (e.g. Kolvereid, 1996; Blanchflower, 2000; Millán *et al.*, 2012; Hytti *et al.*, 2013; Caliendo *et al.*, 2014). Furthermore, we also keep in our sample only established entrepreneurs, who continuously receive income from their business activity, and thus we exclude from the sample all infant business owners (0-3 months) and early-stage (nascent) entrepreneurs (up to 3.5-years-old). The remaining self-employed individuals in the sample managed to survive the first critical years in their business, and they receive regular payments from their economic activity. Global Entrepreneurship Monitor (2013) defines them as owners-managers of established businesses, which means such that operate longer than 3.5 years.

Furthermore, we explore individual determinants of entrepreneurship and self-employment identified in the literature (e.g. Parker, 2004; Simoes *et al.*, 2016; van der Zwan *et al.*, 2016; Boudreaux *et al.*, 2019) and check whether they are available in the GEM 2013 dataset. Unfortunately, the GEM focuses mainly on entrepreneurs themselves rather than on collecting a wide range of variables for individuals with different working status; therefore, we are limited by the potentially available variables. The available variables include gender, age, education, entrepreneurial confidence, and the number of people living in a household, which we later use in our empirical analysis. We describe selected variables in Table 2 and provide readership with summary statistics in Table 3. Presented statistics were weighted over the size 18-64 workforce in each of the countries.

Table 2. List of Variables

Variable	Definition
<i>Employment status</i>	Employment status as one of three categories: Self-employed with employees (having at least one employee excluding the owner of the business), self-employed without employees or in paid employment. Self-employed are considered to be owners-managers of an established business for more than 3.5 years.
<i>Age</i>	Respondent's age.
<i>Education</i>	Set of dummy variables according to the United Nation's educational classification.
<i>Entrepreneurial Confidence</i>	Dummy variable which equals 1 if the respondent answered 'yes' to the following question 'Do you have the knowledge, skill, and experience required to start a new business?'
<i>Number of People in Household</i>	The number of people living permanently in the respondent's household.
<i>Country</i>	Respondent's country of residence.

Source: own elaboration based on Global Entrepreneurship Monitor (2013) data.

Table 3. Sample Descriptive Statistics

Variable	Frequency (%)	N
<i>Self-employed without Employees (=1)</i>	3.8	7244
<i>Self-employed with Employees (=1)</i>	9.4	7244
<i>Pre-primary education or no education (=1)</i>	0.0	7218
<i>Primary education or first stage of basic education (=1)</i>	2.0	7218
<i>Lower secondary or second stage of basic education (=1)</i>	6.4	7218
<i>(Upper) secondary education (=1)</i>	63.2	7218
<i>Post-secondary non-tertiary education (=1)</i>	4.7	7218

Variable	Frequency (%)	N			
<i>First or second stage of tertiary education (=1)</i>	23.7	7218			
<i>Entrepreneurial Confidence (=1)</i>	50.4	7023			
Variable	Mean	SD	Min	Max	N
<i>Age</i>	41.1	11.1	18	64	7 177
<i>Number of People in Household</i>	3.3	1.4	1	15	7 187

Note: Self-employed and wage-employed individuals only. Post-stratification weights applied.

Source: STATA 14, own calculations based on Global Entrepreneurship Monitor (2013) data.

RESULTS AND DISCUSSION

We follow the methodological approach used in previously published studies on the individual determinants of entrepreneurship (e.g. Djankov *et al.*, 2006; Lukeš *et al.*, 2013; Holienka *et al.*, 2016; Dvouletý, 2018), and we employ multivariate logistic regression analysis to understand the differences between wage-employed, solo, and employer entrepreneurs. Our dependent variables have binary character – i.e. being self-employed with/without employees =1, otherwise =0 – and the presented logistic regression models are estimated on a sample of self-employed and employed individuals. The sample was extracted from the GEM 2013 dataset. All estimates are weighted over 18-64 workforce per census data in each of the countries. The estimated regression models were found to be statistically significant, and they fulfil the standard econometric assumptions (Wooldridge, 2002; Hoetker, 2007).

Two series of econometric models are presented. The first set of regression models aims to capture differences between solo self-employed and wage-employed individuals (Table 4), while the second set (Table 5) shows the differences between employer entrepreneurs (self-employed with employees) and wage-employed. The empirical strategy aims to address the potential of pooled sample bias (Cowling, 2000) by first estimating separate models for the Czech Republic, Hungary, Poland, and Slovakia and, next, by estimating a pooled model for the whole sample of Visegrád countries. The pooled model includes country dummies to address cross-country heterogeneity. Given this empirical approach, we can see how the individual drivers of entrepreneurship differ across Visegrád countries.

Determinants of Solo Entrepreneurship

The first empirical insight we may see from the models – aiming to capture the differences between wage-employed and solo self-employed individuals (Table 4) – is that entrepreneurial confidence is the only strongly significant determinant that is stable across all estimated models. The remaining variables are less conclusive. Women seem to be self-employed less often when compared with men in the Czech Republic, Hungary, and Slovakia, as suggested by the negative regression coefficients. However, the statistically significant coefficient was obtained only in the case of Slovakia. When it comes to age, the obtained results suggest mostly positive association, except for Poland; however, the statistically significant coefficient was found only for the Czech Republic. Moreover, we do not find any empirical support for the inverse u-shaped relationship between age and the likelihood of being solo self-employed. The role of education is also not straightforward. Education seems to be a strong predictor of solo self-employment in the Czech Republic, where we find a positive and statistically significant association with higher levels of education. Nevertheless, results for the remaining countries are very ambiguous. Finally, once we look from the perspective of

household size, we may say that in the Czech Republic and Poland there seems to be a negative relationship, which is statistically significant only in the Czech model, while in Slovakia and Hungary, there appears to be a positive association.

Table 4. Individual determinants of solo entrepreneurship in V4 countries in 2013: solo self-employed vs wage-employed

Model number	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)
Country-sample	Czech Republic	Hungary	Poland	Slovakia	Visegrád countries
Independent variables/ Dependent variable (=1)	<i>Self-employed without employees</i>				
<i>Female</i>	-0.196 (0.204)	-0.524 (0.341)	0.248 (0.372)	-0.637+ (0.373)	-0.204 (0.150)
<i>Age</i>	0.120+ (0.0671)	0.0677 (0.126)	-0.0850 (0.168)	0.0133 (0.124)	0.0445 (0.0555)
<i>Age squared</i>	-0.00115 (0.000797)	-0.0000387 (0.00146)	0.00109 (0.00192)	0.000115 (0.00141)	-0.000201 (0.000642)
<i>Primary education or first stage of basic education (reference category)</i>
	(.)	(.)	(.)	(.)	(.)
<i>Lower secondary or second stage of basic education</i>	9.031*** (1.143)	-1.355 (0.837)	.	.	-1.065 (0.715)
<i>(Upper) secondary education</i>	8.313*** (1.052)	0.475 (0.738)	-1.392 (0.944)	0.338 (0.393)	-0.488 (0.678)
<i>Post-secondary non-tertiary education</i>	7.182*** (1.460)	-1.156 (0.967)	-0.616 (1.042)	.	-0.927 (0.751)
<i>First or second stage of tertiary education</i>	8.448*** (1.058)	0.460 (0.709)	-1.151 (0.966)	.	-0.375 (0.675)
<i>Entrepreneurial Confidence</i>	1.171*** (0.226)	1.902*** (0.363)	2.402*** (0.568)	1.854*** (0.491)	1.476*** (0.172)
<i>Household Size</i>	-0.265*** (0.0782)	0.00517 (0.112)	-0.0786 (0.137)	0.0683 (0.107)	-0.119* (0.0556)
<i>Constant</i>	-14.17*** (1.570)	-6.868** (2.647)	-2.202 (3.371)	-5.492* (2.545)	-4.307*** (1.265)
Country dummies	No	No	No	No	Yes
Observations	3,164	990	1,001	995	6,213
Prob > chi2	0.00	0.00	0.00	0.00	0.00
Pseudo R ²	0.062	0.186	0.113	0.091	0.073
AIC	1042.6	317.1	309.2	322.1	2001.3
BIC	1103.2	366.1	353.4	356.4	2088.8

Notes: self-employed are owners-managers of established businesses for more than 3.5 years. Countries included in Model 5 (pooled sample of four Visegrád countries): Czech Republic, Hungary, Poland, Slovakia. Post-stratification weights applied. Robust standard errors are in parentheses, stat. significance is reported as follows: + p < 0.10, * p < 0.05, ** p < 0.01, *** p < 0.001.

Source: STATA 14, own calculations based on Global Entrepreneurship Monitor (2013) data.

CONCLUSIONS

The presented article chapter aimed to enrich scholarship on individual determinants of solo and employer entrepreneurship in post-communist economies. The study exploited data from the four Visegrád countries, namely the Czech Republic, Hungary, Poland, and Slovakia, from the 2013 Adult Population survey, a part of the GEM. We utilise the available identified determinants of entrepreneurship and self-employment, including gender, age, education, entrepreneurial confidence, and the number of people living in a household, and we estimate multivariate logistic regression analysis with the aim to understand the differences between wage-employed, solo self-employed, and employer entrepreneurs. Compared to the previously published studies, we estimate separate models for each of the Visegrád countries first and, then, we also estimate a pooled model so as to overcome the problem of pooled sample bias.

The obtained findings from all estimated regression models – regardless of the type of self-employment, i.e. with or without employees – show a strong and positive impact of entrepreneurial confidence on the likelihood of being an established entrepreneur. This agrees with previously published studies on the determinants of entrepreneurship showing the importance of entrepreneurial confidence in the decision to pursue an entrepreneurial career pathway (e.g. Koellinger *et al.*, 2007; Dimov, 2010; Simoes *et al.*, 2016). Nevertheless, observations for remaining variables join the increasing volume of knowledge by showing that self-employed individuals are ‘different animals’ with and without employees (Burke & Cowling, 2015; Dvouletý, 2018).

It was quite surprising for us to observe that we were almost unable to see any statistically significant results for the group of solo self-employed individuals. The exception is the Czech Republic, where we noticed that solo self-employment career pathway is positively associated with age and with higher levels of education. A negative relationship was observed for household size and women. Women are also less likely to be self-employed in Slovakia. On the contrary, for the group of job creators, we may see more harmonised patterns, especially in terms of the obtained level of education. Job creation is positively associated with higher levels of education in the Czech Republic and Poland, which corresponds with the recent observations of Dvouletý (2018) indicating that employer entrepreneurs are usually individuals with more senior profiles, both in terms of education and experience. Women are according to the presented findings also less likely to create new jobs, which was again found to be a statistically significant determinant in the Czech Republic and Slovakia. Quite surprisingly, we were unable to observe an inversed u-shaped relationship between age and job creation, previously documented by several scholars (e.g. Cowling *et al.*, 2004; Millán *et al.*, 2014; Dvouletý, 2018). Such a finding might be linked to the context of the post-communist economies. As entrepreneurship has been emerging after the end of the socialist regime, we propose a hypothesis – which may be further tested in later studies – that most of Visegrád entrepreneurs are relatively younger compared to those doing business in the Western European countries.

Unfortunately, the presented findings are limited by the resources we have. The country-level samples are relatively small, and the findings rely on a dataset from just one year. Having a longitudinal dataset or, at least, data for more years (and cohorts of entrepreneurs) would definitely increase the robustness of the presented findings. A larger sample might

also help in proving statistical significance for the variables that have already been included in the conducted multivariate analysis. Moreover, we need to acknowledge that it would be more proper to have a more recent comparable dataset, which is not currently available. Our research thus also serves as a call for researchers and scholars from those Visegrád countries that have stopped conducting the GEM study, i.e. the Czech Republic and Hungary.

We also need to acknowledge that there are other important individual determinants of entrepreneurship unavailable in the GEM 2013 dataset, which we nevertheless found important in the previous research. These variables should become the subject of future investigation in the context of Visegrád countries. Among other things, scholars should focus on the role of family and partner-entrepreneur relationships and their impact on overall life satisfaction (Shoubaki & Stephan, 2018), the importance of family background and parental influence (Lindquist *et al.*, 2015), and the role of physical and mental disability in pursuing entrepreneurial career (Jones *et al.*, 2011).

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Acknowledgements and Financial Disclosure

This work was supported by the Internal Grant Agency of the Faculty of Business Administration, University of Economics, Prague under no. IP300040.

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Published by Cracow University of Economics – Krakow, Poland

