

## **ENTREPRENEURIAL ACTIVITY IN SLOVAKIA: SELECTED REGIONAL ASPECTS AND THE ROLE OF GOVERNMENTAL ENVIRONMENT**

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### **Abstract**

**Purpose:** The main aim of our study was to contribute to this increasing body of the regional entrepreneurship literature by a better understanding of the regional entrepreneurial activity in Slovakia as an example of post-communist economy.

**Design/methodology/approach:** We exploit the existing measures of entrepreneurship from Global Entrepreneurship Monitor and Statistical Office of the Slovak Republic, and we explore the inter-regional differences in the levels of entrepreneurial activity among eight Slovak NUTS 3 regions during years 2011-2015. We also employ the multivariate regression models and empirically investigate the relationship between the business environment and entrepreneurial activity in Slovakia.

**Findings:** The average engagement in entrepreneurship in Slovakia was during the analysed period 16-18% of the economically active population depending on the measure used. The results of multivariate regression models have shown that the overall improvement of the general business environment positively influences the levels of entrepreneurship in Slovakia

**Research/practical implications:** We believe that such an observation may serve as an encouragement for the further efforts invested in improving business conditions for the established and new Slovak entrepreneurs. We also encourage future researchers to study further other location factors of entrepreneurial activity such as cultural, logistic and socioeconomic variables. Future research might also address the role of entrepreneurial infrastructure and public entrepreneurship and SME policies.

**Originality/value:** The presented study empirically contributes to the body of knowledge on the regional entrepreneurship and the conducted approach towards quantification of the entrepreneurial activity might serve as an inspiration for other scholars.

**Keywords:** Regional Entrepreneurship, Business Activity, Barriers of Entrepreneurship, Governmental Environment, Global Entrepreneurship Monitor, Slovakia

**JEL Codes:** M2, M1, L260

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## **Introduction**

The determinants of entrepreneurial activity in a cross-country setting have been previously studied all over again (e. g. Roman et al., 2018). Researchers are thus lowering-down the levels of empirical analysis, and they study location factors of entrepreneurial activity at regional, municipal and city levels (e. g. Wyrwich and Fritsch, 2016; Audretsch et al., 2015; Glaeser et al., 2010). Such a shift is among other reasons important also due to a long-term policy goal to boost the establishment of regional entrepreneurship ecosystems (Dvouletý, 2017a).

Although the literature is slowly growing, there are still many countries and regions that have not been explored yet. One of the regions that have not been studied extensively are the post-communist economies which have experienced the process of economic transformation in the early 90s (Dvouletý, 2019; Dvouletý, 2017a; Holienka et al., 2016). We aim to enrich the body of regional entrepreneurship literature by studying regional entrepreneurial activity in Slovakia as a representative of this group of transition economies located in Central Europe.

To reach our goal, we exploit the existing measures of entrepreneurship from Global Entrepreneurship Monitor (2018) and the Statistical Office of the Slovak Republic (2018) during years 2011-2015 and we explore the inter-regional differences in the levels of entrepreneurial activity among Slovak NUTS 3 regions. After that, we investigate the relationship between governmental institutions and the level of regional entrepreneurial activity with the help of multivariate regression models. We believe that the presented findings might be interesting for both regional entrepreneurship scholars and local policymakers.

The rest of the paper is structured as follows. First, we calculate several measures of regional entrepreneurial activity in Slovakia and discuss the regional differences in the rates of entrepreneurship. Second, we describe the determinants of entrepreneurship and the role of government in shaping entrepreneurship in the context of the collected dataset. In the third section, we use the multivariate regression models and empirically investigate the relationship between the business environment and entrepreneurial activity in Slovakia. Finally, we discuss the main findings, and we offer suggestions for future research.

## **1 Regional Aspects of Entrepreneurship in Slovakia**

To explore the regional entrepreneurial activity in Slovakia, we need to consider the established historical geographic regions - Fritsch and Wyrwich's (2014) long-term persistence in regional development - and the structural differences (disparities) among them. According to the Statistical Office of the Slovak Republic (2018), the country is divided into eight larger –

NUTS 3 - regions and into seventy-nine smaller – LAU 1 – regions. Audretsch et al. (2015) recommend studying entrepreneurial activity at the lowest possible levels to discover the interregional patterns in entrepreneurship.

Nevertheless, we also need to have in our minds that once we lower-down the level of analysis, there are usually many data limitations depending on the approach we choose. Entrepreneurship scholars have been studying various ways and measures of entrepreneurial activity for a long time. Those established in the literature have been recently reviewed by Dvouletý (2018) or earlier by Stenholm et al. (2013) and Iverseen et al. (2007). Two most common approaches towards the calculation of entrepreneurial activity include survey-based measures (e. g. from Labour Force Survey or Global Entrepreneurship Monitor) and measures deduced from the national structural business statistics. Each of the approaches towards measuring entrepreneurship has its advantages and disadvantages. Power and reliability of the survey data is given by the initial sample size which is often limiting the extrapolation of the data on the lower administrative units. On the other hand, data from the business registers do not contain the early-stage entrepreneurial activity and they may also contain the businesses which are no longer active. Empirical scholars (e. g. Dvouletý, 2018; Stenholm et al., 2013; Iverseen et al., 2007) thus usually recommend using multiple measures of entrepreneurship.

Having this recommendation in our minds, we exploit the survey data from the Global Entrepreneurship Monitor (2018) and the official business statistics from the Statistical Office of the Slovak Republic (2018). We use two most common measures from the Global Entrepreneurship Monitor (GEM) - *Established Business Ownership Rate*<sup>9</sup> (EBOR) and *Total Early-Stage Entrepreneurial Activity*<sup>10</sup> (TEA). Summing-up the former two indicators might roughly correspond with the overall GEM level of entrepreneurial activity. The third indicator of the regional entrepreneurship rate is calculated from the structural business statistics, and it accounts for the percentage rate of the registered business activity per economically active population. Due to the data availability, we use data from years 2011-2015 and given the sample size of the GEM survey data, we study entrepreneurial activity at the NUTS 3 level as it was also done in the previous studies (e. g. Dvouletý, 2017a; Bosma, 2011).

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<sup>9</sup> Established Business Ownership Rate (EBOR) measures “% of 18–64 population who are currently an owner-manager of an established business, i.e., owning and managing a running business that has paid salaries, wages, or any other payments to the owners for more than 42 months”, Global Entrepreneurship Monitor, 2018.

<sup>10</sup> Total Early-Stage Entrepreneurial Activity (TEA) measures “% of 18–64 population who are either a nascent entrepreneur or owner-manager of a new business”, Global Entrepreneurship Monitor, 2018.

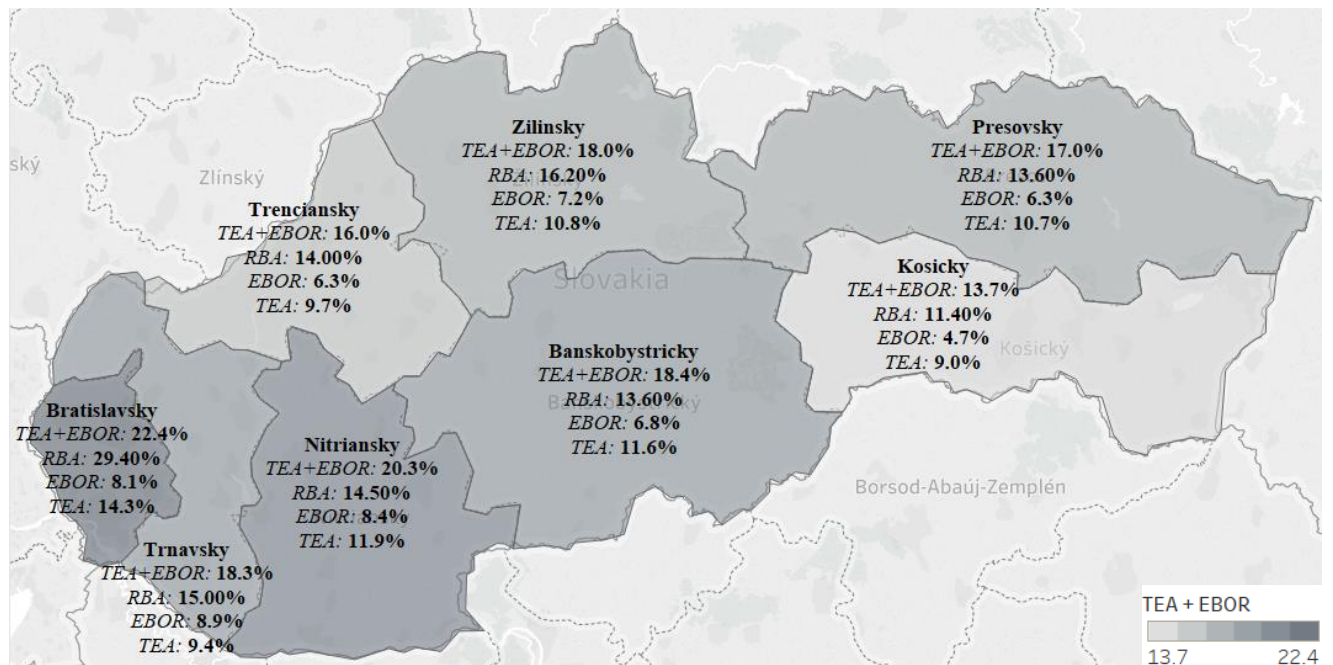
First, we plot all four indicators on the following Figure 1, to show the average entrepreneurial activity in the eight Slovak NUTS 3 regions. If we sum-up both measures of GEM and compare the total with the rate of registered business activity, we may surprisingly find not such high differences between these two measures of entrepreneurship. The average rate of entrepreneurial activity during years 2011-2015 was according to Global Entrepreneurship Monitor (2018) 18%, and according to the structural business statistics (Statistical Office of the Slovak Republic, 2018) 16%. The similarity of measures was also empirically supported by the positive and statistically significant values of the bivariate correlation coefficients (*Sum of TEA+EBOR* and *Rate of Registered Businesses*: 0.5; *TEA* and *EBOR*: 0.6; *TEA* and *Rate of Registered Businesses*: 0.5; *EBOR* and *Rate of Registered Businesses*: 0.3).

Although the presented measures in Figure 1 slightly differ in the order of the regions when it comes to the level of entrepreneurial activity (ANOVA's p-value < 0.05), both indicators representing the overall level of activity (*Sum of TEA+EBOR* and *Rate of Registered Businesses*) reveal, that the highest level of entrepreneurial activity in Slovakia is concentrated in Bratislava region, and the lowest in Kosice region. This information is true also when we compare both GEM indicators separately.

According to Pilková, et al. (2017) in these regions are also interesting findings related to inclusive entrepreneurship which means the engagement of less represented groups of the population in entrepreneurship (women, seniors, youth). Bratislava region together with Trnava and Nitra regions belong to the most economically developed and most urbanised once (in terms of highest GDP per capita, average income, and lowest unemployment rate). These regions are characterized by the highest inclusivity of female entrepreneurship, lowest inclusivity rates of seniors and youth. Thus, it seems that economically sound regional environment encourages and pulls more female to start engagement in business activities. We might also expect that within such context, opportunity motives shall prevail necessity-driven efforts. On the contrary, economic power creates increased employment opportunities (concerning diversity in economic activities and incomes) that might attract more young people to become employees instead of starting their own business, compared to economically less developed regions. Kosice region, together with Banska Bystrica, Zilina and Presov regions have the lowest GDP per capita and highest unemployment rate. Moreover, they are characterised by a pattern where inclusivity of youth is the highest, followed by inclusivity of female populations and seniors. These arguments support an assumption that the economic development of regions influences the overall levels of entrepreneurial activity, and it

determines its overall structure (e. g. shares of necessity, opportunity and inclusive entrepreneurship).

**Fig. 1: Indicators of Regional Entrepreneurial Activity in Slovakia over years 2011-2015**



Notes: *RBA* - Rate of Registered Business Activity; *EBOR* - Established Business Ownership Rate; *TEA* - Total Early-Stage Entrepreneurial Activity; *TEA+EBOR* - Sum of TEA and EBOR  
 Source: Tableau, author's elaboration of the data from Global Entrepreneurship Monitor (2018) and Statistical Office of the Slovak Republic (2018)

## 2 Empirical Approach and Data

There are many reasons, why some regions may have higher rates of entrepreneurship compared to others. Besides the long-term path-dependence of the entrepreneurship rate (Wyrwich and Fritsch, 2016), there are factors and variables that influence the levels of entrepreneurial activity. Scholars studying determinants of entrepreneurship usually classify them into several categories. According to Roman et al. (2018) and Dvouletý (2017b), location factors of entrepreneurial activity include among others economic variables (e. g. gross domestic product, unemployment rate), institutional and governmental environment (e. g. barriers of entrepreneurship, corruption), R&D and innovation efforts (e. g. intensity of R&D investments, density of institutions), cultural, logistic and socioeconomic variables (e. g. educational structure of the population, status of entrepreneurs, fear of failure, traffic infrastructure) and public entrepreneurship and SME policies (e. g. grants, entrepreneurial infrastructure).

The relationships between location factors of entrepreneurship and the level of activity are usually empirically analysed through the multivariate regression analysis (Roman et al., 2018). We aim to study determinants of entrepreneurial activity in Slovakia following this empirical approach. Given the former socialist history of this transition economy, changing business environment and the long-term negative attitudes of entrepreneurs towards the Slovak entrepreneurship environment (see e. g. Belás et al., 2015, Pilková et al. 2017) we would like to particularly focus on the role of governmental institutions in shaping Slovak entrepreneurial activity.

Inspired by the previous literature (e. g. Roman et al., 2018; Dvouletý, 2017), we assume that improvement of business environment was positively associated with the level of entrepreneurship. We measure development of entrepreneurship environment by the two variables; business freedom index collected from Heritage Foundation (2018) and by the World Bank's (2018) Doing business statistics measuring the number of procedures needed to establish a new business company.

We also control for the other determinants of entrepreneurial activity, such as unemployment rate and share of economically active population (15-64) which were obtained from the World Bank's (2018) database. We also include fear of failure rate obtained from the Global Entrepreneurship Monitor (2018) to control for the risk attitudes of those who see good opportunities to start a business in the region where they live.

Our data have been formed into a panel of eight Slovak NUTS 3 regions over years 2011-2015 and summary statistics for all variables are presented in the following Table 1.

**Tab. 1: Summary Statistics (Years 2011-2015)**

<b>Variable</b>	<b>Mean</b>	<b>SE</b>	<b>Min</b>	<b>Max</b>	<b>Observations (N)</b>
<i>Total Early-Stage Entrepreneurial Activity (TEA)</i>	10.9	2.6	6.8	16.8	40
<i>Established Business Ownership Rate (EBOR)</i>	7.1	2.4	3.1	12.0	40
<i>Rate of Registered Business Activity</i>	16.0	5.4	10.1	31.4	40
<i>Unemployment Rate (%)</i>	13.1	4.4	5.6	19.7	40
<i>Share Population (15-64)</i>	71.2	1.0	68.9	73.0	40
<i>Procedures to Start Business</i>	7.4	0.5	7.0	8.0	40
<i>Fear of Failure (GEM)</i>	47.2	4.1	35.5	57.0	40

Source: STATA 14, author's elaboration of the data from Global Entrepreneurship Monitor (2018) and Statistical Office of the Slovak Republic (2018)

### 3 Results

We follow the described empirical approach, and we estimate multivariate regression models with the aim to explore the relationship between Slovak governmental environment and the regional levels of entrepreneurial activity. We use the three measures of entrepreneurial activity to increase robustness of our results. Nevertheless, we must honestly admit that our analysis is limited by the number of observations we have (N=40).

We estimated all models in STATA 14 software and all panel regressions were estimated with the robust standard errors to avoid problems of heteroscedasticity and autocorrelation. We also check the level of collinearity with the help of Variance Inflation Factors (VIF) test and we conclude that there is no multicollinearity in the presented models. Finally, we use region and year fixed effects to control for the remaining sources of heterogeneity in our data (Wooldridge, 2010). The estimated models were found to be statistically significant (F-test), and we present them in Table 2.

First, it is worth mentioning that besides the control variable representing share of economically active population, all variables indicate the same direction of impact on all measures of entrepreneurship which can be considered as a good sign. Second, given the number of observations, it is not surprising that there are also insignificant variables in the regression estimates. This was true especially for the control variables. However, we focus in our interpretation on the role of governmental institutions. Both variables representing the governmental environment (*Procedures to Start Business* and *Business Freedom Index*) were found to be statistically significant. The variable measuring the number of procedures needed to start a business indicates that with the decreasing number of procedures, the overall entrepreneurial activity increased. Business Freedom Index corresponds with the former finding and it shows that higher business freedom was also positively associated with the higher levels of entrepreneurial activity.

These results together indicate that efforts invested into the improvement of the general business environment may positively influence the levels of entrepreneurship in Slovakia. Moreover, such an observation is in line with the previous literature on the determinants of entrepreneurial activity (e. g. Roman et al., 2018; Dvouletý, 2017a).

**Tab. 2: Regression Results: Determinants of Regional Entrepreneurial Activity in Slovakia over years 2011-2015**

Model Number	(1)	(2)	(3)	(4)	(5)	(6)
Independent / Dependent Variable	<i>EBOR (GEM)</i>		<i>TEA (GEM)</i>		<i>Rate of Registered Businesses</i>	
<i>Unemployment Rate</i>	-0.286 (0.237)	-0.286 (0.297)	-0.236 (0.508)	-0.236 (0.484)	-0.121 (0.124)	-0.121 (0.0704)
<i>Share Population (15-64)</i>	-0.444 (0.534)	-0.444 (1.168)	0.325 (0.570)	0.325 (1.189)	-0.303 (0.564)	-0.303 (0.949)
<i>Procedures to Start Business</i>	-5.387** (1.776)		-4.492** (1.557)		-2.229* (1.080)	
<i>Business Freedom Index</i>		1.418* (0.691)		1.182† (0.638)		0.587† (0.337)
<i>Fear of Failure (GEM)</i>	-0.149* (0.0718)	-0.149† (0.0848)	-0.00511 (0.0896)	-0.00511 (0.0821)	-0.00317 (0.0296)	-0.00317 (0.0259)
<i>Constant</i>	87.97 (47.90)	-53.81 (41.95)	27.43 (47.44)	-90.78 (52.32)	67.60 (47.34)	8.935 (43.85)
Regional Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	40	40	40	40	40	40
$R^2$	0.704	0.704	0.796	0.796	0.995	0.995
Adjusted $R^2$	0.538	0.538	0.681	0.681	0.993	0.993
<i>AIC</i>	150.9	152.9	140.6	142.6	50.15	46.15
<i>BIC</i>	164.4	168.1	152.4	156.1	65.35	57.97

Notes: Models were estimated with robust standard errors. Estimated models include fixed effects for years and regions. Standard errors are reported in parentheses.

Statistical significance: †  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

Source: STATA 14, author's elaboration of the data from Global Entrepreneurship Monitor (2018) and Statistical Office of the Slovak Republic (2018)

## Conclusion

The recent trend in the literature aiming to map patterns in the levels of entrepreneurial activity has shifted from cross-country studies towards studies conducted at regional, municipal and city levels. Such a shift brings many empirical challenges, especially when it comes to the availability of the data at the lower administration units. The main aim of our study was to contribute to this increasing body of the literature by a better understanding of the regional entrepreneurial activity in Slovakia during years 2011-2015.



We have exploited the existing measures of entrepreneurship from Global Entrepreneurship Monitor (2018) and the Statistical Office of the Slovak Republic (2018), and we have explored the inter-regional differences in the levels of entrepreneurial activity among Slovak NUTS 3 regions. We show that the highest level of entrepreneurial activity in Slovakia is concentrated in Bratislava region and the lowest in Kosice region. The average engagement in entrepreneurship in Slovakia was during the analysed period 16-18% of economically active population depending on the measure used, which corresponds with the earlier findings of Pilková et al. (2012) who claim that the overall activity in Slovakia is above the European average.

Building on the initial findings, we have further explored the relationship between the Slovak entrepreneurship environment and the level of entrepreneurial activity. The results of multivariate regression models have shown that the overall improvement of the general business environment positively influences the levels of entrepreneurship in Slovakia. We believe that such an observation may serve as an encouragement for the further efforts invested in improving business conditions for the established and new Slovak entrepreneurs.

Although our study has introduced measures and way how to study the regional aspects of entrepreneurship, our empirical analysis is limited by the available data. We would like to encourage future researchers to further study other location factors entrepreneurial activity by including the role of other potential determinants of entrepreneurship, represented by cultural, logistic and socioeconomic variables. Future research might also address the role of entrepreneurial infrastructure (incubators, science parks and accelerators), and public entrepreneurship and SME policies.

## **Acknowledgment**

This work was supported by Internal Grant Agency of Faculty of Business Administration, University of Economics in Prague, under no.: IP30004. This work was also supported by the Slovak Research and Development Agency under the contract No. APVV-14-0647.

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