

The impact of entrepreneurship on economic development in Romania

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Abstract: *Entrepreneurship represents an important driver of economic growth and development. The current study considers an analysis of the impact on GDP brought by indicators such as gross fixed capital formation, school dropout rate, unemployment rate and number of the new enterprises. The analysis uses panel regression as well as the OLS method. The results indicate a negative impact of entrepreneurship (measured with the number of new enterprises) on economic development.*

Keywords: *entrepreneurship, economic development*

JEL Classification: *R15, P25, L26*

Introduction

Various authors analyzed the relationships between entrepreneurship, economic development, and other variables such as culture, ethnicity, ethics, individual resilience, education, and gender. According to Sanchez et al (2018), the state of well-being could be influenced by micro-entrepreneurs who could help eliminate disparities by setting up new businesses in less developed areas. In such a context, the results might show that the level of development depends on entrepreneurial ecosystems which, in turn, could be influenced by places, objectives, people, and processes that are involved for economic development. These aspects could lead to the need for regulatory interventions because, finally, the new developed areas will lead to increased public benefits by increasing the network of transportation, entertainment, education, and health.

Regarding the impact of entrepreneurship on a regional level, there are a lot of studies examining the economic results and their effect on different dimensions of society. To bring new evidence related to the impact of entrepreneurship on the development level, the current study considered the analysis of several macroeconomic indicators in correlation with the number of newly created enterprises.

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This study is organized as follows. The next section focuses on the literature review. Section 3 discusses the methodology. Section 4 comprises the discussions of the results. The last section concludes the paper.

Literature review

The impact of entrepreneurship on development is discussed in various papers. The studies cover different areas: from general analysis with policy suggestions to regional analysis for the EU or for individual countries, with panel models and other econometric analyses.

Huggins and Thompson (2015) analyzed the relationship between entrepreneurship, innovation and regional growth on a global scale. The authors discussed the connections between regional growth and entrepreneurship as well as the role of innovation in boosting economic development.

Brodzicki and Golejewska (2019) assess the importance of metropolitan location for entrepreneurship innovation performance. Their results prove that there is no metropolitan advantage detected for innovation measures. The advantage relies on the higher performance of metropolitan-based firms in patenting and licensing. The results of their paper prove that location is one of the key factors affecting firm growth and competitiveness and support the idea of regional innovation systems.

Carree and Thurik (2010) analyzed the impact of entrepreneurship. The conclusions emphasized the need for a framework with four elements: identifying the micro-economic foundations of growth, identifying the intermediate linkages from entrepreneurial activity to economic progress, dealing with dual causality in the relation between entrepreneurial activity and growth, taking into account the multidisciplinary character while linking together different levels of analysis.

Dvouletý et al (2018) analyze the link between the entrepreneurial activity and regional economic development in developing economies. They used data for 48 developing economies for the time frame 2000–2015 and analyzed entrepreneurial activity based on a set of national economic and wealth indicators (Gross Domestic Product-GDP, Gross National Income-GNI, and Human Development Index-HDI). They tested the impact of entrepreneurship on economic development initially and again after one year. The estimates proved a negative impact of entrepreneurial activity on national GDP and GNI, and no impact on HDI.

Rusu and Roman (2017) discuss in their paper the impact of macroeconomic and business-related factors on entrepreneurial activity in several EU countries. The results showed that some of the indicators (inflation rate, foreign direct investments, access to credit, and total tax rate) are significantly correlated with entrepreneurship in EU countries. Their conclusions were that national economic development as well as the attitude of individuals towards entrepreneurship are the key factors to promote entrepreneurship in the analyzed EU countries.

Szerb et al (2017) discuss REDI, a new index which provides a framework useful for analyzing the entrepreneurial environment of European regions, a mandatory activity before tailoring regional policies. The index provides a policy portfolio simulation that offers many benefits, for example highlighting system dynamics in regional systems of entrepreneurship.

Bozward et al (2021) analyze how enterprise and entrepreneurial education impacts regional development. The paper analyzes the results of HE-BCI (UK's Higher Education Business and Community Interaction) survey together with latest available data from UK Office for National Statistics in order to understand the impact of educational entrepreneurship on multiple regional development factors (creation of start-ups, business investment and business survival). The results indicate that the impact of educational entrepreneurship is higher in regions with lower levels of GDP. As a consequence, UK economic development needs to pay attention to funding this type of entrepreneurial activities in order to create value in economically disadvantaged regions.

Rauhut et al (2018) discuss how immigrant entrepreneurship impacts regional development. They chose three towns in Sweden and analyzed data on company start-ups at a local level. They observed that immigrant entrepreneurs are represented mostly in the labor intensive and low productive start-ups in the service sector. This type of entrepreneurship does not help regional development. As a direct consequence, the region follows a vicious circle of underdevelopment, with companies started by immigrant entrepreneurs who have low experience which leads to low savings, consumption and income. Their analysis showed that solutions that are good for the economic development of metropolitan areas might not have the same outcome in small towns with industrial specificity.

Espinoza et al (2019) performed a national level analysis for Chile in order to discover the factors influencing entrepreneurship in different regions. They used econometric models to analyze the dependency between districts in Chile related to entrepreneurship development. They concluded that the immigrant population, the presence of various universities and local capacity of developing patents are the variables with the greatest positive effect on this dependence.

Kang et al (2022) examine how knowledge capabilities lead to new firms' growth. Their paper analyzes the Italian NUTS-3 regions by utilizing an integrated data set combining patent data from the EPO PATSTAT database, and regional data from Eurostat. The study contributes to research on KSTE (The Knowledge Spillover Theory of Entrepreneurship) by connecting entrepreneurship and regional productivity and by clarifying different aspects of regional knowledge capability.

Iacobucci and Perugini (2021) analyze to what extent entrepreneurial ecosystems (EE) have an impact on economic resilience at local level. The paper presents a quantitative analysis performed on NUTS 3 Italian provinces and concludes as follows: first, a new composite index of EE at local level can be used, created from different political, social, cultural and

economic aspects, and second, the role of EE in terms of resilience to external shocks is very important.

Mihai and Tigau (2020) discuss the impact of entrepreneurship on regional disparities in post-comunist Romania. They use a spatial panel framework in order to analyze how entrepreneurship influences regional development. Their findings highlight that regional disparities are not driven by new enterprises, but rather by the activities of older or foreign companies.

Zaman et al (2012) discuss the main obstacles that Romanian entrepreneurs are confronted with. Also, they research for possible solutions in the form of adequate policies, instruments, economic, and financial mechanisms. The paper highlights the importance of promoting the positive attitude towards entrepreneurship behavior and increasing financial support for SMEs. The authors emphasized some features related to the entrepreneurship success such as the age or the gender of entrepreneurs.

Methodology

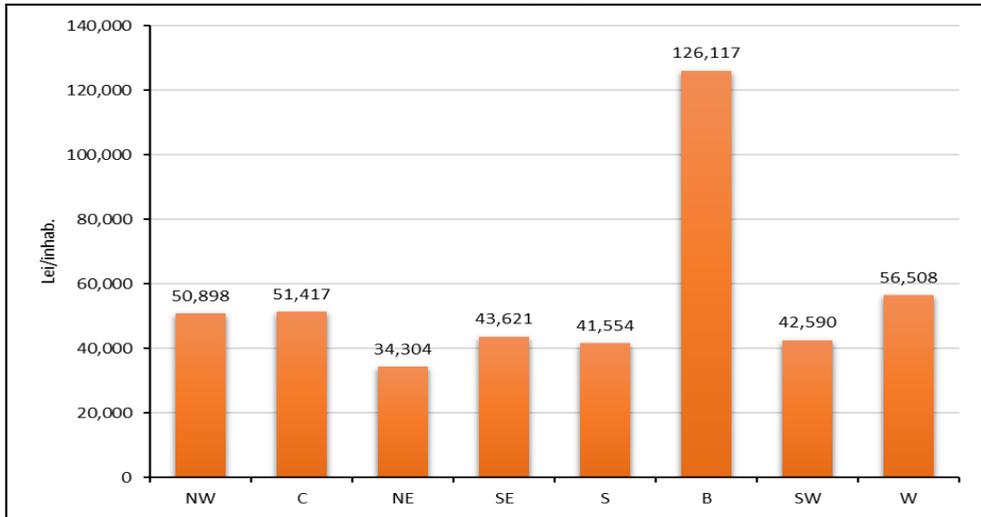
The current study aimed to highlight the relationship that exists between five variables, looking specifically at the link between the newly created companies and gross domestic product, a relation that may affect the direction of economic development. An annual dataset for 2002 – 2019 period was developed, per total and also for Romanian development regions / NUTS2 (North-West (NW), Centre (C), North-East (NE), South-East (SE), South-Muntenia (S), Bucharest-Ilfov (B), South-West Oltenia (SW), and West region (W)). The variables used in analysis are presented in Table 1.

Table 1. The variables used in analysis

Acronym	Explanation	Unit	Source
GDP	Gross domestic product	Lei (national currency)/inhabitant	National Institute of Statistics (NIS) from Romania
GFCF	Gross fixed capital formation	Millions of lei	
SCHDROPRATE	School dropout rate	%	
UNEMPLRATE	Unemployment rate	%	
NE	New enterprises	Number	

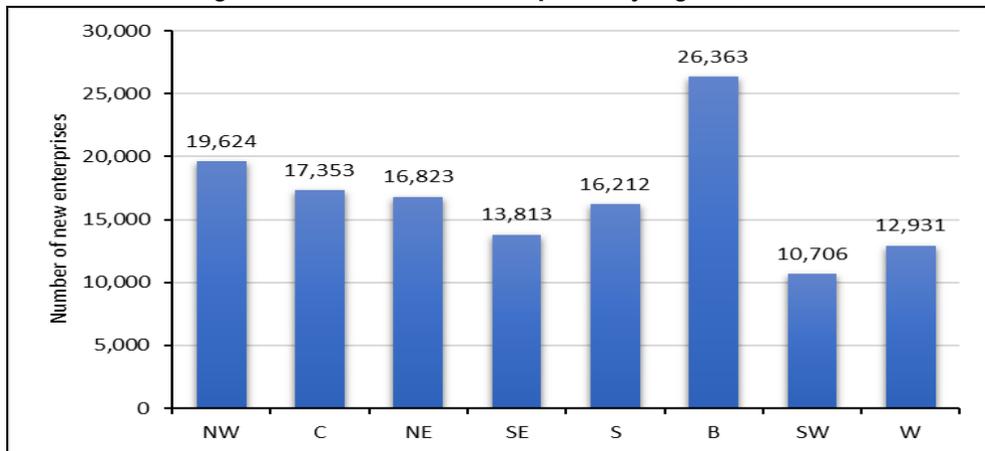
Source: own compilation.

Figure 1 shows the distribution of regional gross domestic product/ inhabitant. The highest value is found in Bucharest-Ilfov region (126.117 lei/inhab.), while the North-East region is in last place (34.304 lei/inhab.). It is important to highlight that, according to the World Bank, the national GDP/inhab. evolved from 8,400 lei/inhab. in 2002 to 58,050 lei/inhab. in 2019 (World Bank, 2022).

Figure 1. Gross Domestic Product by regions (lei/inhabitant), 2019

Source: own compilation based on NIS data.

At the end of 2019, as shown in Figure 2, the number of new enterprises do not follow the evolution of gross domestic product, with two exceptions for Bucharest-Ilfov (26,363) and North-West Region (19,624), which are ahead of the rest of the regions.

Figure 2. Number of new enterprises by regions, 2019

Source: own compilation based on NIS data.

The descriptive statistics are presented in Table 2. This table shows important information (mean, median, standard deviation, skewness, and kurtosis) regarding the variables used.

Table 2. Descriptive statistics of the variables

	GDP	GFCF	SCHDROPRATE	UNEMPLRATE	NE
Mean	28053.28	17608.58	17.89097	5.485417	16080.56
Median	22830.50	12748.75	18.30000	5.700000	15350.00
Maximum	126117.0	102392.4	29.20000	10.80000	37244.00
Minimum	5057.000	1867.500	5.500000	1.100000	5257.000
Std.Dev.	20362.88	18383.34	5.171573	2.329980	5585.404
Skewness	2.142704	2.643185	-0.248695	-0.010977	0.794907
Kurtosis	8.953396	9.630358	2.343241	2.108195	3.881240
Jarque-Bera	322.8459	431.4442	4.072376	4.774790	19.82457
Probability	0.000000	0.000000	0.130525	0.091869	0.000050
Sum	4039673.	2535636.	2576.300	789.9000	2315600.
Sum Sq.Dev.	5.93E+10	4.83E+10	3824.558	776.3194	4.46E+09
Observations	144	144	144	144	144

Source: own compilation.

We first developed a model considering data for Romania, and in the second stage of the analysis we developed the same model for each Romanian NUTS2 region. A positive relationship between the GFCF variable and the dependent variable GDP is expected. We expect a positive relationship between NE and GDP. Also, a negative relationship between school dropout rate variable and the dependent one is expected, and also between unemployment rate variable and the dependent one.

Results and Discussion

The analysis aimed to develop an econometric model to highlight the relationships between GDP and entrepreneurship, for the case of Romania and also for Romanian development regions, for the 2002-2019 period, using the Panel Least Squares method. The first step is related to the use of the Hausman test to decide between fixed or random effect models (Table 3). The null hypothesis is that the random effects model is appropriate, and the alternative hypothesis is that the fixed effect model is appropriate.

Table 3. The Hausman Test

Correlated Random Effects – Hausman Test			
Equation: Untitled			
Test cross-section random effects			
Test Summary	Chi-Sq. Statistic	Chi-Sq.d.f.	Prob.
Cross-section random	17.447807	4	0.0016

Source: own compilation.

The probability value is $0.0016 < 5\%$, which means that we can reject the null hypothesis. Seems that the fixed effects model is appropriate in our case. The second step is related to the estimation of the regression model parameters for the fixed model effects. The results are in Table 4.

Table 4. Estimation of the regression model parameters -the model with fixed effects

Dependent Variable: GDP; Method: Panel Least Squares; Sample: 2002 2019; Periods included: 18; Cross-sections included: 8; Total panel (balanced) observations: 144				
Variable	Coefficient	Std.Error	t-Statistic	Probability
GFCF	1.126159	0.061688	18.25581	0.0000
SCHDROPRATE	-506.3705	205.7515	-2.461078	0.0151
UNEMPLRATE	-2214.102	423.2207	-5.231555	0.0000
NE	-1.101996	0.165791	-6.646892	0.0000
C	47148.67	5431.634	8.680385	0.0000
Effects Specification				
Cross-section fixed (dummy variables)				
R-squared	0.906116	Mean dependent var		28053.28
Adjusted R-squared	0.898292	S.D. dependent var		20362.88
S.E. of regression	6494.072	Akaike info criterion		20.47482
Sum squared resid	5.57E+09	Schwartz criterion		20.72231
Log likelihood	-1462.187	Hannan-Quinn criter.		20.57539
F-statistic	115.8167	Durbin-Watson stat		0.999701
Prob (F-statistic)	0.000000			

Source: own compilation.

Only the GFCF variable has a positive influence on GDP. The rest of the coefficients are negative. Initial hypotheses are confirmed, with the exception of the entrepreneurship variable, whose coefficient is a negative one. Also, this result can be affected by the reduced number of records, in which case data must be analyzed at a much more advanced level of granularity (a specific period or quarterly frequency).

In the second stage of the research, the model was developed for each of the eight development regions in Romania, using variables and data for the same period, 2002-2019. The results of the regressions are presented in detail in Table 5.

Table 5. Estimation of the regression model parameters for the NUTS 2 regions in Romania (dependent variable: GDP, method: Least Squares)

Development NUTS 2 Region	Coefficient					R-squared	Durbin-Watson stat
	GFCF	SCHDROPRATE	UNEMPLRATE	NE	C		
North-West	1.929133 (0.0000)	551.0383 (0.2414)	-1088.596 (0.3555)	-0.167234 (0.6881)	-3117.437 (0.8721)	0.910741	1.606253
Centre	1.259289 (0.0010)	471.1122 (0.2940)	-1835.279 (0.0769)	-0.445555 (0.1748)	16386.77 (0.3135)	0.901417	1.474863

Development NUTS 2 Region	Coefficient					R- squared	Durbin- Watson stat
	GFCF	SCHDROPRATE	UNEMPLRATE	NE	C		
North-East	1.390301 (0.0213)	419.3919 (0.4317)	-1258.532 (0.3717)	-0.685667 (0.0583)	13016.24 (0.5508)	0.799494	1.364813
South-East	0.592769 (0.2297)	-420.5533 (0.6046)	-3780.082 (0.0083)	-2.232059 (0.0018)	82317.86 (0.0214)	0.814326	1.220044
South	0.636140 (0.0570)	-2192.035 (0.0034)	-815.8461 (0.3300)	-0.717346 (0.0360)	75642.29 (0.0007)	0.903803	0.983857
Bucharest- Ilfov	0.269101 (0.2495)	-1718.814 (0.2434)	-42295.24 (0.0012)	-2.410835 (0.0014)	212401.3 (0.0003)	0.942707	2.080062
South-West	2.031837 (0.0029)	-1201.897 (0.0963)	-343.6873 (0.7583)	-0.957288 (0.2081)	38173.60 (0.0220)	0.805303	0.972503
West	1.645965 (0.0183)	-318.7141 (0.5333)	-2614.786 (0.0491)	-1.033526 (0.0564)	39062.42 (0.0175)	0.878633	1.159566

Source: own compilation; p-values in round brackets.

The results indicate a positive impact of the GFCF variable (investments) on economic growth. Also, one can mention the following:

- the coefficient of the GFCF variable is significant only in the case of North-West region, Centre region, North-East region, South-West Oltenia region, and West region;
- all other independent variables have negative coefficients, except the case of SCHDROPRATE which has a positive sign for North-West region, Centre region, and North-East region;
- the coefficient of the SCHDROPRATE variable is significant only in the case of South-Muntenia region;
- the coefficient of the UNEMPLRATE variable is significant only in the case of South-East region, Bucharest-Ilfov region, and West region;
- the coefficient of the NE variable is significant only in the case of the South-East region, South-Muntenia region, and Bucharest-Ilfov region.

Probabilities obtained for the coefficients of the independent variables differ by region and only some results are statistically significant (where the probability value is below the 5% level). Regarding the number of new businesses, for the NW, C and SW regions, the probability is above 10%. Moreover, the impact on the GDP is negative, and the highest value of the β parameter is recorded in the case of Bucharest-Ilfov region, which has the highest GDP and the highest number of new economic units.

Conclusions

The results obtained in this paper confirm some hypotheses related to the analyzed variables. The negative sign of the entrepreneurship variable coefficient shows that the enterprise risk is high. The number of enterprises is large enough to influence the value at the national level.

The business environment in Romania is very volatile and is primarily characterized by the development of small enterprises. This indicator shows that new enterprises are vulnerable in the business environment.

Further research could adopt an indicator that focuses on older enterprises on the market or the share of value added created by enterprises. However, the impact of entrepreneurship can be analyzed through other methods, such as questionnaire-based analysis, thus indicating future research directions. Also, it is important to consider indicators such as the size of the social capital or the number of kilometers of roads.

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