

Regional differences in new firm formation:

Evidence from Romania

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Abstract

Business creation has mainly been studied given its relevance as a source of employment and economic development. However, most research has been conducted in developed economies. The objective of this paper is to examine the impact that certain demographic and economic variables have over business creation in Romania for the period 1999–2005. The results indicate that regional business creation in Romania is mainly explained by factors related to higher unemployment rates and industry restructuring processes where industry density plays a key role. We also find that regions where business creation is mainly oriented towards economic sectors related to business services exhibit higher rates of business creation. These findings give evidence that entrepreneurship in Romania is helping to industrially reconfigure the old industrial regions. The dissimilar business formation rates found across Romanian regions as well as its reported determinants would tend to give ammunition to the argument that effective entrepreneurship support policy should have the capacity to be customised to fit the specific profile of the targeted regions and beneficiaries.

Keywords: Business formation, regional variations

JEL classification: L26, R11

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1. Introduction

What are the determinants of regional variations in firm formation rates? Not surprisingly, there is a large number of articles dealing with the relation between regional features and business creation rates, and it has been found that factors linked to unemployment, population demographics, and the configuration of the industry help explain start-up differences at the regional level (Reynolds, 1994; Audretsch and Fritsch, 1994; Guesnier, 1994; Keeble and Walker, 1994; Kangasharju, 2000; Armington and Acs, 2002; Acs, Armington and Zhang, 2007). Nevertheless, all these studies have been conducted in developed countries. One reason behind the lack of research in developing and transition economies is the need of information concerning business creation rates and the different variables of interest at the regional level.

In most countries small and medium sized enterprises (SMEs) dominate the business scenario, accounting for more than 95% of the total number of firms (Hofer and Sandberg, 1987; OECD, 1997; European Commission, 2003a). Academic research also highlights the importance of business creation processes for employment (Reynolds et al., 2007), economic development (Birch 1987; Storey 1994), as well as to improve market competitiveness (Vesper, 1984).

But what happens in the case of transition economies that have passed from a formal institutional framework based upon central planning to one oriented towards a market

economy? Business creation is being recognised as a key ingredient required for these countries to consolidate their sprouting market economies. It is therefore reasonable to maintain that an important challenge faced by former socialist countries is stimulating an entrepreneurial society which can help consolidate the private business sector.

However, and given the resource constraints faced by small firms and their vulnerability with respect to environmental changes and uncertainty, a better understanding of the factors and mechanisms that explain firm formation rates in transition economies stands as a key issue for business owners and policy makers.

Romania is not an exception. The country went through a profound and troubled transition to consolidate its economic system (European Commission, 2003b), which was also expected to help establish and improve the internal conditions required for the establishment of an entrepreneurial society. Yet, there is evidence about the presence of severe differences in business formation rates amongst Romanian regions (Lafuente and Driga, 2008). In the case of Romania, and in most transition economies, the study of the factors that explain differences in business formation rates has remained unexplored in the literature, mainly because the lack of appropriate and up-to-date data.

In this sense, does the consolidation of the market-oriented economy affect firm formation rates equally across Romanian regions? Or to the contrary, are business formation rates in Romania mainly driven by factors linked to regional-specific differences?

This paper attempts to respond to these questions. Therefore, in consonance with the important institutional changes that occurred in Romania during its transition from a planned to a market economic system, our main research objective guiding this paper is to identify those factors that explain regional differences in business formation rates in Romania.

The remainder of the paper is organised as follows. Section 2 briefly describes the Romanian transition process. Section 3 presents the theoretical framework. Section 4 describes the data and the adopted methodological approach. Empirical results are offered in section 5, and final conclusions are displayed in section 6.

2. Transition in Romania: Towards a market-oriented economy

With the breakdown of the planned economy in December 1989, Romania underwent a deep and troubled reform process. At this point, it should be remarked that this paper only considers significant institutional changes that may affect business formation. Tismaneanu (1993), Ibrahim and Galt (2002), Stoica (2004), and Scarlat and Scarlat (2007) present reviews of the Romanian transition process in much greater length.

During transition new legal codes and courts able to enforce contracts between newly created firms were introduced (Murrell, 2003). In the early years of transition, reform processes aimed to underpin formal market institutions through a greater flexibility in prices, wages and contractual autonomy.

However, these market-oriented institutions had to consolidate and learn how to govern more complex relationships. In this period, key success factors of Romanian

entrepreneurs were marked by their access to finance, and their ability to mobilise resources from third parties, which predominantly depended on their past credentials within the planned economy. Given the background of these individuals, it is not surprising that the introduction of new institutions has been difficult and in some cases inappropriate. Consequently, new formal institutions (laws and implementation bodies) were quickly set-up. However, their effective implementation came about very slowly as the Romanian society gradually assimilated the new values of the market economy into its social routines (Clark and Soulsby, 1999). Yet, in this period individuals were lacking an efficient formal institutional support that could facilitate the development of entrepreneurial activities in Romania (McMillan and Woodruff, 2002). It can be argued that these factors were a combination of informal (the legacy from the past), and formal institutional factors, such as the complications in the new legal system and the tight macroeconomic stabilisation policies. Another major problem facing entrepreneurs was the deficiencies of the financial sector. The complexity of the banking procedures, the lack of experience in banking, and the high interest rates were important constraints faced by potential Romanian entrepreneurs during this first stage of transition (IMF, 1996).

These institutional deficiencies represented important entry barriers for potential entrepreneurs. A firm's ability to survive during this period did not depend on the development of competitive advantages, but rather on how they engaged through market and non-market relations within a complex set of institutions (OECD, 1998). Furthermore, individuals lacked the necessary entrepreneurial skills to successfully lead a new venture within such a complex and turbulent environment. The human capital creation process under the planned system may have become less effective when

confronted to the market economy. This is because the political structure in these countries constrained the accumulation of business experiences, and the educational system was biased towards hard sciences and engineering, neglecting social sciences, law, business and public policy (Kovacs and Virag, 1995).

Since 2002, and after a gradual and troubled transition process, Romania embarked on a new transition which led to important progresses with reforms. This second transition was mainly motivated and driven by Romania's need to harmonise its formal legal institutions with those of the European Union for accession purposes. In its annual report, the European Commission (2003b) catalogued the Romanian economic system as a functional market economy. By 2002, nearly 70% of economic activity was in private hands, as compared to the 45% in 1995 (Ibrahim and Galt, 2002). The Romanian economy in 2002 showed significant advances in the gradual opening of key markets such as energy. Some important reforms had also been initiated within the country's banking sector and infrastructures.

Arguably, this second transition process linked with Romania's accession to the EU ended with the EU enlargement of 2007. This second transition has led to an improvement of Romania's internal conditions required for the establishment of an entrepreneurial society. For instance, statistics from EUROSTAT show that inflation, after peaking in 2000 (45.7%), shows a decreasing rate between 2002 (22.5%) and 2005 (9%). Also, entrepreneurial activities were supported by governmental and EU agencies created to this purpose. As can be seen in Table 1, and based on the European Union criteria to identify regions (NUTS, Nomenclature of Territorial Units for Statistics),

entrepreneurial activities experienced important increases between 1999 and 2005 that were consistent throughout all Romania.

Table 1. Gross and Net Rates of Business Creation in Romania
for the period 1999–2005

Region (NUTS-2)	Counties (NUTS-3)	Gross change in the number of firms		Number of exits		Net change in the number of firms	
		<i>Total Gross Entries</i>	<i>Annual birth rate</i>	<i>Total Exits</i>	<i>Annual exit rate</i>	<i>Total Net entries</i>	<i>Annual net birth rate</i>
Capital	2	38,168	9.58%	20,037	3.44%	18,131	6.14%
Centre	6	17,561	7.11%	7,941	2.35%	9,620	4.76%
West	4	15,737	8.56%	6,247	2.43%	9,490	6.13%
South	7	12,403	5.22%	6,840	2.21%	5,563	3.00%
South-East	6	15,228	5.47%	9,569	2.60%	5,660	2.86%
South-West	5	9,376	5.49%	5,160	2.30%	4,216	3.19%
North-East	6	13,820	6.30%	6,797	2.31%	7,023	3.99%
North-West	6	19,642	7.24%	8,613	2.30%	11,030	4.94%
Romania	42	141,935	7.07%	71,203	2.59%	70,732	4.48%

The regional distribution follows the NUTS-3 criteria: The capital includes Bucharest and Ilfov. Centre includes Alba, Brazov, Covasna, Harghita, Mures and Sibiu. West includes Arad, Caras-Severin, Hunedoara and Timis. North west includes Bihor, Bistrita-Nasaud, Cluj, Maramures, Satu-Mare and Salaj. North east includes Bacau, Botosani, Iasi, Neamt, Suceava and Vaslui. South includes Arges, Calarasi, Dambovita, Giurgiu, Ialomita, Prahova, Teleorman. South west includes Dolj, Gorj, Mehedinti, Olt and Valcea. South east includes Braila, Buzau, Constanta, Galati, Tulcea and Vrancea.

Source: Self-devised from Lafuente and Driga (2008).

3. What explains differences in firm formation rates across regions?

Over the past decades the determinants of differences in regional start-up rates have received increased attention from academics and practitioners. In particular, academic research in this area has highlighted the importance of tax rates, transportation costs and local scale economies (Harrison and Kanter, 1978; Bartick, 1989). More recently, regional differences in business creation rates have been found to be influenced by regional factors which are related to demographic and economic variables (Reynolds, 1994; Audretsch and Fritsch, 1994; Guesnier, 1994; Keeble and Walker, 1994;

Kangasharju, 2000; Armington and Acs, 2002; Acs, Armington and Zhang, 2007). In this paper we focus our attention on certain determinants of regional variation in business formation rates that have been commonly used in previous research.

First, the market growth effect, commonly proxied through GDP and income variables, captures the local wealth effect as well as potential improvements in the local quality of life. This factor is expected to positively influence business formation rates because, on the one hand, more developed and wealthier territories will have a greater demand for a wider range of products and services. On the other hand, individuals with entrepreneurial potential residing in more developed areas face lower financial and structural barriers increasing their probability to become entrepreneurs. Nevertheless, empirical evidence regarding the effect of market growth over business creation rates is mixed. Whereas Kangasharju (2000) find no significant relation between market growth and business formation rates in Finland, Reynolds (1994) reports a positive effect of market growth over new business formation rates. In addition, Armington and Acs (2002) find partial support for the positive link between market growth and business start-up rates. Even though the evidence regarding the effect of market-related variables on business formation rates is dissimilar, we believe that the market conditions, understood as per capita GDP at PPP prices, positively affects business formation rates as potential entrepreneurs would benefit from a better economic framework increasing their probability to become entrepreneurs. Thus, our first hypothesis emerges:

H1: Regions with higher per capita GDP have higher rates of business formation.

The second variable relates to the agglomeration effect. Classical and contemporary economic thinking has consistently portrayed agglomerated areas as the preferred setting for launching businesses. It has been argued that highly populated areas, such as urban areas, offer a larger pooled labour market supply (Marshall, 1920), a greater provision of non-traded inputs (Marshall, 1920), an easier and cheaper access to markets (Hoover, 1948), a greater availability of complimentary services (Myrdal, 1957), better infrastructures (Jacobs, 1969), and greater volumes of demand (Krugman, 1981, 1991b). It has been argued that highly populated territories are more likely to attract highly skilled and better educated people, providing a source of potential entrepreneurs. The agglomeration effect has been traditionally measured through variables linked to population density, and results provided by Audretsch and Fritsch (1994), Keeble and Walker (1994), Reynolds (1994) and Armington and Acs (2002) give support to the positive effect that agglomeration is having on business creation rates. From this arguments come our second hypothesis:

H2: The rate of creation of new businesses is higher in those regions with higher population density levels.

The third factor considered in this study is the regional unemployment rate. Entrepreneurial activity (business formation) has attracted the interest of many researchers who have demonstrated that increased levels of entrepreneurial activity can have positive repercussions on employment generation (Birley 1985, Storey, 1988, 1994, Kirchoff and Phillips 1988, 1992, White and Reynolds 1996), and on economic growth (Sexton 1986, Dubini 1989, Storey 1994, Wennekers and Thurik 1999). Therefore, entrepreneurship could be considered a key ingredient required for European

lagging territories to consolidate their sprouting market economies (Rehn and Taalas, 2004). This is especially relevant in the case of transition economies because, since transition started with the breakdown of the Berlin Wall, the average unemployment rate has consistently risen in all transition economies over time (Bornhorst and Commander, 2006). However, the relation between unemployment and business formation rates is complex and two interpretations emerge from the literature. On the one hand, increases in unemployment levels could signal a decrease in the regional demand, a fact that is expected to negatively affect the rate of new business formation as it constrains local economic activity (Storey and Johnson, 1987). On the other hand, it has been argued that unemployment is positively correlated to business creation rates because workers who are unemployed are more likely to become entrepreneurs as a result of the accumulation of human capital (Evans and Leighton, 1990; Storey, 1991), and the lack of opportunities for paid employment which pushes unemployed individuals towards entrepreneurial activities. Also, new firms are expected to reduce unemployment as they are likely to employ the owner of the firm and other people. The dissimilar results reported in the literature could be consequence of differences in the methodological approach chosen by research which lead to a sector bias. Reynolds et al. (2007) show how the positive relation between unemployment and new firm formation rates is stronger in studies examining firm birth rates in all economic sectors, whereas this relation is weaker in those studies that only consider business formation in manufacturing sectors. It is important to remark that in this paper we are interested in examining business formation in all Romanian economic sectors, and from the abovementioned argument comes our third hypothesis:

H3: Regions with greater unemployment rates exhibit higher rates of business formation.

The fourth factor of interest for the purposes of this study is linked to the entrepreneurial culture. Mason (1994) shows how, in Western Europe, regions dominated by large-scale firms employ larger labour pools including skilled and non-skilled individuals. Therefore, regions that heavily rely on big firms exhibit lower rates of business formation (Reynolds et al., 2007). Empirical evidence supporting this can be found in Kangasharju (2000) for Finland and by Armington and Acs (2002) for the USA. In addition, Viladomiu, et al. (2004) find that the populations of the north-eastern counties of Spain where textile ‘colonies’ dominated most socio-economic aspects of local community life for the greater part of the twentieth century lack even the basic entrepreneurial culture and have relatively low business creation levels, and this even though most of these colonies have been inoperative since the 1980’s. Dominance of large firms tends to neuter endogenous business initiative. To the contrary, areas historically dominated by small and medium business have been found to have greater local entrepreneurial spirit and business creation levels (Illeris, 1986).

At the regional level, the positive effect of entrepreneurial culture over entrepreneurial activities has been reported in several studies (Wagner and Sternberg, 2004; Lafuente et al., 2007; Vaillant and Lafuente, 2007). Thus, regions with a long entrepreneurial tradition of small firms are expected to show higher levels of start-up activity as they have a different configuration of entrepreneurial talent as well as a regional-specific setting that enhances this talent.

The impact of the entrepreneurial culture over business formation rates becomes especially relevant in the case of Romania because, the lack of an entrepreneurial society under the past centrally planned economic framework could be weighing down current efforts to promote entrepreneurship (Kessler, 2007). The following hypothesis is therefore formulated:

H4: The rate of new business formation is higher in those regions with a greater proportion of small businesses.

Finally, we take into account the structure of the industry at the regional level by measuring the density of businesses. Industry density is linked to the presence of a spillover effect. According to our framework, regions can obtain important gains derived from a shift in the configuration of their industries. Regions that changed from a manufacturing-based industrial configuration to one dominated by less capital intensive firms such as services normally show higher rates of business creation (Armington and Acs, 2002). This way, the concentration of firms relative to the population of a specific area facilitates workers (skilled and non-skilled) the access to a more dynamic labour market, decreasing the probability of unemployment and labour shortage (Krugman, 1991a). This gives individuals residing in these regions a greater set of business opportunities, and therefore new firms are more likely to be created where spillover intensity is the greatest.

At this point an important consideration is in order. Reynolds et al. (2007) show that the impact and significance of certain variables commonly used to explain business formation rates vary according to whether all economic sectors or manufacturing sectors

are examined. The same holds for variables linked to the configuration of the industry. This difference reported in the literature seems to stem from the fact that certain economic sectors are more sensitive to changes in population-related variables (local demand and population density, for instance) given the nature of the end consumer and the initial capital necessary to start the business. To the contrary, in other economic sectors, like manufacturing, the rate of business formation is more affected by economic-related variables such as land or input prices (Reynolds et al. (2007)). In order to correctly examine the potentially positive effect of these spillovers over regional business formation rates, we define the industry density, for each region and period, as the ratio of established business per square kilometre divided by the regional population per square kilometre. This is done for the total population of firms and for the type of industry as well. Thus, the last set of hypotheses to be tested in this paper follows:

H5: (a) The rate of new business formation is higher in regions with higher levels of industry density.

(b) The rate of new business formation is higher in regions with a higher concentration of consumer-oriented businesses.

4. Data and Method

4.1 Data

The data used to carry out this study comes from two sources. First, information about the firms operating in the different Romanian counties was obtained from the CEBR Industry Outlook. This dataset, collected from Romanian governmental sources and provided by the Romanian Centre for Entrepreneurship and Business Research (CEBR), comprises detailed financial and qualitative information for over 600,000 Romanian

surviving and non-surviving firms. Given the purpose of our study, and in the interest of following a rigorous methodology, we included in our final sample only those surviving firms for which the number of employees, the industry classification code (NACE), as well as the location can be clearly identified. Thus, our final sample comprises information for more than 465,000 Romanian surviving companies over the period 1999–2005 (Table 2).

In this paper, the unit of analysis is the geographical region, so data was grouped in regions following the criteria established by the European Union (Nomenclature of Territorial Units for Statistics, NUTS). Based on this classification criteria, there are 42 counties in Romania (NUTS-3 level), and the total number of observations in our sample for the period 1999–2005 is 294. Table 2 presents the total number of firms available from the CEBR Industry Outlook, and for illustrative purposes, Romanian counties are grouped in 8 regions as follow (NUTS-2): 1) Capital (Bucharest and Ilfov), 2) Centre (Alba, Brasov, Covasna, Harghita, Mures and Sibiu), 3) West (Arad, Caras-Severin, Hunedoara and Timis), 4) North-West (Bihor, Bistrita-Nasaud, Cluj, Maramures, Satu-Mare and Salaj), 5) North-East (Bacau, Botosani, Iasi, Neamt, Suceava and Vaslui), 6) South (Arges, Calarasi, Dambovita, Giurgiu, Ialomita, Prahova, Teleorman), 7) South-West (Dolj, Gorj, Mehedinti, Olt and Valcea), and 8) South-East (Braila, Buzau, Constanta, Galati, Tulcea and Vrancea).

From Table 2 it can be observed that the Capital region has the largest proportion of firms in the country in 2005 (101,379 enterprises). In addition, it can be seen that the relative weight of this region has increased during the period under analysis (from 19.12% in 1999 to 20.26% in 2005). Other regions that experienced an increase in the

proportion of firms between 1999 and 2005 are the Western (from 9.16% in 1999 to 9.79% in 2005), the North-western (from 13.55% in 1999 to 13.71% in 2005), and the Central regions (from 12.33% in 1999 to 12.36% in 2005).

Table 2. Number of Surviving Enterprises in Romania for the period 1999–2005

	1999	2000	2001	2002	2003	2004	2005
Capital	65,260	69,816	74,286	75,808	83,119	92,228	101,379
Centre	40,848	42,416	44,165	44,537	47,950	52,657	57,498
West	30,340	31,679	32,415	33,280	36,677	40,886	45,548
South	39,378	40,636	40,446	40,102	43,228	47,145	51,330
South-East	45,977	47,642	48,324	48,614	52,015	55,929	59,337
South-West	28,206	29,047	29,615	29,199	31,817	34,304	37,360
North-East	36,312	37,577	38,421	39,175	41,757	45,414	48,946
North-West	44,882	46,715	48,700	50,694	52,999	57,941	63,755
Overall	331,203	345,528	356,372	361,409	389,562	426,504	465,153

Regional distribution is based on the NUTS-2 criteria.

Source: Self-devised from the CEBR Industry Outlook.

Second, we obtained for each Romanian county and for the period 1999–2005, information concerning local market conditions, unemployment rates, and population demographics from EUROSTAT data sources.

4.2 Variable definition

As for the dependent variable, there are three most commonly used methods to compare business creation rates across regions. First, the ecological approach considers the flow of new firms relative to the stock of existing firms in a given area (total number of new firms divided by the total number of firms). Here, it is considered that established firms can serve as a platform for incoming firms and a learning field for potential entrepreneurs (Smith, 1991; Audretsch and Fritsch, 1994). However, this definition of birth rate suffers from a pitfall linked to the mean firm size. Given that the number of start-ups is normalised by the existing population of firms, this measure is likely to

present higher birth rates in those regions dominated by large firms, and it would tend to show lower birth rate figures in areas where the mean firm size is relatively low.

The second approach (population) defines the birth rate as the ratio of new firms divided by the total population. The use of this measure leads to the assumption that the potential entrepreneurial pool in a region is constrained to those individuals living in the area under analysis, i.e., all firms created in a specific area are only created by individuals living there (Cross, 1981; O'Farrell, 1986). This definitional problem could also lead to collinearity problems between birth rates and variables related to demand growth and population demographics, a fact that prevents us from introducing this measure of business formation in our analysis.

Finally, there is the labour force approach to define firm formation rates. This method has recently received great acceptance by academics (Kangasharju, 2000; Armington and Acs, 2002; Acs, Armington and Zhang, 2007), as this measure is based on the theory of entrepreneurial choice proposed by Evans and Jovanovic (1989). Under this approach, workers decide to start a new business in a given region based on the expected utility they would obtain from entrepreneurial activities relative to that obtained from wage work. Despite the estimation of business formation rates through this variable implies that workers start new firms in the market where they have been working in, this approach is particularly appealing because it assumes that new entrepreneurs have gained experience in the labour market prior the launch of their businesses. Also, this variable breaks down the population constraint linked to the availability of potential entrepreneurs, that is, new entrepreneurs may operate their firms in areas different from their home-area (Audretsch and Fritsch, 1994). Consequently,

and given the purpose of this paper, we define business formation through two variables linked to the labour force approach: the number of surviving firms relative to the size of the labour force (1,000 workers), and the annual variation in the number of active firms relative to the total labour force, i.e., the net change in the number of firms per 1,000 workers. Descriptive statistics for the dependent variables are presented in Table 3, and it can be observed that, during the period under analysis, the Central region shows the largest number of surviving firms per 1,000 workers. But, the Capital region exhibits the largest annual variation in both the number of surviving (22.54%) and new surviving firms per 1,000 workers (20.60%) in Romania.

Table 3. Firm formation in Romania between 1999 and 2005

Region (NUTS-2)	Counties (NUTS-3)	Surviving firms per 1,000 workers		New surviving firms per 1,000 workers	
		<i>Mean value</i>	<i>Annual change</i>	<i>Mean value</i>	<i>Annual change</i>
Capital	2	89.29 (74.75)	22.54%	13.74 (16.03)	20.60%
Centre	6	99.77 (39.49)	8.32%	5.43 (4.56)	9.18%
West	4	79.37 (24.35)	11.09%	5.19 (4.17)	11.73%
South	7	56.50 (21.33)	6.63%	2.14 (3.21)	7.85%
South-East	6	70.01 (14.30)	6.78%	2.74 (2.63)	7.11%
South-West	5	53.73 (26.37)	9.87%	2.81 (3.69)	15.15%
North-East	6	34.40 (34.40)	8.47%	1.82 (1.71)	8.69%
North-West	6	81.20 (81.20)	10.01%	4.72 (3.90)	10.97%
Total	42	68.39 (34.72)	9.40%	3.94 (5.42)	10.35%

The regional distribution follows the NUTS-3 criteria: The capital includes Bucharest and Ilfov. Centre includes Alba, Brazov, Covasna, Harghita, Mures and Sibiu. West includes Arad, Caras-Severin, Hunedoara and Timis. North west includes Bihor, Bistrita-Nasaud, Cluj, Maramures, Satu-Mare and Salaj. North east includes Bacau, Botosani, Iasi, Neamt, Suceava and Vaslui. South includes Arges, Calarasi, Dambovita, Giurgiu, Ialomita, Prahova, Teleorman. South west includes Dolj, Gorj, Mehedinti, Olt and Valcea. South east includes Braila, Buzau, Constanta, Galati, Tulcea and Vrancea. Standard deviation is presented in brackets. Total number of observations = 294

Source: Self-devised from the CEBR Industry Outlook.

Also, counties that experienced important annual variations in these variables are all in the western Romania. For counties in the Western region the annual change in the stock of surviving and new surviving firms per 1,000 workers between 1999 and 2005 was

11.09% and 11.73%, respectively. For counties in the North-West and South-West the mean change in the number of surviving per 1,000 workers for the same period was 10.01% and 9.87%, respectively, whereas the annual variation in the number of new surviving firms per 1,000 workers stood at 10.97% and 15.15% for counties in the North-West and South-West, respectively. To the contrary, we find that counties in the North-East, the South and South-East lag behind the rest of Romania in terms of both the stock of surviving firms and the number of new surviving firms per 1,000 workers, as well as in terms of annual variations in these figures (Table 3).

The description of the independent variables follows. First, market growth is defined as the Gross Domestic Product per inhabitant (at the county level and expressed in Euros at PPP prices). Information for this variable was obtained from EUROSTAT and from Table 4 it can be seen that the mean GDP per inhabitant between 1999 and 2005 is 5,556 euros (at PPP prices). At the regional level, and as one could expect, the highest GDP values are found in the Capital region (10,780 euros), whereas the lowest values in this variable are shown by those counties in the North-East (4,175 euros) and in the South (4,688 euros).

The second factor considered is linked to population agglomeration. Similar to Reynolds (1991) and Armington and Acs (2002), agglomeration is measured as population per square kilometre (population density). Information for the regional population as well as for the geographical extension of Romanian counties was obtained from EUROSTAT. From the descriptive we observe that the Capital region is the most densely populated (4,364 inhabitants per square kilometre), whereas the population

density in the rest of Romanian regions ranges between 63 inhabitants per square kilometre (West) and 106 inhabitants per square kilometre (North-East) (Table 4).

Third, we introduced the unemployment rate at the county level. Figures in Tables 4, also obtained from EUROSTAT, show that the average unemployment in Romania for the period under analysis is 7.48%, being the regions of the North-West (6.46%) and South-West (6.62%) those reporting the lowest rate of unemployment. To the contrary, regions of the South-East and the South report the highest unemployment rates during the period analysed (8.82% and 8.61%, respectively).

Table 4. Descriptive statistics for the selected variables (period 1999–2005)

Region (NUTS-2)	Counties (NUTS-3)	GDP per inhabitant (PPP)	Population density	Unemployment rate	Proportion of small firms
Capital	2	10,780.47 (3,023.36)	4,364.10 (4,341.35)	0.0749 (0.0168)	0.9572 (0.0164)
Centre	6	6,284.61 (1,365.12)	76.68 (21.58)	0.0741 (0.0249)	0.9599 (0.0078)
West	4	6,569.52 (1,767.28)	63.06 (14.68)	0.0704 (0.0188)	0.9608 (0.0075)
South	7	4,687.86 (1,369.33)	102.90 (39.78)	0.0861 (0.0426)	0.9625 (0.0087)
South-East	6	5,106.33 (1,492.03)	93.16 (29.49)	0.0882 (0.0378)	0.9662 (0.0078)
South-West	5	5,230.52 (1,417.30)	81.35 (14.18)	0.0662 (0.0269)	0.9693 (0.0121)
North-East	6	4,174.71 (1,066.15)	106.08 (23.55)	0.0691 (0.0250)	0.9601 (0.0107)
North-West	6	5,527.66 (1,556.50)	81.28 (15.10)	0.0646 (0.0221)	0.9661 (0.0072)
Overall	42	5,556.35 (2,055.18)	291.68 (1,291.92)	0.0748 (0.0308)	0.9632 (0.0100)

The regional distribution follows the NUTS-3 criteria: The capital includes Bucharest and Ilfov. Centre includes Alba, Brazov, Covasna, Harghita, Mures and Sibiu. West includes Arad, Caras-Severin, Hunedoara and Timis. North west includes Bihor, Bistrita-Nasaud, Cluj, Maramures, Satu-Mare and Salaj. North east includes Bacau, Botosani, Iasi, Neamt, Suceava and Vaslui. South includes Arges, Calarasi, Dambovita, Giurgiu, Ialomita, Prahova, Teleorman. South west includes Dolj, Gorj, Mehedinti, Olt and Valcea. South east includes Braila, Buzau, Constanta, Galati, Tulcea and Vrancea. Standard deviation is presented in brackets. Total number of observations = 294

Source: Self-devised from the CEBR Industry Outlook.

Concerning the presence of small firms in the local economy, we obtained information from the CEBR dataset to measure this variable through the proportion of small firms at the county level. Based on European criteria, we define small firms are those having less than 50 employees. From Table 4 we observe that in Romania, and for the 1999–2005 period, the average proportion of small firms is 96.32%. Also, the South-Western (96.93%) and South-Eastern (96.62%) regions exhibit the highest proportion of small firms in their economies, whereas the Capital region is the one presenting the highest concentration of large businesses (95.72% of established firms are small).

As we indicated in our framework, we use industry density variables to measure the structure of the industry at the county level. Industry density is defined as the number of established businesses per square kilometre relative to the population per square kilometre. From the descriptive we observe that, controlling for the geographical extension of the county, there are 14.94 business per inhabitant in Romania over the 1999–2005 period (Table 5). As expected, the Capital region has the highest level of industry density (26.06), whereas the lowest value for this variable is reported for counties located in the North-East (10.48) and the South (11.95).

We also take into account differences in the configuration of the industry at the county level. From the database we obtained the industry code for each firm based on the four-digit NACE classification. This constitutes an important advance since most research is focused on either all economic sectors or manufacturing firms. To control for differences in the industry configuration at the regional level, we followed a similar approach as in Armington and Acs (2002) and we catalogued the different industries in

seven categories: 1) extractive (NACE codes: 01–1450), 2) manufacturing (NACE codes: 15–3720), 3) distributive (NACE codes: 40–4100 and 60–6420), 4) retailing (NACE codes: 50–5274), 5) business services (NACE codes: 45–4550 and 70–7530), 6) consumer services (NACE codes: 55–5552 and 8000–9700), and 7) financial firms (NACE codes: 65–6720).

This aggregation allows us controlling for specific effects that industries might experience due to market conditions. For instance, extractive firms (3.57% of the total number of firms in the sample) are more dependent on natural resources, whereas manufacturing firms (12.94% of firms) are more likely to employ unskilled labour (Armington and Acs, 2002), have other businesses as major customers and they are more affected by input costs (Reynolds et al., 2007). Also, Reynolds et al. (2007, p. 130) remark that the rate of business formation in sectors oriented towards individuals customers, such as retailing (55.90% of firms in the final sample), consumer services (9.88% of firms) and distributive firms (5.03% of firms), is more affected by variables related to individual commerce (local demand, population growth or availability of small amounts of capital). Finally, we separated financial firms (0.60% of the total number of firms in the sample) because this category represents the supply of finance for potential entrepreneurs and established companies.

Table 5. Descriptive statistics for the variables related to industry density (period 1999–2005)

Region (NUTS-2)	Counties (NUTS-3)	All economic sectors	Extractive firms	Manufacturing firms	Distributive firms	Retailing firms	Business services	Consumer services	Financial firms
Capital	2	26.0609 (13.3009)	0.3193 (0.1993)	2.6843 (1.1352)	1.2529 (0.6253)	13.4079 (5.8694)	6.0000 (5.3388)	2.1971 (1.413)	0.1986 (0.1954)
Centre	6	17.6107 (4.1738)	0.5264 (0.1673)	3.0355 (0.7398)	1.0014 (0.3488)	8.1012 (2.1137)	2.7567 (1.5246)	2.0936 (0.5078)	0.0971 (0.0542)
West	4	17.2855 (4.0074)	0.6611 (0.3370)	2.3979 (0.615)	0.9386 (0.3688)	8.3443 (1.2581)	2.7318 (1.8655)	2.1039 (0.3406)	0.1068 (0.0580)
South	7	11.9521 (2.4526)	0.6784 (0.3808)	1.2759 (0.5097)	0.5235 (0.2703)	7.2857 (1.2486)	1.2106 (0.8041)	0.9243 (0.1912)	0.0531 (0.0405)
South-East	6	15.2006 (4.3061)	0.5219 (0.2075)	1.4690 (0.5369)	0.7714 (0.5304)	9.1879 (2.0379)	1.6138 (1.1276)	1.5490 (0.7398)	0.0864 (0.0611)
South-West	5	12.0758 (5.2049)	0.3077 (0.1836)	1.1251 (0.5508)	0.4823 (0.3052)	7.8606 (3.6139)	1.1480 (0.6878)	1.0566 (0.4536)	0.0957 (0.0629)
North-East	6	10.4834 (1.8948)	0.3355 (0.1501)	1.5117 (0.5048)	0.4281 (0.2517)	6.0021 (0.9338)	1.1552 (0.6233)	0.9855 (0.1906)	0.0631 (0.0437)
North-West	6	17.0225 (5.6931)	0.4724 (0.1473)	2.6255 (0.8125)	1.1721 (0.4664)	8.3426 (2.9524)	2.6098 (1.7515)	1.6771 (0.6036)	0.1243 (0.0789)
Overall	42	14.9336 (6.0776)	0.4930 (0.2719)	1.9373 (0.9549)	0.7756 (0.4794)	8.1023 (2.8761)	2.0465 (1.9991)	1.4856 (0.7266)	0.0929 (0.0768)

The regional distribution follows the NUTS-3 criteria: The capital includes Bucharest and Ilfov. Centre includes Alba, Brazov, Covasna, Harghita, Mures and Sibiu. West includes Arad, Caras-Severin, Hunedoara and Timis. North west includes Bihor, Bistrita-Nasaud, Cluj, Maramures, Satu-Mare and Salaj. North east includes Bacau, Botosani, Iasi, Neamt, Suceava and Vaslui. South includes Arges, Calarasi, Dambovita, Giurgiu, Ialomita, Prahova, Teleorman. South west includes Dolj, Gorj, Mehedinti, Olt and Valcea. South east includes Braila, Buzau, Constanta, Galati, Tulcea and Vrancea. Standard deviation is presented in brackets. Total number of observations = 294

Source: Self-devised from the CEBR Industry Outlook.

Considering the industry density at different economic sectors, we observe in Table 5 that the spatial distribution of firms in Romania is heavily biased towards retailing, business services and manufacturing businesses. The capital region shows the highest density in all economic sectors excepting the extractive and manufacturing sectors. Together with the capital region, counties in the North-Western and Western regions show and above-the-average density of financial firms, whereas counties in the North-East not only have the lowest overall industry density, but also the poorest spatial concentration of distributive, retailing and financial businesses.

4.3 Econometric model

In a first step, we propose to identify those factors that make some geographical areas have a higher stock of firms in Romania through the following equation:

$$\begin{aligned}
 F/W_{i,t} = & \alpha_o + \beta_1 \text{GDP}_{i,t-1} + \beta_2 \text{Population Density}_{i,t-1} \\
 & + \beta_3 \text{Unemployment}_{i,t-1} + \beta_4 \text{Proportion of Small Firms}_{i,t-1} \\
 & + \beta_5 \text{Industry Density}_{i,t-1} + \beta_6 \text{Time}_{i,t} \\
 & + \beta_7 \text{Time}_{i,t} \times \text{Region}_{i,t} + \varepsilon_{i,t}
 \end{aligned} \tag{1}$$

where $F/W_{i,t}$ refers to the stock of active firms (F) per 1,000 workers (W) in each county (i) and for each year (t), and $\varepsilon_{i,t}$ is the normally distributed disturbance term. As control variables we introduced time, which corresponds to year-specific dummies, and dummy variables for each region (NUTS-2) to account for potential regional effects. All independent variables are introduced as lagged terms to avoid potential endogeneity problems.

Our second application aims at explaining county differences in firm formation rates as:

$$\begin{aligned}
\Delta F/W_{i,t} = & \alpha_o + \beta_1 \Delta \text{GDP}_{i,t-1} + \beta_2 \Delta \text{Population Density}_{i,t-1} \\
& + \beta_3 \Delta \text{Unemployment}_{i,t-1} + \beta_4 \Delta \text{Proportion of Small Firms}_{i,t-1} \\
& + \beta_5 \Delta \text{Industry Density}_{i,t-1} + \beta_6 \text{Time}_{i,t} \\
& + \beta_7 \text{Time}_{i,t} \times \text{Region}_{i,t} + \varepsilon_{i,t}
\end{aligned} \tag{2}$$

where Δ denotes a change in the variables used in our analysis. Similar to our first estimation, lagged terms of the independent variables are introduced in the regression, and for these variables changes were calculated between periods $t-2$ and $t-1$ to avoid endogeneity problems.

Concerning the econometric technique, panel data analysis is the most efficient tool when the sample is a mixture of time series and cross-sectional data since it takes into account firm's unobserved and constant heterogeneity. Consequently, equations [1] and [2] are estimated using a fixed-effects approach.

As for the hypotheses to be tested, we expect a positive relation between the GDP variable and business formation ($\beta_1 > 0$ in equations [1] and [2]) (**H1**). In the case of the hypothesis linked to population density (**H2**), we expect $\beta_2 > 0$, which means that there is a positive impact of agglomerations over business formation rates. In the case of the third hypothesis (**H3**) we expect that $\beta_3 > 0$, meaning that there is a positive relation between unemployment rates and start-up activities. For hypothesis four, a positive result in the parameter estimate linked to the proportion of small businesses ($\beta_4 > 0$) would indicate that this variable is having a positive impact upon business creation rates (**H4**).

Finally, a positive coefficient in the industry density variable ($\beta_5 > 0$) would indicate that regions with a greater concentration of firms relative to their population have higher business formation rates (**H5a**). A similar result is expected for the parameter estimates related to consumer-oriented businesses (**H5b**).

5. Empirical Findings

Table 6 presents the regression results (fixed-effects) for our first model, i.e., when the dependent variable is, for each county (NUTS-3), the natural logarithm of the total stock of firms per 1,000 workers. In Table 7 we show the results for our second application, when the dependent variable is the annual variation in the number of active firms per 1,000 workers. Specification one in Tables 6 and 7 presents the results for the model that considers the overall industry density, whereas specification two introduces into the regression model the variables accounting for the level of industry density for the different economic sectors previously presented.

Our results show that underprivileged counties, in terms of lower levels of GDP per capita, are those which show a higher number of firms per 1,000 workers (Table 6). When the change in the number of established firms is the dependent variable (Table 7), we obtain the same result. Yet, the lack of significance in the parameter estimates leads to reject our first hypothesis (**H1**) which states that regions with higher per capita GDP have higher rates of business formation. A similar finding is obtained for the agglomeration variable (population density). Here, results reveal that the stock of active firms is not concentrated in highly-populated areas. Again, parameter estimates have the predicted sign, however, they are not statistically significant. We therefore reject **H2**

which proposes that business formation rates are higher in those regions more densely populated.

Table 6: Regression results (Fixed Effects): Regional characteristics and firm formation

Independent variables	Dependent variable: net number of surviving firms per 1,000 workers	
	(1)	(2)
In GDP per inhabitant (PPP) ($t-1$)	-0.2344 (0.1693)	-0.1292 (0.1563)
In Population density ($t-1$)	1.0992 (1.2216)	1.0770 (1.1709)
Unemployment rate ($t-1$)	1.7399 (0.5934)***	1.6154 (0.5691)***
Proportion of small firms ($t-1$)	-6.3432 (2.2780)**	-4.7537 (2.2479)**
Industry density ($t-1$)	0.0564 (0.0126)***	
Extractive density ($t-1$)		-0.1418 (0.1775)
Manufacturing density ($t-1$)		-0.2016 (0.0934)**
Financial services density ($t-1$)		0.7814 (0.5343)
Retailing density ($t-1$)		0.1553 (0.0210)***
Distributive density ($t-1$)		0.1454 (0.1168)
Business services density ($t-1$)		-0.0214 (0.0331)
Consumer services density ($t-1$)		-0.1317 (0.0943)
Year 2000	-0.3069 (0.2224)	-0.9377 (0.2327)***
Year 2001	-0.1666 (0.1994)	-0.7618 (0.2124)***
Year 2002	-0.0667 (0.1827)	-0.5353 (0.1921)***
Year 2003	-0.0518 (0.1644)	-0.4446 (0.1660)***
Year 2004	-0.0661 (0.1353)	-0.2743 (0.1278)**
Time dummies \times Regional dummies	Yes	Yes
Intercept	6.5270 (7.0184)	4.4031 (6.5465)
F – test	16.26***	18.60***
R ² (within)	0.8160	0.8565
Observations	252	252

Standard errors are presented in brackets. The omitted regional variable is the Capital region (NUTS-2). *, **, *** indicates significance at the 0.10, 0.05, and 0.01 level, respectively.

Table 7: Regression results (Fixed Effects): Regional differences in business formation

Independent variables	Dependent variable: Δ Net number of surviving firms per 1,000 workers	
	(1)	(2)
Δ GDP per inhabitant (PPP) ($t-2, t-1$)	-0.0329 (0.0660)	-0.0607 (0.0646)
Δ Population density ($t-2, t-1$)	0.6821 (0.7632)	1.1970 (0.7573)
Δ Unemployment ($t-2, t-1$)	0.0641 (0.0386) *	0.0657 (0.0385) *
Δ Proportion of small firms ($t-2, t-1$)	-3.4676 (1.4427) **	-3.1757 (1.4441) **
Δ Industry density ($t-2, t-1$)	-0.2951 (0.1352) **	
Δ Extractive density ($t-2, t-1$)		-0.0311 (0.0351)
Δ Manufacturing density ($t-2, t-1$)		0.0146 (0.0883)
Δ Financial services density ($t-2, t-1$)		0.0102 (0.0101)
Δ Retailing density ($t-2, t-1$)		-0.4184 (0.1218) ***
Δ Distributive density ($t-2, t-1$)		0.0054 (0.0270)
Δ Business services density ($t-2, t-1$)		0.1766 (0.0681) ***
Δ Consumer services density ($t-2, t-1$)		-0.0190 (0.0746)
Year 2001	0.0030 (0.0660)	0.0287 (0.0655)
Year 2002	0.0865 (0.0726)	0.0772 (0.0714)
Year 2003	0.0546 (0.0730)	-0.0023 (0.0776)
Year 2004	-0.0504 (0.0663)	-0.0576 (0.0720)
Time dummies \times Regional dummies	Yes	Yes
Intercept	0.1540 (0.0219) ***	0.0836 (0.0286) ***
F – test	4.04 ***	4.14 ***
R ² (within)	0.5330	0.5876
Observations	210	210

Standard errors are presented in brackets. The omitted regional variable is the Capital region (NUTS-2). *, **, *** indicates significance at the 0.10, 0.05, and 0.01 level, respectively.

Concerning the unemployment variable, results in Table 6 indicate that business formation is more intense in those counties located in regions with higher rates of unemployed people. Moreover, from Table 7 we observe that an increase in unemployment rates positively affects business creation, a finding that signals that in those regions where unemployment grows individuals are more likely to be pushed towards entrepreneurial activities. This is consistent with our third hypothesis (**H3**) that states that regions with greater unemployment rates exhibit higher rates of business formation.

As for the proportion of small firms at the county level, our results reveal that counties dominated by small firms show lower rates of business formation (Table 6). Furthermore, we find that a shift to a greater proportion of small firms is negatively affecting the creation of new businesses (Table 7). Thus, we reject **H4** which states that the rate of new business formation is higher in those regions with a greater proportion of small businesses. Alternatively, this result could signal that Romanian regions lack flexible specialisation (Reynolds et al., 2007). As we indicated, Romania has been exposed to a profound restructuring process derived from the dramatic structural change towards a market-driven economy after 1989. This process could have led some regions to have a less flexible and efficient organisation of their economic activity when it comes to both allocate the different resources available and adapt to changes in the local market conditions (Reynolds et al., 2007). Rather, new firm formation in Romania is helping to industrially reconfigure those old industrial regions.

In accordance with the regional spillover theory (Krugman, 1991a), the coefficients for the industry density variable are positive and highly significant (Model 1 in Table 6). We therefore confirm our hypothesis **H5a** which proposes that the rate of new business formation is greater in regions with higher levels of industrial density. However, the coefficient for industry density turns negative and significant when the change in this variable is considered, indicating that regions where the concentration of firms relative to the population increases exhibit lower rates of business formation (Model 1 in Table 7). From specification 2 in Table 7 it is possible to observe that this negative result comes from an industry restructuring process. In fact, results show how regions with higher changes in business formation rates are those that experienced a change in the

configuration of their industry, moving from retailing activities to a higher concentration of firms operating in sectors related to business services. Thus, we reject hypothesis **H5b** which states that the rate of business formation is higher in regions with a higher concentration of consumer-oriented businesses.

6. Conclusions

The main research objective guiding this paper was to explain regional differences in business formation rates in Romania. The significance of this research flows from the recognition that entrepreneurship is a crucial component necessary to consolidate the market economy in transition countries. Therefore, one of the most important challenges for former socialist countries like Romania is to stimulate an entrepreneurial society which can help consolidate the private business sector. But the Romanian landscape is marked by important regional differences in firm formation rates.

Using a robust longitudinal database comprising information for more than 465,000 Romanian firms from all economic sectors for the period 1999–2005, we constructed a dataset on business formation rates considering the county (NUTS-3) as unit of analysis. Results indicate that for the specific case of Romania, the regional differences in firm formation rates are not influenced by local levels of economic development as measured by GDP, nor by agglomeration when measured through population density.

New business creation in Romania was found to be linked to local levels of unemployment, where counties with greater unemployment have higher new firm formation rates. This result clearly indicates a strong necessity character of entrepreneurship in Romania, where becoming an entrepreneur and starting your own

business is often seen as a means of income generation of last resorts when no labour market alternatives are to be found.

Similarly new firm formation in Romania is especially high in counties with an established industrial base, where industry density and industry restructuring processes explain the uneven regional distribution of entrepreneurship across Romania. This is an indication of the importance of industry spillovers in Romania, where new firms are often set-up in the shadows of existing businesses. This is especially relevant in the case of those Romanian territories that shifted towards an entrepreneurial fabric configured by firms operating in business-service sectors.

Rather than an entrepreneurship concentration pattern characterised by regional economies with businesses of a relatively small size, the geographic distribution of new firms in Romania is following a somewhat similar pattern as that set by the industrial developments of the planned economy in regions marked by large industrial firms.

This latter result, combined with the finding that greater unemployment and industry density contribute positively to new firm formation rates in Romanian regions, would indicate that apart from the Capital entrepreneurship in Romania is helping to industrially reconfigure the old industrial regions.

The results emerging from this study have important implications for policy makers. Many governments introduce policies to enhance market growth and local demand as the economic welfare of territories has been traditionally linked to the benefits derived from the population and economic potential of regions. These actions have an indirect

effect on business creation rates as individuals residing in more developed and wealthier societies have a wider range of business opportunities and face lower structural barriers when it comes to start a new business. Even though these policies have had an impact on the development of the different Romanian regions, our results indicate that these investments had no significant impact on business formation rates.

The dissimilar business formation rates found across Romanian regions as well as its reported determinants would tend to give ammunition to the argument that effective entrepreneurship support policy should have the capacity to be customised to fit the specific profile of the targeted regions and beneficiaries. Rather than a uniform entrepreneurship programmes, governments and local administrations could introduce specific policies that not only sway individuals to get involved in entrepreneurial activities by facilitating the business creation process, but also that take into consideration the regional specific conditions to ensure a more effective allocation of public resources, in order to help established firms survive and operate in the short and long term.

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