

Armeanu, Dan; Istudor, Nicolae; Lache, Leonard

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THE ROLE OF SMEs IN ASSESSING THE CONTRIBUTION OF ENTREPRENEURSHIP TO GDP IN THE ROMANIAN BUSINESS ENVIRONMENT

Dan Armeanu^{1*}, Nicolae Istudor² and Leonard Lache³
¹⁾²⁾³⁾ *Bucharest University of Economic Studies, Romania*

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Abstract

Given the negative effects of the economic crisis on the Romanian economy, entrepreneurship represents one of the main pillars of economic recovery and the authorities need to act in support of private entrepreneurship initiative. Even though entrepreneurship does not equate to the small and medium-sized enterprises, there is strong support in literature regarding the importance of SMEs in national economies due to the authorities' potential of intervention and their contribution to gross value added.

The fluctuating evolution of the Romanian business environment has led to a high volatility of its contribution to GDP, which is especially true in the case of SMEs due to their lack of technology and capital and difficult access to financing, as well as limited know-how compared to the large companies that control the Romanian market. Successful entrepreneurial initiative leads to sustainable businesses and ensures a smooth transition from business ideas to the creation of value added, thus supporting economic growth and the narrowing of macroeconomic gaps which have been generated during the economic recession. As a distinctive and dynamic component of Romanian entrepreneurship, the SME segment has a significant contribution to GDP. This study aims at assessing the contribution of entrepreneurship, through its SME segment, to Romania's GDP in the main economic sectors and, at the same time, the estimation of output gap at sectoral level, thus filling a gap in entrepreneurship-related domestic literature.

Keywords: entrepreneurship, business environment, small and medium-sized enterprises, real GDP, potential GDP, output gap, production function

JEL Classification: L26

* Corresponding author, **Dan Armeanu** — darmeanu@yahoo.com

Introduction

Entrepreneurship initiative represents a cornerstone of market economy and its support by public authorities is a fundamental prerequisite of long-term economic welfare. Such supportive measures are ever more important in the context of an economy in transition to a fully-fledged market-based system. This is the case of Romania, where the slow and unconvincing progress has been a chief result of the lack of a stable, attractive and competitive business environment. Public policy has obviously lacked a structured and coherent approach to sustaining the local entrepreneurship environment, which in turn has affected subsequent economic growth. Since multinational corporations dominate the Romanian economic landscape, with limited potential for stimulative public intervention (i.e., tax benefits), significant attention must be paid to the small and medium-sized enterprise sector. In many economic sectors, SMEs are the main job creators, as well as the main contributors to GDP. Authorities have an array of tools available to support SMEs, such as tax and administrative facilities, counselling and assistance in EU funds absorption, support towards human capital development etc.

The connection between entrepreneurship and SMEs in the Romanian business environment is well documented in literature – see, among others, Lafuente and Driga (2008, 2009), Lafuente and Rabetino (2007), Marchiş (2011) and Ciucan-Rusu and Szabo (2013). The authors demonstrate that entrepreneurial initiative in the Romanian economy has been relatively weak at creating value added and at orientation towards the customer and that deficiencies in human resources, financing and the institutional framework have not allowed SMEs to fully unlock their growth potential, thus limiting their contribution to GDP. The specificity of the institutional framework, the lack of management culture and entrepreneurial education*, as well as the inherent shortcomings of the local business environment (difficult access to financing for smaller companies, the high number of bankruptcies and the lack of fiscal transparency) have far outweighed the traditional advantages of SMEs – the potential to generate value added, the adaptability to ever changing markets, the rapid adoption of new technology and ability to produce managerial innovation. All of these aspects have obviously affected the contribution of SMEs to GDP.

Given that domestic literature on the topic of entrepreneurship (and its SME sub-segment) is mainly focused on descriptive analysis and its qualitative dimension†, the objective of this study is to assess the capacity of entrepreneurship and SMEs to innovate and to generate value added. The proposed approach shall be based on the Cobb-Douglas production function with constant returns to scale and statistical filtering techniques and it shall estimate all of the model's inputs (capital, labour and labour elasticity of output) by specific techniques, using statistical data available for the Romanian economy over the 2000-2013 period. The model shall also be used to evaluate the output gap of the SME segment, as well as to determine the contribution of labour, capital and total factor productivity to economic growth in Romania's top six value added-generating sectors.

The paper is structured as follows: the ensuing section is dedicated to a review of the main results of entrepreneurship- and SME-related literature, both in Romania and internationally. Next, the research methodology shall be described – the production function model, estimating input variables, applying the model and assessing its suitability given the peculiarities of the Romanian economy. The two following sections shall discuss model results and draw the necessary conclusions.

* See Lafuente and Rabetino (2007).

† See Lafuente and Driga (2007, 2009).

Review of the scientific literature

Small and medium-sized enterprises, and more generally entrepreneurship, are widely considered to be a fundamental engine of economic development at global level. However, due to the institutional and market inefficiencies they face, public intervention is necessary in order to sustain growth in the SME sector (Pîslaru and Modreanu, 2012). According to The World Bank (1994, 2002, 2004) and Beck and Demirgüç-Kunt (2004), pro-SME policies are based on three main pillars: first and foremost, stimulating competition and entrepreneurship and thus promoting economic efficiency, innovation and the effective use of resources. Secondly, SMEs are widely believed to have the best potential of job creation, as large corporations are comparatively less reliant on labour. Thirdly, some authors (see, for instance, Ardic, Mylenko and Saltane, 2011; Cressy and Tovainen, 2001; Dietrich, 2010) consider SMEs to be more productive than large firms; however, their progress is slowed down by limited access to financing and several institutional barriers.

As pointed out by Beck and Demirgüç-Kunt (2004, 2006), in spite of the growing interest towards fostering SME development at international level that has resulted in several multi-billion dollar financial assistance programmes provided by The World Bank and EBRD, among others, pro-SME policies are subject to heavy criticism by authors who argue their efficiency. Some studies (Pagano and Schivardi, 2001) argue that large corporations enjoy significant competitive advantage that enables them to benefit from important scale economies, which in turn allows them to make significant investment in R&D that ultimately leads to increased productivity, as well as an improved ability to respond to the challenges of a continuously evolving international business environment (Maksimovic and Phillips, 2002). Other studies (Haltiwanger, Jarmin and Miranda, 2010) indicate that, in the medium term, SMEs are neither better job creators than large companies, nor are they more reliant on labor than large corporations.

An interesting view is that of Ayyagari, Demirgüç-Kunt and Maksimovic (2011) and Beck and Demirgüç-Kunt (2006), who question the relationship between firm size and firm contribution to economic growth. As it turns out, this relationship is heavily influenced by factors as natural resource endowment, the direction and efficiency of economic policy, the degree of openness exhibited by the economy, the competitiveness of domestic products in international markets etc.. For example, economies that are relying on the export of products that incorporate substantial value added favour large corporations, as opposed to less open economies, and pro-SME policies can generate distortions at microeconomic level (Beck and Demirgüç-Kunt, 2004). However, it is worth noting that many studies question the higher presumed efficiency and productivity of SMEs compared to large corporations, as well as the contribution of SMEs to economic growth. As discussed in Beck and Demirgüç-Kunt (2004), this requires significant effort towards a business environment with few barriers to entry and exit, an efficient institutional framework and a transparent and predictable legal system and public policy that fosters private economic initiative and stimulates competition.

The issues of SME efficiency and SME contribution to economic growth are ever more complicated in the case of emerging economies, where the lack of appropriate management culture, bureaucracy and institutional deficiencies discourage both entrepreneurial initiative and the internationalization of SMEs, thus directly affecting their development (Volchek, 2013).

Regarding entrepreneurship in Romania, Ciucan-Rusu and Szabo (2013) identify an additional issue of the business environment and SMEs: the translation of already performed activities in the public sector into the SME segment, thus leading to a

"nomenclature business" type of entrepreneurship, dominated by a large number of businesses with only one employee and with zero ability to innovate and create value for the client. The same study underlines the weak involvement of education in acknowledging the importance of entrepreneurship and entrepreneurial culture, idea backed by Lafuente and Rabetino (2007). Other studies (Lafuente and Driga, 2007; 2009, Marchiș, 2011, Pîslaru and Modreanu, 2012) contain descriptive analyses of entrepreneurship and SMEs and statistical information pertaining to SMEs, without attempting a quantitative assessment of the contribution of SMEs to GDP or a modelling of the sectoral output of SMEs and the related output gap. Such an endeavour is necessary as it permits correlations and simultaneous interpretations with similar analysis performed by the National Bank of Romanian and the European Commission at a macro level, thus providing policy makers with a valuable instrument.

Research methodology

The output model based on the Cobb-Douglas production function assumes the following equation of output:

$$\bar{Y} = A\bar{L}^\alpha \bar{K}^{1-\alpha} \tag{1}$$

where \bar{Y} is potential GDP, \bar{L} is potential labour input (the level of full employment), \bar{K} is the potential capital stock, when labour input is at its potential level and α is the output elasticity of labour.

As discussed in Konuki (2008), if salaries reflect the marginal productivity of labour, α shall be equal to the ratio of total labour earnings to gross domestic product. A formal derivation of this parameter in the particular case of the Romanian economy is discussed in the following sections.

Estimating potential GDP on the basis of a production function approach involves the identification of potential levels of labour and capital, total factor productivity and the output elasticity of labour, α . The main advantage of this methodology is that it is backed by economic theory, while at the same time providing useful information about the drivers of equilibrium output, which is out of reach for purely statistical methods. However, as highlighted in Denis, Grenouilleau, McMorrow and Roger (2006), the robustness and the reliability of this approach is only as good as its inputs. As we shall see shortly, estimating potential levels of labour and capital poses a significant challenge in the case of volatile economies.

In order to assess the labour trend, the following equation shall be used:

$$\bar{L} = N \cdot \bar{\theta} \cdot (1 - NAIRU) \cdot \bar{T} \tag{2}$$

where \bar{L} is the equilibrium level of labour (used for purposes of estimating potential GDP), N is active population (15-64 years old), $\bar{\theta}$ is the trend labour participation rate and the equilibrium unemployment rate (NAIRU) shall be determined based on the following equation (U_t is the actual unemployment rate):

$$U_t = NAIRU_t + U_t^C \tag{3}$$

in which U_t^C is cyclical unemployment (driven by the current state of the economy). \bar{T} is the trend average number of hours worked weekly in the economy.

As regards the estimation of the parameters, some clarification needs to be made. For purposes of estimating NAIRU, two approaches can be used: on the one hand, dynamic models that explicitly incorporate macroeconomic drivers of NAIRU (such as inflation; see Altăr, Necula and Bobeică, 2010, Kuttner, 1994 and Denis, Grenouilleau, McMorrow and Roger, 2006 for a thorough discussion); on the other hand, statistical techniques for trend extraction can be used, the most popular being the Hodrick-Prescott and Kalman filters.

In this paper we shall use the approach proposed by Ozbek and Ozlale (2005), with NAIRU being modelled using a random walk with drift model:

$$NAIRU_t = NAIRU_{t-1} + z_t + \varepsilon_t^{NAIRU} \quad (4),$$

where the drift z_t itself follows a random walk process:

Estimating the cyclical component of unemployment poses some methodological challenges, as discussed in Altăr, Necula and Bobeică (2010). Due to the frequent structural breaks in time series pertaining to the Romanian economy and the resulting high volatility of macroeconomic variables and high sensitivity to phases of the economic cycle, we find that a legitimate choice for the cyclical component of unemployment is a AR(2) model with time-varying coefficients:

$$U_t^C = \delta_{1t} U_{t-1}^C + \delta_{2t} U_{t-2}^C + \varepsilon_t^{U^C} \quad (5),$$

with the associated stationarity condition $\delta_{1t} + \delta_{2t} < 1$.

Based on these equations of movement, we quarterly NAIRU shall be estimated using an extended Kalman filter applied to the seasonally adjusted time series. The trend labour participation rate $\bar{\theta}$ and average time worked \bar{T} , shall be estimated by means of a standard Hodrick-Prescott filter instead of a consensus approach as suggested by Altăr, Necula and Bobeică (2010), which propose the simultaneous use of the HP and Kalman filters. This choice is motivated by the fact that the time series have exhibited not significant volatility over the relevant time frame, but a smooth evolution, which makes the HP filter an appropriate choice.

The estimation of the labour input at sectoral level is done based on the same reasoning as in (2), accounting for the proportion of SME employees in the total number of employees at economic sector level, as follows:

$$\bar{L}_S = N \cdot \frac{\bar{N}_S}{\bar{N}_{EC}} \cdot w_{S_IMM} \cdot \bar{\theta} \cdot (1 - NAIRU) \cdot \bar{T} \quad (6),$$

where: \bar{L}_S is the labour trend at sectoral level (only SME), \bar{N}_S is the labour trend in the economic sector S, estimated using a Hodrick-Prescott filter, \bar{N}_{EC} is the labour trend at the whole economy level, also estimated using a HP filter, and w_{S_IMM} equals the weight of employees in the economic sector S attributable to SMEs.

The output elasticity of labour α can be estimated using a variety of approaches, almost all based on some ratio of labour derived earnings to gross value added created in the economy (please see Guerriero, 2012, for a detailed analysis of the alternative approaches to

determining the parameter). Estimates for the Romanian economy range from 0,65 (Altăr, Necula and Bobeică, 2010), to 0,68 (European Commission, using an estimation horizon between 1990 and 2006) and 0,69-0,70 (Guerriero, 2012).

For purposes of this study, the following formula shall be used to estimate α , both at economy level and at sectoral level:

$$\alpha = \frac{C + MI}{GVA} \tag{7}$$

in which C is the employee compensation, consisting of salaries and other assimilated income, MI equals mixed income, representing the proportion of gross operating surplus charged to entrepreneurial compensation and GVA is gross value added. Estimating α at sectoral level poses some challenges, as mixed income is not available at economic sector level. This is why we will make the assumption that mixed income is distributed at sectoral level directly proportional to the gross value added created in the respective sectors, as follows:

$$\alpha_s = \frac{C_s + MI_{EC} \times \frac{GVA_s}{GVA_{EC}}}{GVA_s} \tag{8}$$

Inherent in our approach is the assumption that the output elasticity of labour α is the same for both the economy as a whole and for the SME segment of the economy.

The next important step in calibrating the production function is estimating the capital stock, which is not directly observable. A possible approach is proposed by Konuki (2008) and Altăr, Necula and Bobeică (2010), based on the permanent inventory method. According to this model, the capital stock at time t is given by:

$$K_t = K_{t-1}(1 - d_Q) + GFCF_{t-1,t} \tag{9}$$

where K_t is total capital at time t, d_Q is the quarterly rate of depreciation of capital, with the link between the annual and quarterly rates of depreciation being given by $d_q = 1 - (1 - d_A)^{1/4}$, and $GFCF_{t-1,t}$ is the gross fixed capital formation (capital inflows) during period t.

The application of the permanent inventory method can be done in two ways. One of them is to assume that the growth rate of capital is equal to the rate of growth of real GDP. In this case, the real capital stock at the end of year n is determined as follows (see Gălăţescu, Rădulescu and Copaciu, 2007):

$$K_n = \frac{GFCF_n}{r_A + d_A} \tag{10}$$

where r_A is the annual rate of growth of capital formation. This approach has one significant drawback, which is the need to reliably estimate the annual growth rate of capital inflows, with different assumptions yielding different results, as discussed in Konuki (2008). The other approach starts with a predetermined level of the initial capital-to-output ratio and subsequently estimates the capital stock using the recursive relationship (9).

In their study, Altăr, Necula and Bobeică (2010) start with a capital-to-output ratio equal to 2,0 in 1995; however, this is not consistent with the IMF country report of 2003 which proposes a capital-to-output ratio of 1,3 in 1992. Considering the capital obsolescence in the Romanian economy in the first years of transition to a market economy system (implying high depreciation rates), we consider that a capital-to-output ratio of 2.17 in 2000 is appropriate, which corresponds to a capital-to-gross value added ratio of 2,44 in the same year. This value has been estimated using equation (9), considering an average annual growth rate of real GDP of 3.59% and annual depreciation rate of capital of 5% over the 2000-2013 horizon. The annual depreciation rate is consistent with the studies of Altăr, Necula and Bobeică (2010) and Gălăţescu, Rădulescu and Copaciu (2007).

In order to evaluate the capital stock in the SME segment of the economy at sectoral level, we shall start from the capital-to-gross value added ratio determined for year 2000, as follows:

$$K_{SME,S,2000} = GVA_{2000} \cdot w_{K,GVA,2000} \cdot \frac{GVA_{SME,S}}{GVA_{EC,S}} \quad (11),$$

The estimation of capital stock for subsequent periods is done based on the assumption that the capital stock of SMEs will grow at a quarterly rate equal to the growth rate of the total capital stock in the economy. For purposes of modelling potential GDP, there are solid arguments (Denis, Grenouilleau, McMorrow and Roger, 2006), Konuki, 2008, IMF, 2003 and 2012 etc.) regarding the use of the actual capital stock in the economy as a proxy for the trend stock of capital ($K_T = \bar{K}_T$).

The last step in model calibration is estimating total factor productivity (TFP). In this respect, implied TFP shall be first determined using actual real GDP and trend labour and capital determined using the methodology previously described:

$$A_{implied} = \frac{Y}{L^\alpha K^{1-\alpha}} \quad (12),$$

where L and K represent actual inputs of capital and labour. For the trend input of labour, formula (6) will be used, replacing trend values of variables with the actual quarterly observations, while trend capital is given by (17). Once the series of implied TFP has been derived, a Hodrick-Prescott filter shall be applied in order to estimate trend TFP.

In our opinion, the model's strength lies in the simultaneous identification of factor and productivity contributions to sectoral, SME-produced GDP, as well as output gap at sectoral level. As it shall be seen, the model's results allow for a better understanding of Romania's macroeconomic gaps (the overheating of the economy in 2004-2008 and the subsequent contraction) and, at the same time, an appraisal of SME performance during the crisis and the ensuing economic recovery. By identifying the winners and the losers of the economic crisis, we shall have a clear image of the ability of local entrepreneurship to adapt to new economic conditions and contribute to economic growth through innovation and increased productivity.

Results and discussion

The first step in our research effort is to estimate the output elasticity of labour α . The estimation has been performed for both the economy as a whole and for the six economic sectors taken into consideration based on their contribution to total gross value added

created in the economy. The estimation methodology has been described in the previous section and the data cover a 14-year time horizon (2000-2013). The results are presented in table no. 1 below:

Table no. 1: Output elasticities of labour

Economy	Industry	Trade	IT&C	Real Estate	Construction	Agriculture
0,6261	0,6374	0,6932	0,5739	0,2349	0,5109	0,4348

Source: authors' calculations

At this point, an important clarification must be made concerning the contribution of the SME segment to gross value added and the proportion of employees in the SME segment in the total number of employees in the Romanian economy. As previously discussed, these are necessary in order to estimate the labour and capital inputs in equation (9). For purposes of this study, a five-year average (2008-2012) has been considered with the exception of agriculture, for which data are not available and a proportion of 90% has been considered for both gross value added and the number of employees for the SME segment. The results are given in table no. 2 and 3:

Table no. 2: The contribution of SMEs to total gross value added created in different sectors of the Romanian economy, 2008-2012

Gross value added at factor prices, billion RON										
Year	Industry		Trade		IT&C		Real Estate		Construction	
	Total	% SME	Total	% SME	Total	% SME	Total	% SME	Total	% SME
08	85,7	31,7	65,4	68,1	15,9	30,1	6,8	95,3	26,7	68,3
09	75,1	32,6	55,9	68,1	14,8	28,8	5,0	94,9	21,9	72,9
10	83,9	31,0	56,6	64,1	14,8	31,7	4,9	95,8	19,8	71,1
11	88,2	30,8	59,8	62,2	14,8	33,1	5,0	95,4	19,5	68,5
12	95,4	30,3	61,6	63,0	15,8	36,0	5,8	96,7	18,5	73,4
Σ	428,3	31,3	299,2	65,1	75,9	31,9	27,4	95,6	106,4	70,8

Source: INSSE data, authors' calculations.

Table no. 3: Number of employees in the Romanian economy, 2008-2012

Number of employees (thousands persons)										
Year	Industry		Trade		IT&C		Real Estate		Construction	
	Total	% SME	Total	% SME	Total	% SME	Total	% SME	Total	% SME
08	1.644	49,5	1.543	76,7	145	58,2	47	89,3	554	77,2
09	1.423	50,4	1.410	75,9	135	59,7	43	89,3	469	79,1
10	1.346	50,1	1.330	76,1	130	59,3	41	88,4	393	78,1
11	1.387	50,9	1.362	77,0	134	59,0	41	87,8	418	79,7
12	1.381	50,2	1.369	76,2	137	58,9	40	88,2	400	80,9
Σ	7.181	50,2	7.013	76,4	681	59,0	211	88,6	2.235	79,0

Source: INSSE data.

Before we proceed to the discussion of the estimation results in respect of potential GDP and output gap for the Romanian business environment, we shall briefly analyse the contribution of production factors to economic growth in Romania over the 2001-2013 time frame. The subsequent figure no. 1 exhibits the results.

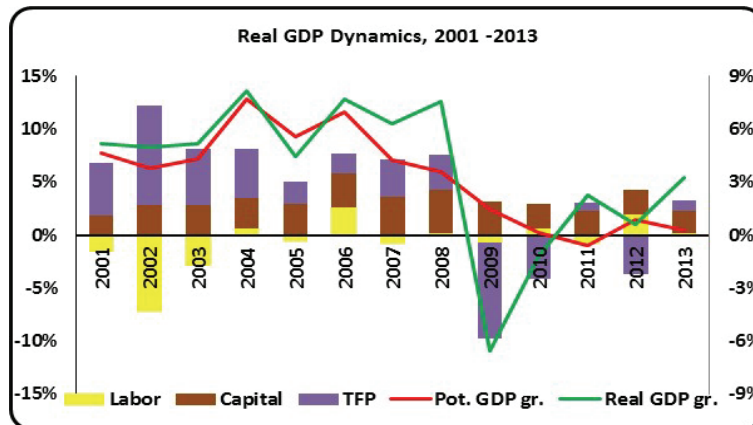


Figure no. 1: Romania – real GDP dynamics, 2001-2013

Source: authors' calculations.

As we can see, Romania's high pre-crisis growth levels have been mostly due to significant improvement in TFP and recapitalization, as well as foreign-financed acquisition of technology. With the onset of the crisis in 2008, TFP rapidly contracted in 2009 and 2010 and has never recovered since. The economic recovery of 2011-2013 has been backed mainly by the capital stock in the economy, whose contribution to economic growth has varied only slightly over the time frame considered in our analysis, which was to be expected given that recent growth has been significantly influenced by one-off events such as unexpected agricultural growth in 2011 and by internal demand and exports in 2012 and 2013. The negative contribution of labour to economic growth highlights a weak area of the Romanian business environment, namely weak labour productivity, which requires immediate and significant investment and structural reform in education. It is only under these circumstances that human capital can actually contribute to economic growth and not hamper Romania's economic development.

It is also worth noting that the dynamics of potential GDP have been significantly tempered in the post-crisis period, which is logical if we consider the severe effect of the recession on Romania's economic growth potential. In this context, the closing of the output gap estimated for late 2013 is due to both solid growth in late 2012-2013, as well as the likely slowdown in Romania's growth potential as result of the crisis, which further reflects the entrepreneurs' sceptic stance on future economic recovery. Returning to pre-crisis levels of growth depends on several factors, such as accelerated implementation of structural reform, effective commitment to support the business environment, significant absorption of EU funds and substantial inflows of foreign direct investment.

We now turn our attention to an analysis of the output gap, at both economy and SME segment level, where we shall analyse the first six sectors in order of contribution to total gross value added created in the economy – industry, trade and services, information and communication, real estate transactions, construction and agriculture. Table no. 4 gives a centralised image of output gap, both at economy level and at sectoral level.

The model yields results consistent with the evolution of the Romanian economy in 2000-2014. In the first part of the previous decade (2000-2004), as Romania acquired technology and TFP and its competitiveness increased, the output gap closed, with the economy posting annual growth rates well in excess of its potential level. The fluctuations of output gap in

2005-2007, accompanied by sustained economic growth, can be partly attributed to the change in monetary policy regime that took place in Romania in 2005, with the National Bank switching to an inflation targeting regime based on a close correlation of policy rates with inflation expectations (and with expected GDP evolution in relation to its equilibrium level). In this context, output gap stood within a + / - 1 p.p. range in 2005-2006, with the economy growing from year to year and enjoying a comfortable increase in investment.

Table no. 4: Output gap at economy and sectoral levels, 2001-2013

Year	Output Gap	SME Industry	SME Trade	SME IT&C	SME Real Estate	SME Construction	SME Agriculture
2001	-1,99%	-1,26%	0,72%	-1,50%	-2,90%	2,18%	-2,00%
2002	-0,86%	0,07%	-5,91%	1,49%	2,52%	1,70%	-2,36%
2003	-0,02%	0,92%	-2,69%	0,30%	-2,71%	-1,56%	0,53%
2004	0,41%	1,57%	-0,92%	0,40%	-2,17%	-6,23%	8,34%
2005	-0,67%	-0,44%	-0,46%	-3,41%	2,15%	-11,22%	0,56%
2006	0,05%	0,31%	4,01%	0,00%	3,90%	-7,60%	-0,14%
2007	2,00%	1,92%	4,91%	3,62%	3,75%	4,52%	-6,54%
2008	5,90%	1,26%	10,00%	4,41%	3,43%	20,06%	0,81%
2009	-2,46%	-3,67%	-3,46%	-2,33%	-4,98%	5,99%	-2,23%
2010	-3,76%	-0,39%	-5,31%	-3,98%	-5,42%	1,20%	-5,00%
2011	-1,02%	0,57%	-3,58%	-1,19%	-1,98%	-10,11%	6,23%
2012	-1,28%	-3,34%	3,41%	0,16%	-1,10%	-6,43%	-5,48%
2013	1,68%	1,93%	2,56%	0,54%	2,90%	0,94%	4,32%

Source: INSSE data, Eurostat, AMECO, authors' calculations.

Sustained economic growth continued in 2007-2008 when, on the back of a hike total factor productivity and capacity utilization, increased external competitiveness of the Romanian economy and reduction in unemployment, as well as unprecedented expansion of local entrepreneurship, the output gap closed and the economy overheated, growing far above its potential growth level. The financial crisis that started in late 2008 marked the collapse of the Romanian economy, which contracted in two consecutive years (by 6.6% in 2009 and 1.2% in 2010, respectively). During the recession, the National Bank of Romania has been reluctant to cut the policy rate, foreign investment fell drastically, the number of bankruptcies soared (and especially so within the SME segment) and the banking system faced the undesirable situation of a surge in non-performing loans, as well as liquidity and financing issues and was thus unable to finance the economy. The resulting increase in funding costs has severely affected entrepreneurship initiative in Romania. Naturally, this led to a negative output gap and to significantly lower potential GDP growth rates. Romania's return to economic growth has been modest at first (2011 and 2012) and the surprises of 2013 and the first part of 2014 have brought actual GDP back on a consistent path to its potential level. However, Romania's post-crisis growth rates are far from pre-crisis levels of growth as a result of the economy's structural weakness that became evident during the recession, increasing public debt and slow post-recession recovery of aggregate demand.

The industrial sector has closely followed the evolution of the Romanian economy over the relevant horizon (please refer to figure no. 2). The pre-crisis growth in industry was due to both local entrepreneurship initiative and, more importantly, significant FDI inflow and total factor productivity, as technology was transferred to Romania. An important lesson of the 2001-2008 period is the negative contribution of labour to economic growth, with weak

levels of labour productivity even in expansionary periods. The recession that started in 2008 was accompanied by a severe reduction in TFP and still weak labour productivity, which could not be counterbalanced by capital contribution to economic growth anymore. As a result, potential growth rates were near zero in industry during recession. The investment inflow in industry in 2011-2012 required a period of adjustment of productive capacity, a period that was characterised by weak TFP and negative output gap; this period ended in 2013, when the industrial sector posted its highest post-crisis growth levels. At the same time, a significant drawback the Romanian business environment in the industrial sector is weak labour productivity, which makes human capital a major concern to entrepreneurs in this sector, alongside investment and absorption of EU funds, as well as continuous innovation of local entrepreneurship.

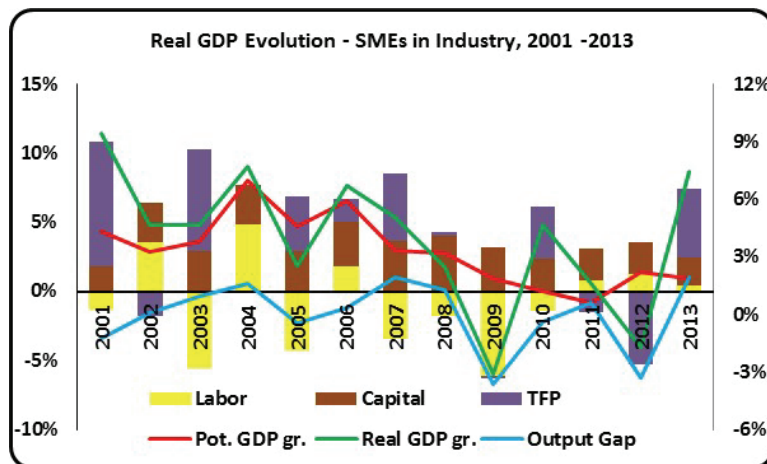


Figure no. 2: Real GDP Evolution, SMEs in Industry, 2001-2013

Source: authors' calculations.

Note: growth rates and output gap are plotted on the secondary axis.

The trade and services sector has exhibited greater volatility compared with the economy as a whole: during 2001-2005, as a result of a fast growing economy, trade and services had a high growth potential (in the range of 10% annually), while output gap was negative; in 2007-2008, consumption fully contributed to the overheating of the economy and output gap in the trade sector peaked at 10% (please refer to figure no. 3). During the ensuing economic recession, internal demand contracted severely and output gap turned to negative once again in 2009-2011 and subsequently closing due to the rebound of aggregate demand. However, it is important to emphasize the fact that a shrinking potential GDP in 2009-2013 was a key factor in the closing of the output gap in the trade and services sector, with the crisis seriously impacting this sector.

A distinguishing characteristic of SMEs in the trade and services sector has been the vastly positive contribution of labour to economic growth (unlike industry), whereas TFP has never recovered to pre-crisis levels after significantly contributing to sectoral growth in the pre-recessionary period. It is therefore imperative that the productivity rebound in order for the trade and services sector to get back on the healthy growth potential path. Therefore, in the case of local businesses operating in the trade and services sector, in which SMEs represent by far the largest job creators (over 76%), the main challenge in the near future is to increase productivity in the context of a positive contribution of labour.

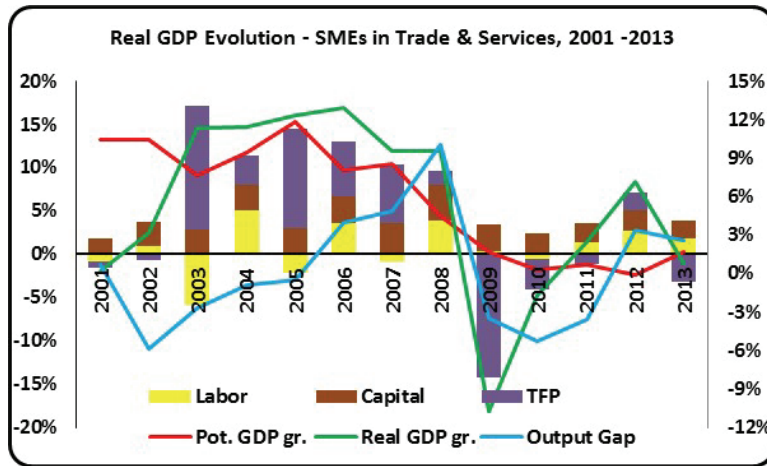


Figure no. 3: Real GDP Evolution, SMEs in Trade & Services, 2001-2013

Source: authors' calculations.

Note: growth rates and output gap are plotted on the secondary axis.

Significant investment, as well as numerous local start-ups in the IT&C sector over the past decade led to a high sectoral growth potential, that has never been attained by actual growth, resulting in a negative output gap in 2000-2006. The output gap then closed in 2007 and peaked in 2008 on the back of total factor productivity (see figure no. 4 below). The crisis affected the IT&C sector, which posted negative growth rates in 2009 and 2010, mainly due to the negative contribution of TFP. It is worth noting that, after 2010, productivity in the IT&C sector has not recovered to pre-crisis levels and growth rates have been modest (albeit positive), which has led to a negative output gap expected to close in 2014/2015. Investment in capital and supporting entrepreneurship initiative in the IT&C sector, the need to continuously acquire new technologies and the development of human capital are all fundamental prerequisites for achieving pre-crisis growth levels for SMEs in the IT&C sector.

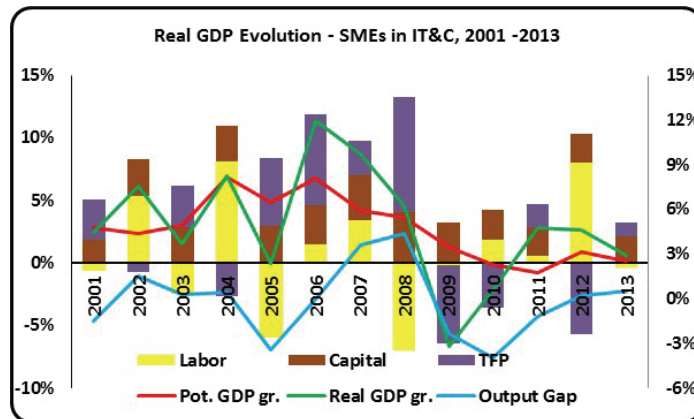


Figure no. 4: Real GDP Evolution, SMEs in IT&C, 2001-2013

Source: authors' calculations.

Note: growth rates and output gap are plotted on the secondary axis.

The real estate and construction sectors have been significantly affected by the economic crisis, with high pre-crisis growth rates followed by sharp contractions in 2009-2013 and negative output gaps during this period (please see figures no. 5 and 6). Two obvious effects of the crisis have been (i) the deteriorating labour productivity in the real estate transactions sector, which in turn has led to significant adjustments in the number of employees in this sector, and (ii) the rapidly worsening TFP in the case of construction companies, as a result of very weak demand, both during the recession and afterwards. Necessary corrective measures (significant improvement in labour productivity and the need to adapt to the changing conditions of the business environment in Romania) are amplified by the fact that SMEs are the main employment providers in these sectors (creating 89% of jobs in real estate transactions and 79% of jobs in construction) and the main contributors to GVA (96% in the case of real estate transactions and 71% in the case of construction).

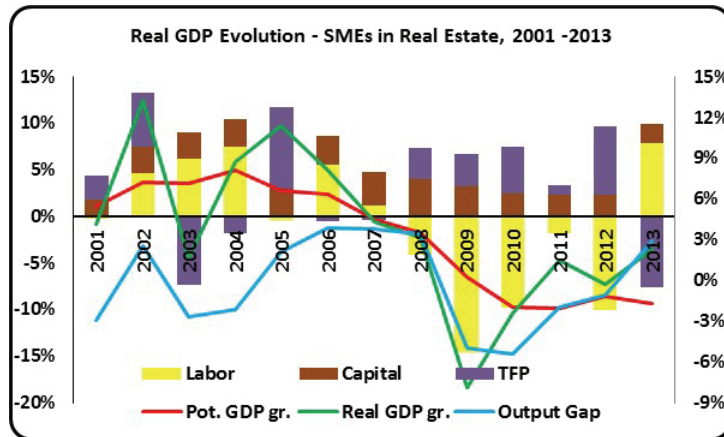


Figure no. 5: Real GDP Evolution, SMEs in Real Estate Transactions, 2001-2013

Source: authors' calculations.

Note: growth rates and output gap are plotted on the secondary axis.

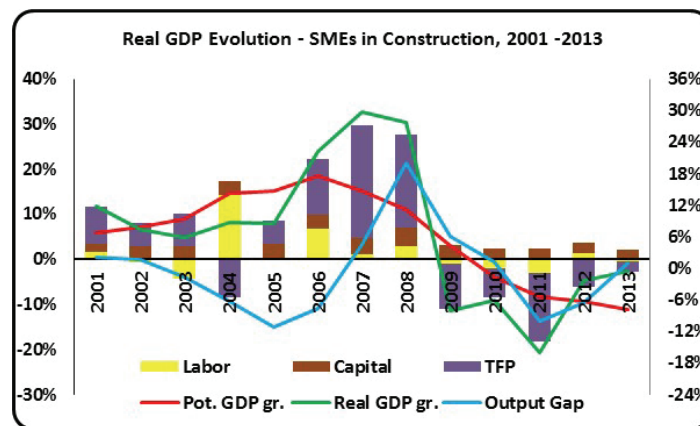


Figure no. 6: Real GDP Evolution, SMEs in Construction, 2001-2013

Source: authors' calculations.

Note: growth rates and output gap are plotted on the secondary axis.

The agricultural sector, analysed in figure no. 7, has fluctuated significantly over the relevant time horizon, with good periods immediately followed by weak ones. Given the obsolete and underdeveloped agricultural infrastructure, weak productivity is to be expected and good years are likely due to external factors (such as favourable weather conditions). In order for SMEs in agriculture to achieve a sustainable yearly growth potential, significant investment in the capital base is mandatory, as well as the acquisition of modern technology, such that the contribution of agriculture to economic growth is not of random character anymore. In this context, EU funds are a likely and welcome solution; however, institutional progress is required in order to increase efficiency in EU funds absorption. Of even more concern is the fact that domestic agriculture has operated below its potential every year, the lack of investment in agriculture has a very high opportunity cost, especially if we factor in the significant contribution of agriculture to GDP (approx. 7% in year 2013).

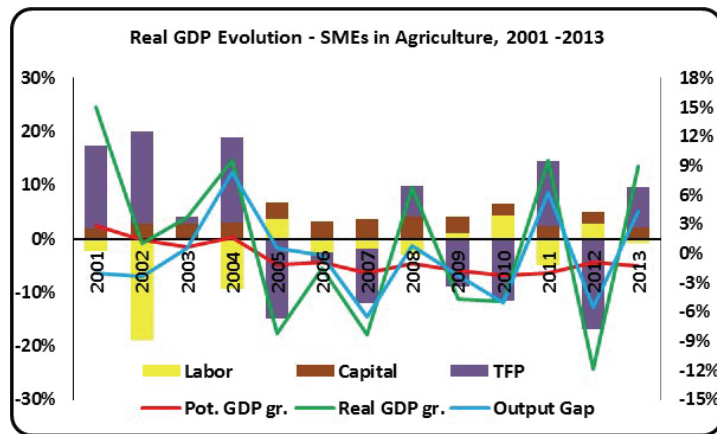


Figure no. 7: Real GDP Evolution, SMEs in Agriculture, 2001-2013

Source: authors' calculations.

Note: growth rates and output gap are plotted on the secondary axis.

Conclusions

Romania's economy has exhibited significant volatility as a result of the long and complex transition process to a fully functional market economy and the accompanying structural and policy transformations. As we have seen, the economic crisis had a significant impact on the growth potential of Romania, which dropped far below pre-crisis levels, and also on total factor productivity fuelled by, among others, a significant reduction in foreign direct investment. The same is valid for industrial capacity utilization and structural unemployment which increased during the recession during to the hysteresis effect, leading to a significant weakening of the Romanian business environment.

By incorporating recent positive evolutions, the model yields positive signals and suggests the closing of the output gap of Romania in 2013. A note of caution is necessary, as returning to pre-crisis growth levels depends on several factors. Firstly, as we have seen, the industrial and trade and services sectors have been Romania's main engines of economic growth before the crisis; however, during 2009-2013, they faced a drastic reduction of TFP and worsening levels of labour productivity. The recovery of these sectors

to a healthy growth potential cannot happen in the absence of significant investment by the business environment (especially in the case of SMEs, who contribute significantly to the creation of value added in these sectors) and in the absence of EU funds absorption. The same can be said about the information and communication sector. As concerns the real estate transactions and construction sectors, which had important contributions to pre-crisis economic growth, they exhibited severe contraction during the recession due to worsening labour productivity and TFP. In the real estate sector this led to a natural reduction in the number of employees, while in the construction sector the return to sound growth levels depends on the recovery of the overall economy. The significant fluctuations in the agricultural sector are due to weak productivity and obsolete infrastructure and require significant investment in order to increase productivity and enter a sustainable growth path.

The model gives a clear message: Romanian entrepreneurship has been severely affected by the economic crisis and the productivity of SMEs in the six main economic sectors has significantly slowed down as a result. This is a direct result of the SMEs' low capacity to innovate, their concentration in low value added-generating sectors, limited access to financing and weak management. It is worrisome that even after the end of the recession the SME segment is still operating below potential in almost all sectors (with the sole exception of trade, which is normal considering the recovery in aggregate demand). Considering that the output gap is expected to close in 2013/14, this highlights the competitive advantage that large companies that control the market have over SMEs, which has allowed the former to better weather the economic crisis and to return to growth rates near pre-crisis levels. In order to achieve this, entrepreneurs in the SME segment need to increase their potential to innovate.

In order to support entrepreneurship in Romania, it is imperative that authorities act to promote competitiveness and the attractiveness of the Romanian business environment, by means of institutional and legal reform and by increasing the transparency and stability of the fiscal system; however, entrepreneurial education is also paramount, as it has a direct impact on employed human capital.

References

- Altăr, M., Necula, C. and Bobeică, G., 2010. Estimating Potential GDP for the Romanian Economy. An Eclectic Approach. *Romanian Journal of Economic Forecasting*, 3/2010, pp.5-25.
- Ardic, O.P., Mylenko, N. and Saltane, V., 2011. *Small and Medium Enterprises – A Cross-Country Analysis with a New Data Set*. Policy Research Working Paper 5538, The World Bank.
- Ayyagari, M., Demirgüç-Kunt, A. and Maksimovic, V., 2011. *Small vs. Young Firms Around the World – Contribution to Employment, Job Creation and Growth*. Policy Research Working Paper 5631, The World Bank.
- Beck, T. and Demirgüç-Kunt, A., 2006. Small and medium-size enterprises: Access to finance as a growth constraint. *Journal of Banking and Finance*, 30, pp.2931-2943.
- Beck, T., Demirgüç-Kunt, A. and Levine, R., 2005. SMEs, Growth and Poverty. [online] NBER Working Paper 11224. Available at: <<http://www.nber.org/papers/w11224>> [Accessed 26 November 2014].

- Ciucan-Rusu, L. and Szabo, Z., 2013. The Pyramid of Entrepreneurship in Romania: Towards New Approach. In: Ramadani, B. and Schneider, C., eds., 2013. *Entrepreneurship in the Balkans*. Berlin Heidelberg: Springer-Verlag.
- Cressy, R. and Tovainen, O., 2001. Is there adverse selection in the credit market? *Venture Capital: An International Journal of Entrepreneurial Finance*, 3(3), pp. 215-238.
- Denis, C., Grenouilleau, D., McMorro, K. and Roger, W., 2006. Calculating potential growth rates and output gaps - A revised production function approach. *European Commission Economic Papers*, 247.
- Denis C., Mc Morrow K. and Röger W., 2002. *Production Function Approach to Calculating Potential Growth and Output Gaps - Estimates for the EU Member States and the US*. Economic Paper, 176, European Commission.
- Dietrich, A., 2010. Explaining Loan Rate Differentials Between Small and Large Companies: Evidence from Switzerland. *Small Business Economics*, 38(4), pp.481-494.
- Gălătescu, A., Rădulescu, B. and Copaciu, M., 2007. *Estimarea PIB Potențial în România*. [pdf] Caiete de Studii nr. 20, BNR. Available at: <<http://www.bnr.ro/DocumentInformation.aspx?idInfoClass=6786&idDocument=3710&directLink=1>> [Accessed 26 November 2014].
- Guerriero, M., 2012. *The Labour Share of Income around the World. Evidence from a Panel Dataset, Inequalities and Development: new challenges, new measurements?*. [pdf] University of Bordeaux. Available at: <<http://piketty.pse.ens.fr/files/Guerriero2012.pdf>> [Accessed 26 November 2014].
- Haltiwanger, J., Jarmin, R. S. and Miranda, J., 2010. *Who Creates Jobs? Small vs. Large vs. Young*. [pdf] NBER Working Paper, 16300. Available at: <<http://www.nber.org/papers/w16300.pdf>> [Accessed 26 November 2014].
- International Monetary Fund, 2003. *Romania: Selected Issues and Statistical Appendix*. [pdf] IMF Country Report 03/12. Available at: <<http://www.imf.org/external/pubs/ft/scr/2004/cr04220.pdf>> [Accessed 26 November 2014].
- International Monetary Fund, 2012. *Romania: Selected Issues*. [pdf] IMF Country Report. 12/291. Available at: <<http://www.imf.org/external/pubs/ft/scr/2012/cr12291.pdf>> [Accessed 26 November 2014].
- Konuki, T., 2008. Estimating Potential Output and the Output Gap in Slovakia. [pdf] IMF WP, 08/275. Available at: <<https://www.imf.org/external/pubs/ft/wp/2008/wp08275.pdf>> [Accessed 26 November 2014].
- Kuttner, K.N., 1994. Estimating Potential Output as a Latent Variable. *Journal of Business and Economic Statistics*, 12(3), pp.361-368.
- Lafuente, E. and Driga, O., 2007. *1st Report on Entrepreneurial Activities in Romania*. CEBR WP, 02. [pdf] Available at: <<http://www.kfacts.ia.ro/uploads/File/WP012007.pdf>> [Accessed 26 November 2014]
- Lafuente, E. and Driga, O., 2009. *2nd Report on Entrepreneurial Activities in Romania: Executive Summary for the Year 2008*. CEBR WP, 01. [pdf] Available at: <<http://www.kfacts.ia.ro/uploads/File/WP200901.pdf>> [Accessed 26 November 2014]

- Lafuente, E. and Rabetino, R., 2007. *Human Capital as a Determinant of Small Firms' Growth in Romania: A Quantile Approach*. CEBR WP, 03. [pdf] Available at: <<http://www.kfacts.ia.ro/uploads/File/WP032007.pdf>> [Accessed 26 November 2014]
- Maksimovic, V. and Phillips, G., 2002. Do Conglomerate Firms Allocate Resources Inefficiently? Evidence from Plant-Level Data. *Journal of Finance*, 57, pp.721-767.
- Marchiș, G., 2011. Study Regarding Romanian Entrepreneurship. *EuroEconomica*, 30(5).
- Ozbek, L. and Ozlale, U., 2005. Employing the extended Kalman filter in measuring the output gap. *Journal of Economic Dynamics and Control*, 29, pp.1611-1622.
- Pagano, P. and Schivardi, F., 2001. *Firm Size Distribution and Growth*. Banca d'Italia Working Paper, 394.
- Pîslaru, D. and Modreanu, I. *Studiu – Contribuția IMM-urilor la Creșterea Economică – Prezent și Perspective*. Beneficiar – Comisia Națională de Prognoză. Bucharest: Editura Economică.
- Volchek, D., 2013. *Internationalization of small and medium-sized enterprises and impact of institutions on international entrepreneurship in emerging economies: the case of Russia*. [pdf] Available at: <<https://www.doria.fi/bitstream/handle/10024/93790/isbn9529522655127.pdf?sequence=2>> [Accessed 26 November 2014]
- World Bank, 2002. *Review of Small Business Activities*. Washington DC: World Bank.
- World Bank, 2004. *Review of Small Business Activities*. Washington DC: World Bank.
- World Bank, 1994. *Can Intervention Work? The Role of Government in SME Success*. Washington DC: World Bank.