Long-term effects of the investments dynamics in Romania in the post-accession period – a regional approach

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Abstract. *The adhesion to the European Union has boosted investment in Romania, which contributed significantly to the economic growth in 2007-2008. The economic adjustments during the crisis period were focused mainly on reducing the public investments, while promoting procyclical policies. The economic recovery noted after 2011 was recorded amid the drop of investments, in particular due to further decrease of public investments, under the impact of the fiscal consolidation measures and the tendency to push economic growth by stimulating consumption. The private investments had an uneven territorial orientation, which contributed to an increase of regional economic disparities. The paper analyses the recent dynamics of investments in Romania and their contribution to the economic growth, seeking to determine the extent to which the investment policy will lead to a greater territorial cohesion. In this regard, we have used the econometric analysis of the relationship between investment growth and economic development at regional level, by using a set of linear regressions.*

Keywords: investments, public investments, fiscal policy, regional economic growth, regional disparities.

JEL Classification: E22, H50, H62, R11.

1. Introduction

The investments have a double role in the economy: in short-term investments are considered a component of aggregate demand, and their growth can stimulate the economy, including through the investment multiplication mechanism, while in long-term investments increase the productive potential of the national economy. In conditions of crisis, public investment may reverse the diminishing investment propensity of the private sector.

In addition to the importance of both absolute and relative level of investment as a component of GDP, also the investment efficiency is significant. The differences in efficiency can be highlighted by measuring the increase in gross investment required for a specific output's growth at the national level. Data analysis for the three most developed EU countries (France, Germany, UK) shows that this indicator was significantly higher in the period 1980-1989 (1.1 to 1.8) compared to 1990-2005 (0.7 – 0.8), so the investments efficiency increased on long-term (Griffith and Wall, 2012, p. 347). In crisis period, calculating the efficiency in this way is significantly disrupted by the impact of reduced aggregate demand, but the concern for investment efficiency continues.

In Romania there was a waste of public funds for investment and the total investments multiplier turned out to be even sub unitary in the period 2007-2012 (Dachin and Gherman, 2014). It's already outlined the idea that European funds may induce the increase of the investment efficiency and at the same time they could support the modernization of public administration (Dăianu, 2015, p. 201). Thematic concentration on the priorities of Strategy Europe 2020 influenced the approach and the construction of operational programs for 2014-2020 period. The introduction of macroeconomic conditionalities was motivated by the need to ensure the link between cohesion policy and economic governance of the European Union. The specialists say that these conditionalities have a strong coercive character (Drăgan et al., 2013, p. 199), which basically refers to the need of setting priorities in the investment process and of using European funds efficiently.

A component of private investment that supports economic growth consists of the foreign direct investments (FDI). The FDI are themselves conditioned in a certain measure by public investment and absorption of European funds, at least because of the need to have a modern infrastructure in order to be effective. Although Romania is behind many EU countries regarding the stock of FDI, empirical studies on sub-regions in Eastern Europe shows that disparities regarding the dynamics of FDI tend to decrease (the Gini coefficient tends to decrease) (Strat, 2015).

The European Commission analysed the evolution of public investment managed at subnational level, showing that during the 2009-2013 period these have declined, as well as total investment in most EU countries. The EU cohesion policy plays an important role

by providing a major funding source for public investments (European Commission, 2014, pp. 154-154).

The paper provides an empirical analysis of the investment trend in Romania in the post-accession period to the European Union in the context of the applied fiscal policy and the need for fiscal consolidation. The analysis is performed both at national level and at the level of development regions, given the regional disparities regarding the investment effort and its long-term effect. To determine the effect of the investment dynamics on economic growth and development we have used the econometric analysis by means of a set of linear regressions. The regression coefficients were calculated based on data from Eurostat and the European Commission. At national level we calculated the Pearson correlation between annual indices of real GDP/potential GDP and public investment indices, respectively separately the total investment indices (GFCF). At regional level we used for each region the same method; respectively we calculated the correlation coefficients between total investments dynamics (GFCF) and GDP dynamics, respectively GDP per capita and employment rate. Separately we determined the correlation between FDI and GDP dynamics.

2. The fiscal policy in the post-accession period and the dynamics of investments

The assessment of the general characteristics of fiscal policy in Romania in the post-accession period requires an analysis of the type of policy applied during a longer period of time, so we considered the structural budget balance evolution between 2000 and 2015. The structural budget balance was calculated by eliminating the cyclical component from the actual budget balance. For the fiscal policy to be countercyclical, it should be an expansionary policy during the recession, when the real GDP is lower than potential GDP and there is cyclical budget deficit, and respectively a restrictive policy during times of rapid expansion and cyclical budget surplus.

In Romania, the periods of expansionary policies were associated with surpluses of the cyclical budget balance (Table 1), while the deepening of the structural budget deficit could be attributed to the implementation of expansionary fiscal policy which relied on the growth of public expenditure based on temporary revenue, which had a cyclical nature. In the post-accession period the global financial crisis felt in Romania was aggravated by the existing internal imbalances, mainly by the problem of high twin deficits (the budget deficit was 5.7% of GDP and the current account deficit was 11.5% of GDP in 2008), which led to further measures of pro-cyclical nature adopted in the context of limited fiscal space.

Countercyclical policies have not followed the basic rule of the state, since fiscal adjustments were made when the economy recorded a negative output gap, contrary to the recommendation of economic theory that fiscal consolidation should be done when the economy operates above its potential.

Table 1. *The budget balance (% of GDP) and the characteristics of fiscal policy in Romania, 1999-2015*

Year	Actual budget balance (ESA deficit)	Cyclical budget balance	Structural budget balance	Output-gap	Variation of the structural budget balance compared to previous year	Interpretation		
						Expansionary/ restrictive fiscal policy		Procyclical/ Counter-cyclical fiscal policies
1999	-4,4	-2,2	-2,2	-7	-			
2000	-4,7	-1,9	-2,8	-7,1	-0,6	expansionary	→	countercyclical
2001	-3,5	-1,8	-1,7	-5,2	1,1	restrictive	→	procyclical
2002	-2	-1,3	-0,7	-4	1	restrictive	→	procyclical
2003	-1,5	-0,9	-0,6	-2,7	0,1	restrictive	→	procyclical
2004	-1,2	0,4	-1,6	1,1	-1	expansionary	→	procyclical
2005	-1,2	0,3	-1,5	1	0,1	restrictive	→	countercyclical
2006	-2,2	1,6	-3,8	4,8	-2,3	expansionary	→	procyclical
2007	-2,9	2,7	-5,6	7,9	-1,8	expansionary	→	procyclical
2008	-5,6	4,5	-10,1	13,3	-4,5	expansionary	→	procyclical
2009	-8,9	0,8	-9,7	2,3	0,4	restrictive	→	countercyclical
2010	-6,6	-0,3	-6,3	-1	3,4	restrictive	→	procyclical
2011	-5,3	-0,7	-4,6	-2,2	1,7	restrictive	→	procyclical
2012	-2,9	-1,2	-1,7	-3,7	2,9	restrictive	→	procyclical
2013	-2,2	-0,9	-1,3	-2,5	0,4	restrictive	→	procyclical
2014	-1,5	-0,7	-0,8	-2	0,5	restrictive	→	procyclical
2015*	-1,6	-0,5	-1,1	-1,6	-0,3	expansionary	→	countercyclical
2016*	-3,5	-0,3	-3,2	-0,8	-2,1	expansionary	→	countercyclical

* estimations.
Source: based on European Commission data, Cyclical Adjustment of Budget Balance, Autumn 2015 (European Commission, DG ECFIN Economic Forecasts, 2015).

The structure of budgetary spending in Romania in 2009-2012 indicates the predominance of social assistance expenditures (about 32-34%) and of personnel expenditures (approximately 18-24%) in total expenditures of the Consolidated General Budget (CGB). In this period there is a gradual increase in expenditures for projects funded by external non-reimbursable funds, from 1.4% in 2009 to 6.4% in 2012 in total expenditures of CGB, however accompanied by a reduction of the share of capital expenditures covered from the national budget, from 11.3% to 9.3% over the same period. Starting with 2013 it can be observed a tendency of reducing the share of public investment expenditure: the share of capital expenditure in total expenditures of CGB decreased to 8.3% in 2013, 7.6% in 2014 and 4.7% in the first three quarters of 2015, all without a significant offset of increased actual expenditures (co-financing) for projects financed from external funds. Thus, although the Government's Fiscal Budgetary Strategy 2014-2016 included the transition to a development model focused on public investment as a driving force based on an increasing share of public investments in total expenditures of CGB (Government of Romania, 2013, p. 18), there was a contrary trend.

For the purpose of this paper, public investment expenditures include capital expenditures, expenditures for projects funded by external non-reimbursable post-accession funds received from the EU and expenditures relating to programs financed from reimbursable funds. In Figure 1a it can be seen a decrease of public capital expenditures as % of GDP, as well as a substitution process by means of transfers to projects financed from European funds since 2009. However, starting with 2012, this

process of substitution declined so that there is a decrease of total public investments relative to GDP, but also an absolute decrease of it.

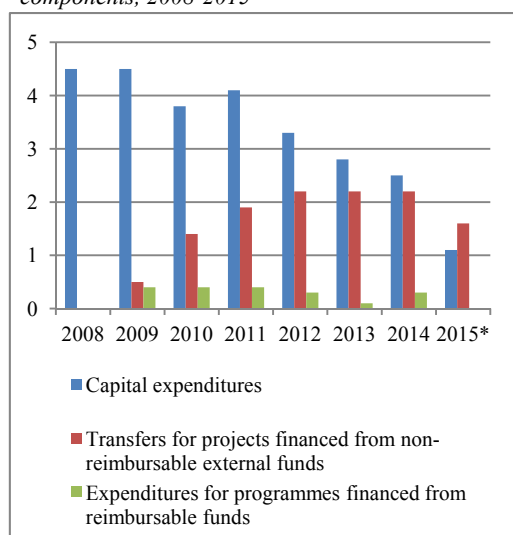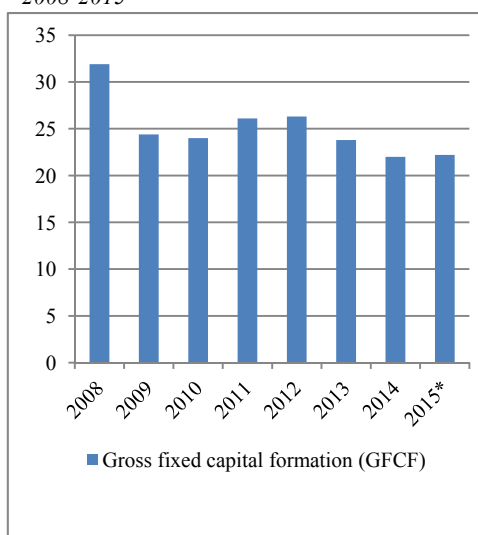**Figure 1a.** *Public investments as % of GDP, by components, 2008-2015*

Figure 1b. *Total investment (GFCF) as % of GDP, 2008-2015*

Source: Ministry of Public Finance, Romania, The Consolidated General Budget execution – briefings, http://www.mfinante.ro/execbug.html?pagina=buletin and own calculations based on data from the National Institute of Statistics.

Public investment did not have the role to counteract the crisis after 2009, which confirms the restrictive procyclical fiscal policy. At the national economy level, the gross fixed capital formation (GFCF) (Figure 1b) has been negatively influenced by the trend in public investments in the period 2013-2015.

The gross fixed capital formation dynamics in Romania in the post-accession to the EU was strongly influenced by the crisis, which marked a decrease by 28.1% of GFCF in 2009 compared to 2008 (Table 2). Investments have not recovered significantly in 2010-2012, and then fell again. The total annual flow of investments (GFCF) recorded in 2010-2014 was significantly lower than before the crisis, period 2007-2008, so the investments have not been a priority driver of economic growth in Romania.

Table 2. *Variation of gross fixed capital formation (GFCF) in Romania, 2007-2014*

Year	2007	2008	2009	2010	2011	2012	2013	2014
% from the previous year	30.3	15.6	-28.1	-2.1	6.3	0.1	-7.9	-3.6
2007 = 100%	-	15.6	-16.9	-18.6	-13.5	-13.4	-20.2	-23.1

Source: Based on data from Romanian Statistical Yearbook 2013 and other sources National Institute of Statistics.

Economic recovery observed after 2011 was made amid the drop in investment, due in particular to lower further public investment under the impact of the fiscal consolidation measures and the tendency to spur economic growth by stimulating consumption.

GDP dynamics is strongly correlated with the dynamics of total investment (GFCF), the Pearson correlation coefficient being of 0.92 (Table 3). This correlation is much lower in the case of public expenditures, given by the coefficient of 0.57. In the long term, investment effects are reflected in the dynamic of potential GDP, the correlation is as well high, with a coefficient of 0.76, while the GFCF contributed about 58% to potential GDP growth.

Table 3. *The correlation coefficients between GDP growth and investment dynamics in the period 2004-2014*

The dependent variable - the independent variable	Correlation coefficients	R square
GDP - Capital expenditures of the national budget (GFCF from general government)	0.577537684	0.333549777
GDP - Capital transfers from the national budget	0.145930223	0.02129563
GDP - Total investments of the national economy (GFCF)	0.928475816	0.862067342
GDP/capita - Total investments of the national economy (GFCF)	0.949081242	0.862067342
Potential GDP - Total investments of the national economy (GFCF)	0.76602163	0.586789138

Source: own calculations based on Eurostat and European Commission data, Cyclical Adjustment of Budget Balance, Autumn 2015.

3. The dynamics of investments in development regions of Romania (NUTS 2)

Investments aim to respond to the challenges that are required by the new economic realities and the approach of the investment strategies should contribute to the valorisation of the existing economic potential.

At the regional level we analysed the investments' dynamics using investment chain based index. In the Figure 2 we can see that in the year joining the European Union, due to a high confidence degree in investment environment, the investments trend has been positive.

In 2009, amid economic crisis installed, we can observe that investment activity in all regions of Romania decreased most in the South-Muntenia region (half compared to 2008). This investments dynamic has been driven by high degree of uncertainty expressed among investors, especially among foreign investors, but also due to the negative trend that public investments have recorded.

At the regional level the Eurostat available data regarding the gross fixed capital formation stop with the year 2012, when only the Bucharest-Ilfov recorded an increase of investments by 18% compared to the previous year, while the remaining regions recorded a decrease of them by 1% in the South-Muntenia region and by 18% in the North-East region.

Both at regional level and national level we can observe that the upward trend slowed in 2012, with the reduction in public investment, which targeted the budgetary balance.

Figure 2. *The investments' indices (GFCF) at regional level, 2000-2012 (in % compared to last year)*
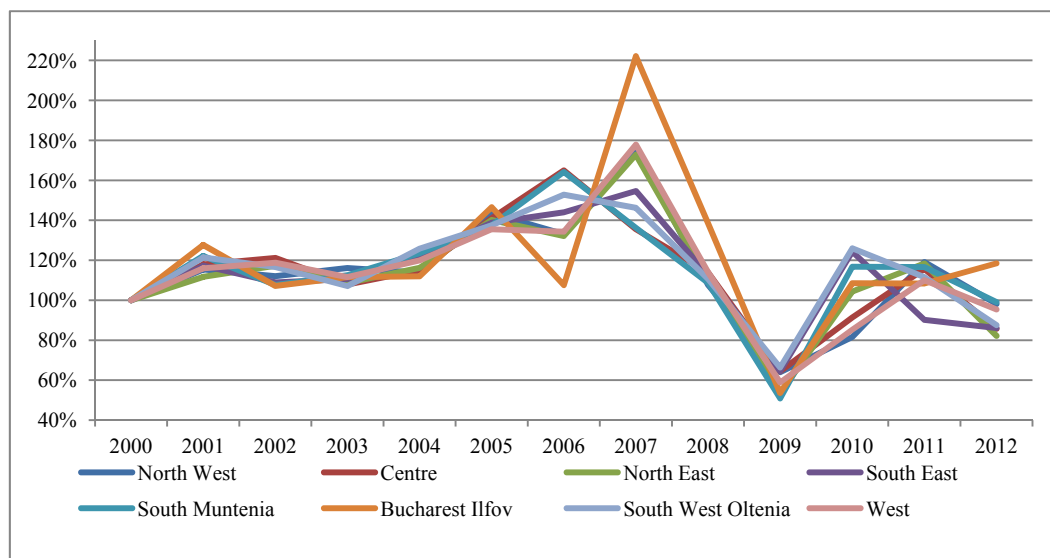
Source: graph based on data from Eurostat.

The regional disparities regarding both the economic environment and the development opportunities have led mainly to concentrating investments in the Bucharest-Ilfov region during the analysed period. Figure 3 highlights the distribution of investments at regional level that contribute to the persistence of development disparities between regions.

Figure 3. *Distribution of annual investment (GFCF) at regional level (NUTS 2), 2000-2012*
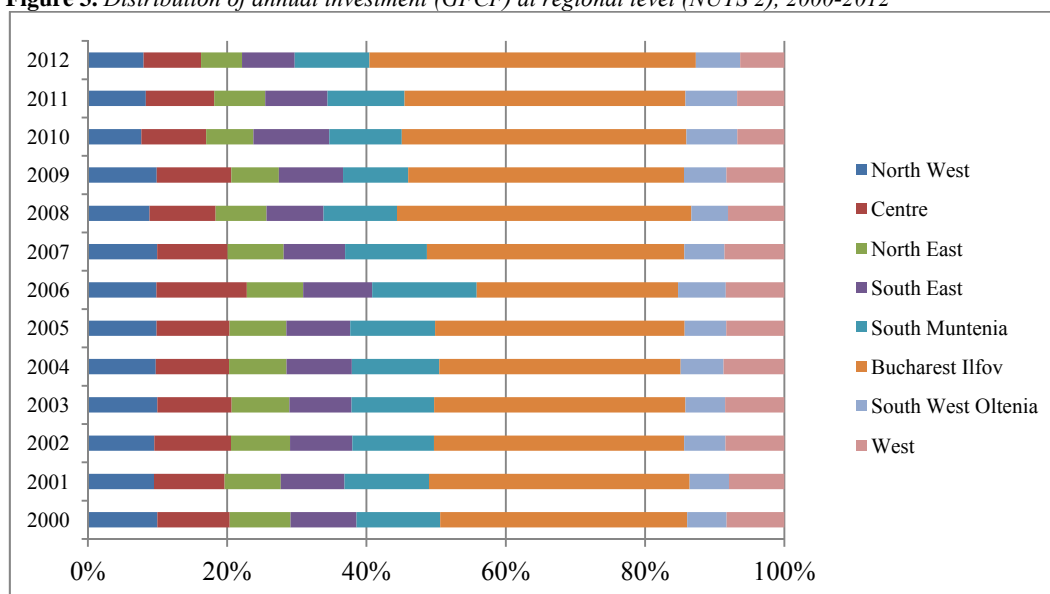
Source: graph based on data from Eurostat.

The distribution of foreign direct investment by regions presents a similar concentration in the Bucharest-Ilfov region, given that the FDI attracted by this region were in a percentage of 60% of the total foreign direct investments, situation which maintains the hierarchy above (Figure 4).

Figure 4. *Distribution of foreign direct investment stocks on regional level (NUTS 2), 2000-2012*
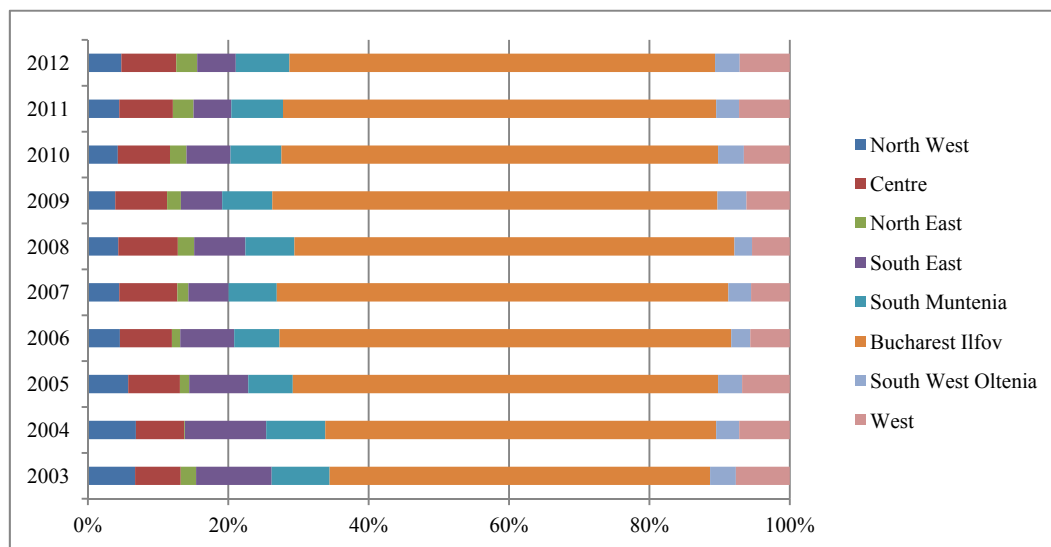

Source: graph based on data from the National Bank of Romania.

4. The effects of the dynamics of investments on economic development and employment at regional level (NUTS 2)

In Romania, regional disparities in terms of GDP per capita are persistent. There is a divergence process of economic development (GDP per capita) at regional level (Figure 5). More developed regions still attract the highest level of investments.

The Bucharest-Ilfov region recorded an upward trend of the GDP per capita in the period before the crisis, from EUR 8,800 in 2005 to EUR 17,600 in 2008, followed by a decrease in 2009 down to EUR 14.100 (Figure 5). In 2012 the recorded value was in amount of EUR 15,900. GDP per capita in Bucharest-Ilfov region constantly exceeds with minimum 50% the average GDP per capita at national level for the entire analysed period (2000-2012). Values close to the national average were registered in West and Central regions. The other five development regions have values of GDP per capita below the national average throughout the analysed period. The lowest economic performance was recorded in the North-East region with values between 2,400 EUR per inhabitant in 2005, rising to 4,200 EUR per inhabitant in 2012.

Figure 5. *Trends in GDP per capita at regional level (NUTS 2), 2000-2012*
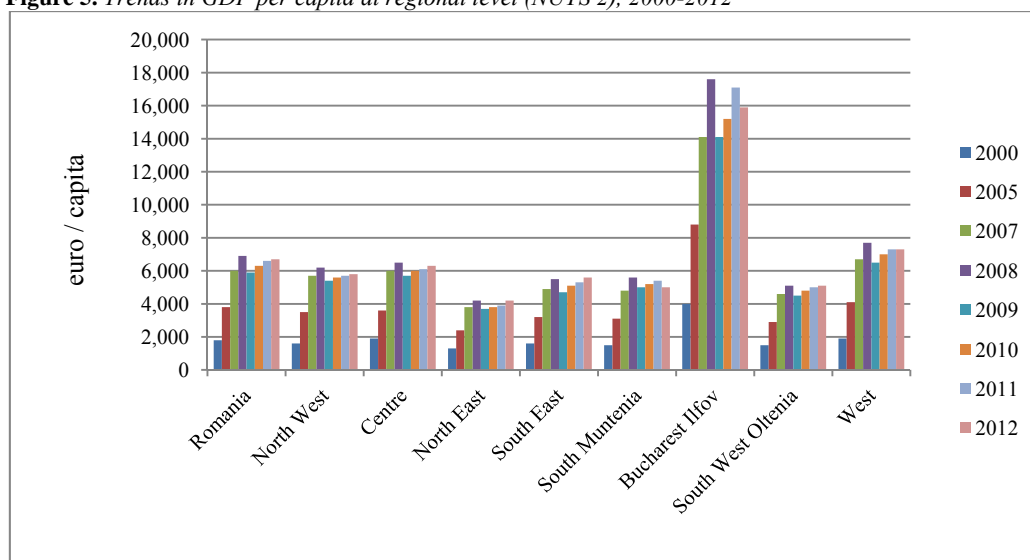
Source: graph based on Eurostat data sources.

The statistical analysis aimed to highlight the link between investments (independent variable) and economic performance of regions (measured by GDP, respectively by GDP per capita) and the link between the investment and the employment rate. This analysis aims to show the degree of correlation between variables calculated based on regional data provided by Eurostat.

The first step of the analysis was to calculate the Pearson correlation coefficient between GDP and gross capital formation at regional level, both variables being expressed in euro. As it was expected, the coefficient is high, over 0.9 at national level, gross capital formation being the driving force of technological progress and an indicator of investment activity, representing an important factor which determines the economic growth. At regional level the correlation coefficient recorded the highest value in the South-East region, while in Bucharest-Ilfov region its value was 0.74 (Table 4). The lower intensity of the link is explained by the strength and the economic dynamics of Bucharest-Ilfov region that has a more attractive economic environment and a strong growth potential supported by many other factors including the existing institutional structure, skilled labour force, the diversity of activities developed and so on.

For a more accurate evidence, within the analysis we used the indicator GDP per capita as being representative of the development. The coefficient of correlation between investment and GDP per capita confirms the level of correlation between gross capital formation and GDP.

The link between investments and the employment rate is not straightforward in all regions. Although investments have a significant impact on growth potential, namely on

territorial cohesion by creating jobs and increasing income, employment levels depend on many other factors to be considered such as the continuing emigration of labour force and the structural change of the economic activity.

Table 4. *Pearson correlation coefficient between the investments dynamics of and GDP dynamics, respectively the employment rate, 2000-2012*

	Romania	North West	Centre	North East	South East	South Muntenia	Bucharest Ilfov	South West Oltenia	West
FBCF - PIB									
	0.93	0.90	0.91	0.91	0.92	0.85	0.74	0.87	0.87
FBCF - PIB/LOC									
	0.94	0.88	0.90	0.91	0.90	0.81	0.72	0.86	0.87
FBCF - Rata ocuparii									
	0.02	-0.18	0.26	-0.12	-0.04	0.18	-0.20	-0.12	0.27
ISD - PIB									
	0.71	0.58	0.83	0.50	0.49	0.58	0.57	0.04	0.55

Source: own computation based on data from Eurostat and National Bank of Romania.

Except the Bucharest-Ilfov region, in more developed regions (West, Central and South-Muntenia), which have a higher level of industrialization, GFCF contribute to increasing of employment, even if the strength of the correlation is weak. In the remaining regions the correlation coefficient is negative, the employment being mainly influenced by external migration and by the decline of labour force surplus employed in agriculture.

Analysing the link between GDP and foreign direct investment stock (Table 4) we can see that there is a strong positive relationship in regions such as Center where the correlation coefficient recorded a value of 0.83, or a link almost non-existent in the South-West Oltenia region. This is explained by the unequal distribution of foreign direct investment at regional level (Figure 5).

The impact of foreign direct investment on the economy is contradictory. On the one hand, FDI aim to contribute to regional economic growth and increase the standard of life by increasing labour productivity and wages through technology transfer and more intense spillover effects, complementary to the gross formation of fixed capital from internal sources. And on the other hand, the manner in which they are dispersed, the concentration in certain regions causes a negative effect as a result of widening the existing regional disparities.

5. Conclusions

In Romania, the fiscal policy in the period 2000-2015 was predominantly procyclical, so that the measures taken by the government have not contributed significantly to counteract cyclical fluctuations. In the post-accession period, which coincided largely with the economic crisis, amid a recessionary gap, the fiscal policy was restrictive. This policy is reflected in the dynamics of public investment, given that the share of capital expenditures of the budget in GDP went into sharp decline after 2011, without being

sufficiently compensated by co-financing of projects financed by external funds. The trend of reducing public investment has contributed to the overall decline in total investment (GFCF) in the period 2013-2015, which does not ensure sustainable economic growth.

The correlation coefficient of 0.94 between GFCF and GDP dynamics actually shows a strong link induced by investment, but the correlation between GFCF growth and potential GDP growth is weaker (correlation coefficient 0.76). At the same time, the correlation between public investment and GDP growth is significantly lower, which can be explained by lower relative importance of these investments, but also by their lower efficiency.

At regional level it appears that all development regions (NUTS 2) followed a similar trend of GFCF in the last decade, except the Bucharest-Ilfov region, which registered during the post-accession period an increased level of investment, above average, including foreign direct investments, which led to increase the regional disparities in levels of development measured by GDP per capita. The correlation between GFCF and GDP dynamics is very strong in each region, but it can be noted some deviations from the national average. The investments have a significant impact on growth potential, as well as on the achievement of territorial cohesion, including the creation of jobs. Except the Bucharest-Ilfov region, in more developed regions (West, Central and South-Muntenia), which have a higher level of industrialization, GFCF contribute to increasing employment, even if the strength of the correlation is weak. In other regions the correlation is negative, being mainly influenced by the external migration and by the decline of labour force surplus employed in agriculture.

Acknowledgements

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