A BRIEF ANALYSIS OF THE EU STRUCTURAL FUNDING IMPACT ON THE SUSTAINABLE DEVELOPMENT

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Abstract
Recent issues and discussions, in connection to the EU structural funds allocation, spending, but also efficiency, especially for countries such as Romania, have generated the present analysis. Thus, the purpose of this study was to focus on the efficiency of European financing and to identify the impact of EU spending on sustainable development in selected EU member states – the previous two enlargement waves. Methodology was based on the UN and EU Commission sustainable development indicators and developed into both a comparative and a Pearson correlation analysis throughout the existing time interval. The main analysis restriction was represented by the short time interval of EU structural funds allocation. Results pointed towards a low impact of EU funding in terms of sustainable development in Central and Eastern Europe. Given the hypothesis and the specific economic conditions in the European Union, but also the crisis-generated imbalances, a delayed positive impact on sustainable development is expected.
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Keywords
structural funds, sustainable development, unemployment, education.

JEL Classification
F37, Q56, F21, P33

Introduction

Given the recent debate in terms of EU financing allocation and spending efficiency, this paper envisages conducting a brief analysis of the EU structural funding impact on sustainable development. Analysis is focused on the Central and Eastern European Countries as main beneficiaries of such funding, but the time interval is rather limited – given the existing statistical data from the EU Commission. Sustainable development is depicted by means of the EU Commission and UN methodology establishing the sustainable development categories of indicators and supported by data provided by Eurostat. According to specialized literature, measuring sustainable development is " an essential prerequisite to promoting a sustainable society" (Mitchell, 2005). Sustainable development indicators can be split into two groups – under the shape of an aggregate index, or as a set of indicators (Mitchell, 2005). The main landmark concerning sustainable development in Europe has shaped up as a consequence of international events, but also of EU engagements: the 1992 Rio World Summit, the 2001 Gothenburg European Council,

the 2002 Johannesburg World Summit, and finally the 2006 EU SD Strategy (Steurer and Hametner, 2013). Clement (2004) analyzed the effect of structural funds in stimulating sustainable development for the Nordic countries. Synthesizing, the study shows that regional programs developed have not been too efficient in integrating the sustainable development principles and also, that there is no straight-forward demonstration that structural funds are a catalyst for sustainable regional development (Clement, 2004). Mullaly (2004) performed an analysis of the structural funds impact on sustainable development in Ireland. Conclusions point out to the fact that Ireland is not an accurate model in terms of sustainable development and the impact of structural funds cannot be qualified as positive or negative without a certain degree of ambiguity (Mullally, 2004). EU funded projects are expected to contribute to sustainable development (Dapkus and Streimikiene, 2004). Ekins and Medhurst (2006) considered that beyond assuring economic and social cohesion at a European Union level, structural funds also play the role of supporting regional sustainable development. The selection of a certain set of indicators capable to assess the impact on sustainable development, must start from their aims, as they were defined by the European Union. Given that, we took into account the EU Commission working documents from 1999 onwards. This document indicates the fact that assistance programs from the EU Commission have three main categories of objectives: global (expressed in terms of impact); specific (in terms of results); and operational (in terms of output) (EC, 1999). Also, the substantiation of a coherent set of indicators concerning the accurate quantifying the connection between structural funds and sustainable development authors start from delimitating four main capital types: Manufactured; Natural; Human; Social. Taking into account all these elements, literature proposes a subsequent set of indicators. Even though, amongst their conclusions, there is also the fact that structural funds may not exclusively, by themselves, determine sustainable development. Under certain conditions, structural funds may provide orientation towards sustainability. Radu, Olaru and Dumitru (2012), after performing a questionnaire-based investigation aiming to study the impact of structural funds on sustainable development in Romania, formulated a set of conclusions such as: a generalized lack of awareness towards sustainable development; a limitation of sustainable development to its ecologic component; the assessment of sustainability as an eligibility condition for a proposal, not as an aim or a necessity. Dapkur and Steimikiene (2014) studied the connection between Happy Planet Index (reflecting sustainable development) and the EU structural funds absorption. Results seem contradicting. Authors point out the fact that even if Lithuania got more financing per capita than Poland, the HPI is lower, and at the same time, even if Estonia got more financing per capita than Lithuania, the HPI is again lower. CEROPE (2003) developed the HERMIN model used in several EU member states in order to estimate the impact of EU funding on national economies, but also in order to conduct a comparative analysis of financial transfers required for regional development. Also, the HEROM variant – developed by the Romanian Centre for Economic Modelling – is detailed and used in order to determine the structural funding impact on the Romanian economy. Bradley and Untiedt (2012) approached the necessary strategy aiming at healthy economic development of the Irish economy, a strongly supported economy by means of EU financing, also to overcome recession. The report points out towards the fact that inside a global economy characterized by incertitude, it is rather difficult to get a complete picture of the impact and the coordinates of sustainable economic growth, just by employing the HERMIN model. Still there is the advantage of identifying the correlations existing between the macroeconomic indicators and the capacity to use the EU financial support. In evaluating the absorption degree of EU funds, we should not just take a look towards the amount spent, but also

towards the fulfilment of the task meant to accelerate the sustainable development of beneficiary member states. This is where the significance of this analysis comes from, and this is why its results should also provide direction for further rethinking of objectives, policies and implementation of financing. By giving an impulse to development in certain areas – such as the central and eastern European countries where the need for catching-up has been identified, EU funds can contribute to the long-term development and welfare. This is the motivation for focusing this analysis on the economic side of sustainability. According to existing hypothesis and previous research, the aim of this paper is to correlate the EU funds spending in most recent EU member states to an impulse in sustainable development, beyond the simple, isolated ecological approach. Our assessment is rather located in the economic area of sustainability. Even if correlation proves still low, and yet insufficiently materialized, longer term results and effects are to be foreseen. The present analysis focuses on the welfare side of sustainable development and an indirect assessment of the ecologic side, and the choice of the indicators set has been made subsequently.

Analysis and results

Our analysis started from the assessment of five major indicators of sustainable development in each category drafted by the UN and the EU Commission: - unemployment for the population below 25 years of age; people at-risk-of-poverty and social exclusion; early leavers from education and training; in work at-risk-of-poverty rate; resource productivity. Each criterion represented the broader, aggregate expression of the sub-chapters inside a group as defined by the Eurostat methodology. Also, these indicators focused on the economic side of sustainable development as we wish to go deeper than the ecologic approach of sustainability. Data was provided by Eurostat for a period from 2011 to 2013 in order to be coherent with the EU funding data for selected countries. We used the entry data in order to test for correlation between the EU structural spending in selected countries and an increase in sustainable development measured through selected indicators according to UN and EU Commission methodology. From a methodological point of view, the EU funds' spending was not split according to the type of program, as the set of indicators analyzed here comprise main economic perspectives of sustainable development also aimed by EU financing. Thus there is no discrepancy between the input targeted and the output indicators considered. Prior to correlation analysis we conducted a comparative analysis of countries beneficiating from EU funding, based on existing Eurostat data. Accordingly, during a three years interval, sustainable development did not evolve dramatically – and even though indicators' varied, countries seemed to maintain their ranking inside the group - highest levels of young population unemployment Lithuania – 2011, Slovakia – 2012 and Cyprus – 2013, while lowest levels, and thus contribution to increasing sustainable development can be found in Malta.

Table 2. Sustainable development indicators for selected EU member states – 2012

	Unemployment <25		People at-risk-of-poverty		Early education leavers		In work risk-of-poverty		Resource productivity		EU funds	
	%		%		%		%		euro/kg		mil. Eur	
	2012	2013	2012	2013	2012	2013	2012	2013	2012	2013	2012	2013
BG	25.0	28.4	49.3	48.0	12.5	12.5	21.2	21.0	0.3	0.33	1,732.5	1,976.9
CZ	18.1	18.9	15.4	14.6	5.5	5.4	9,6	8.6	0,97	0.98	4,529,4	4,893.1
EST	22.4	18.7	23.4	23.5	10.3	9.7	17.5	18.6	0.46	0.46	154.5	973.3
CY	22.4	38.9	27.1	27.8	11.4	9.1	14.7	15.3	1.37	1.64	179.5	227.1
LAT	31.0	23.2	36.2	35.1	10.6	9.8	19.2	19.4	0.59	0.56	1,832.6	1,063.2

	Unemployment <25		People at-risk-of-poverty		Early education leavers		In work risk-of-poverty		Resource productivity		EU funds	
	%		%		%		%		euro/kg		mil. Eur	
	2012	2013	2012	2013	2012	2013	2012	2013	2012	2013	2012	2013
LIT	32.6	21.9	32.5	30.8	6.5	6.3	18.6	20.6	0.86	0.89	1,530.2	1,881.2
HU	26.1	27.2	32.4	33.5	11.5	11.8	14.0	14.3	1.1	0.94	4,177.1	5,909.8
ML	13.3	13.0	23.1	24.0	21.1	20.8	15.1	15.7	1.58	1.75	141.2	173.7
POL	25.8	27.3	26.7	25.8	5.7	5.6	17.1	17.3	0.55	0.57	15,735.8	16,179.5
RO	23.9	23.7	41.7	40.4	17.4	17.3	22.6	22.4	0.31	0.31	3,445.5	5,560.6
SLO	15.7	21.6	19.6	20.4	4.4	3.9	13.5	14.5	1.38	1.39	931.8	813.6
SLK	33.7	33.7	20.5	19.8	5.3	6.4	13.2	12.8	1.1	1.16	2,286.8	2,026.1

Source: Eurostat – sustainable development indicators

People at risk-of-poverty and social exclusion reached peaks in Bulgaria, while best performing country position, at this chapter was the Czech Republic. In work at-risk-of-poverty rate was the highest in Bulgaria – 2011 and Romania – 2012, 2013, while the highest degree of sustainable development from this point of view was again encountered in the Czech Republic. The highest resource productivity was in Malta, while Romania and Bulgaria have the lowest rates, and thus, the lowest degree of sustainability. There is in fact no correlation between the amount of the EU financing towards a country and that country's sustainable development. Poland beneficiated from the highest amount but it is not described by best performing indicators. Romania on the other hand, with constantly the second highest amount spent is sometimes the worst performing in terms of in work at-risk-of-poverty share of the total population. Further on, we analysed the way EU funding supported the increase in sustainable development for these countries, as main beneficiaries. The choice to group the most recent EU member states was based on previous literature results, where individual analysis proved rather puzzling as there was no proof of a direct correlation between EU funds spending and the increase in sustainable development indicators. The intensity of correlation is assessed using the Pearson correlation coefficient.

Table 3. Descriptive Statistics – 2011

	Mean	Std. Deviation	N
I0	2,799.533	3,933.6765	12
I1	.2417	.06387	12
I2	.28817	.101474	12
I3	.10325	.055214	12
I4	.16533	.037838	12
I5	.7933	.42930	12

Source: authors' computing

Table 4. Correlation analysis results – 2011

		I0	I1	I2	I3	I4	I5
I0	Pearson	1	.168	-.008	-.308	.006	-.270
	Sig. (2-tailed)		.601	.980	.330	.986	.395
I1	Pearson	.168	1	.426	-.321	.311	-.531
	Sig. (2-tailed)	.601		.168	.310	.325	.075
I2	Pearson	-.008	.426	1	.340	.870**	-.633*
	Sig. (2-tailed)	.980	.168		.280	.000	.027
I3	Pearson	-.308	-.321	.340	1	.420	.204
	Sig. (2-tailed)	.330	.310	.280		.174	.524
I4	Pearson	.006	.311	.870**	.420	1	-.638*
	Sig. (2-tailed)	.986	.325	.000	.174		.026
I5	Pearson	-.270	-.531	-.633*	.204	-.638*	1
	Sig. (2-tailed)	.395	.075	.027	.524	.026	

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Source: authors' computing

In order to accurately assess an evolution in correlation, rather than quantifying the impact of EU funding on sustainable development, just like the comparative analysis, the correlation analysis evolves yearly, on progressive and aggregate data basis, aiming to get more significant results. The descriptive and statistical analyses of the existing data summarized here provide a rather comprehensive picture of the coherence between the EU settled – global, specific and operational objectives and the sustainable development indicators employed across the EU. Nevertheless, two methodological challenges and limitations are worth mentioning - the limited time interval given the allocation and spending of EU structural funds in CEECs, but also the set of countries. Analysis results are presented below using the correlation analysis based on Pearson coefficient methodology. For 2012 and 2011, the situation rather unchanged – EU financing was very weakly correlated to sustainable development indicators in CEECs. At this point, one would have expected to encounter some sort of a response from the macroeconomic indicators, once the programming period started in 2007 and the financial inflow from the EU to the newest member states should have started producing results and even profit in some areas of the economy. Delays in that kind of feedback were mainly due to the delayed spending of EU funds – especially for Romania. Thus, the lack of correlation of the business cycles, as an expression of the low rate of convergence with EU western economies was a setback and caused different time intervals for the investments amortization. This is also an average time span corresponding to the economic crisis, and it is rather possible that positive effects of the EU funding might have been compensated and overcome by the imbalances generated by the global economic and financial crisis. Even if rather acute in the Euro Area, central CEECs did not get to the point of an imminent bailout. Poland was one of the few to maintain a positive growth rate, while Romania managed reasonable levels of foreign debt and budget deficit, even during crises peaks. For 2013, an even weaker correlation compared to the previous two years may be observed when trying to connect EU funding with social exclusion indicators or resources' productivity. It is potentially indicative of a lack of orientation in EU funds spending towards the innovative, low-resource-consumption areas of the economy that may in time lead to an impulse in sustainable development.

Table 7. Descriptive Statistics - 2013

	Mean	Std. Deviation	N
I0	3,473.175	4,484.1422	12
I1	.24708	.069842	12
I2	.28642	.094533	12
I3	.09883	.050863	12
I4	.16708	.039523	12
I5	.9150	.49307	12

Source: authors' computing

Table 8.Correlation analysis results - 2013

		I0	I1	I2	I3	I4	I5
Pearson	I0	1.000	.099	-.004	-.202	-.012	-.383
	I1	.099	1.000	.206	-.303	-.033	.048
	I2	-.004	.206	1.000	.463	.791	-.562
	I3	-.202	-.303	.463	1.000	.385	.010
	I4	-.012	-.033	.791	.385	1.000	-.584
	I5	-.383	.048	-.562	.010	-.584	1.000
Sig. (1-tailed)	I0	.	.380	.495	.264	.485	.110
	I1	.380	.	.260	.169	.459	.441
	I2	.495	.260	.	.065	.001	.029
	I3	.264	.169	.065	.	.109	.488
	I4	.485	.459	.001	.109	.	.023
	I5	.110	.441	.029	.488	.023	.
N	I0..5	12	12	12	12	12	12

Source: authors' computing

Another point to be made here is also the scale of the financial inflow compared to the size of the economy, which is crucial in determining a sizeable impact that could be depicted by the Pearson correlation methodology. Thus analysis must always include both a quantitative and a qualitative side that would account for both the quality of the spending, and also the amount spent into a certain direction of development. For both the Romanian and the Polish cases, the amount is also relevant, and even if being the top two beneficiaries in this respect, that is not being reflected, at least for the short run, by an impulse on sustainable development.

Discussion

Statistical analysis cannot create a complete and coherent picture of the impact of structural EU funding on the improvement of sustainable development, unless correlated to sustainable development policies integration and coordination to EU objectives. As the EU's main goal is to '*Promote coherence between all European Union policies and coherence between local, regional, national and global actions in order to enhance their contribution to sustainable development'* (European Council, 2006), the weak influence of EU funds on sustainable development indicators in selected countries, seems to prove the ineffectiveness of vertical policy integration. Even more than that, for the financial programming period 2007-2013, it may even point towards the un-coordination of the EU objectives, with the real needs of the beneficiary member states. Weak correlation is mainly in line with all previous quantitative analysis in the field, and it becomes more and more clear that unless complete integration and coordination are being achieved, efficiency in terms of sustainability is not an easy and close target. Results prove, that either EU funds are not enough, compared to the economy scale, or they are not correctly directed towards areas that could render them efficient and contributing to sustainable development, at least in a long term. Funds are thus going elsewhere than towards the real support of economic areas with real development potential. Finally, that leads to the idea that sustainability is not much of a target unless from the eligibility of a certain funding application, rather than from the real middle term economic and social benefit of a certain state. CEEC EU member states perform differently when talking about the capital invested – no matter the type or the source of that, compared to traditional market economies, even the small ones in the south of Europe. The selected sample provided the context for the discussion about the efficiency of EU funding on a certain level of economic development, such as the "functional market economy" status. One of the analysis facets is also the fact that emerging economies encounter a certain delay in rendering sustainable effects given their drawbacks.

Table 9.Average EU funds allocation per capita 2007-2013

Country	EU funds (EUR)	Country	EU funds (EUR)
Bulgaria	916.13	Lithuania	2,279.84
Cyprus	707.29	Malta	1,993.81
Czech Rep.	2,522.44	Poland	1,743.57
Estonia	2,578.03	Romania	959.68
Hungary	2,515.05	Slovakia	2,125.05
Latvia	2,238.55	Slovenia	1,991.94

Source: authors' computing based of EU Commission data

EU funds allocation and efficiency should also be analyzed in connection with average per capital spending. Form this point of view, the highest amount can be observed in the

Estonia case and the correlation is with a high absorption rate, rather than with an impulse for the sustainability side. Romania's average is one of the lowest thus explaining the lack of correlation. Even though, spending is limited to allocation, and EU funds allocations are also dependent on several variables such as the regional GDP per capita average compared to the EU average, but also on the fixed per capita amount. Connection is analyzed here also on an economic size level. Even though, the influence of EU membership on both a statutory and a financial level have contributed to a more extensive experimentation of sound practices on the market, an increase in ecologic awareness, but also of important social aspects such as the evolution towards the lack of discrimination. From an economic point of view, structural funds may be interpreted as capital subsidies, and thus may be rendered with a conditional effect under the circumstances of the already proven lack of correlation to the broader spectrum sustainable development. Under these circumstances, the effects would be conditionally effective. Conditions are represented by the regional – NUTS analysis and the existence of the above mentioned degree of economic development deriving from certain sets of variables, according to the envisaged indicator. For example, in case of the unemployment, a key variable ensuring a positive effect would be the very low rate of low-skilled population. That is in fact a correlation amongst sustainable development indicators employed here. A deeper analysis from this perspective is desirable and represents the next step of the current research.

Conclusions

According to the presented analysis, results and discussions, the main conclusions of this paper are:

- EU financing is an important tool for financing catching-up economies, such as the central and eastern European member states, with several facets of sustainable development in terms of ecology, a decrease in structural unemployment, a reorientation of resource consumption or a lower degree of early education system leavers;
- Central and eastern European member states have been and will be the beneficiaries of important amounts from the EU, even if spending and allocation does not match the sustainable development indicators evolutions. For example, Poland has been provided with the highest amount of EU financing but indicators have not developed in a significant manner.
- The possible explanation for the lack of correlation between the financial inflow from the EU and the evolution of sustainable development in selected countries may be: the lack of policy coordination, the delay in implementation for some of the countries, at least for the 2007-2013 programming period, or the delayed effect of financing due to the duration of the economic cycle from input to out-put;
- From now on, the implementation of EU structural funds should take into account both the correlation of European strategy to national or regional sustainable development particular needs, and the identification of potential improvement of internal innovation capabilities;
- The size of the economy, the development of the economic structure and the transmission mechanisms that render capital – no matter the source of the type, efficient and sustainable, are important variables that might postpone significant results in the sustainable development area;
- Even under the lack of correlation between EU funding and economic sustainability, positive effects may come out in the light of a deeper research that would correlate sustainable development indicators on a regional level, and also acquire the connection

with EU structural funding. Thus, a three-dimensional analysis on a NUTS level could at least partly account for the limited impact of the EU structural funds' spending.

From the present analysis, it becomes evident that, at least for the past programming period, EU funding lacked a clear conceptualization on how to target and positively affect sustainable development by triggering variables such as unemployment, poverty and exclusion risk, early education abandon or resource productivity. Our research also indicates, beyond the classical weak correlation, a series of further correlation that might bring to the surface the effectiveness of this capital inflow. Furthermore, the imbalances and divergence sources have been identified. As a consequence, for the new financial framework 2014-2020, a new set of strategies should define objectives which are clearly measurable and allow for an ex-post assessment of the sustainable development impact and would also enhance effectiveness.

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