The Effectiveness of EU Cohesion Policy Revisited:

Are EU Funds Really Additional?

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ABSTRACT

Is Cohesion policy effective? Does it contribute to the reduction of development disparities and strengthen competitiveness in the EU? These are the questions that have inspired a growing body of research on Cohesion policy evaluation, which has come to varied and inconclusive results. There has been significant variation with regards to the established (in) effectiveness of Cohesion policy among different methodological approaches. Ideally, the econometric tests would be able to provide conclusive results, which would represent the most convincing empirical proof. Unfortunately, the nature of Cohesion policy itself is posing serious limitations to the econometric approach, which has usually been limited to the direct testing of the macroeconomic impact of the resources. In order to circumvent these shortcomings, the authors have continued to rely on the econometric methods, but have nevertheless proved the benefits of using an indirect estimation approach. They have confirmed that Cohesion policy effectively increases the structural expenditures of the recipient Member States, thereby fulfilling one of the necessary conditions for effectiveness of EU transfers. Overall, effectiveness still depends on other conditions, among which the micro-efficiency of funds' management and their effect on private investment stand out in particular.

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1. INTRODUCTION

Cohesion policy is an EU development policy, designed to reduce disparities in the development capacity of the regions and Member States lagging behind, while at the same time to contribute to a strengthened competitiveness and employment of all other areas. With €347 billion until 2013 at its disposal it represents the second largest item in the EU budget, after the Common Agricultural Policy, which means that its effectiveness is a subject of great interest due to the potentially high opportunity costs these funds might have.

Whether the Cohesion policy resources contribute to convergence, higher growth of targeted areas and create jobs and strengthen competitiveness, remains, at least from the scientific perspective, an open question. As argued by (Ederveen *et al*, 2003: 31) "there is no consensus about the impact of Cohesion policy". A slightly more specific assessment is put forward by (Molle, 2007: 253) who deems Cohesion policy as appropriate, although not perfectly efficient due to somewhat higher costs, but most controversy however seems to be related to its effectiveness. As far as effectiveness is concerned, there are wildly differing views expressed in the literature, which range from entirely to conditionally negative (Boldrin and Canova, 2001; Dall'erba *et al* 2007; Ederveen *et al*, 2006); to highly positive (Beugelsdijk and Eijffinger, 2005; Bradley and Untiedt, 2007; EIB. 2007; Venables and Gasiorek, 1999). Thus, "the debate on the overall effectiveness of EU regional policy is still largely inconclusive" as also argued by the OECD (OECD, 2007: 129).

The differences in the assessment of Cohesion policy's effectiveness can be explained to a considerable extent, though not entirely, by the methodological approach employed therein. The *Macroeconomic Modeling* approach; whose assessment of Cohesion policy is uniquely positive, has the advantage of being able to estimate the indirect effects and the counterfactual in the context of the general equilibrium itself, based on the micro-economic relationships. This approach is subject to criticism however, because its estimates are said to be the result of the structure of the model, which is imposed by the researcher and is hence subjective (Cappelen *et al,* 2003). This in turn is supposed to result in estimates that represent only the ex-ante assessment of potential, but not the factual impact of Cohesion policy (Ederveen *et al*, 2003). The second approach to evaluation of Cohesion policy's macroeconomic effectiveness is represented through *case studies*, bottom-up, descriptive, contextual evaluations, which in spite of their ability to take into account specific features of the activities under evaluation, are, to an even greater extent, subject to the problem of authors' subjectivity. This is due to the "ad hoc" nature of the methodologies used. Furthermore, the bottom-up approaches are disadvantaged by their weak ability to assess indirect effects; there has been attempts to overcome this problem (Bradley *et al*, 2006; Venables and Gasiorek, 1999), however, these are again subject to objections from macroeconomic modeling approaches.

Therefore, in an ideal world, the third approach, the "*econometric*" or "testing approach", would seem to be the most appropriate as it directly measures the effect of the spent resources. It too however is faced with methodological limitations as shown, among others, by the inconclusive results provided by this type of evaluation. A literature review shows (Wostner, 2009) that one cannot in general render econometric studies to give predominantly negative assessment as is often argued (e.g. Gripaios *et al,* 2008), although it is true that the non-robustness of the results seems to be almost a systemic property of this approach (Florax, 2002; Levine and Renelt, 1992; Roodman, 2007). (Rodik, 2005) even goes as far as to argue that the econometric approach is entirely incapable of measuring the effect of economic policies as "policy interventions are not random and

their presence responds to unobservables" (*ibid.*, 11).

Notwithstanding such an extreme assessment, we would argue that there are three main arguments why the direct testing of the macroeconomic effectiveness of Cohesion policy resources is problematic. First, the Cohesion funds represent, in the context of multiple, more dominant and complexly interwoven determinants of economic growth, simply an economic shock that is (too) minute to allow for its clear econometric identification (OECD, 2007: 129). This argument is also related to the problem of threshold effects implied by new economic geography theory as pointed out for example by (Ottaviano, 2003) and (Rodríguez-Pose and Fratesi, 2007). Second, as regards its contents, Cohesion policy is highly heterogeneous both in terms of its purpose and in terms of the extremely varied "initial conditions", addressed with in different target areas. Hence, a "simple" determination of the average macro-effects seems rather inappropriate in the case of such diverse contexts. Third, the available data, including that for Cohesion policy expenditures, does not allow, at least at this stage, one to specify models detailed enough to capture a causal relationship between Cohesion policy and growth (or convergence). A related problem is a lagged effect of different investments, which by definition have a long term effect, making it an almost insurmountable challenge for the testing approach (Begg, 2006) when relatively short time-series are available.

Given the above mentioned limitations and challenges it appears that an undisputable and conclusive assessment on the Cohesion policy's impact on macroeconomic parameters seems to represent an overoptimistic expectation. Hence, as argued by (Molle, 2007), the effectiveness of Cohesion policy "needs to be taken in terms of plausability instead of proof" (*ibid.*, 230).

This drove us to take a different course in this paper: evaluation of macroeconomic effects of Cohesion policy is tackled with a testing methodology in an indirect manner. The approach of this paper hence rests on the following logic: Cohesion policy expenditures represent only a part of a broader package of public economic development policies. If it is true that on average, government spending on the provision of public goods, particularly infrastructure and education, promotes economic growth; and at the same time that Cohesion funds are allocated according to the institutional practice of the given region or country; then it can be argued that the particular impact of Cohesion funds will be comparable to the macroeconomic impact of general public spending on the above mentioned public goods. As will be shown, the existing empirical evidence does indeed assess this relationship to be predominantly positive. Thus, the fundamental question is no longer the direct impact of Cohesion funds on the economy, but rather the extent to which they increase the amount of public spending, allocated for promoting development in target areas. This so-called 'additionality' principle of Cohesion funds is the necessary condition for any positive net effects to occur in the recipient country or region, while the actual effect of each particular investment will depend on: a.) micro-efficiency of the spent resources and b.) impact of public investment on private investment.

There are thus four fundamental assumptions with the above argument: 1.) the public economic development expenditures contribute to economic growth; 2.) the impact of Cohesion policy resources is comparable to those of general public expenditure for the same purpose; 3.) the Cohesion policy resources increase the total amount of spending, allocated for economic development in target areas (additionality principle) and 4.) there is no negative impact of public investment on private investment, i.e. crowding out. The question of micro-efficiency has been

studied in depth in other studies (e.g. Wostner, 2008).

The first assumption is analyzed in the next section. The second assumption has its critics, who argue that due to lower marginal costs the decision-making in Cohesion policy is less efficient than otherwise (refer to de la Fuente, 2003 for discussion), such statements however do not seem to be confirmed by evaluations (Eureval and Rambol management, 2008; European Investment Bank. 2007). Furthermore, due to full integration of Cohesion policy resources in the public policy framework, at least in the major recipients, and the significantly greater extent of controls on Cohesion policy spending (Rafalzik, 2008), our assumption seems to be realistic. The third assumption is the subject of this paper, while the fourth requires an additional comment. The crowding-out effect of public expenditure has been analyzed by (de la Fuente, 2003) on the case of Spain, who finds some net crowding-out only in case of subsidies, while for public expenditure in infrastructure, direct investment and training, de la Fuente even finds net crowding-in. The same conclusion is made by (Afonso and Alegre, 2008), who show, in the case of the EU27 for the 1976-2001 period, that not only does public funding not reduced private investment, but has even contributed to additional boosts in private investment.

The indirect estimation approach has been tried before (de la Fuente, 2003; de la Fuente and Vives, 1995; Martin, 1998), since such an approach is very suitable for estimating long-term, supply-side impacts of the resources spent on the economy. Especially (de la Fuente and Vives, 1995) and (de la Fuente, 2003) seem to be particularly relevant: their estimate is based on the production function approach, where Cohesion policy "impacts" on the function's inputs. Apart from the estimated elasticities, the greatest reproach could come from the aforementioned crowding-out and multiplication effects. Even in this case however, the author assumed that nothing would change with the other public expenditure, i.e. that Cohesion policy resources would be additional to existing public expenditure.

The additionality principle[1] admittedly represents one of the basic principles of Cohesion policy, not only since the reforms in 1988, but since its very beginnings. According to the reports by the European Commission, Member States tend to abide by this principle (e.g. European Commission, 2004: 140); however, these claims are based on methodology that has been bilaterally agreed between respective Member States and the EC, who itself admits that there are a number of weaknesses: difficulties in comparing results across Member States, shortcomings in data comparability over programming periods, problems in capturing all relevant eligible expenditure, heterogeneity of the information provided, difficulties in verifying the reliability of data and the lack of a monitoring mechanism (European Commission, 2009: 11). To the best of our knowledge, these methodologies have never been evaluated by independent experts nor in any other way, hence, it is not surprising that throughout the history of the Cohesion policy serious doubts and skepticism have arisen with regard to the practical implementation of the additionality principle (Bachtler *et al,* forthcoming; Dardanelli, 1999; Ederveen *et al,* 2003; Tomkins and Twomey, 1992). This further supports our view that we are dealing with a vital, yet empirically under-researched area. (Ederveen *et al,* 2003) estimates that every Cohesion policy euro on average crowds-out 0.17 euros of national regional policy funding, while (Dardanelli, 1999) is even more sceptical, claiming

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[1] Art. 15 of the Council Regulation (EC) No 1083/2006 of 11 July 2006 laying down general provisions on the European Regional Development Fund, the European Social Fund and the Cohesion Fund and repealing Regulation (EC) No 1260/1999.

that "full respect for this principle is virtually unattainable" (*ibid*., 78). Admittedly, doubts are expressed even by some high ranking European Commission officials (European Commission, 2008: 31). Despite logical theoretical conclusions, this study is thus, to the best of our knowledge, the first to empirically analyze the mutual relationship between public spending in Member countries and the respective amounts of Cohesion funds received.

The article is structured as follows. After the introduction, which also sets out the methodology of the paper, the second section presents a literature review on the role of public expenditure on economic growth (the first assumption above) as well as the theory of public expenditure, used to specify the empirical model. This is the subject of section three, followed by the presentation of model results in section four, which also includes the robustness analysis. Section five concludes and puts forward implications for Cohesion policy.

2.   THEORETICAL CONSIDERATIONS AND LITERATURE REVIEW

2.1   The role of public expenditure on economic growth

The body of work, which evaluates the effect of public spending or public capital on economic growth is rather extensive; hence, studies that employ meta-analysis are all the more convenient. Among those published recently, three deserve particular attention. Firstly, (Nijkamp and Poot, 2004) who seek to determine the impact of fiscal policies (public spending, defence spending, tax policy, and investment into infrastructure and education) on economic growth, based on 93 studies published in refereed journals between 1983 and 1998[2]. According to their findings, the overall impact of all fiscal policies on long-term economic growth is generally weak, with many results being inconclusive; however, they identified a robust effect of investment in education and infrastructure. With regard to the latter, the authors state that 72 percent of the studies identified a significantly positive effect on economic growth, while one fifth of the studies did not arrive at conclusive results. It may be of interest that the studies that employed data at national level seem to have yielded more positive results, and that the same applies to those that are based on longer time series. This is an indication of the importance of externalities and the long-term nature of the effect, produced by investments in infrastructure. The studies analysed established even stronger support in the case of investment in education, as over 90 percent of them pointed to the statistically significant positive impact of such investments on economic growth.

The second study that seeks to summarise the results in this field is (Romp and de Haan, 2007). They analysed 77 studies from the period between 1995 and 2006, whose central question relates to the effect of public capital on economic growth. The studies are classified into six groups: studies based on production function, cost function, vector autoregression, models relating to several countries, models that estimate the crowding-out effect, and approaches based on the theory of optimum scope of public capital. Compared to older overview analyses of this type (e.g. Sturm *et al*, 1998), they found that on average, newer studies tend to identify an even more positive impact of public capital on economic growth. In addition, these studies underline the heterogeneity of such impact in terms of results from respective countries, regions, or sectors. The importance of the quality and scope of existing infrastructure is particularly emphasized since investments are subject to diminishing returns of scope. Furthermore, the contribution of network effects is increasingly being focused on, as these effects result in non-linear relations. Also, the issue of the extent to which a particular investment addresses and solves a certain bottleneck is also raised more attentively than in older studies. According to some studies, the impact of public infrastructure also depends on institutional and political aspects.

The most recent meta-analysis dates to 2008 (Bom and Ligthar, 2008). It systematically analyses 76 studies that were published no later than in 2006, and which are based on the logic of public capital as an input to the production function. Sixty-eight of the studies analyzed, i.e. nearly 90 percent, established a positive effect of public capital on economic growth. The elasticity of GDP with regard to the changes in the amount of public capital (taking into account 13 properties of estimates, ranging from the type of data to the model specification) is estimated at 0.086, confirming the

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[2] For a table that lists all studies included in the analysis, including their characteristics and key findings, see *ibid*, p. 96-100.

desirability of investment into public infrastructure from a macroeconomic point of view. The finding that a narrower definition of public capital or infrastructure (e.g. railway or airports) tends to bring a more positive effect than when it is defined more broadly (so as to include e.g. administration buildings), is also of particular interest from the aspect of this analysis. Moreover, elasticity was found to be higher when infrastructure was provided by local or regional authorities.

Lastly, we include in this overview the results of (Afonso and Alegre, 2008), who established the effect of the composition of public spending on economic growth and productivity in the case of the EU27 in the period from 1971 to 2006. Employing a dynamic panel, they found that higher public spending and social transfers have a negative effect, and public investment has a positive effect on economic growth. Furthermore, the impact of public spending for economic purposes was also proven to be statistically significant, with public spending on education having a particularly significant positive effect. These two types of spending, as presented below, represent the key components of so-called 'structural' or 'development' spending.

A positive impact of infrastructure and public capital on economic growth has also been established at the level of EU regions (Basile *et al,* 2001; Bronzini and Piselli, 2007; Charlot and Schmitt, 1999; de la Fuente and Vives 1995), however not uniquely so, as (Martin, 1998; Martin. 1999; Vanhoudt *et al,* 2000) do not find infrastructure as the appropriate instrument for development policy. Furthermore, at the regional level there are discussions on the direction of causality, with infrastructure being a cause of growth found by (Bronzini and Piselli, 2007) and its effect by (Vanhoudt, et al. 2000). An excellent illustration of the complexities, connected with investments in infrastructure, is put forward by (Crescenzi and Rodríguez-Pose, 2008), who find that infrastructure endowment is important for growth, while the additional investment does not seem to be significant. Furthermore, endowment of neighbouring regions with infrastructure has a positive impact on a given region, while higher investment in those regions has a negative impact on the growth of a given region. This indicates that the timing and a coherent strategy for investment is of crucial importance to the effectiveness of public investment.

The existing body of work thus estimates the effects of public capital or development spending on economic growth as predominantly (though not uniquely) positive. This conclusion is particularly robust in economies with underdeveloped infrastructure and in economies in which local and regional authorities play a leading role. The former is certainly a feature a majority of the target areas for Cohesion policy; with regard to the latter, a uniform assessment is hard to put forward. However, local and regional authorities are undoubtedly at least one of the key partners in the implementation of Cohesion policy, even when they are not directly in charge. It can therefore be concluded that Cohesion funds, assuming equal or similar productivity of investments, compared to other public investment funded by national funds, should be expected to have a positive effect on economic growth and productivity; when their inflow increases the amount of structural spending.

2.2. Theory of public expenditures

In order to specify the empirical model, the findings of the empirical studies quoted above are insufficient. Analysis of the effect of Cohesion funds on public spending, more specifically the part of public spending, aimed at promoting development (hereinafter referred to as structural spending), requires the factors that define their scope and amount must first be understood according to the theory.

As argued by (García and Martos, 2004: 8), explanations of the scope and amount of public spending, or the extent of government's role in an economy, is hardly governed by a single dominant theory, but rather by a large number of partial theories that tend to emphasize particular aspects. These include either the determinants of demand for public services or the composition of supply of such services, where, in addition, both economic and political aspects should be accounted for. The problem of explaining and the empirical testing of the effect of each particular factor is that several (partial) theories seem to be mutually complementary and interrelated. As a result, attempts to determine the impact of an individual factor without accounting for other theories were often impeded by the problem of omitted-variable bias (Shelton, 2007: 2230).

As a logical consequence, modeling the scope and amount of public spending should include a control or test for significance of as many key theories or factors as possible, from among those listed below.

Among the first theories that seek to explain the dynamics of the amount of public spending is the thesis (Cameron, 1978) that open economies have greater amounts of public spending. The thesis is supposedly based on the finding that such economies have a more unionised labour force which in turn leads to stronger demands for redistribution. (Rodrik, 1998) later provided alternative grounds for the same thesis as he found that the theory holds regardless of the development stage of the country, as well as for any type of public spending. He therefore argued that the reason for a larger scope and amount of public spending lies in insuring against external risks.

The next theory defines the size of a country as the determinant of public spending (Alesina and Wacziarg, 1998). It is thought that, in larger countries, the per capita cost of public goods, due to their non-rivalness, is lower in large countries than in smaller ones; moreover, the preferences tend to be more heterogeneous in larger countries, which results in lesser common interest, which in turn leads to a lesser scope for, and amount of, public spending. Furthermore, smaller countries are more open to international trade and in case of worsening terms of trade, their costs are potentially higher. Both aspects point in the same direction, i.e. more spending on public goods in smaller countries.

Notable theories regarding the scope of public spending also include Wagner's law which predicts that the scope of public spending, i.e. the scope of government, will increase with its level of development (e.g. Lamartina and Zaghini, 2008). This is thought to result from two motives: as a country develops, social complexity tends to increase as well, which in turn leads to greater demands for regulation and public intervention; on the other hand, certain public goods are seen as "luxury goods" by their nature (e.g. culture), which again means that their consumption will rise as the income increases.

Following a similar line of thought, (Meltzer and Richard, 1981) developed a theory according to which the scope and amount of public spending is not explained only by the level of development, but also income inequality of a society. Deriving from the median voter theory, they found that the median voter's benefits from taxation will be proportional to the average income; hence, the difference between the average and median income is proposed to explain the increase in public spending. Consistent with the interest group theory, greater pressure on redistribution could also be derived from the age structure of the population and unemployment level, which means that higher values for both, i.e. ageing populations and higher unemployment rate, would result in a higher amount of transfers.

According to (Brennan and Buchanan, 1980), the level of public spending is also affected by the level of decentralisation in a country. A strong central level in a country will, in their opinion, have less trouble reaching an internal consensus for higher taxation while fiscal decentralisation is thought to prevent this (García and Martos, 2004: 25).

In terms of identifying the effect on public structural spending, the anti-cyclical or stabilisation role of the government plays a particularly vital part. According to (Musgrave, 1959), this is one of the government's central three functions; hence, public spending is positively correlated to categories that either require a greater amount of transfers (e.g. unemployment level) or increased budget revenues (real economic growth). On the other hand, public spending is negatively correlated to categories that promote macroeconomic stability (e.g. inflation rate or extent of public debt).

(Easterly and Levine, 1997) submit that the heterogeneity of preferences in a country, in addition to its size, is also affected by demographic factors; they specifically point out the ethnic fragmentation of the society. This theory is based on the assumption that the ethnical differences preclude a consensus on provision of public goods. Another possible interpretation is that the benefit of a public good for a particular ethnic group will be smaller if such good is shared with another ethnic group.

Finally, the extent of public spending is thought to be affected by a series of political factors (refer for example to Potrafke, 2006). Most notably, these include the election year – a hypothesis proposed by (Nordhaus, 1975) as far back as 1975. The idea is based on the logic of political-economic cycles. In other words, any government, regardless of its ideological alignment, will be tempted to stimulate economic growth just before the elections to improve its odds of re-election; these efforts, in turn, are expected to increase public spending. (Rogoff and Sibert, 1998) expanded this thesis to include the possibility of influence as early as in the pre-election year as the current government, based on its advantage in terms of access to information, seeks to communicate to the voters its 'superior' ability to govern (Potrafke, 2006: 4). On the contrary, (Alesina, 1987; Hibbs, 1977) stress the importance of ideological alignment of each government, with the ones leaning to the left believed to be more likely to increase public spending due to their focus on the "working class", while the right-wing governments whose electorate predominantly consists of capital owners, will focus more on curbing inflation and, consequently, lower public spending. (Weingast *et al*, 1981) propose the idea that the amount of public spending is also affected by the composition of the government: a greater number of "decision-makers" in coalition governments is thought to result in higher spending as making decisions in such governments is more difficult. (Persson *et al*,1998) and (Milesi-Ferretti *et al*, 2002) also point to the effect of the majority rule or proportional representation voting systems. According to (Persson *et al*, 1998), the majority rule is believed to

reduce spending on public goods, yet increase the amount of transfers; on the other hand, (Milesi-Ferretti *et al,* 2002) argue that due to the election method, a majority rule following a geographic principle will exhibit a greater propensity to provide public goods. In the context of income inequalities, (Shelton, 2007) also makes a case for the role of political rights which can affect the representation of particular segments of the electorate at the elections.

3.   EMPIRICAL MODEL

The analysis of the effect of Cohesion policy at the EU level is considerably impeded by the availability of data. Due to a very short time period in which the new Member States, i.e. the states that joined the EU in 2004 or later, have taken part in Cohesion policy, the analysis must inevitably focus on the EU15, i.e. the countries that were EU Member States prior to the year 2004.

3.1   Data

The data used was mostly acquired from Eurostat, which allows a high level of data comparability; in addition, this is the data used by the European Commission in its (official) analyses. Since most of the data required are only available at the level of particular countries, analysis at lower levels is not possible. In addition, time series are also rather restricted at the country level as well. This, as well as the commonly recognised advantages of its use[3], led us to derive our results from panel data. The length of the time series differs from one country to another, which means that the panel is unbalanced. For most countries, the data are available for the period between 1995 and 2006 - that is for 12 years. Depending on model specification, Greece has the shortest time series with five years, while Italy and Great Britain have the longest time series with 17 years (from 1990 to 2006).

Data on inflow of Cohesion funds by country were obtained from the financial reports of the European Commission (European Commission. 2007; European Commission, 2008) and therefore do not relate to the appropriations for commitments, but to actual inflows received by the Member States in each year. The analysis based on actual inflows is of key importance as Cohesion policy has seen considerable time lags between the commitments and the actual payments. This is particularly notable for the period before 2000; after which, the so-called "N+2" rule applied, which means that a country should spend its available commitments no later than in the following two years, or there would be so-called 'decommittment'.

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[3] See e.g. Baltagi: 2008: 6-8.

Table 1: Average amounts of inflows from Cohesion policy by programming periods and average amounts of structural expenditures in these periods; presented as percentage of GDP

	1990* - 1993		1994 - 1999		2000 - 2006	
	CP inflows	Struct. Exp.	CP inflows	Struct. Exp.	CP inflows	Struct. Exp.
Belgium	0,1		0,2	11,5	0,1	11,7
Denmark	0,1	12,2	0,1	12,5	0,1	12,2
Germany		10,5	0,2	10,6	0,2	8,6
Greece			2,1	8,3	1,5	8,9
Spain	0,7		1,2	10,2	1,0	10,0
France	0,1		0,2	10,6	0,1	10,1
Ireland			1,8	10,1	0,5	9,5
Italy	0,2	11,7	0,3	9,9	0,3	9,6
Luxembourg	0,1	12,7	0,1	10,6	0,0	10,1
Netherlands	0,1		0,1	10,7	0,1	10,8
Austria			0,2	12,0	0,1	11,5
Portugal			3,0	13,0	2,0	12,5
Finland		14,8	0,2	13,6	0,2	10,9
Sweden			0,1	12,3	0,1	12,1
UK	0,2	8,8	0,2	7,9	0,1	9,2

Source: Eurostat, own calculations.
Note: * Subject to data availability, initial year differs from one country to another

The data on public spending were also obtained from the Eurostat database. The Eurostat methodology is based on the European System of National Accounts (ESA95) and on the Classification of the Functions of the Government which defines economic functions for which public sector funding was used. Due to our interest in the additionality, we were particularly interested in those areas that can be co-financed with Cohesion policy funds. The European Commission is using the term "structural expenditure" for this group of expenditures (see European Commission, 2006) This group comprises of all expenditure for economic purposes (which includes a wide array of fields, ranging from research and development and entrepreneurship promotion to agriculture and transport, including infrastructure), environment protection, and education. The average size of structural expenditure ranges between 10 and 11% of GDP (refer to table 1), which noticeably exceeds the amounts in the official methodology, agreed between the European Commission and particular Member States. For the 2007-2013 period, these account for 5.6% of GDP for the convergence regions (European Commission, 2009: 9). The use of official statistics thus means that the relationship with Cohesion expenditure will be harder to empirically evaluate, nevertheless such an approach, due to the objectiveness and comparability of data, gives the result the necessary credibility.

The data on public expenditure, not related to the level of central government, were used as a control for the effect of the level of fiscal decentralization. This data, too, is derived from the Eurostat database. The section of the Eurostat database "Government deficit and debt" was the source of data on public debt, which refer to the consolidated gross debt of the public sector. The government balance refers to the surplus or deficit of the entire public sector, i.e. both central government and regional and local levels, as well as social funds; it is available at the Eurostat web page via Euroindicators. The key problem of data availability for the government balance appears in the case of Greece where data, in the time of writing, was only available as of 2002.

Availability of a longer time series led us to obtain data on the rate of inflation and rate of unemployment from the Organization for Economic Cooperation and Development; partial data on election dates were obtained from (Potrafke, 2006) to be subsequently updated with the data obtained from the world-wide web. All other data, i.e. the data on gross domestic product, demographic and income statistics, and openness to trade, were obtained from Eurostat. The data on gross domestic product in particular restricts the length of the time series as they are only available for all countries according to ESA 95 from 1995 onwards.

3.2. Econometric model specification

Based on the conclusions from the public spending theory, the following panel model specification seems to best capture the dynamics of structural expenditure for the selected 15 European countries:

$$STREXP_{i,t} = c + \beta_1\, CP_{i,t} + \beta_2\, CP^2_{i,t} + \beta_3\, DELTAEXP_{i,t} + \beta_4\, PUBDEBT_{i,t} + \beta_5\, GOVBAL_{i,t} +$$

$$\beta_6\, INFL_{i,t-1} + \beta_7\, EMU + \beta_8\, BDPpcPPS_{i,t} + \beta_9\, UNEM_{i,t} + \beta_{10}\, POP_{i,t} + \beta_{11}\, DECENTR_{i,t} +$$

$$ELEC_i + a_i + a_t + u_{i,t}$$

where:

- Indices i and t relate to the country and year, respectively;

- Dependent variable STREXP represents the amount of structural expenditures. i.e. the sum of all public spending at all levels of government, for economic purposes (including infrastructure), education, and environment protection, consistently with the COFOG classification; it is expressed as a percentage of the GDP;

- c is a constant term;

- CP indicates the amount of funds' inflow from the Cohesion policy, expressed as a percentage of the country's GDP; CP^2 is its square;

- DELTAEXP is a variable that includes all other categories of public expenditure, except structural expenditure;

- PUBDEBT refers to the amount of a country's public debt as a percentage of GDP;

- GOVBAL means government balance, expressed as a percentage of GDP (a negative value indicates a deficit, a positive value indicates a surplus);

- INFL relates to the annual inflation rate, expressed as a percentage change in consumer prices compared to the previous period (OECD data);

- EMU is a dummy variable for the period from accession to the economic and monetary union in each respective country (1999 is the first year for all Member States, except for Greece whose relevant period starts with 2001);

- BDPpcPPS means gross domestic product per capita expressed in purchasing power standard;

- UNEM refers to the unemployment rate (OECD data);

- POP is the average population;

- DECENTR is the share of total public expenditure *not* related to the level of central government;

- ELEC is a dummy variably for the election year in each country. If the elections were held in the second half of the year, the same year is identified as the election year; if, however, the elections were held in the first half of the year, the previous year counts as the election year;

- a_i are country-specific dummy variables, controlling for the unobserved time-invariant effects;

- a_t are yearly time dummies, controlling for the effect of e.g. Europe-wide economic cycles, external shocks, etc.

- $u_{i,t}$ are unexplained residuals of the regression model, normally distributed with a zero mean and a constant variance σ^2_u.

According to the public expenditures theory, several important determinants of the amount of public spending is virtually time invariant (e.g. ethnical fragmentation of a society, political rights, majority rule or proportional representation voting system, etc.); while all these determinants could not explicitly be included in the model. Therefore, it is very likely that the model will require controls for the fixed effects.

4. RESULTS OF THE REGRESSION ANALYSIS

4.1 Analysis results

The results of the selected panel model are presented in Table 2

Table 2: Results of the selected fixed effects panel model for the EU15

| Dependent var..: STREXP	Coefficient	Standard Error	Significance
CP	1.5695	(0.617)	**
CP^2	-32.4761	(15.910)	**
DELTATOT	-0.0981	(0.057)	*
PUBDEBT	-0.0006	(0.000)	***
GOVBAL	-0.0032	(0.000)	***
INFL L1.	-0.0027	(0.001)	***
EMU	-0.0064	(0.002)	*
BDPpcPPS	-7.40E-08	(0.000)	
UNEM	0.0012	(0.000)	**
POP	8.15E-08	(0.000)	***
DECENTR	-0.0776	(0.024)	***
$ELEC_i$	Yes		***
Time Dummy Variable (α_t)	Yes		***
Constant	-0.0036	(0.025)	
R^2			
within	0.7150		
between	0.4201		
total	0.3619		
# No. of observations	170		

Legend: Standard errors in parenthesis using Huber/White/sandwich estimator. ***, **, * refer to the significance at 1%, 5% and 10% respectively

Source: own calculations

The estimated model, explaining the dynamics of structural expenditures, with fixed effects included, has proven appropriate and highly significant; its explanatory power is surprisingly high. This model explains 71 percent of the variance in structural expenditure for the sample of EU Member States; at the same time, the signs of the regression coefficients for all variables were consistent with the theoretical expectations and, as a rule, the coefficients were statistically significant.

The effect of the inflows of Cohesion policy funds (CP), a variable that is the most important for the model's purpose, is statistically significant, positive, but non-linear. The partial effect of Cohesion inflows on the amount of public structural expenditure is presented in Figure 1.

Figure 1: Partial average estimated effect of Cohesion policy inflows on the amount of structural expenditures
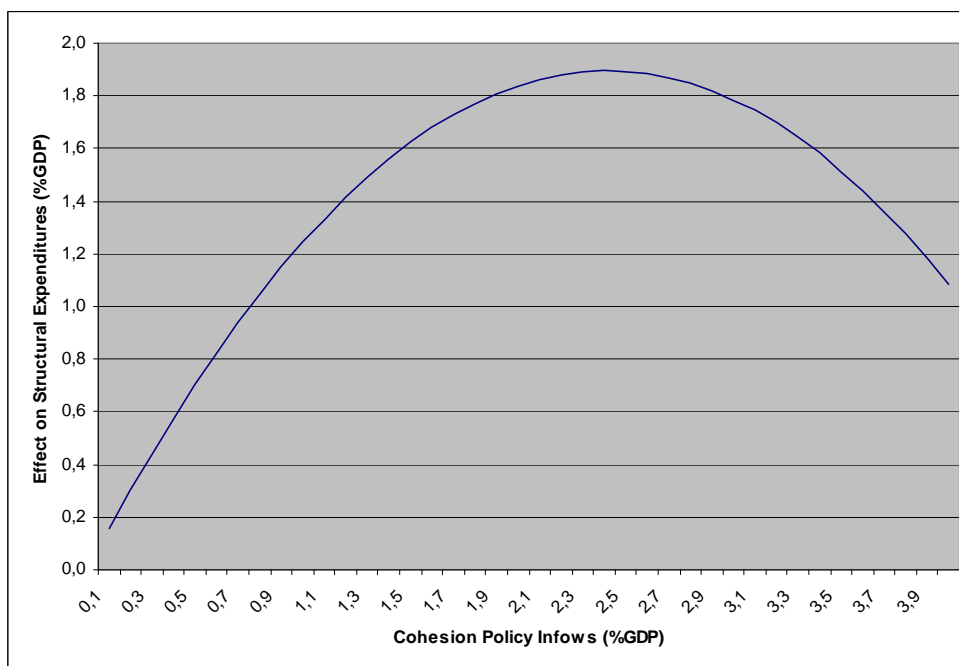
Source: own calculation

Our results indicate that the Cohesion policy inflows represent *additional* public spending; hence, Cohesion policy funds increase (rather than substitute) the public structural expenditure in recipient countries. In case of moderate inflows (up to approximately 1.75 percent of GDP), the additionality of funds is estimated on average to be complete. With minor inflows, the model even shows that the extent of structural expenditures is not only increased by the entire inflow of Cohesion funds, but also by the required sum of own co-financing, which represents an additional leverage for Cohesion policy funds. In case of a more considerable inflow of Cohesion funds (between approximately 1.75 and 2.33 percent of GDP p.a.), a minor rate of substitution was observed, in the range of up to 20 percent of total Cohesion fund inflows. It then follows that at least 80 percent of the inflows represent a net increase in the amount of structural expenditure in the recipient countries. With inflows greater than 2.33 percent of GDP annually, the data has shown a more considerable rate of substitution, or crowding out of domestic public structural expenditure. For example, if the inflow of Cohesion funds amounts to 3 percent of GDP, the increase in structural expenditure will only reach 60 percent. It should be added however that throughout the history of Cohesion policy, inflows of over 2.33 percent were granted only in exceptional circumstances (a total of 8 country-years), which means that in the majority of the years, and countries, Cohesion funds virtually in their entirety increased the amount of public structural expenditure, thus introducing an additional development incentive deriving from public funds.

The following section presents the estimated effect of other explanatory variables, which were included in the model based on relevant theories of public expenditure. Additional explanatory variables not only improve the explanatory power of the model; from the aspect of consistency in estimated results, their omission would be unacceptable as it would lead to omitted variable bias (e.g. Greene, 2000: 334).

The second group of important findings relates to the role of macroeconomic conditions and the country's economic policy when defining structural expenditure. A statistically significant negative effect of other public expenditure (DELTATOT) indicates that the total amount of public spending is relatively fixed and that other expenditures can only increase at the expense of structural expenditure. This may occur due to, for example, an increase in social transfers in cases of economic recession, which can also explain the positive sign of the effect of unemployment (UNEM). The effect of the increase of other public spending (transfers) in the case of recession is already encompassed by the DELTATOT variable; *ceteris paribus*, confirming the expectation that countries with more unemployed potentials will invest more in economic growth. Negative, though not statistically significant, a sign of the effect of the level of development (BDPpcPPS) on the amount of structural spending implies that the Wagner's Law does not apply to the segment of structural expenditure. Intuitively, this result can hardly come as a surprise, since the effect of considerable investment requirements in countries at a lower development stage in the EU, obviously, outweighs the factors, proposed by this law.

Counter-cyclically, the stabilization function of the government is entirely confirmed in the case of inflation rate (INFL). Its effect is statistically significant and negative; however, it should be noted that the effect with a time lag of one year exhibits even greater statistical significance, which points to the fact that we are not dealing with automatic stabilizers but rather a deferred effect of economic policy. The importance of pressures for sustainable public finances are also highlighted by the variables of public debt (PUBDEBT), government balance (GOVBAL), and the effect of economic and monetary union (EMU). All three variables exhibit a negative effect on structural expenditures, meaning that an improvement of government balance will also be reflected in a decrease in structural expenditure; the same applies to the effect of entering the economic and monetary union. It can be concluded that macroeconomic conditions have a considerable effect on the overall effectiveness of Cohesion policy as they make a key contribution in defining the amount of structural expenditure in Member States, i.e. the part of public expenditure for promoting economic growth and crucial for the positive effects of Cohesion funds on the Member States' growth to be realistically expected.

The third group of explanatory variables relates to the political-demographic factors. A large part of these effects is relatively fixed in time and since all cannot be explicitly included in the model, they are controlled by fixed effects (a_i) for each country. As explained by the public expenditures theory, these include: ethnical fragmentation, the voting system, or political rights in the countries. It is therefore hardly surprising that the F-test for the group of fixed effects proves them highly significant and different from zero. A significant positive effect of the population (POP) may at first appear to contradict theoretical expectations; however, it can be explained by lesser total costs for other policies (economies of scale), which enables savings in larger countries and therefore a greater scope and amount of structural expenditure. It should nevertheless be added, that the effect is quite small. The variable of the level of decentralization (DECENTR) is also highly significant and it indicates that a higher rate of fiscal decentralisation, consistently with theoretical expectations, is related to lower structural spending in a country. Finally, the political factors include a statistically significant effect of the election year (ELEC$_i$), which – along with the previously presented findings – supports the notion that political factors in particular bear a notable effect on the scope, amount, and composition of public spending.

4.1. Robustness analysis

In order to test the robustness of the estimated results in the model above, a series of alternative specifications were conducted, confirming the findings of our original model. From the aspect of the method employed, it has already been noted that unobserved, fixed, effects are statistically significant and that as a result, the model of random effects is not appropriate, or rather, will not yield unbiased estimates; this was also confirmed by the Hausman test. The possibility of effect with a time lag was also checked for all variables; however, this only proved appropriate in the case of changes in the rate of inflation. Any non-linear and logarithmic relations values of variables were also tested.

Alternative model specifications also included, a test for the validity of the so-called theory of incremental public expenditure growth (Wildavsky, 1985), which states that the most important determinant of the amount and composition of public expenditure is its composition in the previous year. The Arellano-Bond model was used for a dynamic specification of the model (see last column of the Table 3), estimated by a generalised method of moments and using a lagged dependent variable and first differences of other explanatory variables. The Sargan test did not reject the hypothesis that the model specification is valid and the possibility of second-order autocorrelation is denied (which is a precondition for the use of the model), however, the lagged dependent variable proves not to be statistically significant which fails to confirm the theory of incremental public spending growth and simultaneously confirms, or validates, the static specification of the model.

In addition to the key variables presented above, some additional or alternative variables were tested which are relevant from the theoretical perspective, but failed to prove significant. Hence, as an alternative specification for gross domestic product per capita, real growth of the gross domestic product (BDPRG, see second column of Table 3) was tested; for some countries, the time series available is somewhat longer than in the original model. In this case, too, the estimated relationship is negative, which could support the notion that in the time of economic growth, governments are either seeking to re-structure public finance to a greater extent, or trying to implement counter-cyclical measures; in any case, the effect is statistically not significant. In addition, virtually all other parameters remained robust and significant. The theoretically indicated effect of a country's openness to trade was also tested, as well as the effect of income inequality and the importance of population age structure for the dynamics of structural expenditures. Openness to trade (TRADEOP) was calculated as a sum of exports and imports as a share of GDP, while income inequality (INCIN) was included as the income quantile share ratio where some missing data was estimated by means of linear intrapolation. The effect of age structure was estimated as the share of population aged over 65 (OLDAGE); the source of data for all three variables was the Eurostat database. As can be seen from the fourth column of Table 3, all were proven statistically non-significant and without substantial effect on the value and significance of other parameters in the model, while the effect of Cohesion inflows on structural expenditure is even slightly greater with this specification.

The results of the model have also been proven to be robust to the exclusion, or omission, of the non-significant variable (BDPpcPPS, i.e. GDP per capita in purchasing power standards) from the basic model, which can be seen from column three in Table 3. Similar to the previous case, the coefficients on the effect of the Cohesion inflows on structural expenditure is increased somewhat, however, we decided to keep this variable in the basic model due to the control power of the GDP per capita. Robustness in relation to the exclusion of individual countries was also

tested. The results have proven robust to the exclusion of all countries except for Ireland and Portugal – which is not surprising. In addition to Greece whose weight within the model is diminished because of the restricted time series of available data on government balance, these are the only two Member States that have received extensive inflows of Cohesion funds. Their decisive effect on the significance of regression coefficients for Cohesion policy was thus expected. Nevertheless, we also tested what happens if the variable of the government balance is also omitted; in this case, Greece, too, affects the results over the entire span of 12 years. The signs and significance of regression coefficients remained similar to those of the basic specification. The most obvious change was a somewhat more considerable increase in the coefficients for Cohesion fund inflows. If, in addition to the previously eliminated variable, Portugal is also eliminated from this specification, the estimated effect of Cohesion funds is again within the range of the values yielded by the basic model specification.

The robustness tests presented above have proven that the model is reliable; that the magnitude of the estimated regression coefficients does deviate from one specification to another, but these deviations generally do not affect their significance; and, above all, that these deviations remain reasonably moderate and do not affect the conclusions and findings yielded by the model. Finally, the estimated value of the effect of Cohesion funds on the scope and amount of structural expenditures in the selected model is the mean value in the span of various alternative specifications, which additionally increases the reliability of the results.

Table 3: Robustness analysis of the estimated model (various specifications and data samples; dependent variable is the amount of structural expenditure - percentage of GDP)

	Basic model	Real GDP Growth	Without insig. control var.	Spec. with all control var.	Without Ireland	Without Portugal	Without GOVBAL	Without GOVBAL and Portugal	Arellano Bond
CP	1.5695**	1.6087***	1.6962***	1.8077***	1.1271	0.3122	2.7430**	1.8659	1.0605*
	(0.617)	(0.592)	(0.608)	(0.642)	(0.760)	(0.842)	(1.250)	(1.243)	(0.563)
CP^2	-32.4761**	-34.6754**	-36.2443**	-35.1613**	-26.075	22.6403	-69.3560**	-32.5451	-18.7356
	(15.910)	(14.343)	(15.618)	(16.905)	(18.095)	(37.277)	(32.659)	(33.678)	(14.382)
DELTATOT	-0.0981*	-0.1274**	-0.0399	-0.0806	-0.0839	-0.1421**	-0.0034	-0.0324	-0.1582***
	(0.057)	(0.057)	(0.059)	(0.060)	(0.058)	(0.068)	(0.060)	(0.076)	(0.046)
PUBDEBT	-0.0006***	-0.0005***	-0.0005***	-0.0004***	-0.0007***	-0.0006***	-0.0007***	-0.0007***	-0.0005***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
GOVBAL	-0.0032***	-0.0028***	-0.0026***	-0.0031***	-0.0031***	-0.0034***			-0.0033***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)			(0.000)
INFL L1.	-0.0027***	-0.0018***	-0.0020***	-0.0024***	-0.0029***	-0.0025***	-0.0034***	-0.0035***	-0.0024***
	(0.001)	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)
EMU	-0.0064*	-0.0085***	-0.0097***	-0.0042*	-0.0058***	-0.0066***	-0.0052**	-0.0051**	-0.0060***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
BDPpcPPS	-7.40E-08			-2.33E-07	2.33E-08	-4.25E-08	5.65E-07*	6.64E-07	-1.12E-07
	(0.000)			(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
UNEM	0.0012**	0.0006	0.0004	0.0005	0.0009	0.0023**	0.0008	0.0009	0.0015***
	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)	(0.001)	(0.001)	(0.000)
POP	8.15E-08***	6.60E-09***	6.00E-09***	6.38E-09***	8.01E-09***	8.40E-09***	1.06E-08***	1.08E-08***	8.98E-09***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
DECENTR	-0.0776***	-0.0496**	-0.0314	-0.0636**	-0.0987***	-0.0737***	-0.2017***	-0.1979***	-0.0940***
	(0.024)	(0.023)	(0.023)	(0.023)	(0.025)	(0.026)	(0.062)	(0.067)	(0.029)
BDPRG		-0.0004							
		(0.000)							
STREXP L1									0.0138
									(0.071)
OLDAGE				-0.0023					
				(0.002)					
INCIN				-0.0009					
				(0.002)					
TRADEOP				-0.0012					
				(0.006)					
$ELEC_i$	Yes***	Yes**	Yes*	Yes***	Yes**	Yes***	Yes	Yes	Yes
Time Dummy Variable (α_t)	Yes***	Yes***	Yes***	Yes*	Yes***	Yes***	Yes***	Yes***	Yes
Constant	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2									
within	0.7150	0.7126	0.6657	0.6662	0.7310	0.7322	0.5444	0.5557	
between	0.4201	0.3549	0.3714	0.4180	0.4980	0.4418	0.3670	0.3714	
total	0.3619	0.3420	0.3237	0.3744	0.4423	0.3703	0.2361	0.2243	
# No. of observations	170	182	192	167	158	158	179	167	148

Note: Standard errors in parenthesis using Huber/White/sandwich estimator. ***, **, * refer to the significance at 1%, 5% and 10% respectively
Source: own calculations.

5. CONCLUSION AND IMPLICATIONS FOR COHESION POLICY

Whether the Cohesion policy resources contribute to convergence, higher growth for targeted areas, create jobs, and strengthen competitiveness, remains, at least from the scientific perspective, an open question. The differences in the assessment of Cohesion policy's effectiveness can be explained to a considerable extent, though not entirely, by the methodological approach employed therein. In an ideal world, the "econometric" or "testing approach" would seem to be the most appropriate as it is directly measures the effect of the used resources; it too however is faced with methodological limitations as shown, among others, by the inconclusive results of this group of evaluations. A literature review shows (Wostner, 2009) that one cannot render econometric studies to give a predominantly negative assessment as is often argued (e.g. Gripaios, et al. 2008), although it is true that the non-robustness of the results seems to be almost a systemic property of this approach (Florax *et al,* 2002; Levine and Renelt, 1992; Roodman, 2007).

We would argue that there are three main arguments for the problematic nature of direct testing of the macroeconomic effectiveness of Cohesion policy resources. First, the Cohesion funds in the context of all other, more dominant and complexly interwoven determinants of economic growth, simply represent a shock that is (too) minute to allow for its clear identification (OECD, 2007: 129). This argument is also related to the problem of threshold effects implied by new economic geography theory as pointed out for example by (Ottaviano, 2003) and (Rodríguez-Pose and Fratesi, 2007). Second, regarding its content, Cohesion policy is highly heterogeneous both in terms of the purposes and in terms of extremely varied "initial conditions" addressed and dealt with in different target areas. Hence, a "simple" determination of average macro effect seems rather inappropriate in the case of such diverse contexts. Third, the available data, including that for Cohesion policy expenditure, does not allow us, at least at this stage, to specify models detailed enough to capture causal relationships between Cohesion policy and growth (or convergence). A related problem is a lagged effect of different investments, which could even theoretically be expected only in the long term, making it an almost insurmountable challenge for the testing approach (Begg, 2006).

This drove us to take a different course in this paper: evaluation of macroeconomic effects of the Cohesion policy is tackled with testing in an indirect manner. The approach of this paper hence rests on the following logic. Cohesion policy expenditures represent a part of the broader package of public economic development policies. If it is true that, on average, government spending on the provision of public goods, particularly infrastructure and education, promotes economic growth, and considering the fact that Cohesion funds are commonly allocated according to the institutional practice of the given region or country, then it can be concluded that the impact of Cohesion funds will be comparable to the macroeconomic impact of general public spending on the above mentioned public goods. The existing empirical evidence does indeed assess this relationship to be predominantly positive. Thus, the fundamental question we have posed was no longer what kind of impact Cohesion funds bring directly to the economy but rather to what extent they increase the amount of public spending, allocated for promoting development in target areas. This, so-called additionality of Cohesion funds, is the necessary condition for any positive net

effects to occur in the recipient country or region; while the actual effect of each particular investment, will depend on: a.) micro-efficiency of the expenditures and b.) the impact of public on private investment. The question of micro-efficiency has been studied in depth in other studies (e.g. Wostner, 2008), while the work on the second question even points to additional crowding-in as opposed to the crowding-out effect (Afonso and Alegre, 2008; de la Fuente, 2003).

The additionality principle admittedly represents one of the basic principles of Cohesion policy, not only since the reform in 1988, but since its very beginnings. Despite its vital importance, our study is to the best of our knowledge, the first to empirically analyze the mutual relation between public spending in Member countries and their respective amounts of Cohesion funds received, outside of the official negotiating framework with the European Commission. This holds true even though throughout the history of the Cohesion policy, serious doubts and skepticism have arisen with regard to the practical implementation of the additionality principle (Bachtler *et al,* forthcoming; Dardanelli, 1999; Ederveen *et al,* 2003; Tomkins and Twomey, 1992).

Based on an econometric model we have found that inflows from Cohesion funds actually result in *additional* public expenditure and that hence, the Cohesion policy funds tend to increase the net amount of public structural expenditure in recipient countries. The relationship has the shape of a quadratic function, which indicates that in the case of smaller inflows, Cohesion funds tend to set in motion additional leverage through the increase in structural expenditure resulting from the requirement for co-financing; on the other hand, crowding out of national public spending can be observed with higher inflows. Nevertheless, this negative effect only occurs with relatively high inflows; hence, Cohesion funds can be positively identified as net additional stimulus for development and growth, fuelled by public funding throughout the predominant part of the spectrum of actual inflows.

Thus, the necessary condition of "plausable effectiveness of Cohesion policy" according to (Molle, 2007) has been met, which however, does not represent a sufficient condition on which to draw conclusions on the effectiveness of a particular country or regions. Meeting such a sufficient condition requires provision of effective and successful management of public funds at the micro level, an aspect that has also been pointed out by (Vanhoudt *et al,* 2000), who suggest that in order to define the productivity of capital expenditures in Europe, "(...)project selection and performance need to be studied in more detail. This clearly calls for a complementary bottom-up approach (...)" (*ibid,* 102). The second sufficient condition rests on the impact of public funding on private investment. According to (Afonso and Alegre, 2008; de la Fuente, 2003) there seems to be even a crowding-in effect, this however would also need to remain true in a given region or Member State under consideration.

Results of the macro-level Cohesion policy performance analysis are not as disappointing as it is often alleged, as this policy seems to fulfil its fundamental mission of increasing public development investments in target areas. Given their – at least on average – estimated positive impact, this means that in terms of attaining its goals, Cohesion policy rests on reasonably sound empirical foundations. Given the restrictions with regard to the

methodology and data availability, it would nevertheless be reasonable to devote additional attention to defining more specific indicators that would be consistent with the particular purpose, for which the funds are granted; however, due to data restrictions this would only be possible at lower geographic levels (e.g. individual Member State, or preferably regions). Due to the same reason, experimental and quasi-experimental methods seem also to be a promising way forward.

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