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## European Regional Policy and Development in Greece: Do Statistics Justify the Investments?

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# **European Regional Policy and Development in Greece: Do Statistics Justify the Investments?**

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## **ABSTRACT**

The study presented in the paper attempts to examine if the alleged effectiveness of the developmental funds - one of the main strategic tools of the EU - can be traced in the typical statistics provided by various authorities and organizations. The study focuses in the case of funds used in Greece during a period of years and it tries to provide insight in the issue, based on statistical and empirical data analysis methodologies.

Available information regarding European programmes and corresponding funds is charted and linked to relevant official statistical data provided by Greek national authorities and Eurostat. Selected sectoral and regional actions are analyzed based on an optimal match between funding objectives and official statistics. The results, both statistical and empirical, appear to support the argument: assessment of EU regional policy based on statistics does not seem to be a conclusive method of evaluation.

**Keywords:** EU funds, regional development, developmental statistics, policy effectiveness, territorial cohesion, policy evaluation

## **Introduction**

In order to improve cohesion and to offer better standards of living for European citizens, especially in regional areas, the EU has allocated considerable funds into a variety of programmes addressing issues such as infrastructure modernization, productive environment

and labor force skills. European and national agencies gather annually a wide range of statistical information regarding the wellbeing and development of European countries and regions. As these statistics cover the most important aspects of economic and social conditions and the perceived status of countries and citizens, it would be expected that any significant changes would be reflected in the data collected and the effects of all the programmes and activities EU has funded would be to some extent quantifiable from the official statistics.

According to EU officials, EU funds and policies have contributed significantly into the Greek economic growth. However, in reality, the identification of a measure-result connection is far from straightforward and the effectiveness of the actions has often been questioned. The reasons for statistics not showing us the expected results could be many:

- the programmes could be ineffective with little or no effect in the main relevant indices;
  - global and local trends, markets and environment could be blurring the image to the extent it is impossible to isolate the effects of any specific actions;
  - there could be too many and complex direct and indirect effects to identify them all;
  - the time dispersion of the effects could be difficult to determine;
- or even
- the current statistics could be not well enough suited to provide us with such information.

### **Ongoing Issue: The (Un)reliable Statistics**

The “numbers don’t lie” axiom is nowadays often strongly questioned and not without a reason. Recent turbulence in the European Monetary Union economy and in particular the Greek financial crisis has been to some extent the result of falsified and inaccurate statistics (European Commission Report 2010a). Greece has found itself in the epicenter of attention regarding data provided to the Eurostat by the national statistics agency (since 2010 Hellenic Statistics Authority, formerly Hellenic National Statistics Service). Following the first waves of European regional and cohesion policies and funds that flowed into the country (mostly since 1985 with the Integrated Mediterranean Programmes (Papageorgiou and Verney 1992), Greece made its way into the monetary union and became a Euro zone member. The benefits from the membership have been regarded as substantial (Anderson and Reichert 1995), even though at the height of the crisis, the ties to the common European currency have also been criticized as an obstacle for more flexible strategies to overcome the deep financial crisis

without the assistance, involvement, and strict supervision of the European Union and the International Monetary Fund.

Under the light of all the above recent developments, the question of policy evaluation based solely on statistics is by default behind a very slippery path. First of all, the main issue is perhaps the validity of the data itself. Statistics provided by Greece have been officially addressed as inaccurate and even forged. As a result some of the figures adopted by Eurostat are also of limited accuracy and their use for any analysis is in few cases questionable. Of course this does not apply to all the data collected; however there is no process for validating the accuracy of any data or source. The main intention from the Greek side was to show a lower budget deficit in order to fulfill the strict European criteria and additionally show high rates of economic development, low unemployment, social cohesion and solid financial improvement. Each attempt to compare European policy effectiveness based on these key indices would introduce a substantial margin for error. This is probably one of the main limitations of the study, and surprisingly, it would not even be considered as a possible issue just a couple of years ago.

Other issues include the lack of available data in many sectors, the inconsistency of the data in comparison with the actions and the expressed targeted results, and the overall difficulty in assessment of several parameters such as social welfare and service quality. In the analysis presented in this paper, all relevant statistics and figures are accepted “as is”, and the results are based on the official – even though controversial – data and information available on first half of 2010.

## **Theoretical Background and Issues Identified**

In order to pursue the vision of a united Europe for the benefit of the European citizens, it was clear from the beginning that inequalities and uneven development had to be addressed effectively, in accordance with the European Union’s Treaty Article 130a stating the need to “promote harmonious development” (European Economic Community Treaty 1957). In other words, it was necessary to establish an extensive framework and to introduce specific regional policies in order to improve cohesion and to lessen disparities. In practice this meant that significant funds would be directed towards the less developed Mediterranean countries, based on each country’s domestic product and other criteria. The funding structure, based on specific actions targeted at specific sectors or groups, needed accurate information

of both the prevailing conditions before the programmes as well as the new conditions after the measures. As a result, evaluation processes became an integral part of the programmes and a variety of methods was introduced in order to assess the success and the short, medium, or long term effects. Evaluations are both internal as well as external and can be distinguished in three forms (ex ante, ongoing and ex post). The purpose of the evaluation is usually defined at two levels; first, to propose improvements in subsequent components, and second, to provide assessment reports on the implementation. Items assessed include the effectiveness, the quality, and the sustainability of the projects. A typical evaluation introduces criteria, indicators, and descriptors and it is based on collection of primary and secondary data, analysis of the data and identification of limits and borderlines in the evaluation itself. Primary data is widely based on questionnaires and reports, especially when the items examined have mostly qualitative rather than quantitative meaning. The analysis can use one of three different paths or any combination of them. First, under the concept of induction, the measured outcome is used to define the idea of the action. Second, by deduction reasoning, axioms are defined leading to consequences. Third, in the abduction process, an assumed rule is defined and either strengthened or rejected based on the observations (Ernst & Young Report 2007). Apart from the general idea, each programme has its own evaluation criteria, while geopolitical pressure and conflict of various stakeholders often leads to contradicting assessments of the results or the effectiveness of a given project.

One of the main targets is the development of regions and the smoothing of the disparities between central and peripheral areas. The existing framework sets priorities on delivering aid to the less developed regions and it is assumed that a significant portion of the funds will be used towards that specific cause. However, this has not always worked well. In many cases the results have been the opposite of the expected and the intervention has not helped the less developed regions but instead it has widened the gap between center and periphery. This phenomenon is described in various reports. In the report prepared for the Latvian Ministry of Finance which is the managing authority of the European funds some of the findings are quite alarming: "...comparing five planning regions, as well as 33 administrative territories by statistical data reflecting socio economic situation and their dynamics shows that all together the disparities among the strongest and weakest territories do not decrease, on the contrary – they increase" (SIA PPC Report 2008). Of course, the statement is only true to the extent that the statistical data does actually reflect the current status of a region, which is in fact the hypothesis examined by this paper. The evaluation and

review process itself has often been a subject of controversy (Ray 2000, Roberts and Hart 1997).

Some studies argue that beyond various figures and measures, EU funding does achieve one of its main goals, “Europeanization” (Zerbinati 2004). Other studies argue that the impact of the EU funding on civil society and the principle of *acquis communautaire* has not been always positive, especially in the new member states in Central and Eastern Europe (Sissenich 2007, Kutter and Trappmann 2010). Unfortunately, more than often it is argued that according existing information and data, European Regional policy is in most cases far from successful and has the opposite results from what intended or expected (Boldrin and Canova 2001, Cieslik and Rokicki 2010, de la Fuente 2002, Martin 1999, Midelfart-Knarvik and Overman 2002). On the other hand, according to official statements of the European Commission (fourth report on economic and social cohesion), the disparities between European regions, as estimated from the use of various indicators such as GDP or income, are considered to be much more diminished in the present than in the past. (European Commission Report 2007).

Studies examining the effect of foreign investments argue that there seems to be a “long-run equilibrium relationship” (Dritsaki et al 2004), and positive effects (Apergis et al 2008). These and various other similar findings would give us an indication that EU funding could be based on similar mechanism to the extent these funds are technically a form of foreign investment, even though within a significantly different context and structure. Whatever the differences might be, foreign investment studies do provide useful instruments and tools for evaluation based on statistical and other methods that can be adopted in the case of assessment of EU policies.

The evaluation of the European funds impact for whole regions or countries is a difficult and complex task. One way to overcome the existing difficulties is to focus on selected sectors or areas and make observations for a limited number of activities only. For example, studies argue about the positive effects of European funds for tourism in the Republic of Ireland (Hurley et al 1994, Pearce 1992).

Recently, the European Commission has introduced a new way of evaluating the progress and the effects of the regional cohesion funds which account for over one third of the total EU budget. Traditionally the measured objectives have included the “absorption rate” that describes the amount and timescale of the funds used by member states receiving the aid. Another measurable index has been the infrastructure and particularly transportation networks. Now, at the middle of the 2007-2013 the new approach includes strategic

objectives expressed in terms of innovation, green policies and job creation (Inforegio Panorama 2010). The increasing importance of policy evaluation has been pointed out in several occasions. According to Dirk Ahner, the director-general of the Commission's Regional Policy Department, "Policy evaluation is a topic of growing importance for cohesion policy", while EU Regional Policy Commissioner Johannes Hahn has said that the new way of reporting is a new feature for cohesion policy as it puts into practice the ambition to establish a robust system for the delivery of structural fund investments during the programming period (Inforegio Panorama 2010). EU officials were unanimous that the report shows positive results and furthermore proves the importance and good alignment of the European cohesion programme during the ongoing global financial crisis, however they also add a warning regarding the statistics, as "the data should not be viewed as infallible" (European Commission Report 2010b).

## **Data Collection and Sources**

The data used by the study is organized according to the following parameters:

a) Data by geographic region. This is divided by second level of NUTS (Nomenclature of Territorial Units for Statistics), a total of 13 regions for Greece (Eurostat 2010, HSA 2010).

1. Attica
2. Central Greece
3. Central Macedonia
4. Crete
5. East Macedonia and Thrace
6. Epirus
7. Ionian Islands
8. North Aegean
9. Peloponnese
10. South Aegean
11. Thessaly
12. West Greece
13. West Macedonia

b) Data by activity. The standard categorization is used as adopted by Hellenic Statistical Authority and it is the data provided to Eurostat as well. A total of fifteen areas of interest are considered (Eurostat 2010, HSA 2010).

1. Agriculture
2. Building and constructions
3. Culture - Leisure
4. Fishery
5. Health - Social protection
6. Household income and expenditure
7. Industry
8. Justice
9. Labour market
10. Livestock
11. Population
12. Tourism
13. Trade - Services
14. Transport
15. Urban Audit

c) Data by programmes. The source of the funding is used to link the funds with the specific sectors or regions targeted by the programmes.

The number and type of programmes varies between regions and sectors; for example a total of almost 5800 distinct actions are implemented in the region of Attica alone, while over 40 programmes are recorded in the agriculture sector. Similar figures apply to other regions and sectors (Eurostat 2010, HSA 2010).

For all the above categories, data is analyzed and compared for a series of years corresponding to the first period of regional funding between 2000 and 2006. Sufficient data does not exist for the combination of all years, sectors, and programmes. Wherever this is the case, it is mentioned in the analysis or shown in the supplementing tables or charts.

## **Methodology and Analysis Procedure**

Statistical tools used in the analysis include one and two stage least square methods to test the long term relationships between funds and official statistics. Stationarity of the variables has been tested and spurious regression has been ruled out only in few randomly selected cases. It is acknowledged that a cointegrating vector approach could have introduced a more accurate examination of the potential relationship, assuming that specific conditions exist. Such analysis would have been based on one of the widely accepted methods such as the Engle-Granger two-step method (Granger 1981), the Johansen procedure (Johansen 1991), or the Phillips-Ouliaris cointegration test (Phillips and Ouliaris 1990). However the focus of the study is to determine the initial suitability of the data for any kind of statistical analysis and a more thorough analysis is planned for the future. As the amount of available data is extensive, testing has been performed in selected combinations of funds and activities or sectors. The empirical study presents a small number of the tests performed. In all cases presented there are two hypotheses:

*Hypothesis H0: There is no correlation between funds and statistical values*

*Hypothesis H1: There is significant correlation between funds and statistical values*

The tests were performed mostly at the sector top level, while secondary levels were introduced in a few cases to test the potential effect of specific sub programmes and actions as regards specific statistical variables. As an example, the overall effect of EU funding in the sector of healthcare does not seem to be significant in terms of values and outcome surveyed. However, a specific action targeted at a specific regional unit is found to increase the regional indices for a given period and therefore a positive relationship and outcome is assumed.

When calculating the funds, the total amount invested is taken into account. This includes funds from the EU and the national and private participation in the projects.

At the initial stage of the analysis a multi-dimensional matrix was built in order to identify all possible meaningful interactions between the main variables. The large number of variables in each dimension, expressed in hundreds and even thousands individual parameters, could theoretically result in an excessive and difficult to handle amount of potential correlations. However, a systematic approach was utilized, providing a first level of linking between funding aims and expected results. This procedure effectively cleared all irrelevant and non-essential relationships, leaving only those with a logical meaning. The range of useful results

was further refined and narrowed by regional and thematic scope, thus allowing the identification of causal links and the discarding of any irrelevant combination. For example, if the action under evaluation was the promotion of equal opportunities and the enhancement of female entrepreneurship in the sector of popular art and handicraft production, then the only useful examined linkage would have been the correlation between the funding for the action and the percentage of female entrepreneurs in the specific sector, in a year by year analysis, always with necessary time shifts.

While the applied methodology is straightforward and based on logical assumptions, it also had an unexpected overall outcome. From the hundreds of thousands of possible combinations between programmes, actions, regions, and relevant statistics, only an extremely small percentage of the relationships was actually functional and could be used for analysis. Furthermore, even when analysis was possible, in most cases the quality and amount of statistical data would only allow for descriptive and causal evaluation and was not sufficient for thorough statistical analysis. This could mean that there is significant gap between the targets as defined by European policies and the measured performance through typical statistics that are collected on standard basis. This finding also explains the preference for either internal evaluation or for evaluation based on separate funded actions; both requiring extensive resources and analysis to produce reports and explanation regarding the effectiveness of regional and other policies.

The core of the analysis is based on single parameters. That is also the main reason why no linking is attempted between programmes and popular statistical measures such as GDP and employment. Most statistical measures would be the result of combined performance of various activities and sectors. The effect of any individual action would be either minimal (in comparison to the overall result) or difficult to isolate as an independent variable. As a result of the applied methodology and approach, few of the most distinctive and interesting cases have been selected and are presented in the following study results.

## **The Empirical Study: Selected Cases**

The selected tests and their results presented herein have been categorized by sector. Only the top-level correlations are showcased.

Our first example is from the agriculture sector. Between 2001 and 2006, 1482 million Euros granted from EU were supplemented by 554 million from Greek public funds

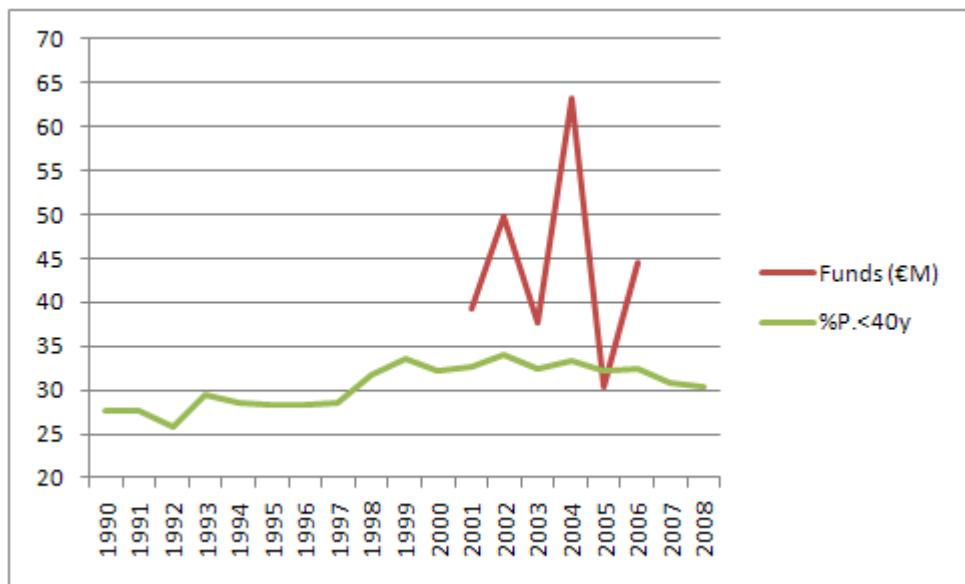
and 1172 million as private participation, allocating a total of 3.2 billion Euros for the development of agriculture in Greece. Within this sector, 265 million were directed to the improvement of the age pyramid i.e. to counteract the trend of aging population working in the sector. This was mainly achieved by providing incentives to new farmers in order to attract young people or keep them at rural areas. The following table shows the funding and the percentage of young people in the agriculture sector during the years 2001-2009 (Eurostat 2010, HSA 2010).

Table 1  
Agriculture Funding Example

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Funds (million €)				39.2	49.8	37.7	63.2	30.3	44.5			
Percentage of young farmers	32%	34%	32%	33%	34%	32%	33%	32%	32%	31%	30%	26%

Values before and after the 2001-2006 sectoral programme have been included in the sample, in order to identify the prevailing trends. The above data is also shown in the following diagram.

Chart 1  
Agriculture Funding Example



For the period 2001-2006, there is no data to support the H1 hypothesis of significant correlation between funding and age pyramid (sig, 2 tailed = 0,1 > 0,05). Because of the nature of the action, there is no meaning for time shift testing, since the results are immediate and do not build up. Two additional factors need to be considered. First, general statistics do not give information about how many of the new farmers that benefited from the funding were still active at the sector one, two or three years later. Second, there is no information about the percentage of those who were near the age limit eligible for funding and therefore during next years would show up in the next age groups.

The general trend as regards the age groups is by itself interesting since there has been a steady increase in the percentage of younger farmers throughout the 90s. Once the funds arrive, this trend stops and a decline starts after they end. In absolute figures, the number of young farmers is about steady between 1990 and 2001 and then drops significantly after 2003. The percentage does not show a big fluctuation because it more or less follows the overall agriculture employment trend. It is unclear if the funding prevented a steeper decline after 2001 that would have taken place if there was no intervention. Another critical information missing is the prediction before the start of the funding; focusing solely on the numbers gives the impression that funds were initially targeted to measures that were unnecessary, at least according to historical data and statistics. Also, after the end of the funding in 2006 there is no evidence of a rapid decline that was controlled by the EU funds. Again, on the other hand, for an analysis to be anywhere near complete, it would need an evaluation of the structural aspects of the actions and their effects in the stabilization of the agriculture sector labor force. And of course a complete European and global market analysis for at least a decade would be needed to determine external pressures and environmental parameters. Whatever approach is taken into the interpretation of the statistics, none of them is conclusive about the relationship between the targeted action and the result on the measured data it is supposed to affect.

Another example is from the health sector. During 2001-2006 approximately 500 million euro were spent for health care reform. From these funds, over 200 million were allocated in health facilities modernization and expansion. Of the amounts spent on equipment, 153 million were from EU funds and the rest from Greek national funds. Approximately a quarter of the investments were targeted at primary regional and local healthcare infrastructure. The table below shows the total funds allocated for the primary infrastructure and the existing number of health centers which are the main instrument for

primary health care in Greece in non urban areas. Also included is the number of beds in health centers, the medical equipment in health centers, the number of medical and paramedical staff and the general unmet need for healthcare (Eurostat 2010, HSA 2010).

Table 2  
Healthcare Funding Example

Year	2000	2001	2002	2003	2004	2005	2006	2007
Funds (million €)	-	26,2	32,5	35,3	42,2	41,6	28,5	-
Health centers (HC) and beds	-	-	188 1115	187 1101	189 1091	190 1025	190 1010	-
Medical equipment in HC	-	-	2001	2006	2138	2253	2345	-
HC Personnel	-	-	7335	7380	7358	7344	7301	-
Unmet need for healthcare	-	-	-	-	6,5	6,5	6,8	9,2

The programmes in this sector were targeted in improving healthcare service and quality and not directly to capacity increase. It has to be noted though that the capacity remained steady during a period of extensive investments in private healthcare facilities. The number of installed medical equipment does show an increase that could be linked to the funds, however the “unmet need” index which gives us an indication of the overall improvement of the system does not show any positive outcome. There simply does not seem to be enough data available to draw any conclusions from statistics alone.

The final example is from the transportation sector. Transportation infrastructure indices are typically one of the easiest categories to register and evaluate. Especially when allocation of funds is directed towards specific extensive networks, it is quite straightforward to calculate, most often with great accuracy the relationship between causes (the funding) and results (roads built). In the case of the Egnatia highway that links eastern, north and western Greece, a total of 1.65 billion euro was allocated for the period 2001-2006 alone. The majority of the funds, some 925 million euro was from the EU. The table below shows the funds and the kilometers of Egnatia highway built and opened to traffic between 2000 and 2008 (Eurostat 2010, HSA 2010, Egnatia 2005).

Table 3  
Transportation Funding Example

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Funds (million €)	n/a	224	184	258	345	443	198	n/a	n/a	n/a
Km of road built	96	66	107	79	45	33	36	38	35	110

In reality complex engineering projects like Egnatia highway cannot be evaluated on a length per euro basis, because of the many technical elements (bridges, tunnels etc) that are constructed. A detailed work progress reveals that for example sections built in 2005 include the Dodoni tunnel (4km length) while most sections built e.g. in 2002 were far less challenging. Whatever the relationship between funding and work progress might have been, one thing can be taken for granted: for zero funds the result would have been zero meters of Egnatia road. This aphorism is true for many other projects co-funded by EU in Greece: from social services to higher education. Development was achieved solely based on the availability of projects and funds and often initiatives were taken only because of the opportunity offered by the existence of EU cohesion and regional funds.

## Conclusions and Further Research

One of the important findings from the analysis of the data is that in order to have any meaningful results it is necessary to perform the analysis at the deepest possible and more detailed level, meaning that regional (at least at NUTS2 level or deeper) data must be compared with specific actions that have a well defined target and an explicitly expressed outcome. Even then, currently available data is rarely sufficient to assess the effectiveness of any given programme or action. Of the examples showcased, none is conclusive about the relationship between the targeted action and the subsequent or expected result on the measured data; even though each case was carefully selected and analyzed to provide maximum consistency between specific programme funding and statistical data available.

Internal or external reviews, based on empirical data collection, seem to be the best solution, even though the extensive use of questionnaires and other methods does add elements of subjectivity in the evaluation process. This is the currently preferred method and our findings seem to support the use of it, because from what was found in the case of

Greece, available statistical data simply can't give meaningful and conclusive answers. One of the issues related to the funding evaluation process in general, is the nature of the programmes. Many actions have a strictly defined target group and the evaluation is often based on the evidence provided by the same group. While the group itself might meet the set targets and goals, either diffusion or seclusion of the effects can significantly blur the lines. At the next level of data collection, it is increasingly harder to identify the independent variables and establish the link between cause and result.

A multivariate analysis would enhance significantly the study allowing for more actions and statistics to be linked, while application of cointegrating vector methodology could also provide more accurate results. Finally, national statistics would need to be much more detailed and specific, and additional data would need to be collected, according to the needs of current and future cohesion strategies and expected outcomes.

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