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The 'non-osmosis' of Europeanisation in Greece: the (mis-) management of European receipts and evolutionary views on the 'dual dependency'

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ABSTRACT
Over the past two decades, European regional economies witnessed a proliferation of a new policy paradigm, mainly crystallized through the imperatives of the European Union Regional Policy. Under the economic pressure of strong forces such as the shrinkage of economic space, the de-regulation of markets and the increasing significance of technological change and knowledge as a productive force, national and regional economies coerced to re-construct their economic physiognomies and developmental strategies. This paper seeks to explore the issue of EU's receipts (Structural Funds) management by the Greek governments, in the years 1985-2005. As it will be illustrated, the mismanagement of the period 1985-1995 as well as the 'rationalization' and 'modernization' attempts of 1996-2005, comprehended unintended consequences for the Greek political economy.

Introduction

Under the economic pressure of strong forces such as the shrinkage of economic space, the de-regulation of markets and the increasing significance of technological change and knowledge as a productive force, national and regional economies coerced to re-construct their economic physiognomies and developmental strategies. European regions especially are in a transition period of new modes of production (post-Fordism) on the one hand and of new policy forms on the other. For less favored regions particularly, the adaptation on the new EU's public policy requirements and guidelines constitutes a task on its own.

The issue of management of European receipts through the Structural Funds[1] forms a permanent, an ever timely and a politically as well as academically significant topic in Greek public policy debate. This paper seeks to contribute to the existing literature about the impact of Europeanization over the domestic policy in Greece. More specifically, this article explores the possible implications of the European Union's Regional Policy for the Greek investment policy (Public Investment Program) examining the management style concerning the EU's receipts which was adopted by the Greek governments and its consequences for the Greek political economy and the fiscal relations between EU and Greece as well.

The present paper investigates a set of specific questions aiming to shed some light on the uneasy relationship between Europeanization and the established domestic practices in the area of regional policy in Greece. We primarily examine the issue of the 'Greek developmental state' or alternatively, we search at what extent the Greek political economy has passed into a new stage of development ('new 'developmental state' assumption). In the same framework, similar questions regard the level at which the Greek public administration system has been 'decentralized' over the last years and whether the so-called 'developmental' and investment policies have been 'regionalized'.

Two main hypotheses will be set out in this respect. Initially, the main hypothesis adopted claims that *more receipts do not necessarily generate more development or more cohesion*, especially since they are not accompanied by a '*well-defined, planned and realistic developmental plan'* (efficient investment planning) or otherwise, by a so called 'high-reliability' program[2]. A profound research exploration of public money management in Greece indicates that support of internal infrastructures and creation of 'endogenous' developmental mechanisms count more (or equal at least) on the processes

of development, 'regionalization' and 'convergence'. The allocation of public money on itself does not in any case presume any efficiency since it can lead to a greater dependence on external funds, or simply, to a 'deficient absorptive capacity'.

The second hypothesis that is deployed in this paper is dealing with the so-called 'regional paradox'; as Oughton claims, "*where the need is greatest, so too are the barriers*"[3] (Oughton et al, 2001). More analytically, as it will be illustrated at a later stage, growth is not only a matter of 'political will' but also an issue of '*material sphere synchronization*'. Deficient economic and institutional structures, vested interests and lack of experience are some of the parameters which drastically affect the process of development. Growth and economic performance are not independent from the regions themselves as long as economic development is primarily a spatial procedure.

Theorizing Europeanization

To understand the way through which European integration affects member-states and, as a result regional and development policies in Greece, we should conceptualize the meaning, the scope and the mechanisms of Europeanization. In a broad sense, the Europeanization is associated with the constraints imposed by European integration process at domestic level and the necessity of institutional and policy adaptation to EU rules. But, there is not a common definition of Europeanization as well as there is not a common perception about the 'channels' of Europeanization. Most scholars, however, conceive Europeanization as a process of gradual convergence between member-states, assuming that all countries respond with a similar manner to European integration pressures[4] (Börzel, 1999: 574). Furthermore, most of these accounts also perceive Europeanization as a process which fundamentally alters the relationship between actors at national level by favoring one group over the other[5] (Börzel, 1999: 574-575). In other

words, European integration creates conditions which may be exploited by certain political elites while it imposes constraints over the action of others, producing in such a way 'winners and losers' in national political landscapes.

However, Börzel and Risse assert that the level of such redistribution of power between actors depends on two mediating factors which determine the capacity of the actors to exploit the opportunities derived from Europeanization[6] (Börzel & Risse, 2003: 58). These mediating factors are: 1. multiple veto players which can substantially empower actors with diverse interests, and 2. formal institutions may provide actors with material and ideological resources to exploit new opportunities[7] (Börzel & Risse, 2003: 58). For instance, in the case of Italy, negotiations for EMU reshaped the domestic balance of power in favor of central executive vis-à-vis the traditional *'partitocrazia[8]'* because technocratic elite exploited the opportunities emerged from the process, imposing its policy preferences as well as strengthening its institutional status by invoking the European integration pressures as 'vincolo esterno' [9](Dyson & Featherstone, 1996: 272-273).

Furthermore, on the other side, Schmidt has defined the mediating factors in policy adjustment to Europeanization with economic vulnerability to be the chief factor since countries which are facing economic crisis and stagnation tend to be more open to policy change[10] (Schmidt, 2002: 898). However, economic vulnerability does not constitute the only stimulus for policy change since more than one factor usually interacts towards policy change. All these factors proposed by Schmidt it is briefly summarized in table 1:

Table 1.

Economic vulnerability	Presence or absence of economic crisis, market competitiveness
Political institutional capacity	Principal actors' ability to impose or negotiate change
Policy legacies	Fit with long-standing policies and policy-making institutions
Policy Preferences	Fit with old preferences and/or openness to new
Discourse	Ability to change preferences by altering perceptions

Source: Vivien Schmidt, 2002: 898

Last but not least, it is worth to conceptualize the meaning of Europeanization in southern Europe because it is almost commonly accepted that this periphery is characterized by certain peculiarities and, thus, we would expect that the responses to Europeanization in Southern European countries like Greece, to some extent, to diverge from those of the west European countries[11] (Featherstone & Kazamias, 2000:2). Alternatively, in addition to the general framework of Europeanization which is described above, it would be helpful for analytical reasons to take into account the peculiarities of southern Europe.

First of all, in the southern European experience, Europeanization is primarily synonymous with modernization and it is perceived as the essential force which has empowered those factors who have sought structural changes in society and economy. Therefore, Europeanization may be considered as the 'critical juncture' which '[is] a powerful force potentially capable of providing sufficient support and momentum for the social and political forces adhering to the reformist culture to bring about reforms, rationalization of the structures, and overall changes in…polity and economy'[12] (Diamandouros, 1994). In addition, Europeanization in southern Europe may be classified either as 'responsive' or 'intended' [13](Ioakimidis, 2001: 74). The former is

associated with changes occurred without considerable effort by domestic actors to introduce EU norms and policy styles into the political system and for that reason it could not be regarded as modernization attempt (Ioakimidis, 2001: 74). Whereas, the latter counts as modernization since it is normally a result of the strong intension of domestic political and administrative elites to import into the national political system organizational, behavioral and regulatory styles originally connected with European integration[14] (Ioakimidis, 2001: 75)

Economic Policy and Development in Theoretical Perspective

It is worth for analytical reasons to make two fundamental analytical and theoretical distinctions before coming up with the main part of the paper. The first concerns the role of the state in economic development and the impact of public investments upon growth and development in a given economy/society. According to some approaches, public investments usually cause a 'dislodgement' of private investments which otherwise may be taken place. In this respect, public investments seem to be a substitute and a 'disincentive' for private initiatives. However, in the antipode of this neo-classical approach different interpretations have been developed by several scholars. The reasons for the state intervention can be found mainly, as Stiglitz argues, at the unwanted and unintended consequences derived from the 'uncontrolled' and 'deregulated' market operation[15] (Stiglitz, 1988: 95).

Furthermore, it could be also defined a series of other important factors that under certain circumstances could impose and necessitate the state intervention. For instance, Aschauer in his seminal research has proved that public investments seem to be of utmost importance for the economic development[16] (Panteion University, 1998: 50). Particularly, the significance of public investments lies on their effect upon to the

increment of private sector's productivity as well as to their positive impact on development. Indeed, public investments support and increase the productivity and attribution of private capital and encourage the actualization of private investments[17] (Aschauer, 1989b). According to the same research, public investments have a positive effect upon the marginal productivity of private capital, by creating the necessary private investment incentives (crowding-in effect)[18] (Aschauer, 1989a). In contrast with the argument about the 'dislodgement' of private investments by the extensive public expenditure, Aschauer demonstrates the statistically significant and quantitatively vital impact of public investments upon to the labor productivity and the total productivity as well[19].

A second theoretical distinction upon the issues of economic policy regards the neo-Schumpeterian and neo-classical approaches for development. According to the latter and its deterministic argument, economic and market forces lead automatically, evenly and consistently to economic growth. On the other hand, neo-Schumpeterian approaches deal with issues which are associated with institutional structures[20] (Nelson & Nelson, 2002) and their important role in the processes of development. Put it differently, *institutional and evolutionary economics* underlines the significance of the 'endogenous' structures and the role of specific and case-oriented plans for the goals of growth and the economic convergence between economies.

The main assumption which is developed into the following paragraphs encompasses, either implicitly or explicitly, theoretical elements from both the 'Aschauerian' thought which clearly states the importance of public investments for the economy and the neo-Schumpeterian theoretical approaches; the latter pay a particular tribute to the significance of institutional parameters asserting that they contribute into the economic

development process[21] (Acemoglu, 2005, Furman, 2002) through the 'unlocking of wealth of regions'[22](Amin, 1998: 3) and the overcoming of barriers of growth.

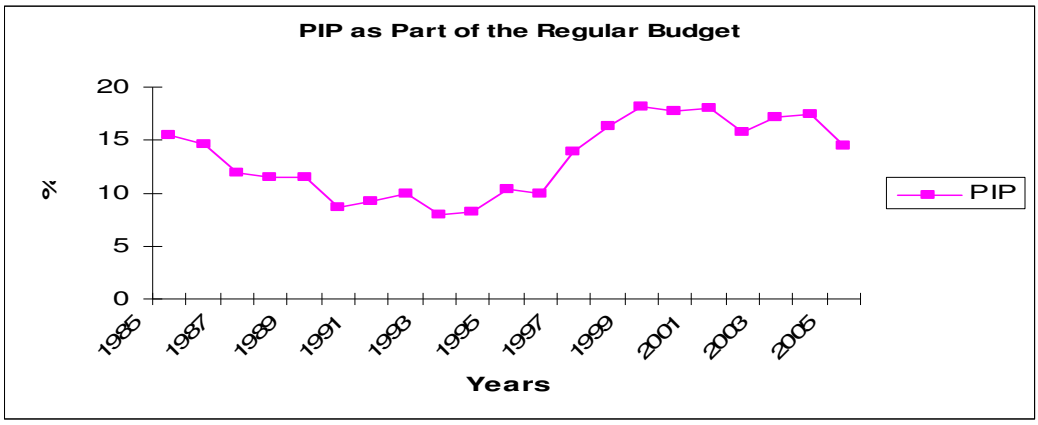
The Greek Public Investment Program in Empirical Perspective

In this part a set of empirical evidence will take place as an attempt to shed some light on Greek economic and regional development. All the evidence used at the present point is extracted from a recent quantitative analysis which is included into the Greek State Accounting Books of 1985-2005 (source: Hellenic Ministry of Economy and Finance)[23]. The main questions that are explored in our analysis concern: i) the relation between last years' developmental process in Greece and the level of contribution of public investments on it, ii) the management of EU's receipts by the Greek governments and iii) possible obstacles that may have been raised on the efforts for growth and development.
The main pillars upon which this analysis is relied are: i) the contribution of Public Investment Program in Public Budget, ii) the contribution of Structural Funds in Public Investment Program, iii) the absorptive rate of EU's receipts and iv) a spatial analysis about the financial distribution.

At the first stage, a fiscal analysis of Public Investments' financial rows is developed. Public Budget (PB) in Greece is being divided into two main parts; the first component of the Public Budget is the Regular Budget (RB) while the second part is the Public Investment Program (PIP). The Public Investment Program involves credit inflows, national contributions and EU's receipts/funds. PIP is the official receiver of EU's Structural Funds. Within PIP there is also one more considerable distinction, namely, the distinction between co-financed and national-financed projects. The totality of the investments carrying out by government, either through Ministries or through regional administrative institutions, is financed by the PIP.

More analytically, Public Investments have been always a small part of the total Regular Budget. Until 1996, PIP was a proportion less than 10% of the Regular Budget; nevertheless, since 1996 and the new government of Kostas Simitis, Public Investments take up steadily the 1/6th of the Regular Budget. Especially in the year of elections (2000-2001), Public Investments are in their highest rate (Graph 1).

Graph 1



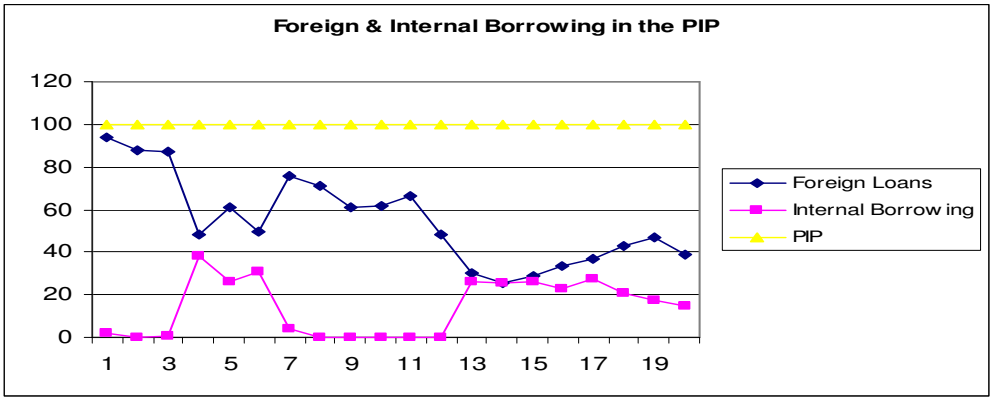
Source: Ministry of Finance, State Budget Accounting Books 1985-2005.

However, as it is illustrated below, the increase of PIP as a proportion of Regular Budget has not been caused by a real increase on funding but rather by an increment in an 'imaginary' category, the so-called 'Public Participation in Public Organizations' (DEKO). This specific category regards potential inflows into the Public Budget, deriving from the participation of the state on shares of Public Organizations.

As Graph 2 depicts, during the same period Public Investment Program increased as a proportion of the Public Budget. Furthermore, the internal borrowing appears to have increased significantly as well. The receipt of European Funds is no longer an adequate

factor to stimulate further developmental processes since it should be accompanied by a 'rational' management of the funds and the construction of a stable and long-term developmental plan. The absence of such a plan as well the lack of a relatively reliable and effective 'institutional thickness'[24], undermined the potential of any positive effects that the European receipts may have for the Greek economy.

Graph 2

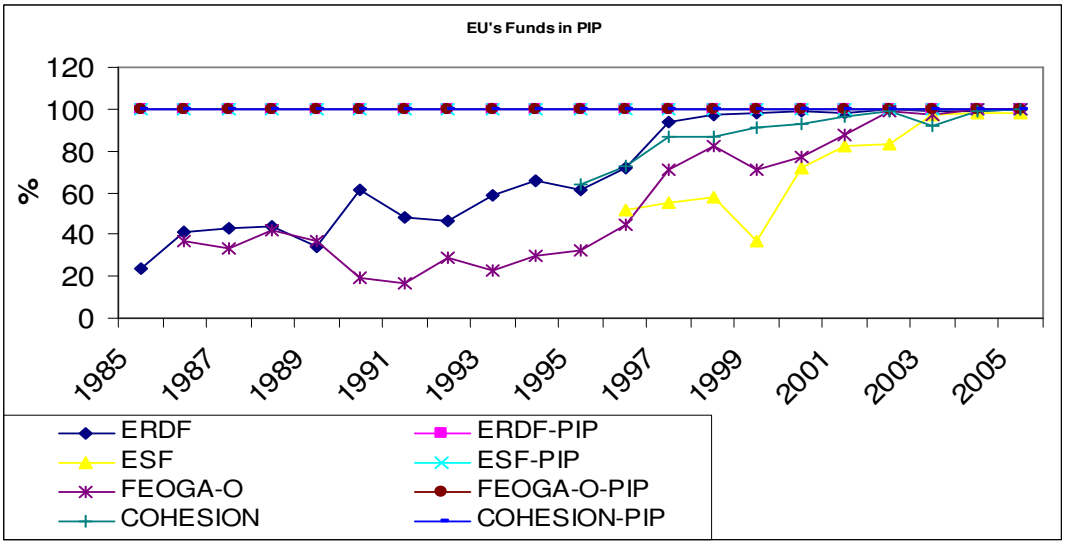


Source: Ministry of Finance, State Budget Accounting Books 1985-2005.

Under the new Social Democratic administration at mid-1990's, fiscal condition in public budget fundamentally improved. Graph 2 depicts strong evidence about the rationalization of the management under the new administration of Kostas Simitis. The greatest part of the funds received from EU after 1996, have been directed towards the Public Investment Program as they should do in order to boost economic development. As we would expect European funds would have led to a greater and balanced development among Greek regions. However, paradoxically the evidence advocates that *more receipts do not come down to more development***.** This 'paradox' observed in Greek case becomes more obvious if we compare the data of Graph 3 and Graph 4. More specifically, Graph 3 denotes the mismanagement of inflows with the high horizontal line

(100%) to represent the total resources received while the fluxes below to represent the allocation of these resources. In other words, as it is illustrated, prior to the flows convergence (1996-7), most of the receipts have been used for transmissive payments and not for investment purposes. Moreover, after 1996-1997, when the inflows gradually pursued investment purposes, the variation between the 'bound payments' and the 'actual received payments' apparently increased; as if the management rationalization not to have been accompanied with the desired efficiency but, instead, it seems to be characterized by a certain degree of *absorptive incapacity and sclerosis*.

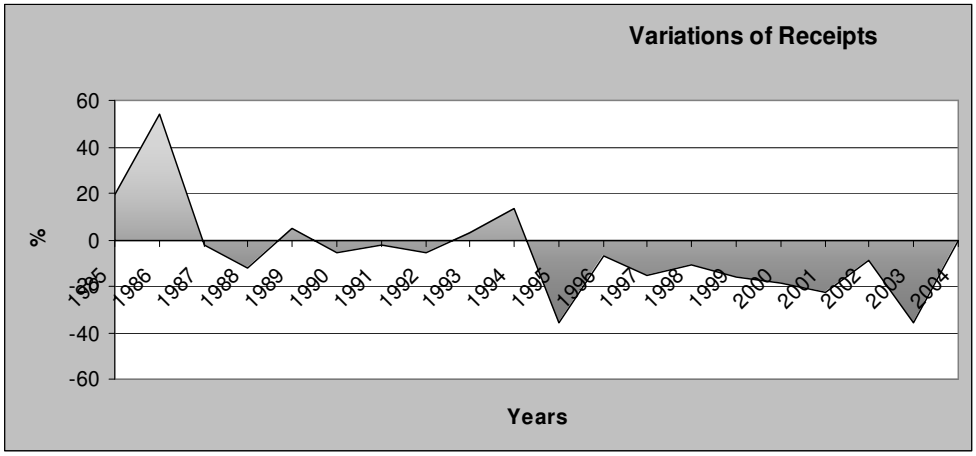
Graph 3



Source: Ministry of Finance, State Budget Accounting Books 1985-2005.

Consequently, we could conclude that the more funds directed to the Public Investment Program, the less funds Greek economy was able to 'absorb'. In other words, after 1996 the variations between the European funds 'arranged' and the European funds eventually received (Graph 4) presumably increased with certain implications for the Greek developmental goals.

Graph 4



Source: Ministry of Finance, State Budget Accounting Books 1985-2005.

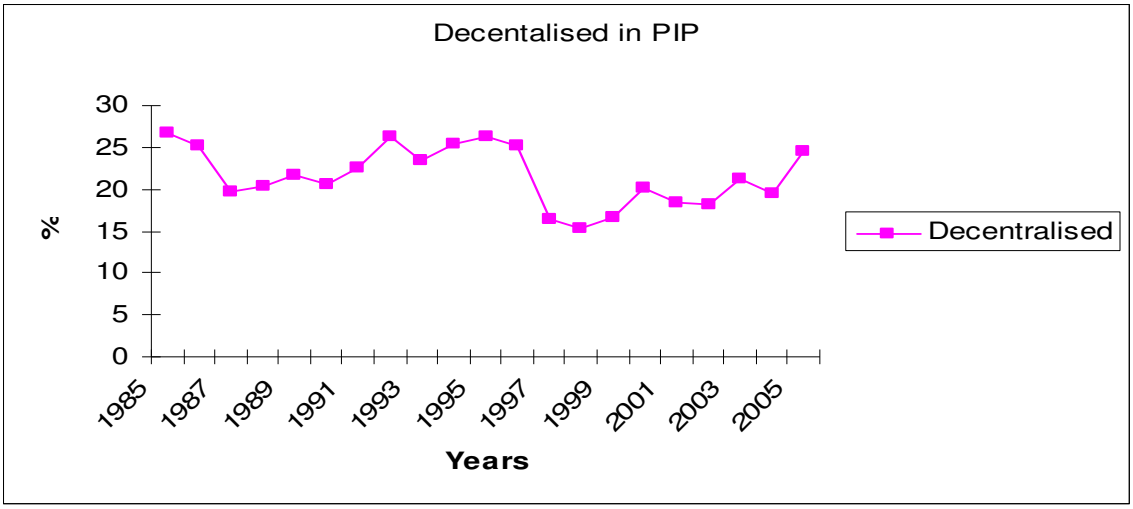
The 'rationalization' of economic management by the Greek government during 1996-2004 generated an unintended consequence which was the *incapacity of full utilization of European funds*. The main reasons for that, according to the interviews conducted in the Ministry of Finance, were: a. the 'inability' of agencies to manage the continuous and simultaneous financial flows, b. the lack of 'know-how' for a number of technical issues, c. the structural constraints imposed by the lack of specialized/de-crystallized private interests to handle the projects but most importantly, d. the *lack of an institutional 'thickness'*. The term institutional thickness refers to the absence of institutions which may be able to bridge the projects (financial flows) with the private interests and to participate-coordinate the efforts at the implementation stage[25] (Ministry of Finance, 2005).

This Greek paradox of ***'non-absorption of growth' and 'non-diffusion' of growth*** confirms the hypotheses about the developmental process in regions. Thus, the inability to receive and to utilize efficiently the European funds, (especially after the

'management rationalization') can be obviously explained and interpreted by the two theoretical points just described above. Firstly, the 'institutional thinness' is part of the absence of a long-term, well-defined and structured developmental plan (ineffective investment planning). In the same vein, secondly, the evidence proves that the less developed the 'spatiality' (region, nation-state), the larger the number of barriers to overcome (lack of expertise, absence of institutional base, lack of interests, entangled interests). Thus, it could be said that Public Budget in Greek political economy is still a 'politically loaded' instrument, used either in favor of specific interest groups or simply for the "disoriented" completion of EU's requirements.

Last but not least, the mismanagement of financial allocations in Greece has also a spatial dimension. Lamprinidis recently published an article providing evidence for the mismanagement of allocations across the regions of Greece. Specifically, Lamprinidis claims that 'allocations increased across prefectures in years preceding national elections'[26] (Lamprinidis et al, 2005), a fact that defends the argument of the politically loaded instrumentality of public finance in the country. In addition, beyond this argument, the data derived from the Public Accounting Books indicates that the 'decentralization policy' itself was rather a 'rhetoric'. Graph 5 indicates the reverse tension which defines the allocation of European funds among the Greek regions. European structural funds are supposed to promote regional development and sustainability ex officio. However, Greek regions have been gradually receiving fewer funds in comparison with the centrally administered funds despite EU's intention the European Regional (Structural) Funds to represent greater portion than national funds in regional development.

Graph 5



Source: Ministry of Finance, State Budget Accounting Books 1985-2005.

Rationalization of public money management not only came with a 'non-diffusion-of-growth syndrome' but furthermore, brought an even more intensive 'centralization'. The more the receipts from the EU, the more difficult for the Greek Governments to diffuse them in qualitative, quantitative and even spatial terms ('*regional sclerosis*'). Additionally, the absence of 'institutional thickness' in the regions also prevented the 'regionalization of growth', by imposing an insuperable barrier for further development. Nevertheless, the importance of the last systemic parameter is still questionable since the financial flows were increasing in periods of elections and as a result it could be said that the 'non-diffusion' of European receipts was not simply 'structural' issue but it was also a matter of political intention. In other words, although there is a certain lack of institutional learning and low responsiveness to the European policy stimuli, it could be said that responses to Europeanization is still a political affair in a sense that when Greek governments desire to increase the tense of public expenditure in order to serve their electoral-political purposes, they manage to exploit European receipts in an effective way.

Conclusion: a progressive 'regional sclerosis'

The above analysis provided empirical evidence according to which: a) the most of the European funds received until 1996, were allocated for transmissive payments but not for investments as they should do in order to foster further economic development, b) after 1996, a rationalization of public money management took place, although accompanied by the unintended consequence of 'non-diffusion' of growth (deficient absorptive capacity), and, c) even after the 'rationalization' of financial management, governments continued to behave in an 'irrational' way with respect to spatial distribution/allocation of European receipts with Greek regions to receive less European money each year -besides the elections' periods- as a result of the insufficient political will and the lack of institutional efficiency .

Thus, political unwillingness, lack of know-how[27], low institutionalization[28] (Spanou, 1998), 'non-synchronization' of material sphere and the absence of a well-defined developmental plan counted as the main barriers to economic growth and development as well as the main causes of the mismanagement of European receipts and the 'non-Europeanization' of Greek public budget. In short, *the more EU funds were obtained by the Greek Government over the years, the more difficult for those funds to be fully utilised, due to a series of negative structural, systemic and political parameters which are permanently present in the Greek political economy*. Furthermore, the explanation of the '***regional sclerosis'*** should be sought to the assumptions of the 'new geographical economics' ('history matters') and the 'evolutionary economics' ('institutions matter').

More analytically, it seems that regional economic development is a historical, path dependent process[29] (Krugman, 1980, 1981, 1995); what regions face first is their own

developmental past and their productive specialization. The transition to a new developmental strategy is not an automatic and linear process. It necessitates institutional as long as systemic changes and shifts. As Klein claims, '*economic development is institutional development*'[30] (Klein, 1999: 462). The role of 'intermediate institutions' and the 'interactive' manner under which economic progress evolves should then be approached as imperatives. Where the dominant paradigms are conditioned by dualisms (state against market), it seems that effective interaction is the key framework[31]. (Morgan & Cooke, 1998: 22).

As Morgan observes, recent EU regional policy follows a different pattern less oriented to tangible infrastructures and more concerned to intangible info-structures[32] (Morgan, 2004: 880). In Greece though, Structural Funds have been mainly directed towards creating the 'hard structures' (physical capital, land, air and sea transport, telecommunications) leaving underdeveloped conditions based on intangible investments and 'soft competitiveness' such as capacity for innovation, R&D capabilities, an institutional framework for ***effective, interactive and co-evolutionary cooperation*** between private and public sector, between companies as well as between Universities, public and private agents.

Based on the analysis above, Greece appears dependent on the EU financial support but mostly, it seems dependent on the economic-growth model/paradigm followed the last fifteen years. The low innovativeness and extroversion of business firms, the insufficient R&D expenditures and the limited contribution to the generation of new knowledge but also the outdated strategies for knowledge dissemination and information transfer[33] (Commission, 2006: iii), are aspects as well as consequences of the policies followed. Fagerberg accurately claims that in Portugal, Spain and Greece reforms have not

included ambitious goals such as the changing of industrial structure (technological change, investments on progressive industries i.e. ICT). As a matter of fact, the results were modest in terms of economic performance, accumulation of skills and technological capabilities[34] (Fagerberg, 2005: 534).

The Greek growth model 'locks-in' the possibilities for a passage to a new innovation and research-oriented, endogenous development. The low innovativeness and low extroversion industry profile, the fragmented and disconnected labor market, the outdated country-dominant model of Taylorism[35] (Lundwall, 2006: 17), the deficient innovation system (lack of R&D expenses, lack of venture capital, institutional inertia and outdated institutional forms-design) and the lack of intermediary institutions and 'associational regional economies' (Morgan, 1998) are the main obstacles and challenges private and public agents have to face. In the age of the increasing knowledge and innovation significance the relation between technology, economy, institutions and policies should be re-considered; and that under the spectrum of *synergies, interactive innovation, regionalised external economies and clustering, associational networking, institutional learning and localized skills pools*.

Furthermore, with regards to the low response of the Greek governments to Europeanization pressures for greater regional development, it could be argued that this is primarily a result of the long established dominance of the central government over political and economic life in Greece. Put it differently, Greek central governments were traditionally the veto-players for any attempt that may provide the regional and the local authorities with further political and economic autonomy. Thus, since the effective utilization of the EU funds presupposes the development of a strong, extensive and at certain extent autonomous regional institutional structure, central government regarded

this tendency suspiciously as the political elite of the country historically intends to maintain a monopoly in the allocation of recourses.

In addition, according to Schmidt's framework for analysis for Europeanization, we could argue that the new imported policy trends were in natural opposition with the long-standing policies and policy-making institutions. Moreover, the policy preference of the Greek government to monopolize the distribution of financial and institutional resources by no means fits with the purposes of Europeanization. However, Europeanization to a certain extent is responsible for specific modernization initiatives concerning regional policy over the past two decades.

More specifically, it was the pressure from European Union which imposed Greek government to establish elections for the second degree of local government the so-called prefectures, by loosening the ties between regions and any given government party. Indeed, Greek governments during 1990's and the early 2000's promoted the administrative separation of the country into several regions in order to achieve higher absorption rates and more effective utilization of the European Structural Funds. But, according to Ioakimidis distinction between *responsive and intended Europeanization*, we could assert that since domestic actors did not make considerable and intensive efforts towards a more independent regional institutional framework, the case of regional development in Greece is rather a responsive Europeanization and it should not be counted as modernization attempt[36].

Last but not least, it could be said that Greek experience does not symbolize a 'clear passage' to a 'developmental state', yet; nor does the Greek administrative body resemble what is usually meant by the term regionalized / decentralized administrative system.

Policy makers and public managers must seriously consider the argument that economic growth should no longer regarded as a linear process relied on quantitative dimensions but it should be seen '*as a response to the evolution of institutions that support economic but also social and non-market relationships*'.

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[Endnotes]

[1] Structural Funds are the main programmatic and financial instruments of the Regional Policy in EU the last two decades.

[2] According to Albert Hirschman, development is not prevented by the lack of resources as from the lack of 'high reliability' programs which are projects of optimal conception, planning and implementation. Hirschman, A (1947) *Investment Policies and 'Dualism' in Underdeveloped Countries*, American Economic Review, vol. 47 (5), pp. 550-570

[3] Oughton C et al, (2001) *The Regional Innovation Paradox*, Journal of Technology Transfer, Vol. 27 (2)

[4] Börzel, T.A (1999) '*Towards Convergence in Europe? Institutional Adaptation to Europeanization in Germany and Spain*' Journal of Common Market Studies 37 (4): 573-96

[5] Ibid.

[6] Börzel, T.A and Risse, T '*Conceptualizing the Domestic Impact of Europe'* in Featherstone K and Radaelli M 'The Politics of Europeanization', Oxford, Oxford University Press

[7] Ibid., 58

[8] *Partitocrazia* is the term which is used to describe the traditional dominance of political parties over the state structures in Italy during the greater part of 20th Century.

[9] The term "Vincolo Esterno" means external coercion/imposition. Dyson, K and Featherstone, K (1996) 'Italy and EMU as a "Vincolo Esterno": Empowering the Technocrats, Transforming the State' South European Society and Politics, 1 (2):272-299

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[14] Ibid., 75

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[17] Aschauer D, A. (1989b) *Public Investment and Productivity Growth in the Group of Seven*, Federal Reserve Bank of Chicago, Economic Perspectives, Vol. 13, no. 5, pp. 17-25.

[18] The central argument of Ashauer is located in the production function: **Yt = At * f (Nt, Kt, GKt)**, where: Yt the real product of private sector in the period t, Nt the employment during the same period, Kt the capital stock excluding private housing in the beginning of period t, GKt the capital stock of public sector in the beginning of the period t and At the indicator of total productivity in the sense of Hicks' neutral technological change (Panteion University, 1998: 50).

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[23] Data, tables and graphs statistically and quantitatively processed by the authors.

[24] By the term 'institutional thickness' is meant the presence of supporting institutions in the region such as enterprise support agencies, political institutions, intermediate institutions (trade associations etc), research institutes, Universities etc.

[25] Hellenic Ministry of Economy and Finance, State Accounting Books, 1985-2005

[26] Lambrinidis, M et al, (2005) *Regional allocation of public infrastructure investment: the case of Greece*, Regional Studies, vol. 39, (9)

[27] As Siriopoulos claims, the rich countries have the ability to educate themselves as they grow rich and the endogenous ability to accumulate the knowledge upon which these efforts are made; while poor countries like Greece face a lack of experience (Siriopoulos, 1998: 545), by meeting difficulties on adapting themselves upon new requirements. Siriopoulos, C & Asteriou, D (1998) *Testing for Convergence Across the Greek Regions*, Regional Studies, Vol. 32.6, pp. 537-546

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INNOVATION POLICY, COMPETITIVENESS, AND GROWTH: A STRATEGY TOWARDS CONVERGENCE OF EUROPEAN REGIONS

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Abstract:

This paper is aiming to examine the main topics related to innovation activities and to estimate the effects on competitiveness and economic growth process, as well as to measure the effects on convergence and cohesion of European member states. In addition, the paper emphasizes the role and the developments in innovation policies and the effects on the convergence process of Greece within the European Union. In particular, it also attempts to emphasize and to estimate the effects of innovation policies and related activities to competitiveness and growth process in Greece in an inter-comparison empirical study using statistical data for R&DT activities for the E.U. member states, in order to conclude and reach in some safe results and policy implications. In methodological terms, the paper will attempt to analyze, using an econometric and benchmarking approach, the effects of innovation activities, in order to clarify the implication on competitiveness and growth process.

Key Words: Innovation Policy, Competitiveness, Growth, Modernization, Cohesion, Convergence
JEL Classificiation: O30, O47, R11

1. REGIONAL POLICY AND INNOVATION IN EUROPEAN UNION

In the past decades, important changes in the pattern of economic growth in countries worldwide have taken place. Recent improvements in productivity and employment have been interpreted as a movement towards a knowledge-based economy (OECD, 2003). Currently, output and employment are expanding fast in high-technology industries such as computers and electronics, as well as in knowledge-based services such as financial and other business services. More resources are spent on the production and development of new technologies, in particular on information and communication technology. Computers and related equipment are now the fastest growing component of tangible investments. At the same time, major shifts are taking place in the labour market in particular the increased demand for skilled labour whereas demand for low-skilled workers is falling across the OECD. Globalization and worldwide competition has shifted the comparative advantage of economies towards the factor of knowledge and innovation, where productivity based on the endogenous development capabilities plays a rather important role, as far as growth and competitiveness enhancement are concerned. In order

to promote innovation activities and technological opportunities, productivity enhancement seems to have a significant to the long run performance of the economy.

As it is declared in the Third Report on Economic and Social Cohesion (2004), strengthening national competitiveness throughout the Union will boost the growth potential of the EU economy as a whole. And, by securing a more balanced spread of economic activity across the Union, it will reduce the risk of imbalances and divergence, making it easier to sustain the European model of economy and society. In policy terms, the objective is to help achieve a more balanced development by reducing existing disparities, avoiding regional imbalances, by making policies more coherent, improving integration and encouraging cooperation between states and regions. On the other hand, there are imbalances in the EU, which threaten the convergence path:

Table 1: Threatens to E.U. regional convergence

Regional level	Threatens
• at EU level	• high concentration of economic activity and population in the central metropolitan areas, which account for the major percentage of population, GDP and R&D expenditure.
• at national level	• persistence of pronounced imbalances between the main metropolitan areas and the rest of the country in terms of economic development.
• at regional level	• persistence of territorial disparities beyond those measured by GDP or unemployment, such as, social exclusion, inadequate economic links and falling population.
• within regions and cities	• development of poverty and social exclusion in areas with often only limited availability of essential services.
• in specific areas constrained by geographical features (islands, sparsely populated areas and certain mountain areas)	• declining population and ageing, while accessibility continues to be a problem and the environment remains fragile and threatened.
• in outermost areas, with a cumulation of natural and geographical handicaps	• continuation of severe social and economic problems which are difficult to tackle because of their remoteness, isolation, topological features, climate, small size of market and dependence on a small number of products.

Source: Adaptation from the Third Report on Economic and Social Cohesion, 2004

Within this framework, the enhancement and convergence of growth and productivity are a major topic in the economic and social policy agenda of E.U. members, since governments seek to concentrate on problems not only related to growth, such as low

employment growth, high unemployment, fiscal deficits and public debt, but also to national disparities and convergence attainment.

Two complimentary sets of conditions need to be satisfied for regions in the Union to sustain economic development and employment in competitive environment. The first is that they must have suitable levels of both physical infrastructure and human capital. The second is that, in the new knowledge-based economy, regions must have the capacity to innovate and to use both existing and new technologies effectively. Community enterprise, industrial and innovation policy is aimed at strengthening the competitiveness of EU producers by promoting competition, ensuring access to markets and establishing an environment which is conducive to R&D across the Union. As is recognized, a lack of innovative capacity at regional level stems not only from deficiencies in the research base and low levels of R&D expenditure but also from weaknesses in the links between research centres and businesses, and slow take-up of information and communication technologies. Knowledge and access to it has become the driving force for growth in advanced economies like the EU known-how and intellectual capital, much more than natural resources or the ability to exploit abundant low-cost labor, have become the major determinants of economic competitiveness since it is through these that economies can not only increase their productive efficiency but also develop new products. Innovation, therefore, holds the key to maintaining and strengthening competitiveness which in turn inessential for achieving sustained economic development. To achieve both sets of conditions requires an effective institutional and administrative framework to support development. The cost of not pursuing a vigorous cohesion policy to tackle disparities is, therefore, measured in economic terms, as a loss of the potential real income and higher living standards. Given the interdependencies inherent in an integrated economy, these losses are not confined to the less competitive states but affect every state in the Union (Third Report on Economic and Social Cohesion, 2004).

European cohesion policy makes a major contribution to these objectives, especially in those countries where there is unused economic and employment potential which can be realized through targeted cohesion policy measures. From a policy perspective, for national development to be sustained requires favorable conditions being established at the national level, in particular a macroeconomic environment conducive to growth, employment and stability and a tax and regulatory system which encourages business and job creation. At the national level, two complimentary sets of conditions need to be satisfied[1]. The first is the existence of suitable endowment of both basic infrastructure (in the form of efficient transport, telecommunications and energy networks, good water supplies and environmental facilities and so on) and a labor force with appropriate levels of skills and training, strengthening of both physical and human capital, together with improvements in institutional support facilities and the administrative framework in place. The second set of conditions, which directly relates to the factors of regional competitiveness which are important in the knowledge-based economy, is that innovation should be accorded high priority, that information and communication technologies (ICT) should be widely accessible and used effectively and that development should be sustainable in environmental terms.; a business culture which encourages

[1] Third Cohesion Report, 2004

entrepreneurship; and the existence of cooperation networks and clusters of particular activities[2].

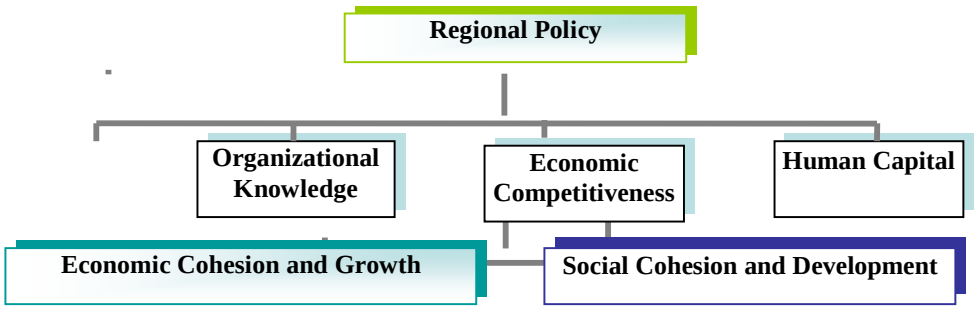
Table 2: Framework of productivity and competitiveness

1st phase	**Inputs** (Productivity enhancement)	• Macroeconomic, entrepreneurial and work environment • Economic and technological infrastructure • Education and skills • Entrepreneurship and business development • Innovativeness and creativity
2nd phase	**Intermediate output** (Productivity enhancement)	• Productivity • Production factors cost • Prices and wages
3rd phase	**Final output** (Competitiveness enhancement)	• Development • Employment • Living standards • Quality of life • Competitiveness

Source: Based on the Annual Competitiveness Report 2004, Ministry of Development, Greece, page 4

Within this framework, the enhancement and convergence of growth and productivity are a major topic in the economic and social policy agenda. One of the focal points of the Treaty of the European Union (E.U., 1992) is 'to promote economic and social progress along with a high level of employment, as well as to achieve balanced and sustainable development ….. through the strengthening of economic and social cohesion....'. The framework of these policy objectives could be illustrated in the following figure:

Figure 1: Economic and social Regional E.U. policy

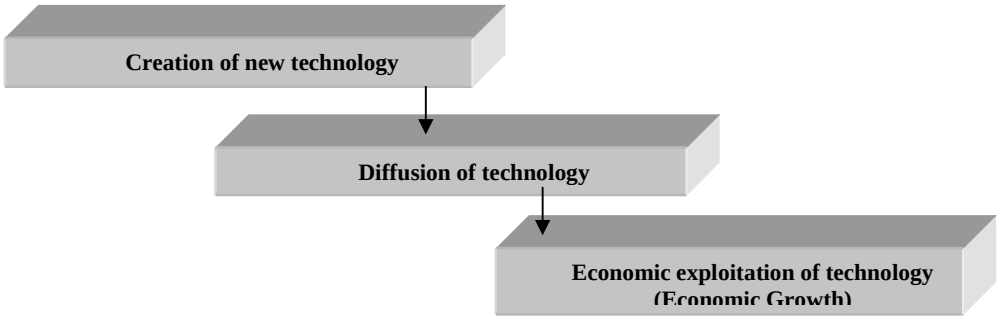


[2] Third Cohesion Report, 2004

According to the Third Report on Economic and Social Cohesion (2004), strengthening regional competitiveness throughout the Union will boost the growth potential of the E.U. economy. Securing a more balanced spread of economic activity across the E.U. will reduce the risk of imbalances and divergence, making it easier to sustain the European model of economy and society. In policy terms, the objective is to help achieve a more balanced development by reducing disparities, avoiding regional imbalances, making policies more coherent, improving integration and encouraging cooperation between states and regions.

Within this framework, development and innovation consist two of the core subjects both in economic and political analyses. In E.U. there is an increasing interest in the contribution of knowledge in the sustainable long-term economic growth, taking into consideration the need that competition forces technological innovations, that increase productivity. Developments in the theory of economic growth have renewed the interest for the role of innovation in the development process, underlining the interaction between the investment in innovative activities, technological change and economic growth.. Technological change, innovation and technology creation and diffusion are an important factor to economic progress, as illustrated in the figure that follows:

Figure 2: Innovation and Economic Growth



Source: Based on Fagerberg (1997)

Innovative actions are considered to be rather important to economic growth, development and welfare. Firstly, they stimulate investments which introduce new commodities and processes, which improve the living standards of the society. Moreover, they lead to new developments, which increase the comparative advantage of an economy and affect positively the trade performance and competitiveness of a country worldwide. These effects result in a greater level of economic growth. While innovation may lead to divergence between firms or nations, imitation through diffusion and dissemination tends to erode differences in technological competencies, and hence lead to convergence (Fagerberg and Verspagen, 2002). On the other hand, combining the production functions in order to create and disseminate innovations leads to improvements in productivity and economic development (Malecki and Varaia 1986; Malecki 1991, Fagerberg and Verspagen, 2002). The economic processes that create and diffuse the new knowledge are critical in the development process and there are powerful contacts between the investment in the human capital, the technological change and

finally economic growth (Acs, Anselin and Varga, 2002). The reason is that the new technologies lead to increase of productivity of factors of production, contributing in the long-term improvement of competitiveness (Griliches, 1980). Technology, also, contributes in the growth of economy, on the one hand because the new or improved products that result from innovations improve the level of existence, and on the other hand, because, with regard to the international trade, the record of open economy depends also from the propensity to innovativeness (Fagerberg, 1988).

Developments in the theory of economic growth have renewed the interest for the role of innovation in the development process, underlining the interaction between the investment in innovative activities, technological change and economic growth. Technology and innovation play an important role in economic growth and technology has become one of the most important factors in the models of growth (Geroski and Machin, 1993, Barro and Sala-i-Martin, 1995, 1997, Freeman and Soete, 1997, and Sternberg, 2000)[3]. The role of innovation is multiple: as motive force it directs the enterprises to ambitious and long-term objectives, it leads to the renewal of methods of production, as well as industrial structures and the appearance of new sectors of economic activity.

While innovation may lead to divergence between firms or nations, imitation through diffusion and dissemination tends to erode differences in technological competencies, and hence lead to convergence (Fagerberg and Verspagen, 2002). On the other hand, combining the production functions in order to create and disseminate innovations leads to improvements in productivity and economic development (Malecki and Varaia 1986; Malecki 1991, Fagerberg and Verspagen, 2002).

The economic processes that create and diffuse the new knowledge are critical in the development process and there are powerful contacts between the investment in the human capital, the technological change and finally the economic growth (Acs, Anselin and Varga, 2002). As a motive force, it prompts the enterprises to long-term development objectives and the advancement of productive structures, so that they maintain the elements of growth, competitiveness and employment. Investments in new technologies aim to the modernisation of productive process and the qualitative upgrade of products, which is one from the basic factors of increase of enterprises. The reason is that the new technologies lead to increase of productivity of factors of production, contributing in the long-term improvement of competitiveness (Griliches, 1980). The technology, also,

[3] Arrow (1962) was the first to systematically appreciate the importance of innovation and technological change in the capital formation and economic growth. He observed that increases in income per capita couldn't be explained by increases in capital to labour ratio, and concluded that the power behind the increase in productivity is the acquisition of knowledge and learning experience created and acquired during the production procedure.

contributes in the growth of economy, on the one hand because the new or improved products that result from innovations improve the level of existence, and on the other hand, because, with regard to the international trade, the record of open economy depends also from the propensity to innovativeness (Fagerberg, 1988). One additional reason is that via innovation the individual and collective needs are satisfied better which constitutes fundamental element of entrepreneurial spirit. The same holds also for countries and economies, which in order to maintain the elements of growth, competitiveness and employment, owe to change fast the new ideas in technical and commercial successes.

Innovative actions are considered to be rather important to economic growth, development and welfare. Firstly, they stimulate investments which introduce new commodities and processes, which improve the living standards of the society. Moreover, they lead to new developments, which increase the comparative advantage of an economy and affect positively the trade performance and competitiveness of a country worldwide. These effects result in a greater level of economic growth. On the other hand, innovation is rather important to an individual firm for two main elements, namely a double role in the incentives of the companies to pursuit and invest on it.[4] Firstly, a corporation, which undertakes R&D programmes, acquires new information and knowledge to embody in the new commodities, as well as new production and marketing processes, ready to be employed in product and process innovation. As a result, through innovation, a company is able to develop directly new products and processes and bring them to the market acquiring an advantage over its competitors. Furthermore, it can enhance the ability of the firm to develop and maintain capabilities to absorb and expand technology information available by external sources, and identify, assimilate and exploit new knowledge and technology produced elsewhere (Cohen and Levinthal, 1989).

The systematic analysis and the theoretical framework of the effects of innovation on the economic efficiency, productivity and growth is based on endogenous growth theory developed by Solow, 1957, Arrow, 1962, Romer 1986 and 1990, Lucas, 1990 and 1993. Endogenous growth theory claimed that not only the accumulation of capital, but mainly the development and accumulation of knowledge and technological change leads to increased and sustainable growth. The reason is that the long-run productivity decrease is avoided, due to capital accumulation through the qualitative-technological improvements of natural and human capital. According to Romer (1986, 1990), knowledge and technological progress are the main engines of economic dynamism and the economy grows endogenously through the accumulation and spillover of knowledge. Growth rate depends on the amount of technological activity within the economy and on the ability of the economy to exploit external technological achievements (Martin and Ottaviano, 1999, Grossman and Helpman, 1994, Coe and Helpman, 1995). Increasing returns and technical change are incorporated within the production function as determinants of the endogenous growth rate (Romer 1986, Lucas 1988, Grossman and Helpman 1994, Barro and Sala-i-Martin, 1997) and economic growth is sustained because of the continuous creation and diffusion of knowledge.

[4] Cohen and Levinthal (1989) called this double role of innovation ‘dual role’.

An important contribution of the endogenous growth theory (Romer, 1987 and 1990) has been to identify the central role that knowledge and knowledge spillovers play in creating and sustaining growth. Pavitt and Soete (1982) examined growth as a result of the development of new knowledge in a country and the diffusion of knowledge between countries. According to Fagerberg (1987) there is a close relation between a country's economic and technological level of development. The rate of economic growth of a country is positively influenced by technological level of the country and its ability to increase it through imitation and exploitation of the possibilities offered by technological achievements elsewhere. Krugman (1991) identified the major role that knowledge spillovers play in generating increasing returns and higher growth. Geroski and Machin (1993) asserted that innovations positively affect the development of enterprises and economies. Moreover, according to Silverberg and Verspagen (1995), technological change and diffusion constitute important factors in long-run macroeconomic growth and development. Moreover, Barro and Sala-i-Martin (1995 and 1997) asserted that growth rate may increase in correlation with technological growth. Furthermore, Freeman and Soete (1997) focused on the importance of technology and innovation claiming that lack of innovation leads to economic death. At the same point of view. Sternberg (2000) said that in industrialized economies the rate of long-term macroeconomic growth depends on the ability of constant development of innovative products and processes.

In the modern knowledge economy, growth depends extensively on the presence or the formation of a network and environment favorable to innovation, which is based on the endogenous development capabilities. Even though the firm-specific factors are important determinants of innovation activity, technological opportunities and favorable entrepreneurial environment have a positive effect on innovation activity, as well. Technological change, innovation and technology creation and diffusion are an important factor to economic progress. While innovation may lead to divergence between firms or nations, imitation through diffusion and dissemination tends to erode differences in technological competencies, and hence lead to convergence (Fagerberg and Verspagen, 2002).

2. E.U. REGIONAL POLICY OBJECTIVES

Nowadays, economies all over the world are described taking part in a race seeking the most appropriate and effective ways that could provide them with the strengths and opportunities necessary to obtain and sustain a competitive advantage over their rivals. Within this framework, at the Lisbon Summit (2000), European Union set itself the goal of becoming the most competitive and dynamic knowledge-based economy in the world, capable of sustainable economic growth and closer regional as well as social cohesion. At the Lisbon European Council, E.U. defined a comprehensive strategy aiming at long term economic growth, full employment, social cohesion and sustainable development in a knowledge - based society. Into doing, it has identified a number of priorities:

Table 3: Economic development priorities

Priority	Means and actions
• give priority to innovation and	• creating closer links between research institutes and

entrepreneurship	industry, developing conditions favourable to R&D, improving access to finance and know-how and encouraging new business ventures;
• ensure full employment	• by emphasizing the need to open up employment opportunities, to increase productivity and quality at work and to promote lifelong learning;
• ensure an inclusive labour market	• unemployment is reduced and social and regional disparities in access to employment are narrowed;
• 'connect' Europe	• closer integration and by improving transport, telecommunications and energy networks;
• protect the environment	• stimulating innovation and introducing new technologies, for example, in energy and transport.

Source: Based on the Third Report on Economic and Social Cohesion, 2004

Four Community initiatives aim to find solutions to these problems common to a number of regions: a) Interreg III for the development of crossborder, interregional and transnational cooperation; b) URBAN II to support innovative strategies in cities and urban neighbourhoods; c) Leader+ to promote rural development initiatives; d) EQUAL to combat discrimination in the labour market.

More than a third of the budget of the Union is devoted to regional development and economic and social cohesion[5]. For 2000 - 2006, EUR 213 billion has been earmarked for all structural instruments for the 15 Member States. In addition, about EUR 22 billion in pre - accession aid, and another EUR 22 billion in structural interventions for the new Member States have been spent through multiannual development programmes, managed jointly by Commission services, the Member States and regional authorities[6].

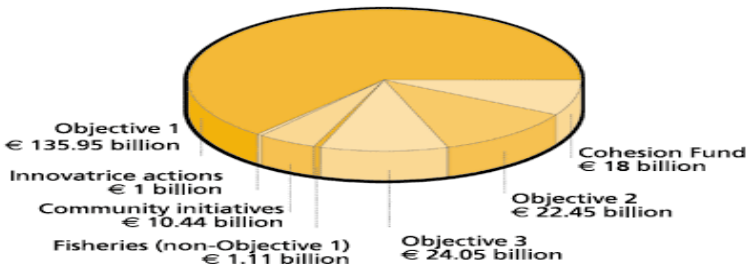
To enhance its impact and secure the best possible results, 94 % of structural funding for the period 2000–06 is concentrated on three objectives:

- Objective 1: Helping regions whose development is lagging behind to catch up.
- Objective 2: Supporting economic and social conversion in industrial, rural, urban or fisheries dependent areas facing structural difficulties.
- Objective 3: Modernizing systems of training and promoting employment. Measures financed by Objective 3 cover the whole Union except for the Objective 1 regions, where measures for training and employment are included in the catch-up programmes.

The total budget allocation for Structural and Cohesion Funds is illustrated in the following figure:

Figure 3: Total budget allocations for Structural and Cohesion Fund 2000-2006 (1999 prices).

[5] The Structural Funds and the Cohesion Fund cover about one third of the EU budget
[6] European Commission, Union, Regional Policy, Inforegio, http:// europa.eu.int



Source: European Commission, Union, Regional Policy, Inforegio, http:// europa.eu.int

3. E.U. REGIONAL INNOVATION PERFORMANCE

As far as the E.U. regional innovation is concerned, there are 3 main reports which conduct surveys about the innovation performance of countries and regions, extract results, and illustrate the comparative situation of each country or region. These reports are:

- The European Innovation Scoreboard (EIS)
- The Summary Innovation Index (SII)
- The Regional Innovation Scoreboard

3.1 THE EUROPEAN INNOVATION SCOREBOARD (EIS)

The European Innovation Scoreboard (EIS) is the instrument developed at the initiative of the European Commission, under the Lisbon Strategy, to evaluate and compare the innovation performance of the EU Member States[7]. The EIS 2006 includes innovation indicators and trend analyses for the EU25 Member States, plus the two new Member States: Bulgaria and Romania, as well as for Croatia, Turkey, Iceland, Norway, Switzerland, the US and Japan. The 25 EIS innovation indicators have been classified into five dimensions to better capture the various aspects of the innovation process, namely:

- Input – Innovation Drivers
- Input – Knowledge Creation
- Input – Innovation & Entrepreneurship
- Output – Applications
- Output – Intellectual Property

Table 6 identifies for each indicator the three European countries with the highest scores and the results for the EU25 and EU15. The innovation leaders take up more than 50% of the leading places, the innovation followers take up 20% and the trailing countries and catching-up countries each 10% of the leading places. The innovation leaders are

[7] The EIS report and its annexes, accompanying thematic papers and the indicators' database are available at http://www.proinno-europe.eu/inno-metrics.html.

particularly dominant in knowledge creation, innovation & entrepreneurship and intellectual property. The innovation followers are most dominant in innovation drivers. The ranking of the E.U. countries according to the EIS 2006 are presented in the following table:

Table 4: Innovation performance leaders

	EU25	EU15	European 'innovation leaders'		
INNOVATION DRIVERS					
1.1 S&E graduates	12.7	13.6	IE (23.1)	FR (22.0)	UK (18.1)
1.2 Tertiary education	22.8	24.0	FI (34.6)	DK (33.5)	EE (33.3)
1.3 Broadband penetration rate	10.6	12.0	IS (22.5)	NL (22.4)	DK (22.0)
1.4 Life-long learning	11.0	12.1	SE (34.7)	UK (29.1)	DK (27.6)
1.5 Youth education	76.9	74.1	NO (96.3)	SK (91.5)	SI (90.6)
KNOWLEDGE CREATION					
2.1 Public R&D expenditures	0.65	0.66	IS (1.17)	FI (0.99)	SE (0.92)
2.2 Business R&D expenditures	1.20	1.24	SE (2.92)	FI (2.46)	CH (2.16)
2.3 Share of medium-high/high-tech R&D	--	89.2	SE (92.7)	DE (92.3)	CH (92.0)
2.4 Share of firms receiving public funding	--	--	LU (39.3)	IE (27.8)	AT (17.8)
INNOVATION & ENTREPRENEURSHIP					
3.1 SMEs innovating in-house	--	--	IE (47.2)	IS (46.5)	DE (46.2)
3.2 Innovative SMEs co-operating with others	--	--	DK (20.8)	SE (20.0)	FI (17.3)
3.3 Innovation expenditures	--	--	SE (3.47)	EL (3.08)	DE (2.93)
3.4 Early-stage venture capital	--	0.023	DK (0.068)	SE (0.067)	UK (0.048)
3.5 ICT expenditures	6.4	6.4	EE (9.8)	LV (9.6)	SE (8.6)
3.6 SMEs using organisational innovation	--	--	CH (63.0)	LU (58.4)	DK (57.1)
APPLICATIONS					
4.1 Employment in high-tech services	3.35	3.49	SE (5.13)	IS (4.97))	DK (4.69)
4.2 High-tech exports	18.4	17.7	MT (55.9)	LU (29.5)	IE (29.1)
4.3 Sales share of new-to-market products	--	--	MT (13.6)	SK (12.8)	PT (10.8)
4.4 Sales share of new-to-firm products	--	--	PT (15.1)	DE (10.0)	ES (10.0)
4.5 Employment in medium-high/high-tech manufacturing	6.66	6.71	DE (10.43)	SI (9.63)	CZ (9.42)
INTELLECTUAL PROPERTY					
5.1 EPO patents	136.7	161.4	CH (425.6)	DE (311.7)	FI (305.6)
5.2 USPTO patents	50.9	60.2	CH (168.4)	DE (123.0)	SE (109.7)
5.3 Triad patents	32.7	38.9	CH (108.9)	FI (101.7)	DE (85.2)
5.4 Community trademarks	100.7	115.7	LU (782.7)	CH (225.2)	AT (187.0)
5.5 Community designs	110.9	127.6	LU (377.6)	DK (243.2)	CH (210.0)

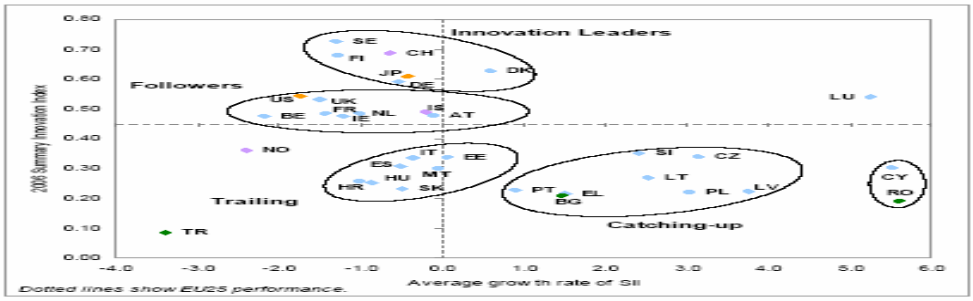
Source: The EIS 2006 report

Best performance across the indicators is scattered across Europe, with as much as 22 countries being among the best 3 performing countries in at least one indicator. Sweden does best being among the best 3 performing countries in 10 indicators, followed by Denmark and Germany each taking up 8 of the leading slots. For many indicators, differences among the best performers are too small to identify an overall best performing country. The indicators of innovation performance suggest that a country can be an innovation leader only if it has a well established innovation system with all elements in place. While practically all EU member states excel in one or the other innovation dimension, only some of them have achieved the overall performance to become world innovation leaders.

3.2 SUMMARY INNOVATION INDEX (SII)

The Summary Innovation Index (SII) gives an overview of aggregate national innovation performance. Figure 6 shows the Summary Innovation Index (SII) on the vertical axis and the average growth rate of the SII on the horizontal axis. Countries above the horizontal dotted line currently have an innovation performance above that of the EU25. Countries to the right of the vertical dotted line had a faster average increase in the SII than the EU25.

Figure 4: SII 2006



Source: SII 2006 Report

Sweden, Finland, Switzerland and Denmark are the European innovation leaders. Slovenia, Estonia and Czech Republic are the best performing new Member States, outperforming as many as four EU15 countries. More specifically, based on their SII score and the growth rate of the SII, the countries included in the analysis can be divided into four groups or clusters (European Innovation Scoreboard, 2006):

• Sweden, Switzerland, Finland, Denmark, Japan and Germany are the *innovation leaders*, with SII scores well above that of the EU25 and the other countries. The lead of the innovation leaders has been declining compared to the average of the EU25, with the exception of Denmark.
• The UK, Iceland, France, Netherlands, Belgium, Austria and Ireland are the *innovation followers*, with SII scores below those of the innovation leaders but above that of the EU25 and the other countries. The above EU25 average innovation performance of the innovation followers has been declining. Also, the gap of the innovation followers with the innovation leaders has on average slightly increased.
• Slovenia, Czech Republic, Lithuania, Portugal, Poland, Latvia, Greece and Bulgaria make up the group of *catching-up countries*, with SII scores well below that of the EU25 and the innovation leaders, but with faster than average innovation performance improvement.
• Estonia, Spain, Italy, Malta, Hungary, Croatia and Slovakia seem to be *trailing*, with SII scores well below that of the EU25 and the innovation leaders, and innovation performance growth which is either below or only just above that of the EU25.

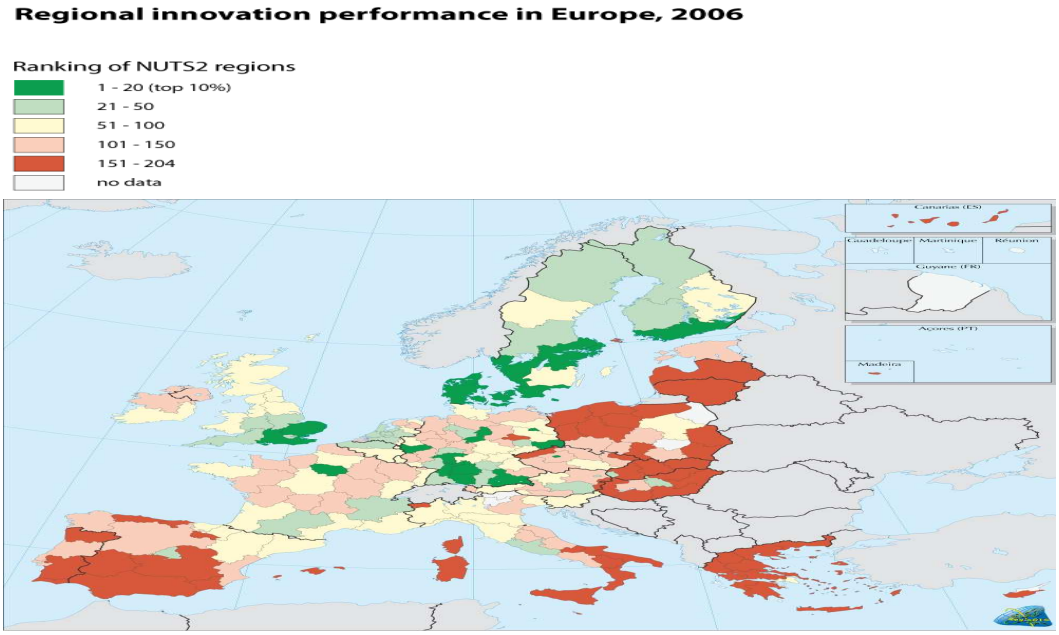
Cyprus and Romania form a separate fifth cluster of fast growing, catching-up countries. Cyprus being one of the smallest EU countries and Romania starting from very low levels of innovation performance, this cluster is less robust than the other clusters, and is

therefore not considered to be a real cluster. Luxembourg, Norway and Turkey do not fit into any of these groups.

3.3 THE REGIONAL INNOVATION SCOREBOARD

The 2006 Regional Innovation Scoreboard provides the relative position of the EU regions. As far as the regional technological performance is concerned, it is presented in the following figure:

Figure 5: Regional Innovation performance in E. U. 2006



Source: Hollanders (2006)

The Top-10 performing regions are Stockholm in Sweden, followed by Västsverige (SE), Oberbayern (DE), Etelä-Suomi (FI), Karlsruhe (DE), Stuttgart (DE), Braunschweig (DE), Sydsverige (SE), Île de France (FR) and Östra Mellansverige (SE).

4. ECONOMETRIC APPROACH

Under this picture, growth rate is considered to be the result of a wide range of economic, social and political factors. Firstly, economic growth may be the result of physical, as well as human, capital accumulation (Jones and Manuelli, 1990; Rebelo, 1991). Secondly, economic growth may be attributed to the existence of external economies and the interactions among the investments of different private or public enterprises and business entities (Arrow, 1962, Lucas, 1988). Thirdly, growth may result from the creation and adoption of new ideas and the accumulation of technological knowledge (Romer 1990, Grossman and Helpman 1991, and Aghion and Howitt 1992). In this

perception, science, technology and innovation are major elements towards economic growth and development.

A production function is a relationship between output and inputs. For a single country the production function may be written as:

$$y_{it}=F_i(X_{i1t},X_{i2t},.....,X_{imt}, t)$$

where: y_{it} is the quantity of output produced per producer unit and X_{ijt} is the quantity of the jth input employed per producer unit (j=1,2,....m) in the ith country for the period t. In order to specify the inputs and output relationship, we begin with an aggregate production function:

$$Y_t=F(K_t, L_t, t),$$

where: Y_t, K_t, and L_t, are the quantities of aggregate real output, physical capital and labor respectively at time t, in order to assess what proportion of any increase in the output over time can be attributed first to increases in the inputs of factors in the production. Solow (1956) postulated that the level of output depended on the level of productivity

$$Y = A(t).F(K,L)$$

where *Y* is the level of aggregate output, namely economic growth, *K* is the level of the capital stock, *L* is the size of the labor force, *A* is total factor productivity (a measure of the current level of technology) and *t* is time. Total-factor productivity is measured as the difference between output and input change, in addition to increases in aggregate output due to capital or labour accumulation and endogenous growth theory asserts that increases in TFP are seen as the key to long-term economic growth.

Under this approach, Fagerberg (1987, 1988) created a model of endogenous technological change, focusing on the importance of innovation on economic growth. According to Fagerberg (1987, 1988) economic growth is explained as the combined result of three factors, namely the potential for innovation creation (proxied by patent growth), the potential for innovation diffusion (proxied by the level of productivity or GDP per capita) and the exploitation of these potentials (proxied by complementary factors, such as investment as a fraction of GDP). Extending this model, and following the theory presented in this paper, an additional complementary factor is included, that is entrepreneurship (proxied by the number of self employed persons in the economy).

Referring to the above mathematical equation, as well as to the above mentioned model,

we obtain our estimating equation for the specification for the growth rate of real GDP:

$$Y_t=F(RD_t, Prod_t, Invest_t, Entrepr_t)$$

Where

RD_t refers to innovation creation activities, proxied by Research and Development expenditure measure,
$Prod_t$ refers to innovation diffusion, proxied by the level of GDP per capita, representing productivity,
$Invest_t$ refers to the exploitation of these potentials, proxied by the investment level as a fraction of GDP, and finally,
$Entrepr_t$ refers also to the exploitation of these potentials, proxied by the the number of self employed persons

The data apply to the economy of EU and they cover a period of 56 years. The measures of GDP and GDP per capita are adjusted in constant PPPs standards, the Research and Development expenditure is also measured in constant prices and the investment level is represented by the Gross Fixed Capital Formation, also in constant prices. The data have been extracted from the OECD, Eurostat and the University of Pennsylvania databases.

The econometric analysis is to be added in the paper…

5. PROSPECTS

Globalization and worldwide competition has shifted the comparative advantage of economies towards the factor of knowledge and innovation, where productivity based on the endogenous development capabilities plays a rather important role, as far as growth and competitiveness enhancement are concerned.

European cohesion policy makes a major contribution to these objectives, especially in those regions where there is unused economic and employment potential which can be realized through targeted cohesion policy measures. From a policy perspective, at the regional level, growth policies should focus on creating favorable environment for the co-operation between firms and institutions that support the development and exploitation of knowledge and innovation. Furthermore, policies should promote the entrepreneurial relations between firms and institutions, fostering the development and dissemination of the expertise, the mobility of human and physical capital and the enhancement of the relationships between business and research entities. Specifically, they should encourage actions such as, promoting innovation, technology transfer and interactions between firms and higher education and research institutes, networking and industrial co-operation and support for research and technology supply infrastructure. Such cooperation and the networks that are formed help to translate knowledge into economic opportunity, while at the same time building the relationships between people and organizations which can act as a catalyst for innovation. Such actions should extend to all the policy areas relevant for economic, scientific and social development and should ideally establish a long-term policy horizon.

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Paper for the 3rd Hellenic Observatory Symposium on Contemporary Greece

THE SUCCESS OF EU COHESION POLICY: THE CASE OF GREECE AND IRELAND

This paper asks how EU transfers in the form of structural funds have affected the economic performance of Greece and Ireland since the mid-1980s. It is argued that the effects of EU funds in the two countries were highly interdependent with the macroeconomic and institutional environment within which they were implemented.

In Greece, EU funds were increased at a time of political strife and instability. They gave successive governments room to delay necessary fiscal reforms by softening the balance of payments constraint of the economy. In Ireland, EU aid played the opposite role, by assisting the government to credibly commit itself to fiscal consolidation.

At the same time, the speeding up of growth that occurred in Ireland resulted in a higher return for structural fund investments. The funds prevented the occurrence of supply-side bottlenecks in the economy and the increased demand for human and physical capital channelled structural funds to effective use. In contrast, Greek structural investment did not take place at a time of favourable conditions to growth. Weakness in the country's governance structures also lowered the potential benefits of structural funds.

George Saravelos

May 2007

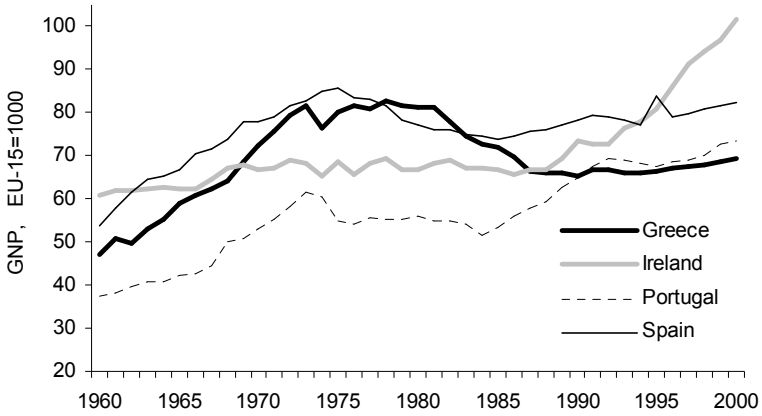
THE SUCCESS OF EU COHESION POLICY: THE CASE OF GREECE AND IRELAND

1. INTRODUCTION

The experience of Greece and Ireland during the last two decades is an interesting illustration of two economies with a widely differing economic performance. Both Greece and Ireland are small European countries, belonging to the periphery of the European Union[1] (EU). Until the mid-1970s, Greece experienced one of the quickest rates of convergence to average EU incomes, while Ireland one of the slowest. Yet as the two countries moved towards economic integration with the rest of the EU during the 1980s, their economic performance exhibited a significant break from the past. Figure 1 shows how Greece was transformed from a 'success story' to a 'problem economy', its rate of convergence slowing in the late 1970s and collapsing in the 1980s. At the same time, Irish economic growth took off, and the 'Celtic Tiger' has rapidly caught up with the income levels of more developed economies.

In the second half of the 1980s, a substantial reform of EU structural funds[2] also took place. These funds are the main instrument of EU cohesion policy, which aims to reduce socioeconomic disparities between member states. The reforms followed the

Figure 1: GNP[a] per head relative to EU average, 1960 – 2002



Source: Penn World Table 6.1

a: GNP is used rather than GDP so as to exclude the substantial profits of foreign companies included in Irish GDP. In 2000, Irish GDP was approximately 15% higher than GNP, while Greek GDP was 2% lower.

1987 Single European Act and shifted the emphasis away from redistributing funds between regions, towards a focus on the pursuit of genuine development strategies (Hall et al. 2001: 315). The changes called for a doubling of resources available to the structural funds by 1992, and introduced the principle of geographical concentration on 'Objective 1' regions whose development was lagging behind, namely Greece, Ireland and Portugal, and most regions of Spain and Southern Italy. Multi-year planning of structural fund investment was also introduced, with each member state being required to draw up long-term financing plans, known as Community Support Frameworks (CSFs).[3]

Taking these significant developments into account, this paper asks how EU transfers in the form of structural funds have affected the economic performance of Greece and Ireland since the mid-1980s. This should not be interpreted as an attempt to comprehensively explain the two countries' different paths of economic development. Rather, these paths provide a unique opportunity to assess the impact of EU structural aid within the context of broader government policy directions. It is shown that the effects of EU funds in Greece and Ireland were highly interdependent with the macroeconomic and institutional environment within which they were implemented.

In section 2 of this paper, I provide a brief overview of the structural characteristics of the two economies. Section 3 surveys quantitative estimates of the growth impact of EU transfers over the period 1989-1999 in Greece and Ireland. In section 4, I argue that these estimates overlook the effect of structural funds on macroeconomic policy. I ask why the Irish government's 1987 fiscal stabilisation effort proved so successful, in contrast to the repeated failure of Greek attempts, and claim that in Ireland, structural funds facilitated fiscal consolidation, while in Greece they gave the government room to delay necessary fiscal reforms. Section 5 investigates the interaction of structural policies with concurrent supply-side developments in both economies. In Ireland, EU funds responded to an exogenous demand for higher human and physical capital investment, and prevented the occurrence of supply-side bottlenecks in the economy. Structural funds were less effectively channelled in the Greek economy, due to the absence of a benevolent growth environment. Section 6 looks at the interaction between institutions and the success of structural policies. Institutional arrangements in Ireland resulted in higher

returns to structural fund investments than in Greece. Section 7 provides some concluding comments.

2. OVERVIEW: THE GREEK AND IRISH ECONOMIES

Until the early 1990's, Greece and Ireland shared a number of similar characteristics common to the peripheral economies of the EU (Barry 2003). Table 1 is a summary of several economic indicators in the two countries. National income and labour productivity in both Greece and Ireland were behind the European average until the 1990's. Exposure to international trade on the other hand, measured as the proportion of exports and imports to GDP, has been persistently higher in Ireland and one of the highest in the EU. This can be largely attributed to Ireland's outward-oriented export growth strategy, pursued since the 1960s, which included the aggressive pursuit of Foreign Direct Investment (FDI) through the provision of capital grants alongside a zero corporate profit tax rate on manufactured exports.[4] Greece, on the other hand, pursued what has been deemed a 'state corporatist' regime, with domestic firms enjoying significant protection from foreign competition (Alogoskoufis 1995, Georgakopoulos 2001). Figure 2 shows how Greece has suffered from a persistent weakness in its current account since the 1980s, a result of the country's long-run competitive weakness in internationally traded manufactures.

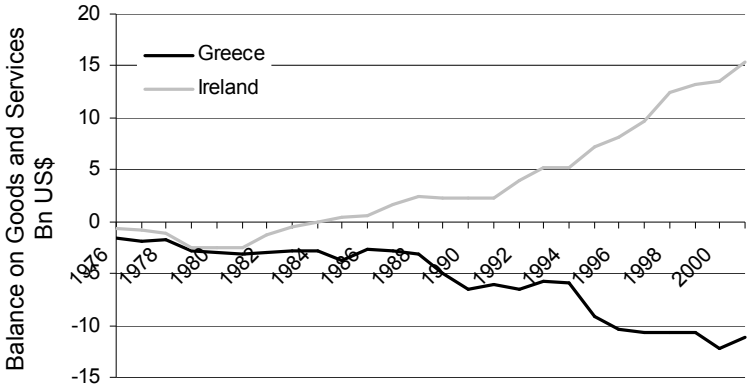
For reasons that relate to the unique political and economic developments in the two countries, Greece exhibited a much faster rate of convergence than Ireland

Table 1: Economic indicators in Greece and Ireland

	Greece	Ireland
GNP per capita (EU15=100)		
1980	81	67
1990	65	73
2000	70	102
Labour productivity (in $ PPPs)		
1980	31,100	26,900
1990	31,300	36,700
2000	35,200	65,000
Exports and Imports (% of GDP)		
1973	29	77
1987	37	101
2000	57	186

Source: Penn World Table 6.1

Figure 2: Balance of payments for goods and services, 1976 – 2001



Source: IMF financial statistics 2002

until the end of the 1970s, despite higher protectionism. Yet by the beginning of the 1990s, the two countries economic fortunes had reversed. Ireland GDP growth has been the one of the highest in the EU ever since, while in Greece one of the lowest until the mid-1990s. The next four parts of this paper investigate the contribution of EU transfers to this reversal of fortunes in the two countries.

3. ESTIMATES OF STRUCTURAL FUND-INDUCED GROWTH

A number of macroeconomic models have been used to derive quantitative estimates of the impact of structural funds on the economic growth of Greece and Ireland.[5] The models typically disaggregate the economy into a number of sectors, specifying a number of behavioural equations that determine the functioning of the economy, such as the wage-setting process in labour markets. Model parameters are calibrated using historical data for each economy, or in the absence of sufficiently accurate country-specific data, parameter values are drawn from the wider growth literature. Externalities to public investment are also typically assumed, though estimates of their magnitude are fairly conservative (Barry 1999: chap. 5). An analysis of the findings of these models illuminates the extent to which structural fund transfers had a different effect on growth in Greece and Ireland, and the sources of these differences.

Table 2 is a summary of the findings of various simulations for Greece and Ireland. Following Ederveen et al. (2002), the results of separate studies have been transformed into a growth elasticity of cohesion support figure, which measures additional yearly GDP per capita growth per GDP unit of cohesion support. The table

demonstrates that on average, a unit of cohesion support to Ireland contributes more to yearly GDP growth than Greece.

How can the different impact of EU structural funds in Greece and Ireland be explained, and to what extent can this account for the differing growth performance of the two countries? To answer the first question, we need to look at the structure and calibration of each of the country-specific models used. In the HERMIN model for instance, Bradley (2004) shows that the most important explanatory factors are the relatively closed nature of the Greek economy compared to Ireland and the smaller scale of much manufacturing activity. Broadly speaking, the reduced effectiveness of structural funds in Greece compared to Ireland has deep roots in the distinct sectoral structure and properties of each economy, most importantly Ireland's relative openness to trade compared to Greece (Bradley 2004, EC 2004).

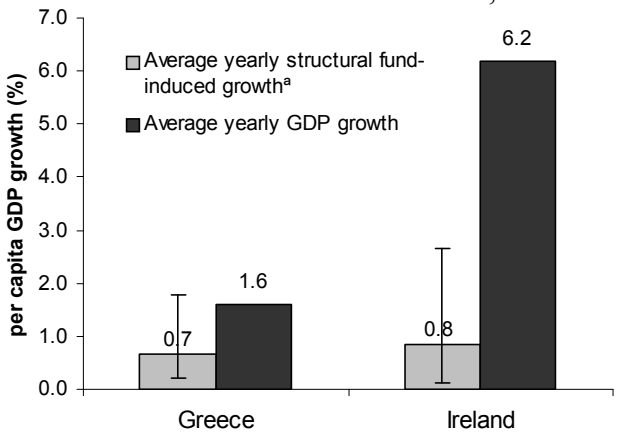
Is this difference sufficient to explain the different growth experiences of the two countries? Figure 3 shows that the answer is negative, as the average growth of Irish GDP has been more than six times higher than the fund-induced growth rate over the period 1989-1999.[6] The Irish boom has been attributed to a wide range of factors,

Table 2: Growth Elasticity of structural funds

Model Simulation	Greece	Ireland
CSF I (89-93)		
Lolos and Zonzilos (1994)[a]	0.33	
Lolos et al. (1995)	0.01	
Pereira (1997)[b]	0.24	0.28
EC (1999b)[c]	0.24	0.43
EC (1999b)[d]	0.09	0.14
CSF II (94-99)		
Bradley, Herce and Modesto (1995)		0.18
Christodoulakis and Kalyvitis (1998)[e]	0.15	
Christodoulakis and Kalyvitis (2000)[e]	0.15	
EC (1999b)[c]	0.29	0.29
EC (1999b)[d]	0.03	0.14
EC (1999b)[f]	0.15	0.24
Pereira (1999)	0.15	0.06
Bradley, Morgenroth and Untiedt (2004)[g]	0.60	0.97
Average	0.20	0.34

a: average of lower and upper bound estimates
b: case 3, assuming constancy in real terms of funds
c: Beutel input-output analysis
d: based on QUEST II model
e: version of HERMIN model, includes externalities
f: Pereira model
g: GDP growth (as opposed to GDP per capita growth)

Figure 3: Average yearly GDP growth attributable to structural funds in Greece and Ireland, 1989-99



Source: author's own calculations.

a: error bars denote upper and lower bounds on estimates.

most of which are closely related to the country's success in attracting high volumes of FDI and to the Single European Market Programme in the late 1980s and 1990s.[7] The failure of the Greek economy, on the other hand, has been broadly ascribed to the failure of the state-led development model in the context of EU accession in the 1980s and inappropriate domestic macroeconomic policies.[8]

While differences in structural fund expenditures are not sufficient to explain the divergent growth experiences of the two countries, it is important to bear in mind that the above models may not capture the full effects of structural fund investments on the economy. Barry (1999: chap. 5) suggests a number of reasons why this may be so. First, estimates of the externalities associated with structural fund investments may be too conservative, underestimating the full returns that such investment may have in the economy. Moreover, while the models used to study the effects of structural funds on growth tend to be linear, expenditures can have highly non-linear effects. For instance, the completion of a major road artery at double the cost of minor road developments may potentially yield more than proportional higher returns. Finally, the interaction between various policy changes, the macroeconomic environment and the returns to structural fund investment may give rise to much more dynamic effects than would emerge were all the changes considered in isolation. It is to these interactions that we now turn our attention, to show that they indeed had a very significant impact on the relative success of structural funds in Ireland and Greece.

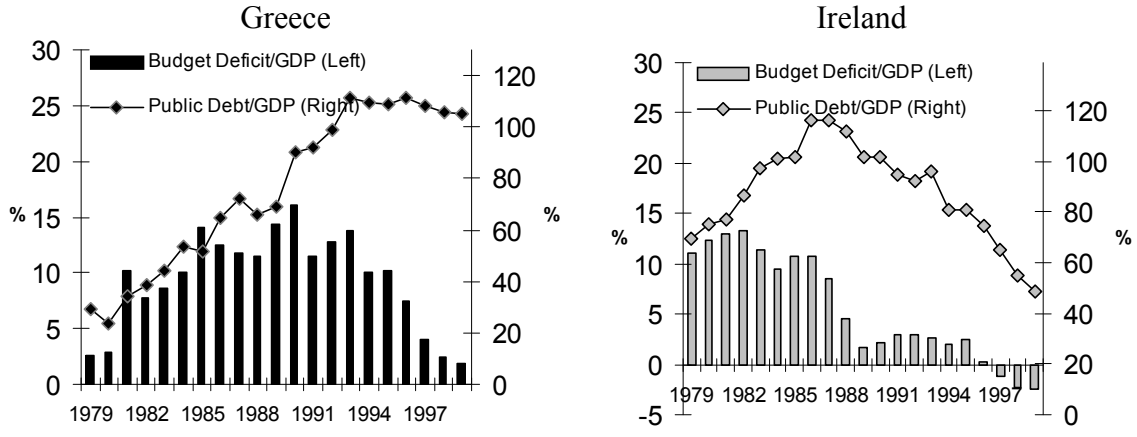
4. EU TRANSFERS AND FISCAL POLICY

In the mid-1980s both Greece and Ireland were in a precarious fiscal position. In Greece, rampant government spending since the late 1970s resulted in extremely high deficit and public debt levels. A short-lived attempt by the government in 1986 to tackle the macroeconomic imbalances of the economy ended in failure, mainly due to the lack of consolidation on the expenditure side (Lolos 1998). In Ireland, unsuccessful attempts were made to curb the fiscal excesses of the late 1970s throughout the 1980s, once again mainly due to a failure to control government spending. A rising interest burden and an increasing cost of transfers, itself a result of ever-increasing unemployment partly due to the fiscal cutbacks, and a recession imported from the UK were the main factors (Barry 1999: chap. 4). In the face of a growing fiscal crisis, both the Greek and Irish governments made renewed attempts at fiscal stabilisation.

The incoming government in Ireland reversed its stated views and unexpectedly began aggressive fiscal tightening in 1987. In the civil service, a freeze on recruitment, an early retirement scheme, deferral of special pay awards were implemented, while extensive cutbacks in public infrastructure spending were enforced. Figure 4 shows that this proved largely successful, as public debt started falling sharply while the primary deficit moved into strong surplus from 1988.

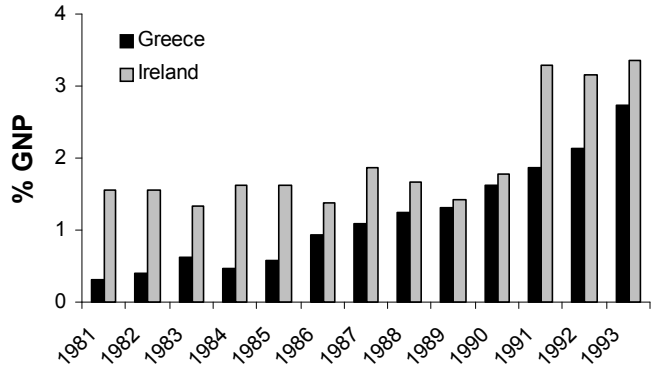
In Greece, a renewed attempt to bring public finances in control after the election of a new conservative government in 1990 ended in failure. Government deficits stayed at levels above 10 percent of GDP until 1993, while the debt to GDP ratio continued to rise.

Figure 4: Budget Deficit and Public Debt, % of GDP 1979-99



Source: Eurostat

Figure 5: Structural fund receipts, 1981-93



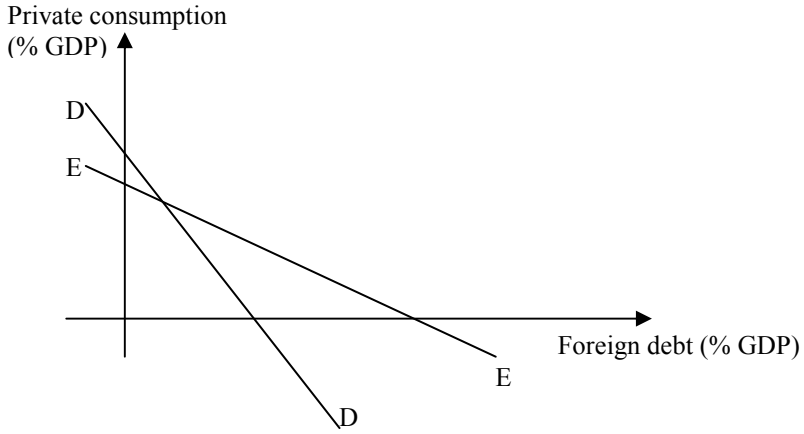
Source: author's own calculations based on Barry (1999) for Ireland, and Bank of Greece (1998), Christodoulakis and Kalyvitis (2001) for Greece

In the meanwhile, following EU structural fund reforms during 1986-88, EU structural fund transfers almost doubled from 1988 to 1993, reaching levels close to 3% of national income in both countries (figure 5). In what way and to what extent did this (positive) shock affect macroeconomic policy differently in the two countries, which were both facing severe fiscal constraints at the time? To answer this question, one needs to consider the effects of EU transfers on fiscal policy in more detail.

Firstly, in small relatively open economies like Greece and Ireland, foreign transfers can have a significant impact on the external constraints facing the economy. For the purposes of our analysis, the effects of the influx of EU transfers on the balance of payments can be demonstrated through the use of an intertemporal savings and investment model, as presented in the Appendix (see also Alogoskoufis 1995). In the model, private consumption and foreign debt as a percentage of GDP are determined jointly by consumers' preferences, the world real interest rate, the growth rate, foreign invisibles transfers and fiscal policy. The long-run growth rate is independent of these and solely depends on the productivity of capital in the economy.

Figure 6 below shows the constraints faced by the economy, the domestic (private consumption) constraint (*DD*) and the external (balance of payments) constraint (*EE*). *DD* depicts combinations of private consumption and external debt yielding a constant ratio of private consumption to GDP over time. A higher foreign debt/GDP ratio, for a given ratio of capital and public debt to GDP, lowers the wealth of private consumers and the sustainable share of private consumption. *EE* depicts

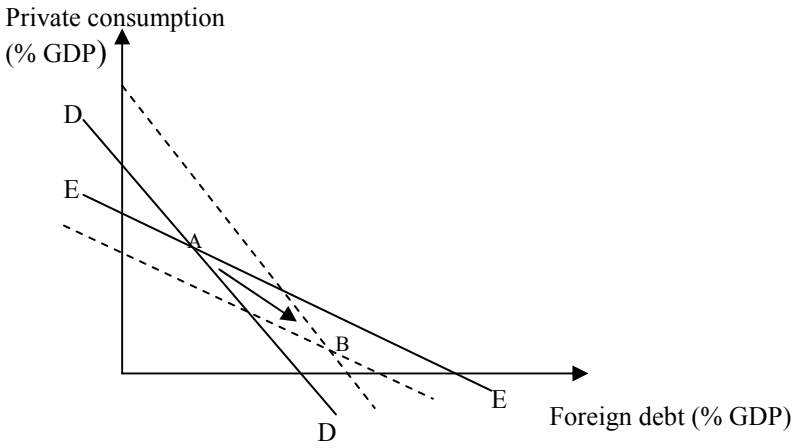
Figure 6: Private consumption and foreign debt



combinations of private consumption and foreign debt that maintain balance of payments, defined as a constant foreign debt/GDP ratio. The higher the foreign/debt to GDP ratio, given the share of public consumption, foreign transfers, the world real interest rate and the growth rate, the lower the share of private consumption consistent with balance of payments equilibrium. A higher foreign debt results in higher interest payments to the rest of the world, requiring higher domestic savings in the absence of new foreign borrowing. Equilibrium is determined by the intersection of *DD* and *EE*.

In the context of the above model, figure 7 shows the impact of a rise in government spending through increased public borrowing. The external constraint *EE* shifts down, as balance of payments equilibrium can only be achieved at lower levels of private consumption. The domestic constraint *DD* shifts up, as any level of private consumption can only be achieved at the expense of higher levels of foreign debt. Overall, an expansionary fiscal policy reduces private consumption and increases foreign debt (point *B*).

Figure 7: Private consumption and foreign debt



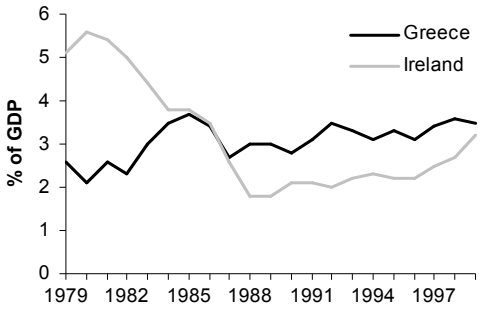
How does an influx of foreign transfers, as in the case of Greece and Ireland in the late 1980s, alter this picture? An inflow of funds from abroad causes the external constraint *EE* to shift upwards, allowing private consumption to rise by softening the balance of payments constraint. This 'softening effect' allows the government to sustain a loose fiscal policy while at the same time avoiding significant adjustments to private consumption through tax rises and corrections to the balance of payments.

Secondly, foreign transfers can have an indirect effect on fiscal policy through the substitution effect. Governments may potentially be able to partially replace public spending on infrastructure, training and other expenditures with EU funds, and thus ease the costs of lower public spending.[9] In the absence of transfers from abroad, a fiscal contraction would require a longer and more costly period of adjustment in terms of foregone investment and other types of spending. Barrett (1992) and others argue that the substitution of public spending with EU funds to retire national debt and reduce the tax burden can yield a higher rate of return than a corresponding increase in productive investment.

Taking the 'softening' and substitution effects into account, we can show how EU structural fund transfers have had different policy impacts in Greece and Ireland. As has already been discussed, Ireland did not face any persistent balance of payments problems in the 1980s, so that the 'softening' effect on the current account and its subsequent impact on fiscal policy was limited. On the other hand, the anticipation and subsequent realisation of higher EU structural aid after 1988 may have had a significant influence on fiscal policy through the substitution effect.

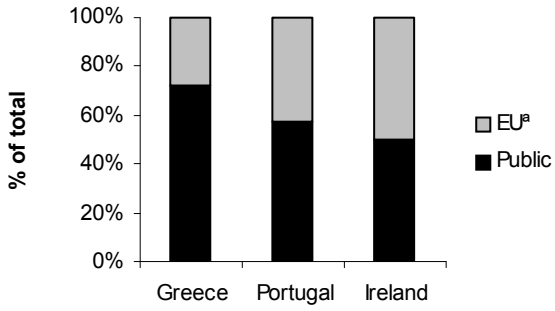
Figure 8 shows the evolution of public investment (the measure excludes structural fund expenditures) in Greece and Ireland, revealing a significant and permanent fall in public investment levels from 1987 onwards in the latter. In this context, the increase in structural fund aid in the late 1980s and 1990s was fortuitous in that it allowed the reinstatement of infrastructural projects that had been postponed or cancelled as part of the necessary fiscal contraction in Ireland (Barry 2002). More generally, it can be argued that EU funds permanently replaced a significant proportion of the Irish government's investment expenditure well into the 1990s. The magnitude of this after 1989 is reflected in the contribution of EU structural funds to total 'development-related' expenditure during the period of the first Community

Figure 9: Public and EU development-related expenditure, 1989-93



Source: Eurostat

Figure 8: Public gross fixed capital formation, 1979-99



Source: European Commission (1994), (1995a), (1995b)

[a]Includes EIB loans

Support Framework. The indicator is a broad measure of productive investment in member states, including public and EU-funded capital expenditures as well as some current expenditures in education and R&D. Figure 8 reveals that EU funds in Ireland in the early 1990s covered for more than half of development-related expenditure, the highest proportion among the small 'Objective 1' countries of the EU.[10]

The above analysis suggests that structural fund inflows had significant substitution effects on fiscal policy in Ireland, facilitating the government's commitment to fiscal consolidation. Giavazzi and Pagano (1991) have argued that the success of fiscal contraction in Ireland can be attributed to Ricardian effects, which resulted in increased aggregate demand and private investment in response to the government's commitment to reduce future expenditures. In this light, increased structural aid can be viewed as having provided significant credentials to government policy, by reducing the costs of fiscal consolidation. In combination to the beneficial exogenous shocks to the economy during the same period, buoyant world growth and falling world interest rates (Bradley et al. 1993), EU transfers contributed to the success of fiscal stabilisation, providing an important credibility and commitment-enhancing stimulus to government policy.

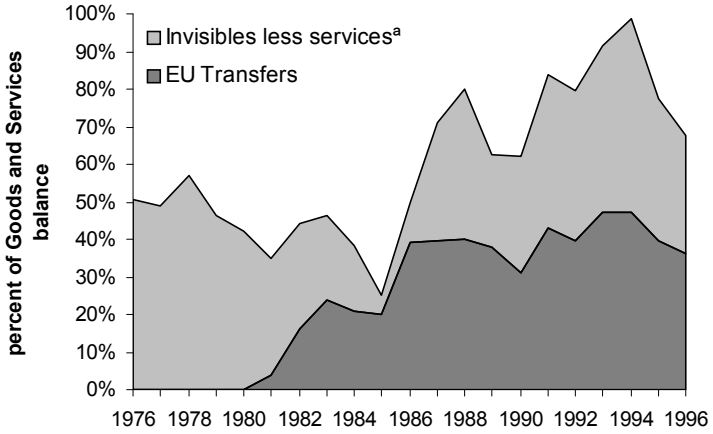
In contrast to Ireland, Greek public investment remained broadly constant from 1986 and well into the 1990s, indicating that the substitution effects of EU transfers were not as significant. If anything, it has been suggested that the increase in EU transfers may have resulted in higher public expenditures and an increase in the size of the public sector (Georgakopoulos et al. 1994: chap. 7). On the other hand, the 'softening effect' of EU funds on the external constraint seems to have been

particularly important for Greece. Figure 10 shows the increasing importance of EU transfers in financing the trade deficit in Greece.

The most important increases in EU transfers as a proportion of the goods and services balance, in 1986 and 1991 respectively, coincide with the influx of structural funds associated with the Integrated Mediterranean Programmes and the first CSF. By 1991, 40% of the balance of payments on goods and services was financed by EU transfers. The 'softening effect' of EU transfers arguably created a type of 'Dutch' disease in Greece, resulting in higher private consumption and lower net exports (Alogoskoufis 1995: 177; Georgakopoulos 2001: 9). The increase in funds coincided with a period of intense polarisation and populist tendencies in Greek politics, and internal political instability after 1989.[11] In such a situation, it became easier for successive governments to postpone fiscal stabilisation, while balance of payments adjustment could be avoided thanks to the softening effect of EU fund inflows on the external balance.

To sum up, the influx of EU transfers in Greece and Ireland in the late 1980s seems to have had a different effect on policy in the two countries. In Ireland, the expectation of higher structural funds provided a credibility-enhancing mechanism for the government's commitment to fiscal stabilisation, and allowed it to substitute public investment with structural funds in the 1990s. In Greece, the 'softening effect' of increased EU transfers on the country's external constraint gave consecutive governments leeway to delay necessary fiscal reform in the face of intense political battles at home. In sum, EU funds speeded up fiscal reform in Ireland, and slowed it down in Greece.

Figure 10: Financing of the goods and services balance of payments deficit in Greece, 1976-96



Source: Bank of Greece data

[a]Mainly immigrant remittances

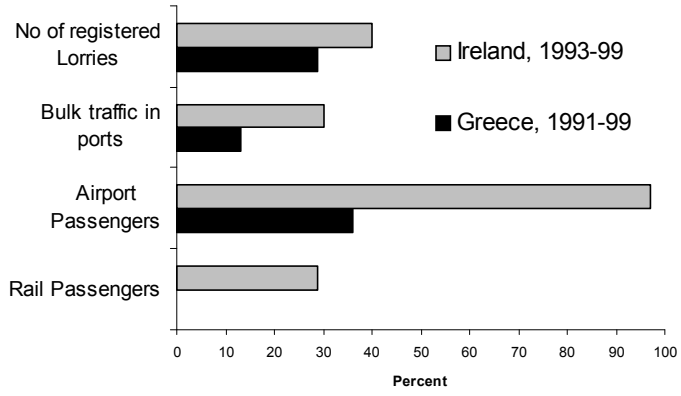
5. STRUCTURAL FUNDS AND SUPPLY-SIDE DEVELOPMENTS

We have seen how EU funds had a significant impact on fiscal policy, contributing to Ireland's successful fiscal stabilisation and Greece's continued macroeconomic difficulties in the 1990s. This section will look at how structural fund programmes interacted strongly and positively with other concurrent developments in the Irish economy – particularly the large inflow of FDI – allowing the funds to be more effectively channelled to productivity-enhancing physical and human capital investment. In contrast, the absence of an external as well as internal growth impetus in Greece meant that the economy was less able to leverage the benefits stemming from structural funds investments. In the subsequent analysis, investment in physical infrastructure, human resources and industrial development will be considered separately, as these are the main areas towards which structural fund investment in directed.

It is appropriate to first consider the effect of structural fund investment in physical infrastructure in Greece and Ireland in the mid-1980s, given the substantial infrastructural deficit relative to the core EU countries (Barry 2002). This justifies the large amounts of structural funds that were directed towards upgrading basic economic infrastructure, particularly in Greece. Focusing on transport, the direct effects of improved infrastructure – lower travel times and reduced transportation costs – have been substantial in the 1990s for both countries, and have been extensively documented in a number of reports (see, for instance, EC 1996). However, increased infrastructure investment occurred in Ireland at a time of rapid increases in demand for transport, resulting in additional timely benefits.

Figure 11 indicates the large increase in demand for air, rail, marine and road services, which was fortuitously accommodated by an expansion in transport capacity.

Figure 11: Increase in transport demand

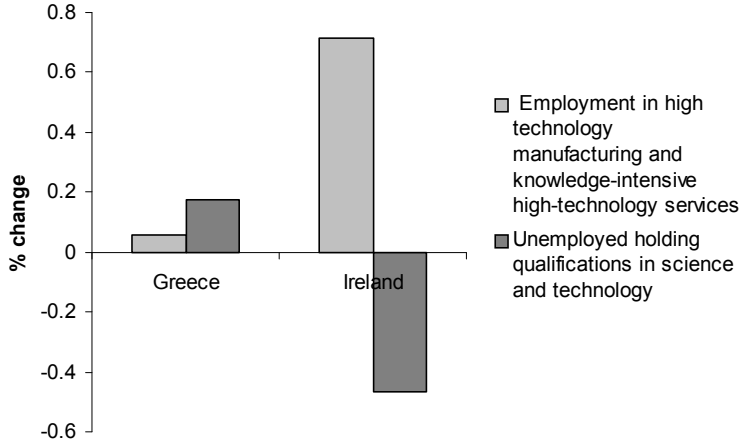


Source: Eurostat

The higher returns of improved transportation infrastructure were thus amplified by the crucial prevention of bottlenecks at a time of increased economic activity. While it is important to recognise that higher traffic levels may themselves be a result of improved infrastructure in both countries, the high and across-the-board increase of traffic in Ireland points to the significance of structural fund investment in accommodating an exogenously driven expansion in transport demand.

In the area of human capital, a similar picture emerges. The inflow of funds to promote human resource development in the 1990s coincided with increased demand for skilled labour in Ireland, particularly from foreign-owned industry. Figure 12 provides such an indication, with employment in technology-intensive business in Ireland rising by more than seventy percent over the period 1994-2003, against six percent in Greece and ten percent in the EU. Focusing on vocational training programmes, it is argued that as a result of direct demand from industry, structural fund-financed training schemes in Ireland more directly responded to industry needs, and were thus reasonably well targeted (EC 2003). In the case of Greece, extensive postponement and re-planning of programmed expenditures suggests that difficulties may have arisen at the design and implementation stages of many training programmes, which were developed in response to the availability of EU resources rather than to internal demand (EC 2002: 93). In separate studies on the impact of structural fund expenditures on the unemployed, it was found that only 33% of those participating in EU-funded training found a job in Greece after the completion of training (EC 2002: 262) compared to 50% in Ireland (Department of Enterprise: 122). Such a result suggests a lower return of human capital investment in Greece than

Figure 12: Cumulative change in employment and unemployment levels in technology and knowledge-intensive sectors sector, 1994-2003



Source: Eurostat

Ireland. Considering that investment in training can potentially have a high rate of depreciation (skills are forgotten if left unused), human capital expenditure in Greece may have led to a lower long-run increase in the stock of human capital than Ireland.[12]

Finally, an important component of EU aid is investment allocated to improving the competitive capacity of domestic industries. This is mainly in the form of subsidising R&D and other expenditures aimed at increasing the efficiency of domestic firms. In Ireland, the return on this type of investment may have been enhanced by the high levels of FDI that entered the economy in the 1990s. Foreign firms have historically shown higher rates of productivity, profitability and innovation than Ireland's indigenous firms (Barry 1999: chap. 3). Accordingly, Irish planning documents place a conspicuous emphasis on improving the linkages between indigenous and foreign-owned firms to aid the transfer of new skills, technology, and management knowledge (EC 1989: 11-13; EC 1994: 22). In spite of the substantial influx of FDI into Ireland, R&D expenditure by domestic firms has not fallen behind their foreign counterparts (Barry 1999: chap. 3), and increases in the level of technology have spread throughout the economy.

In Greece, although EU investment in industry has contributed to increased R&D activity and a substantial rise in labour productivity during the 1990s, there are ongoing concerns as to the lack of clear aims in industrial policy (EC 1996). This is particularly in relation to the manufacturing sector, where employment levels have been in decline since the mid-1980s, and to attracting foreign direct investment, which has been close to zero throughout the 1990s. As a result, structural fund aid has not been able to leverage the potentially significant benefits stemming from the inflow of innovation-intensive FDI in the domestic economy.

To sum up, EU expenditures prevented the appearance of bottlenecks in transport infrastructure and skilled labour in Ireland, accommodating foreign investment inflows. Through measures to promote indigenous industry, structural funds improved the competitive position of domestic firms internationally, and supported R&D spending throughout the economy. In contrast, the absence of a growth impetus in Greece meant that the returns to productive investment were lower. Funds in Greece interacted less dynamically with market needs, reducing the external returns on productive investment.

6. STRUCTURAL FUNDS AND INSTITUTIONAL INFRASTRUCTURE

So far we have seen how EU funds interacted with domestic economic developments in Greece and Ireland. However, EU structural funds programmes are planned and implemented through state bureaucracy, so that the quality of the domestic institutional infrastructure in Greece and Ireland plays a crucial importance in conditioning their effectiveness.

The quantitative estimates of section 3 suggest that cohesion policy had a potential to foster yearly GDP growth by 0.5 - 1% in both Greece and Ireland. This however says little about their actual impact, given that the models assess the beneficial effects assuming that investment plans had been implemented with equal efficiency and effectiveness (Bradley 2004). Therefore, we need to consider whether institutions in Greece and Ireland had a significant impact on the planning and implementation process of structural funds.

The importance of the quality of institutions in affecting growth performance is a recurrent theme in the international growth literature. In an extensive study, Ederveen et al. (2003) claim that structural funds are at best conditionally effective. Institutional conditions, it is argued, determine the type of project that is financed by means of the structural funds, and the efficiency with which this is done. In an attempt to conceptualise these ideas, they assume that the effectiveness of EU aid depends on the 'institutional quality' of the receiving country. Their econometric specification is an augmented form of the Mankiw, Romer and Weil (1992) formulation

$$g_{it} = c + \beta_1 y_{it} + \beta_2 ln(sk_{it}) + \beta_3 ln(sh_{it}) + \beta_4(n_i + g_A + \delta) + \beta_5 SF_{it} + \beta_6 COND_{it} SF_{it} + \varepsilon_{it}$$

where the dependent variable g_{it} is the average annual growth rate of real GDP per capita, and the explanatory variables are initial GDP per capita (y_{it}), the average gross domestic savings rate (sk_{it}), the rate of human capital accumulation (sh_{it}), the population growth rate (n_i), the exogenous rate of technological progress and the rate of depreciation ($g_A + \delta$, assumed equal to 0.05), the amount of Structural Funds as a fraction of GDP (SF_{it}), and $COND_i$, a conditionality factor capturing the institutional quality of the country.

In their estimation, Ederveen et al. (2003) find that structural funds only have a statistically significant and overall positive effect on growth when conditioned on $COND_{\text{it}}$. A number of proxies are used for this conditionality factor, including World Bank governance indicators, inflation, trade openness, corruption and trust variables.

All are found to be statistically significant only when interacting with structural fund aid, and are robust to the inclusion of country dummy variables. Table 4 reports the implied growth elasticity of structural funds, the increase in the growth rate in response to a 1% increase in the share of structural funds in GDP, derived from the authors' estimations.

The elasticities for Ireland indicate a contribution of structural funds to growth that is remarkably similar to the model simulation calculations in section 3, taking into account that the two methods follow a different approach. On the other hand, estimates for Greece suggest that structural funds contributions may have had a negative overall effect on growth, in tandem with the potentially negative effect of funds on the conduct of fiscal policy in the late 1980s.

The negative effect of institutional infrastructure on the efficient allocation of European funding is extensively recognised in the assessment of Greek structural fund programmes.[13] It is pointed out that the authorities assigned with the task of managing and monitoring the implementation of EU aid were unprepared in terms of human resources, legal tools and specialized know-how for the management of important investment projects. Planning and implementation deficiencies are particularly evident in the re-allocation of funds away from the major investments that were initially programmed in 1989-94, towards smaller, more easily-realisable projects.

Figure 13 reveals the extent of this re-allocation in the programming period of the first Community Support Framework. In Greece, thirty-seven percent of initial funding was allocated on investment in 'hard infrastructure', focused on eight main projects, a quarter of which was subsequently reallocated to regional projects. The negative effect of this reallocation on the returns to investment is a common theme in the literature, which stresses the particular problems associated with locally-

Table 4: Growth elasticity of structural funds conditional on quality of institutions

conditioning variable	institutional quality[a]	corruption[b]	openness to world economy[c]
Greece	-1.58	-1.56	-1.55
Portugal	-0.31	-0.31	-0.45
Spain	-0.16	0.08	-2.25
Ireland	0.24	0.44	0.93

Source: Ederveen et al. (2003).

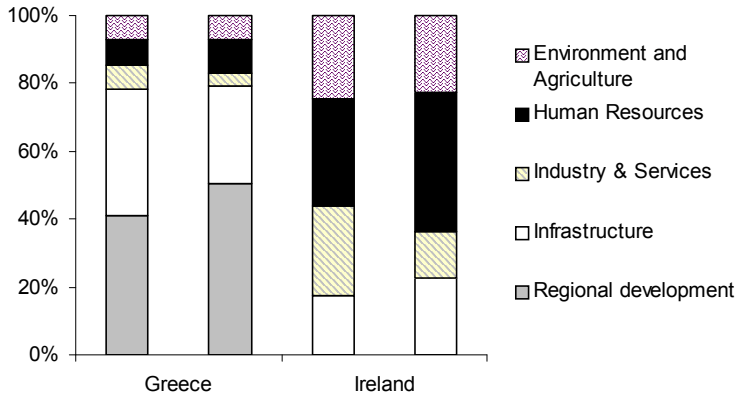
a: based on an indicator by Sachs and Warner (1995)
b: based on the corruption perception index by Transparency International
c: measured as sum of exports and imports as proportion of GDP

implemented structural fund investments (Rhodes 1995; IOBE 1995; Martin 1999). In particular, even though the implementation of funds has increased the role played by local authorities in running development programmes, there has not been enough co-ordination of the various locally based projects on the basis of long-term national development plans. This has been aggravated by poor relations between local and central government and phenomena of clientelism and patronage at the local level (Paraskevopoulos 2001: chap. 3).

Similarly to Greece, Ireland has a long history of state centralisation, with regional government having an even more limited role. However, structural funds in Ireland were not allocated on a regional basis, and local involvement in the drafting and implementation of EU funds was limited at best (Hooghe 1996: chap. 10). The potential problems associated with coordination and regional lobbying were hence alleviated. Regional considerations have only recently come to the fore in Ireland, and fund allocation since the late 1990s places more emphasis on assuring industrial dispersion across regions (Barry 2000: 13).

In spite of the institutional deficiencies outlined above, the proposition of a negative overall effect of EU funds in Greece is not in full accordance with other quantitative results. Bradley (2004) criticises the Ederveen et al. (2003) approach in that it posits a model where the only structural fund impact looked for is one on the growth rate. In most of the sample of EU countries and for most of the sample period 1960-95, the regional aid component was trivially small, and was unlikely to affect the growth rate. On the other hand, general equilibrium macroeconomic models (see

Figure 13: Planned (left column) and realised (right column) allocation of structural funds by type of investment, 1989-93 programming period



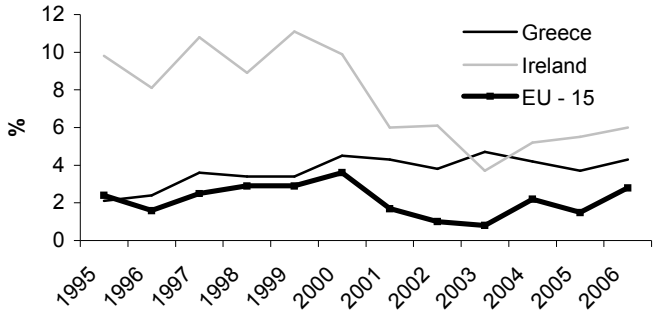
Source: KEPE (1997) for Greece and author's own calculations based on EC (1989) and EC (1994) for Ireland

section 3) posit a less stringent level effect on growth, and are more likely to capture the dynamic impact of structural fund allocation on each specific economy. In other econometric studies, Cappelen et al. (2003) use a cross-country time series panel data set, in a specification in which regional growth is modelled as a function of initial income levels, physical infrastructure, population density, industrial structure, long-term unemployment, R&D intensity and EU transfers. Structural funds are found to have a significant and positive effect overall, and in Greece and Ireland in particular, when country dummies are included. Solanes and Maria-Dolores (2001) find a similar result when testing for β-convergence, and including structural funds as an explanatory variable.

To conclude this section, it has been argued that the low quality of institutional infrastructure negatively influenced the effectiveness of EU funds in Greece. Broadly speaking, econometric studies present a less optimistic view of structural fund effectiveness compared to the macroeconomic simulation models presented in section 3. Hence, the econometric evidence suggests that the benefits of EU funds were not realised to their maximum potential. While this may be true to a significant extent, it should not be overlooked that structural funds positively interacted with domestic institutions during the 1990s, in a manner not identified through formal quantitative analysis. EU aid has had an important influence in boosting specific changes to policy and practices, in the form of new procedures and far-reaching measures that modernised organizational structures. Particularly in Greece, new legislation has been introduced over the course of the last decade, and new management units have been created, which continue their operation under the third CSF (EC 2002). At the local level, Paraskevopoulos (2001) further shows that the management of EU funds has improved institutional capacities, leading to significant improvements in local governance.

Figure 14 illustrates the pickup in growth in Greece in the second half of the 1990s, while World Bank governance indicators over 1996-2002 indicate that Greece has improved its position relative to the rest of the world in all six indicators.[14] The higher growth rates experienced in Greece since the mid-1990s, may therefore partly be a result of improved planning and implementation procedures of the structural funds, introduced through a 'learning by doing' process that began in the 1980s. The extent too which this process has taken place requires further investigation beyond the scope of the present analysis.

Figure 14: Growth rate of per capita GDP, 1995 – 2006



Source: Eurostat

7. CONCLUSION

This paper has shown that EU funds have had different impacts on the growth performances of Greece and Ireland. It has been argued that the effectiveness of structural funds in the late 1980s and 1990s cannot be assessed in isolation from concurrent developments in the Greek and Irish economies, as well as the quality of each country's institutions.

In the first place, structural fund investments have been designed and implemented in the political-economic context of short-term budgetary and monetary policy (Bradley 2004). In Greece, EU funds were increased at a time of political strife and instability. They gave government the room to delay necessary fiscal reforms by softening the external constraint of the economy. In Ireland, EU aid played the opposite role, by assisting the government to credibly commit itself to fiscal consolidation. Public investment funds were replaced by EU aid, allowing sustained levels of infrastructure investment at a time when the economy was benefiting from increased foreign direct investment inflows.

At the same time, the speeding up of growth that occurred in Ireland resulted in a higher return for structural fund investments. The funds prevented the occurrence of supply-side bottlenecks in the economy and the increased demand for human and physical capital channelled structural funds to effective use. Structural funds thus became part of a virtuous economic cycle. In contrast, Greek structural investment did not take place at a time of favourable conditions to growth. Weakness in the country's administrative and governance structures also lowered the potential benefits of structural investment, particularly in the 1989-93 period. A number of conclusions can be drawn from this analysis.

Firstly, it shows that structural funds are least efficient when they are most needed. A weak macroeconomic environment and institutional infrastructure reduces their effectiveness. Ederveen et al. (2003) suggest that structural funds should therefore be directed towards institution-building in the first place. In this respect, the institutional improvement and learning process initiated by structural fund inflows in the 1980s may have had a positive effect on growth rates is Greece in the second half of the 1990s.

Secondly, as Lolos (2001) points out, there should be an internal consistency of both macroeconomic and microeconomic policies in the recipient countries. These policies should be an integral part of structural fund implementation. At the macroeconomic level, accompanying policies should be directed towards the reduction of macroeconomic imbalances in order to promote macroeconomic stability. While this suggests that aid provision conditional on economic reform may increase its effectiveness, the solidarity principle and inter-governmental nature of the EU largely precludes such a method of allocation.

Interestingly, recent developments in Greece have demonstrated that the Maastricht criteria and Stability and Growth Pact for Economic and Monetary Union may have potentially functioned as an alternative commitment mechanism in the domestic macroeconomic policy-making process (Bosworth and Kollintzas 2001; Featherstone 2003). Since the mid-1990s, the Maastricht constraint has helped redefine the terms of domestic political debate and established benchmarks for fiscal discipline. Increased growth rates in Greece since the late 1990s may thus partly be a result of the emergence of positive interactions between high levels of structural fund investment, improved public finances and better institutional infrastructure, an issue worthy of further research.

Notes

[1] The term European Union (EU) is used to refer to the European Economic Community, the European Communities, and the European Union, except where historical clarity requires otherwise. Ireland joined the then European Communities in 1973, while Greece in 1981.
[2] The funds are the Regional Development Fund, the Social Fund, the Agricultural Guidance and Guarantee fund (Guidance section) and the Financial Instrument for Fisheries Guidance. The Cohesion Fund was established in 1992. These funds are distinct from the agricultural subsidies received under the Common Agricultural Policy.
[3] To date, there have been three CSFs: CSF I (1989-93), CSF II (1993-99) and the ongoing CSF III (2000-2006).
[4] This was replaced in the 1980s by a flat 10% rate on all manufactured goods.
[5] A survey can be found in Hall et al. (2001) and Ederveen et al. (2002).
[6] The multipliers over the 1994-99 period may underestimate the effect of structural funds on growth rates if the growth effects of the 1989-93 expenditures 'spill over' to the 94-99 period. Even so, the difference between fund-induced growth and the realised growth rates in Ireland in the 1990s remain too large to be accounted for through the effect of EU transfers.
[7] For an extensive analysis see Barry (1999).
[8] For an extensive analysis see Alogoskoufis (1995), Christodoulakis (1998: chap. 1) and Georgakopoulos (2001).
[9] The replacement of national funds with EU funds undermines the additional impact that cohesion policy can have on levels of investment in a member state. The EU recognises the danger since it requires 'additionality', i.e. co-funding of the Community Support Frameworks with national funds. In practice it is very difficult to avoid crowding out (see, for instance, Matthews 1994: chap. 6). Ederveen et al. (2002) estimate that on average, 1 euro of community aid crowds out 17 cents of public investment.
[10] Average annual development-related expenditure over 1989-93 was approximately 8.4, 8.3 and 5.1 percent of 1994 GDP in Greece, Portugal and Ireland respectively.
[11] The Pan-Hellenic Socialist movement (PASOK) won a landslide victory against the conservative New Democracy (ND) party in 1981. PASOK remained in power from 1981-89. After the reversal of the government's stabilisation programme in 1987, the 1988-89 period was marked by an expansionary policy in anticipation of the upcoming elections. Following the 1988 electoral reforms, which provided for proportional representation in parliament, three consecutive elections were held in 1989-90 amid intense political strife. The conservative New Democracy party finally managed to establish a slim majority of one deputy in March 1990. The party ruled until the collapse of its parliamentary majority in 1993 (for an overview see Lolos 1998; Christodoulakis 1998: chap. 1).
[12] The European Commission evaluation report over 1994-99 (2002: 213) conspicuously notes that Human Resources investment has failed to improve employability and reduce unemployment in Greece. IOBE (1995: 42) notes that structural fund investment in training over the 1990s may even have been undesirable, due to its distortionary effects on the labour market.
[14] For an overall assessment by the EU see for instance EC (2002). For a more detailed study of the role of regional governments see Paraskevopoulos (2001).
[16] On average, Greece rose from the 75th to 78th percentile in terms of the World Bank governance indicators world ranking, while Ireland's position remained constant at the 92nd percentile (author's own calculations).

Appendix

The model is from Alogoskoufis (1995) and Alogoskoufis and Christodoulakis (1990). A small open economy is assumed, whose firms are price takers in product and asset markets, and domestic prices and interest rates are set by the law of one price and uncovered interest parity respectively. Given a constant returns to scale in capital and labour production function, the dynamic constraints for this economy are given by:

$$\frac{dc_t}{dt} = (r^* - \rho + n - g_Y)c_t - n\rho(q\bar{A}^{-1} + b_t - f_t) \quad [1]$$

$$\frac{db_t}{dt} = (r^* - g_y)b_t + g_t - v_t \quad [2]$$

$$\frac{df_t}{dt} = (r^* - g_y)f_t + c_t + g_t + (g_y + d)\bar{A}^{-1} - 1 - e_t \quad [3]$$

where g_y is the rate of growth of output, r^* the world real interest rate, c_t is the share of private consumption to GDP, ρ the pure rate of time preference, n the rate of increase in households, b_t the ratio of public debt to GDP, f_t the ratio of foreign debt to GDP, $q\bar{A}^{-1}$ the equity capital to GDP ratio, g_t the ratio of government consumption to GDP, v_t the ratio of tax revenue to GDP, and e_t the ratio of foreign transfers to GDP.
In equilibrium,

$$\frac{dc_t}{dt} = \frac{db_t}{dt} = \frac{df_t}{dt} = 0 \quad [4]$$

and the government stabilises the ratio of public debt to GDP*:*

$$b = \frac{v - g}{r^* - g_y} \quad [5]$$

The constraints of section 3 are given by substituting [5] in [1], and setting both [1] and [3] equal to zero. This gives the domestic (DD) and external (EE) constraint respectively.

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[1] The term European Union (EU) is used to refer to the European Economic Community, the European Communities, and the European Union, except where historical clarity requires otherwise. Ireland joined the then European Communities in 1973, while Greece in 1981.
[2] The funds are the Regional Development Fund, the Social Fund, the Agricultural Guidance and Guarantee fund (Guidance section) and the Financial Instrument for Fisheries Guidance. The Cohesion Fund was established in 1992. These funds are distinct from the agricultural subsidies received under the Common Agricultural Policy.
[3] To date, there have been three CSFs: CSF I (1989-93), CSF II (1993-99) and the ongoing CSF III (2000-2006).
[4] This was replaced in the 1980s by a flat 10% rate on all manufactured goods.
[5] A survey can be found in Hall et al. (2001) and Ederveen et al. (2002).
[6] The multipliers over the 1994-99 period may underestimate the effect of structural funds on growth rates if the growth effects of the 1989-93 expenditures 'spill over' to the 94-99 period. Even so, the difference between fund-induced growth and the realised growth rates in Ireland in the 1990s remain too large to be accounted for through the effect of EU transfers.
[7] For an extensive analysis see Barry (1999).
[8] For an extensive analysis see Alogoskoufis (1995), Christodoulakis (1998: chap. 1) and Georgakopoulos (2001).
[9] The replacement of national funds with EU funds undermines the additional impact that cohesion policy can have on levels of investment in a member state. The EU recognises the danger since it requires 'additionality', i.e. co-funding of the Community Support Frameworks with national funds. In practice it is very difficult to avoid crowding out (see, for instance, Matthews 1994: chap. 6). Ederveen et al. (2002) estimate that on average, 1 euro of community aid crowds out 17 cents of public investment.
[10] Average annual development-related expenditure over 1989-93 was approximately 8.4, 8.3 and 5.1 percent of 1994 GDP in Greece, Portugal and Ireland respectively.
[11] The Pan-Hellenic Socialist movement (PASOK) won a landslide victory against the conservative New Democracy (ND) party in 1981. PASOK remained in power from 1981-89. After the reversal of the government's stabilisation programme in 1987, the 1988-89 period was marked by an expansionary policy in anticipation of the upcoming elections. Following the 1988 electoral reforms, which provided for proportional representation in parliament, three consecutive elections were held in 1989-90 amid intense political strife. The conservative New Democracy party finally managed to establish a slim majority of one deputy in March 1990. The party ruled until the collapse of its parliamentary majority in 1993, failing to carry through its stabilisation programme (for an overview see Lolos 1998; Christodoulakis 1998: chap. 1).
[12] The European Commission evaluation report over 1994-99 (2002: 213) conspicuously notes that Human Resources investment has failed to improve employability and reduce unemployment in Greece. IOBE (1995: 42) notes that structural fund investment in training over the 1990s may even have been undesirable, due to its distortionary effects on the labour market.
[13] For an overall assessment by the EU see for instance EC (2002). For a more detailed study of the role of regional governments see Paraskevopoulos (2001).
[14] On average, Greece rose from the 75th to 78th percentile in terms of the World Bank governance indicators world ranking, while Ireland's position remained constant at the 92nd percentile (author's own calculations).