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REGIONAL DISPARITIES IN GREECE AND THE PERFORMANCE OF CRETE, PELOPONNESE AND THESSALY

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Abstract

The paper reviews geographical, structural and institutional aspects of spatial development in Greece in the second half of the twentieth century by considering performance at the level of NUTS II and by comparing with other Objective 1 regions of the European Union in terms of income per capita, unemployment and their regional dispersion. It focuses on why Crete has done better than Thessaly, and on why Peloponnese is lagging behind. It examines the possible role of European economic integration in recent patterns of divergence of Greece and her regions from EU averages. The paper also considers institutions and policies of regional development since 1981 and reviews the performance of major European Union-supported efforts, such as Integrated Mediterranean Projects and Community Support Frameworks I and II.
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1. INTRODUCTION

Unequal spatial distribution of income and unequal personal distribution of income within countries continue to be important theoretical and practical issues, despite the significant progress of the world economy during the second half of this century. Although income per capita has increased in many countries at historically unprecedented rates, a number of countries and of regions within countries have failed to keep up. A large number of studies have contributed, over the last three to four decades, to the debate on the causes and consequences of regional inequalities.

Interest in spatial growth processes and inequalities has been renewed recently by several influential works by Barro and Sala-i-Martin and others on the trends of convergence or divergence across countries or regions, and by theoretical work by Krugman and others on geography and increasing returns and by Matsuyama on complementarities and cumulative processes in models of monopolistic competition.[1] The recent literature is concerned with balanced development and has important implications for regional or development policies. Noteworthy in this context is the argument advanced by Kaldor, namely that unequal regional development within a given country poses more serious intellectual challenges for policy than unequal development internationally [Kaldor (1970)]. Many empirical studies have found a significant decrease in the level of inequality, either at the world level or within the European Union, although reports of divergence are not entirely absent. Several studies[2] suggest that the existence of selective tendencies, convergence clubs [as in Quah (1996)], and asymmetric shocks in various economies have led to the persistence and exacerbation of spatial inequalities within the European Union.

A parallel literature has developed that examines in more detail the consequences of European economic integration -- i.e. the Single European Act and the Treaty of Maastricht -- on regional inequality. The majority of these studies predicted that the process of European integration would worsen existing regional inequalities. The reasons most frequently cited are location decisions of firms, geographic features and proximity of the various regions to major European markets, persistent differences in the structures of European economies, and existing differences in levels of technological and human capital development [CEC (1991), Amin et al. (1992), Camagni (1992), CEC (1993), Petrakos (2000)].

These views have had considerable influence with the European Commission, and have led to the formulation of intervention policies on a pan-European scale, such as the First and the Second Community Support Framework (CSF I and CSF II), and the European Community Initiatives [EC (1994)]. A recent report [EC (1999a)]

[1] See Barro and Sala-i-Martin (1991, 1992, 1995), Krugman (1991), Levine and Renelt (1992), Sala-i-Martin (1994), Quah (1996), Sala-i-Martin (1997) for cross-country studies and Abraham and van Rompuy (1995), Armstrong (1995), Molle and Boeckhout (1995) for studies between regions in the European Union. Matsuyama (1995a; 1995b) emphasize the importance of complementarities and propose models of monopolistic competition. Matsuyama (1996) studies the coexistence of rich and poor countries in an integrated world economy as “symmetry breaking” that is a stable outcome. Ioannides (1999) generalizes Matsuyama (1996) by introducing land, and Ioannides (1998) adapts the model in Matsuyama (1996) to a regional setting. Fujita, Krugman and Venables (1999) offers an integrated model of urban, regional and international development, where geography and product mix interact in subtle ways.

[2] Baumol (1986), Fagerberg and Verspagen (1995), Funke (1995), Chatterji and Dewhurst (1996)

suggests that inequalities across member states of the EU declined in the 1988-96 period, but that intra-national inequalities have intensified, as the gaps between the most developed centres and the less developed regions with respect to per capita income growth rates and levels of income per capita have widened. Thus, it is feared that European economic integration may have been associated with a reversal of the process of regional convergence found by several studies in the 1970s and the 1980s.

The present study sets out to contribute to the debate on the causes and underlying factors of regional inequality by providing evidence from Greece. Section 2 reviews the available regional inequalities literature for Greece and presents its main findings. Section 3 presents the main trends in key regional indicators, and Section 4 discusses our case study, which is based on a comparative analysis of the characteristics of the NUTS II regions of Crete, Peloponnese and Thessaly. Section 5 reviews the institutions for regional policy in Greece, and Section 6 presents the conclusions and policy implications of our study.

2. SPATIAL ECONOMIC STRUCTURE AND CHANGE IN GREECE: A REVIEW OF THE LITERATURE

The literature on regional development in Greece offers relatively few empirical investigations of the evolution of regional inequalities in relation to regional geographical features and to changes in regional productive structure. The effectiveness of spatial policies and the spatial consequences of increasing openness of the national economy are poorly understood. This section reviews the most recent studies and presents their main findings.

Greece's structural weaknesses and underdevelopment relative to the EU average qualify it as an Objective 1 Region (O1R). As a result, in discussing regional problems in Greece we are looking at cases of "double periphery", that is, analysing the structure, characteristics and performance of lagging regions within an economy that itself lags behind the EU average.

A. Greece in the EU: A Case of Convergence or Divergence?

Lyberaki (1993) and Petrakos and Pitelis (2000) have shown that Greece was converging towards the EU until the mid 1970s. It then started diverging in the 1980s, and remained so until the mid-1990s. The worse decade in terms of economic performance was the 1980s. During 1981-1990 the average GDP growth rate was 1.5% in Greece, and 2.4% in the EU. In that same period, Greece was the only EU country in which most development indicators are not simply worse than the EU average, but also worse than any other single member. As a result, GDP per capita in Greece as compared to EU declined. Relative GDP per capita (EU=100), measured in ECUs, increased in the 1960s, reaching its highest value in 1970 and decreased thereafter, with signs of stability in the mid-1990s and a trend reversal apparent in the late 1990s. In 1995, however, Greek GDP per capita in ECU's was equal to 45.4% of the EU average, a figure considerably lower than that of 1981 (52.8%), 1971 (58.2%) or even 1961 (49.1%).

Greece's poor performance is typically attributed to several factors. First, the Greek economy is characterised by a sectoral composition reminiscent of LDCs, that is, a high share of agriculture, and a low and declining share of industry in GDP. Greece stands out in this regard among all the other Southern European countries that are members of the EU.

Second, manufacturing is not only in decline but also concentrated in such traditional labour-intensive and light-industry sectors as food, textiles and clothing that in general characterise earlier stages of development. Those, however, are also sectors that seem to be shifting internationally towards LDCs, because of the significant labour cost advantages to be found there. This has put Greece under a double pressure. On the one hand, it is at a disadvantage in markets for modern manufactures compared to other highly industrialised EU countries, and on the other hand it is also at a disadvantage compared to low-wage countries in traditional markets for labour-intensive products. This double pressure, which emanates from increasing international competition, might have been an important factor in the decline of industrial activity in Greece and its concentration in inward-looking sectors.

Third, Greek manufacturing is dominated by very small (by international standards) production units [Petrakos and Zikos (1996)]. Over 93% of industrial firms are very small with less than 10 employees; the average size of firms has remained equal to 5 employees per firm, by far the lowest in Europe.That is in striking contrast with the countries of the European "core" (that is, Belgium, Denmark, France, Germany, Luxembourg, the Netherlands and the United Kingdom), which have an average firm size that ranges from 51 to 31 employees [Petrakos (1997a)]. Essentially, if one excludes public utilities, Greek industry is characterised by absence of large units and dominance of small ones. Its smaller enterprises with traditional organisation are at a disadvantage in exploiting economies of scale and thus suffer with respect to international competitiveness. Overall, the weak industrial structure and low international competitiveness of Greece is at the heart of the divergence of key Greek indicators from the EU averages in the 1980s. Other relatively less developed economies in the EU have had similar experiences. Although several O1Rs have experienced similar difficulties, Greece is the only member with an overall negative convergence record since joining the EU.

Several papers have blamed the differences in performance between Greece and the other Mediterranean EU countries on public public policy choices. Alogoskoufis (1993) attributes Greece’s sluggish performance to expansion of the public sector in the 1980s, arguing that accumulated deficits crowded out private investment. Lyberaki (1996) considers that the adoption of labour market regulation schemes such as wage indexation, collective bargaining and labour protection laws, especially in the 1980s, was responsible for increasing unit labour cost and for reducing flexibility at the firm level, during a time when the rest of Europe was deregulating. Finally, the anti-multinational corporation slogans and anti-EU rhetoric of the early 1980s may have also played a role, by discouraging foreign direct investment (FDI) in a period where domestic capital formation was declining.

Petrakos and Christodoulakis (1997) follow a different line of thought: they emphasise the impact of geography. They argue that Greece has had to cope, in the post WW II period, with a uniquely unfavourable situation not found elsewhere in

Europe. That is, Greece's location in Southeastern Europe placed it far away from major markets and major European market centres, but a lack of common borders made it physically isolated from other western European countries. Furthermore, as a result of the cold war, the country 's borders were real barriers to communication and trade with neighbouring countries.

These conditions contributed to severe distortions in the sphere of external economic relations, with serious long-term implications for the economic structure and performance of the country. Isolation and distance from the European core and other Western European countries implied, in general, limited access for its domestic products to large foreign markets. The absence of economic interaction with its neighbours generated serious disadvantages.

Recent theoretical and empirical research has drawn attention to the importance of geographical factors, such as adjacency and proximity, for international trade [Krugman (1991), Krugman and Venables (1995); Peschel (1990, 1992)], and economic development [Gallup et al. (1998)]. The "missing neighbours factor" in the trade relations of Greece played a key role limiting the country’s export markets and thus its potential for export-led growth [Petrakos (1997b), Sachs (1997)].

Distance from the more economically advanced countries of Western Europe may explain why Greece's trade took on an inter-industry character during a period of extraordinary expansion of intra-industry trade [Petrakos (1997b)]. Trade theory suggests [Gruber and Lloyd (1975), Greenway and Milner (1986, Grimwade (1989)] that countries trade more with their neighbours and that such trade usually takes an intra-industry character. The lack of trade relations with the other Balkan countries pushed Greece further towards specialising in inter-industry trade with the technologically more advanced western European countries. However, such trade worked rather unfavourably for the industrial development of the country. In that respect, the post-war border conditions of the country have generated a “missing factor” in trade relations. In addition, the small size of the country and its lack of accessible markets with a critical size meant that industrial firms could not benefit from economies of scale. This explains why the industrial base of the country became the most fragmented in Europe, a condition that exacerbated the structural problems of the economy and reduced competitiveness [Petrakos and Christodoulakis (1997)].

Overall, the existing literature seems to provide a number of explanations about the diverging performance of the Greek economy during the 1980s. Greece's performance has been affected by the handicap of unfavourable initial conditions related to the structure of the economy, by poor domestic policies, and (perhaps quite importantly) by the limitations of geography and the pre-1989 division of Europe into two political camps.

B. The Evolution and Determinants of Urban Structure in Greece

The basic characteristics of the Greek urban system are the dominance of the metropolis and the absence of medium size cities. The metropolitan region of Athens has doubled in size in three decades and now comprises nearly 40% of the national population, which is close to 11 million people. Thessaloniki comes second with

about 800 thousand inhabitants, while Patras, the third largest city of the country, has about 250 thousand inhabitants. There are another 3-4 cities with about 150 thousand inhabitants each, followed by several smaller cities typically serving as regional administration centres, with population ranging from 20 to 80 thousand inhabitants. Arguably, Greece is characterised by the most concentrated urban structure in Europe.

What factors have contributed to this highly skewed urban structure? Certainly, some of them are related to historically given 'initial conditions.' The gradual expansion of the Greek State from 1821 to 1945 through a series of independence wars has established Athens as the undisputed administrative centre. The influx of refugees and survivors of the 1922 war with Turkey, known among Greeks as "the Asia Minor Catastrophe," helped solidify the preeminence of Athens in terms of population, economic activity, culture and entrepreneurship. However, other factors have also played significant roles.

Petrakos and Tsoukalas (1999) have examined empirically a number of factors affecting spatial polarisation in the 1961-91 period. They found that the process of industrialisation has been partly responsible for urban concentration. Up until the mid 1970s, agglomeration economies in industry favoured the concentration of productive resources and population in the metropolis, while subsequently the emergence of diseconomies of agglomeration (primarily related to transport network congestion and pollution) favoured deconcentration. Although some industrial activity moved to the periphery in the 1970s and the 1980s, deconcentration never really took place. The reason is that the relative importance of industry in the economy declined in the 1980s and the rising tertiary sector of the economy exhibited a strong preference for location in the metropolis. Indeed, their evidence, which is not incompatible with experience in other European countries, shows that tertiary sector producer or consumer service activities enjoy strong urbanisation economies, generating new advantages for Athens and re-enforcing its dominance in the urban system. They also found that increasing urban concentration has been positively associated with GDP growth. This implies that an expansion cycle usually starts from the metropolis, while a recession cycle hits the metropolis harder than the periphery. Berry (1988) has made the point that the business cycle is associated with cycles of spatial concentration of activities. Irrespective of this explanation, this finding implies that the prospects of the Greek economy depend on conditions in the Athens metropolis. Petrakos and Tsoukalas also found that increases in spatial concentration have been associated with the country's deviation from democratic politics, which is reminiscent of findings by Barro (1997) with international data.

Petrakos et al. (2000) also examine the apparent acceleration in the development of smaller cities in Greece during the last decade. This would have been a most welcome development for the Greek urban system if faster growing smaller cities were evenly distributed in space. Their analysis shows, however, that the faster growing smaller cities are largely satellites of the metropolitan centres of Athens and Thessaloniki. As a result, the prospects for a more balanced development of the Greek system of urban centres are limited. Despite the increasing pressure of a rapidly internationalised economic environment, the Athens metropolis seems to maintain or even increase its dominance on the rest of the economy. The newest manifestation of this trend seems to be the tertiarization of the economy and the post-1995 economic boom. In contrast to the international experience of industrial specialisation of small and medium size

cities [Henderson (1986, 1993)], Greek cities exhibit limited industrial specialization and have similar shares of employment in manufacturing regardless of their size [Petrakos and Economou (1999)]. This is less of a paradox when we recognise that Greek manufacturing is mainly oriented towards local demand. Finally, while the continued primacy of Athens is of concern, the relative stability of the Greek urban system is not so surprising, even by the standards of developed countries as well. Researchers, including most recently Dobkins and Ioannides (2000), have drawn attention to remarkable persistence in the evolution of the city size distribution in the United States, where the urban system has undergone extensive spatial development, as well.

C. Regional Convergence-Divergence Trends and the Evolution of Regional Disparities

What is the evidence concerning regional trends in Greece? Petrakos and Saratsis (2000) have examined regional inequalities at the NUTS III level, on the basis of ó-convergence and conditional â-convergence analysis. They found that inequalities were reduced in the 1970s and the 1980s[3]. Giannias et al. (1997) also report a reduction of regional inequalities at the NUTS II level in the 1961-91 period using ó-convergence analysis for a number of welfare indicators. Michelis et al. (1996) provided similar evidence on the basis of ó-convergence and â-convergence analysis at the NUTS III level. On the contrary, Siriopoulos et al. (1997) and Siriopoulos and Asteriou (1998) found no evidence of convergence using again â-convergence analysis. These differences in results must be addressed.

Siriopoulos et al. (1997) estimate convergence regressions with the NUTS III (*nomoi*, that is, prefectures) data for 1981-1991, but report results that are at variance with those by Petrakos and Saratsis (2000). The differences between those two papers are probably due to the data used as indicator of welfare. Siriopoulos et al. (1997) used regional GDP data at the NUTS III level (provided by the National Statistical Service), while Petrakos and Saratsis (1999) refrained from using these data, because they are characterised by several anomalies. The most serious among them is that they fail to provide a plausible GDP per capita figure for Athens, which is ranked, according to those data, 12th in the list behind many other obviously less developed NUTS III regions. Petrakos and Saratsis (2000) chose instead to use a physical index of welfare[4]. Siriopoulos and Asteriou (1998) differs from the first in that it extends the time period to 1996 and performs the analysis at the NUTS II level. This choice leaves them with regressions with only 13 observations, which is a questionable statistical practice. That paper fails to find convergence trends in the 1981-1996 period.

A number of recent papers have examined other aspects of the Greek spatial structure and especially that of industry. Melachroinos and Spence (1997) noticed a sharp change taking place in the 1980s in terms of the geography of industrial development. The major industrial centres of the country seem to attract capital-intensive manufacturing activities, characterised by a greater expansion of output than of employment. Peripheral regions seem to attract labour-intensive activities that expand

[3] See Appendix A for a more detailed presentation of regional inequalities during this period.
[4] The index used is "household electricity consumption per capita". Other papers, e.g., Michelis et al. (1996), also use alternative measures of welfare, besides GDP per capita.

employment far more than output. Fotopoulos and Spence (1999) show that the spatial distribution of new manufacturing plant openings in Greece is affected by initial conditions related to high labour productivity, past growth performance, population density (which they interpret as indicating agglomeration economies), availability of skilled labour and public spending on infrastructure.

Petrakos and Saratsis (2000) have provided the most systematic analysis of the evolution of regional inequalities in Greece. Using regression analysis, they investigate the behaviour of regional inequalities during the business cycle. Petrakos and Tsoukalas (1999) test the hypothesis of positive correlation between regional inequalities and macro-economic performance, as proposed by Berry (1988). This hypothesis links rapid economic growth with increased regional inequalities and is reminiscent of the growth poles theory [Perroux (1970)] and of the cumulative causation theory of Myrdal (1957). Dunford (1993) presents evidence at the European level indicating that regional disparities tend to move countercyclically, by increasing during recessions and decreasing during expansions.

Petrakos and Saratsis (1999) estimate a regression model of the type:

$$\mathbf{ó}/\bar{x}_t = á_0 + á_1 g_{it} + å_t, \qquad (1)$$

where $\mathbf{ó}/\bar{x}_t$ is the coefficient of variation in the period t, and g_{it} is the rate of change of regional GDP of the prefecture in the previous period t-1. The regression was run with g_{it} assuming alternative lag structures for the rate of change of GDP, such as the arithmetic mean, MA(2), MA(3), and MA(4) in the periods t-1 and t-2, t-3, and t-4 respectively. They find a positive and significant value of the slope coefficient, which implies that regional inequalities in Greece – just like inequality in urban areas [Petrakos and Tsoukalas (1999)]– move procyclically. This implies that economic development in each cycle begins from the two major poles of concentration of economic activity, Athens and Thessaloniki. This intensifies inequalities since its spread to the rest of the country is by no means immediate. It also implies that in periods of recession the metropolitan regions are hit harder than the remaining regions of the country and inequalities are thus reduced.

These findings lend empirical support to the hypothesis that the decrease in regional disparities in Greece in recent years is due, at least to some extent, to a prolonged recession that hit the economy in the 1980s [EC (1995)]. Therefore, it is possible that the current phase of economic recovery will be accompanied by a noticeable expansion of regional inequality, since the evidence implies that recovery begins in the more advanced regions of the country. This finding provides empirical support to the hypothesis of Berry (1988), but is in variance with the evidence provided by Dunford (1993) and the established view of the European Commission [CEC (1991)] concerning the relation of regional inequalities to growth at the EU level.

Indeed, European-level evidence indicates that disparities tend to diminish in periods of strong economic expansion, while the findings for Greece tend to indicate the opposite. Given that the advanced countries of Western Europe dominate the EU in terms of population and GDP, a possible reconciliation of these two apparently contradictory findings could be the following. Economic expansion is more likely to lead to regional convergence in advanced countries with a spatially integrated

economic base, while it is more likely to lead to regional divergence in less advanced countries with strong spatial imbalances and a dual economic base. This shows that dealing with the problems of the less developed regions in Greece is a more difficult problem than initially understood, as the spatial fragmentation of the productive base does not allow for any significant spillover effects to take place.

Petrakos and Saratsis (2000) have also examined empirically the influence of several structural characteristics on the growth performance of the Greek NUTS III regions and the consequences of regional policies. They found that the prefectures with a stronger presence of manufacturing in 1981 did grow at faster rates during the period 1981-1991. The model also provided evidence that the prefectures with a relatively higher concentration of high quality human capital developed faster. This finding agrees with Michelis et al. (1996). In addition, that paper shows that prefectures hosting larger enterprises had smaller rates of the GDP per capita growth in the period 1981-1991. As such enterprises operate in larger, not just local markets, they find themselves competing with larger foreign enterprises. As a rule these units suffered consequences of the increased openness of the economy after 1981, following the accession of Greece into the EU, more intensely. Thus, the prefectures with a relatively greater number of large manufacturing units were relatively unfavourably affected by market internationalisation during the period 1981-1991.

They also report that the presence of tourist infrastructure is positively associated with regional economic growth. This result is of great importance for the development of regions which, for geographical or historical reasons, have so far failed to attract significant industrial activity. The availability of tourism resources throughout Greece suggests that tourism may function as a "centrifugal force" offsetting concentration in a few areas.

3. REGIONAL INEQUALITIES IN GREECE: RECENT TRENDS

It is generally believed that in recent years there has been an improvement in the welfare of residents of the Greek periphery. Disposable income has increased, and patterns and levels of consumption have, in several cases, approached those of the metropolitan regions. Internal migration has slowed, or has been restricted to just a few regions. This general impression emanates from the scholarly literature, which has also found convergence tendencies, at least in the 1970s and the 1980s. At this point, we turn to the most recent data that have become available for the 13 NUTS II Greek regions and examine the extent in which previous trends have persisted in the 1990s.

We carry our analysis with the use of a recent data set made available by the Sixth Periodic Report of the EC for the Situation of the EU regions [EC (1999a)]. This data set provides information on Gross Regional Product (GRP) per capita (in PPP terms) for each Greek region, as a share of the EU-15 average [see Table 1 and Figure 1]. Data are also available on average figures for Objective 1 Regions (O1Rs). We note that, throughout the 1988-1996 period, only two or three Greek regions have figures above the O1R average and the national GRP per capita. We also note that some regions have failed to improve their relative position with respect to the EU-15 average GRP per capita.

Table 1: Gross Regional Product (GRP) per Capita (PPP) by Region in Greece, 1988-96

	1988	*1989*	*1990*	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*
East Macedonia, Thrace	52	53	52	53	55	57	59	60	61
Central Macedonia	58	58	57	58	61	64	65	66	67
West Macedonia	63	63	61	61	59	60	60	61	62
Thessaly	54	57	54	56	56	58	60	61	63
Ipeiros	43	42	39	40	41	43	43	43	44
Ionian Islands	55	54	52	53	55	59	60	61	62
West Greece	48	50	48	50	51	55	56	57	58
Continental Greece	72	72	68	68	64	66	65	65	65
Peloponnese	58	57	55	56	56	57	58	58	58
Attiki	61	62	61	62	66	72	73	75	77
North Aegean	44	41	41	43	45	48	49	50	52
South Aegean	68	67	65	66	68	73	74	75	75
Crete	57	64	61	62	64	68	71	72	72
Greece	**58**	**59**	**57**	**58**	**60**	**64**	**65**	**66**	**68**
Objective 1 Regions	63	64	64	65	65	68	69	69	69
EU15	100	100	100	100	100	100	100	100	100

Source: Sixth Periodic Report on the Social and Economic Situation and Development of Regions in the European Union, 1999.

Figure 1: GRP per Capita (in PPS) in Objective 1 Regions (EU15=100), 1988-96

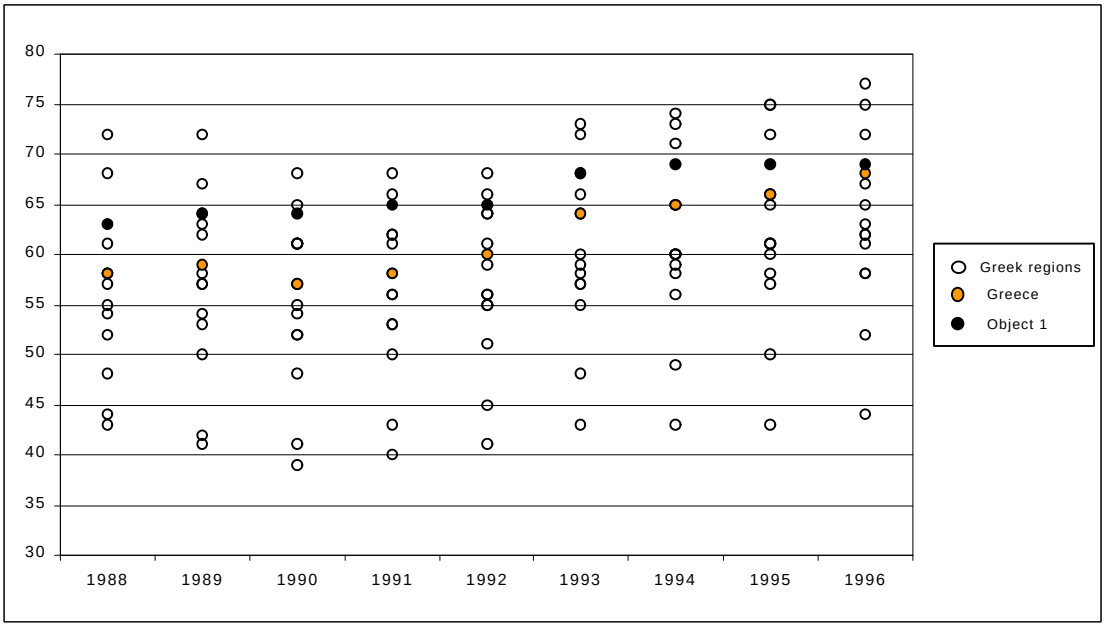
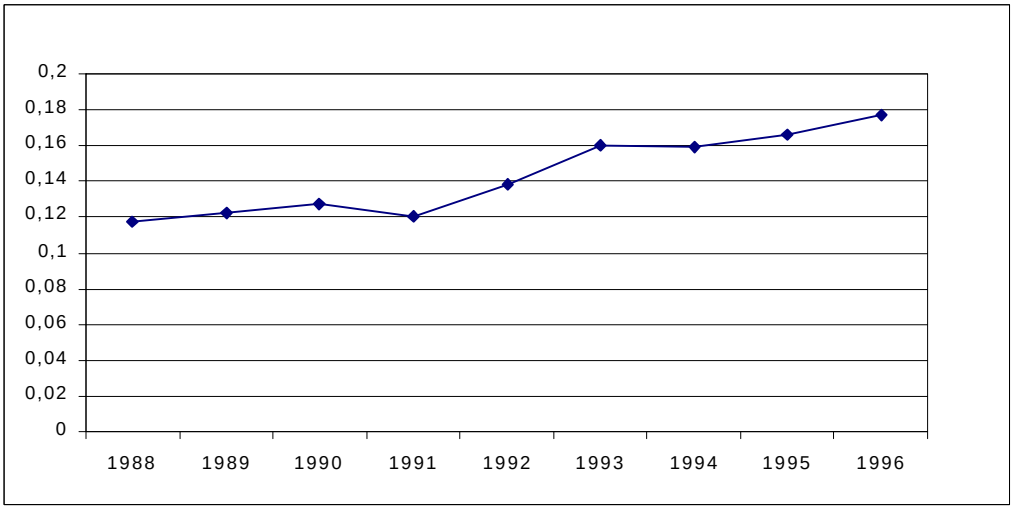


Figure 2 presents a measure of ó-convergence, that is the population-weighted coefficient of variation ($\mathbf{ó}/\bar{x}$) at the NUTS II level for the period 1988-96. We note that the overall trend is increasing. This indicates that earlier convergence patterns may have changed, and is in line with findings by Siriopoulos and Asteriou (1998). Those authors fitted a regression model like that of Barro and Sala-I-Martin (1991), for the 1981-1996 period, and found no evidence of convergence across Greek regions. Although their analysis is based on observations for the 13 NUTS II of Greece only, their findings taken together with our observation are consistent with a

structural change occurring at some point in the early 1990s, with respect to dispersion in growth performance across regions. This possibility has also been invoked by the European Commission as a trend that would threaten to offset the gains of convergence among EU states at the national level [EC (1999a)].

Figure 2: Population-weighted Coefficient of Variation of GRP in Greece



The evidence for Greece suggests that other forces may also be at work. During downturns of aggregate economic activity and while the Greek economy diverges from the EU, the prevailing trend at the regional level is convergence. During upturns and while the Greek economy converges to the EU, the prevailing trend at the regional level is divergence. To the extent that this finding were to receive firmer support in the future (possibly after data sets spanning a longer period and providing more frequent observations become available), it may show that regional disparities in Greece do move procyclically, with booms being associated with higher regional inequality. This is of course an old question in regional economics, but it is particularly interesting here for two reasons. First, Greece appears to differ from other EU countries. E.g., Dunford (1993) has shown that growth and diminishing regional disparities in the EU have gone hand-in-hand. Second, such a relationship introduces additional constraints and challenges for Greek policy makers.

Before we leave the subject of income inequality, it behooves us to stress that income per capita data that is aggregated at the regional level gives a very limited picture of personal income inequality. Unfortunately, no microeconomic data sets of sufficient detail and frequency are available in Greece as of now. In contrast, elsewhere in the EU, e.g. in Finland, it is possible to link microeconomic data with regionally aggregated data and thus obtain a very detailed picture of changes in the personal income distribution [Loikkanen et al. (1988)].

Table 2 and Figures 3 and 4 present regional unemployment data for Greece, for 1988-97. Several observations are in order. First, the unemployment rate in Greece has been, throughout this period, lower than that of the EU-15 average, but moved closer to it during the last few years. Second, all Greek regional figures are, in general, well below the O1Rs-average unemployment rate, while the Greek average rate is about 8 percentage points below the O1Rs average rate, throughout the period

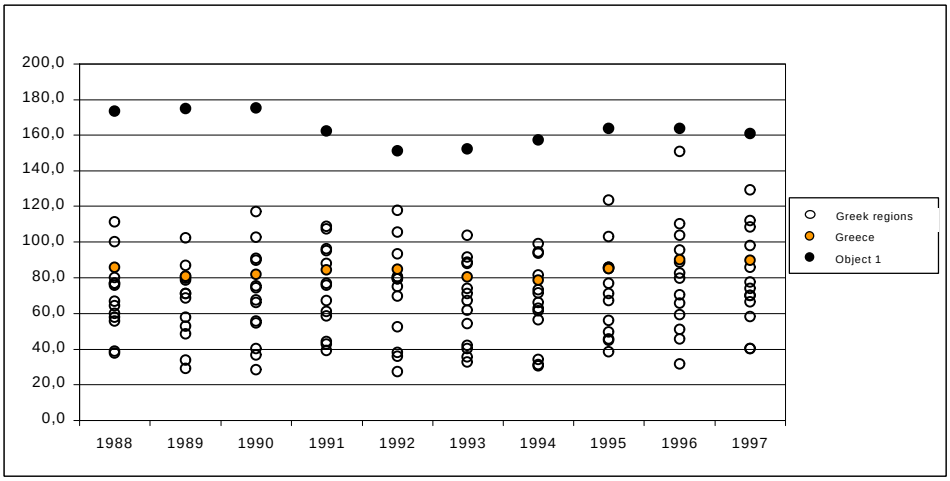
1988-1997. Third, the best performing regions have been the island regions of Crete, the Southern Aegean and the Ionian Islands. What those regions have in common is tourism as the main activity of the local economy. The picture for the worst performing regions is mixed. It includes Attiki (the Athens region) which is the largest and most developed region in the country, Continental Greece (a region adjacent to Attiki that has suffered from industrial decline), Ipeiros (a relatively backward, remote and economically stagnant region), and West Macedonia (a border region that suffered heavily from industrial decline). Fourth, as a comparison between Figures 3 and 4 suggests, regional dispersion of unemployment, as measured by the coefficient of variation, shows a downward trend but has moved somewhat out of synchronization with the national unemployment rate.

Table 2: Unemployment Rates by Region in Greece, 1988-97

	1988	*1989*	*1990*	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	1997
East Macedonia, Thrace	9.0	6.7	5.1	4.8	6.9	6.6	7.4	9.2	9.6	8.3
Central Macedonia	6.8	6.6	5.7	5.5	6.4	7.9	8.2	9.1	8.9	9.2
West Macedonia	6.0	5.7	9.0	7.2	7.4	9.8	9.1	13.2	16.3	13.8
Thessaly	6.9	6.5	7.0	6.2	7.3	7.2	6.9	7.6	7.6	7.5
Ipeiros	5.0	4.0	2.8	8.8	7.4	7.6	8.0	7.2	11.2	10.5
Ionian Islands	3.4	2.8	3.1	3.5	2.5	3.8	3.4	5.3	5.5	6.2
West Greece	7.2	7.2	6.9	7.8	8.6	9.4	10.5	8.2	8.6	7.9
Continental Greece	6.9	5.9	5.8	6.3	10.8	9.5	10.6	9.2	10.3	12.0
Peloponnese	5.8	4.8	5.2	5.0	7.3	5.8	6.3	6.0	6.4	7.5
Attiki	10.0	8.5	7.9	8.9	9.7	11.1	11.1	11.0	11.9	11.6
North Aegean	5.4	5.9	4.2	7.9	4.8	4.3	7.0	4.9	7.1	7.1
South Aegean	5.2	4.4	4.3	3.2	3.5	4.5	3.5	4.8	4.9	4.3
Crete	3.5	2.4	2.2	3.6	3.3	3.5	3.8	4.1	3.4	4.3
Greece	**7.7**	**6.7**	**6.3**	**6.9**	**7.8**	**8.6**	**8.8**	**9.1**	**9.7**	**9.6**
EU15	9.0	8.3	7.7	8.2	9.2	10.7	11.2	10.7	10.8	10.7
Objective 1 Regions	15.6	14.5	13.5	13.3	13.9	16.3	17.6	17.5	17.7	17.2

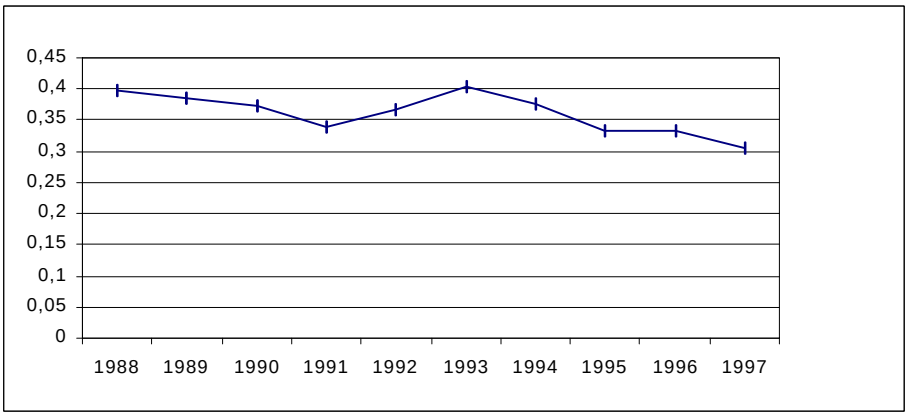
Source: Sixth Periodic Report on the Social and Economic Situation and Development of Regions in the European Union, 1999.

Figure 3: Unemployment Rates in Greece and O1Rs (EU15=100), 1988-1997



In general, the good news is that Greece continues to perform better in terms of unemployment than the average for O1Rs, in contrast to other EU countries, most notably Spain, especially Spain's South, and several industrially declining regions in Spain's West. In general, the good news is that Greece continues to perform better in terms of unemployment, in Spain's West. There are several factors that must be taken into consideration in interpreting the significance of Greece's better unemployment performance. To remind the reader of only a few, Greece has a low, by EU standards, labour force participation ratio, a high share of population that is still employed or underemployed in agriculture, and a dualistic industrial sector that offers opportunities for sporadic, irregular or part-time employment. As Greece modernises, it may experience higher unemployment rates. Regions that are especially likely to experience higher unemployment rates in the future are those with high agricultural employment and high shares of employment in vulnerable industrial sectors.

Figure 4: Coefficient of Variation of Unemployment in Greece, 1988-97



Understanding regional performance requires knowledge of the structural conditions of the regions. Table 3 and Figures 5-7 allow us to compare the basic structural characteristics across Greek regions, and to relate them to O1Rs and EU averages. They present the shares of primary, secondary and tertiary employment for each region in 1997. We observe that Greece, at the national level, has an agricultural employment share which is twice that of the O1Rs and four times that of the EU-15 averages. The share of manufacturing is 5 percentage points below that of O1Rs and 7 percentage points below that of the EU. The tertiary sector of Greece is also relatively less developed than that of the O1Rs and the EU.

Regarding regional characteristics, we note from Figure 5 that with the exception of Attiki, Central Macedonia (including Thessaloniki) and South Aegean (including the island of Rhodos), all other regions have shares of primary sector employment ranging from 25% to 45%. In general, the regional variation in employment shares is higher for the primary than the secondary and the tertiary sectors. Figure 6 shows that the regions with the highest shares in the secondary sector are Western Macedonia (a region with a heavy concentration of energy production), Central Macedonia (including Thessaloniki, the second largest Greek urban agglomeration), Sterea Ellada

(a region in the immediate proximity of Attiki) and Attiki. Figure 7 shows that the regions with the highest shares in the tertiary sector are the two metropolitan regions (which specialise in services) and the islands (which specialise in tourism).

Table 3: Sectoral Distribution of Employment by Region, 1997

	Employment (%)		
	Agriculture	Industry	Services
East Macedonia, Thrace	40.0	17.8	42.2
Central Macedonia	19.6	25.6	54.9
West Macedonia	23.3	33.0	43.7
Thessaly	38.7	17.5	43.8
Ipeiros	30.6	20.4	50.0
Ionian Islands	26.7	16.0	57.3
West Greece	41.6	17.6	40.8
Continental Greece	31.7	27.3	41.0
Peloponnese	43.5	16.9	39.6
Attiki	1.0	25.3	73.8
North Aegean	23.6	20.0	56.4
South Aegean	10.2	20.4	69.4
Crete	37.9	12.3	49.8
Greece	19.9	22.5	57.7
EU15	5.0	29.5	65.6
Object 1	10.8	27.5	61.7

Source: Sixth Periodic Report on the Social and Economic Situation and Development of Regions in the European Union, 1999

Figure 5: Share of Primary Sector in Total Employment by Region, 1997

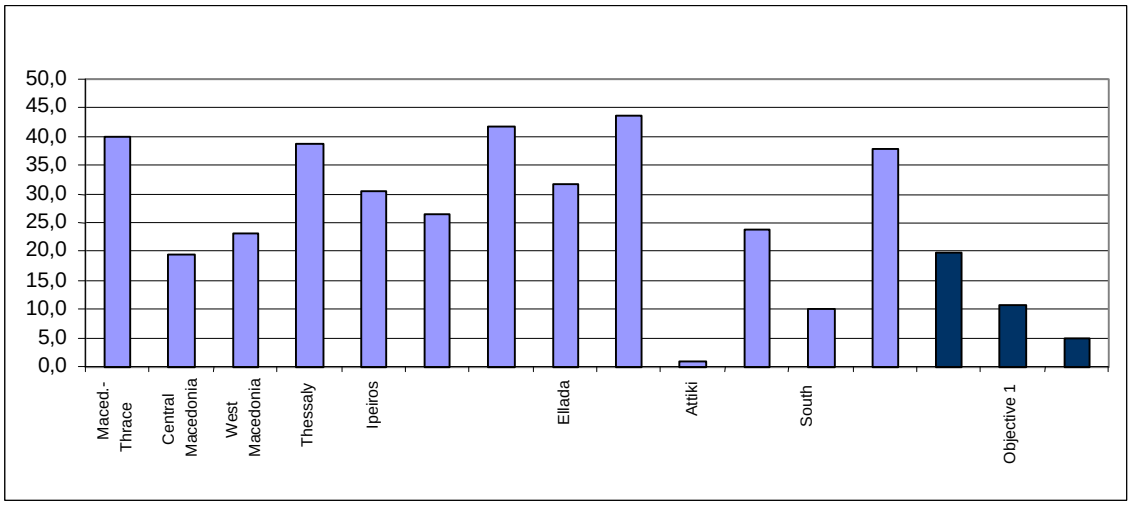


Figure 6: Share of Secondary Sector in Total Employment by Region, 1997

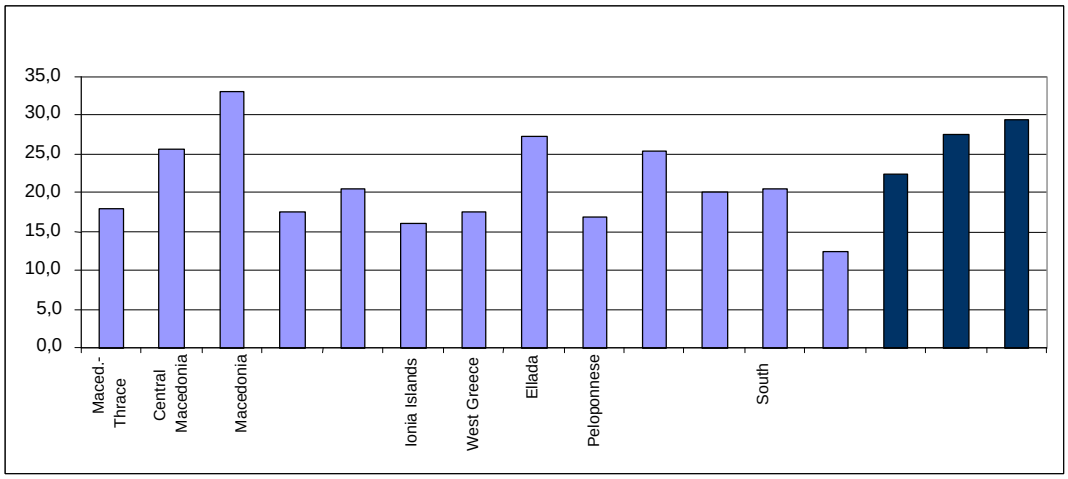
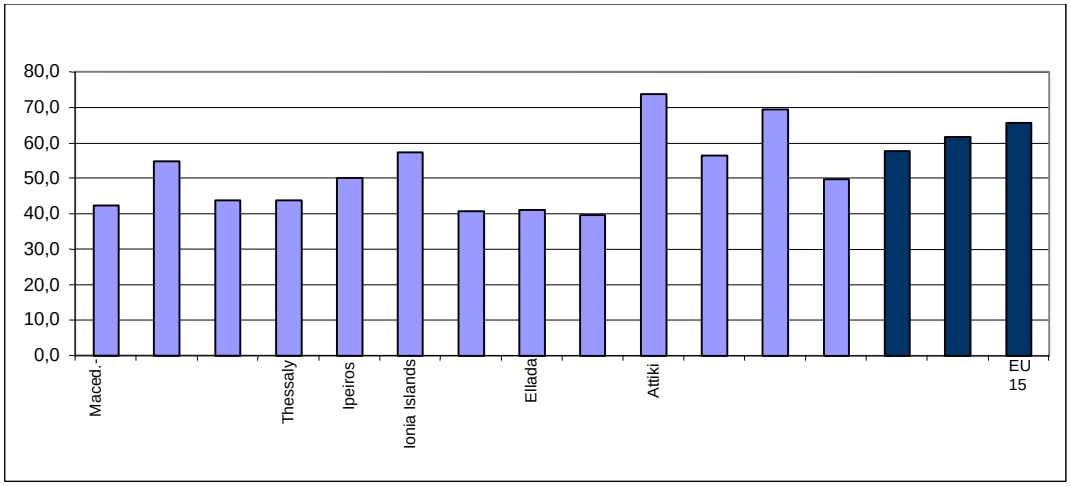


Figure 7: Share of Tertiary Sector in Total Employment by Region, 1997



4. REGIONAL ECONOMIC PERFORMANCE IN GREECE: EVIDENCE FROM THE NUTS II REGIONS OF CRETE, PELOPONNESE AND THESSALY

This section focuses on three Greek NUTS II regions with important economic, structural and geographical differences, that have been chosen as the focus of our analysis: Thessaly, which is a centrally located region; Peloponnese, which is the southern most part of the Greek mainland; and Crete, which is an island (Map 1). Crete is included in our analysis because of its superior economic performance, Thessaly because of its undergoing structural change, and Peloponnese because of its relative backwardness and recent stagnation.[5]

[5] We avoided extreme cases of success (such as the metropolitan region of Attiki) and of failure (such as the region of Ipiros), as the factors behind success and failure are rather obvious, in those particular cases. Success in Attiki is mainly related to the process of tertiarization of the economy, while failure

Map 1. The Regions of Greece

We proceed with our analysis as follows. In this section we present and discuss basic indicators of structure and performance. In Section 5 we turn to description of the institutional framework of regional policy and to a review of special assistance programmes of regional development.

A. Comparative Performance Analysis

Figure 8 (which is based on Table 1B in Appendix B) plots the relative to EU-15 GDP per head data (in PPP) for Thessaly, Peloponnese and Crete and compare them with other Greek and O1Rs regions figures for the 1988-96 period. We note the following. First, for the entire period, Thessaly and Peloponnese are below, while Crete is above, the Greek GDP per capita figure. Second, during 1988-96, Thessaly has improved its relative performance by 7 percentage points, Peloponnese has remained roughly at the same level, and Crete has increased its performance by 15 percentage points. Greece has improved its performance by 10 percentage points and O1Rs by 6 percentage points. Crete has made noticeable progress, having started in 1988 below the national average and having ended in 1996 above the national average. Thessaly has also made progress as it reduced its distance from the EU average (by 7 points) and the O1Rs average (by 1 point), but not the Greek average (where the difference increased from 4 to 7 points). In contrast, Peloponnese has made no progress. It has remained at 58 percent of the EU average, and its position has as a result deteriorated in comparison with the Greek (by 10 points) and the O1Rs (by 11 points) averages.

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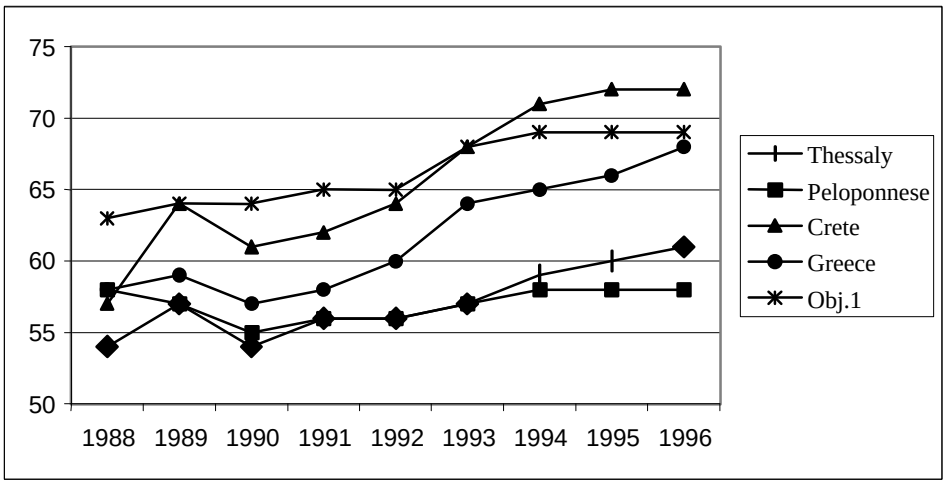
in Ipiros is related to remoteness and isolation caused by territorial morphology and poor transportation infrastructure. We note also that Peloponnese as a NUTS II region excludes the Prefecture of Achaia, which occupies Peloponnese's northwestern corner and historically belongs to it.

Third, Crete is the only one of the three Greek regions, under study here, that performs better than the O1Rs average after 1993.

Figure 8: GDP per Capita (in PPP) in Objective 1 Regions, 1988-96



In sum, Crete has improved its position with respect to EU, O1Rs and national averages, Thessaly has improved its position with respect to EU and O1Rs averages, but not the national average, and Peloponnese has deteriorated with respect to Greek and O1Rs average, but not the EU average.

Figure 9: Unemployment Rates in Selected Greek and Objective 1 regions, 1988-97

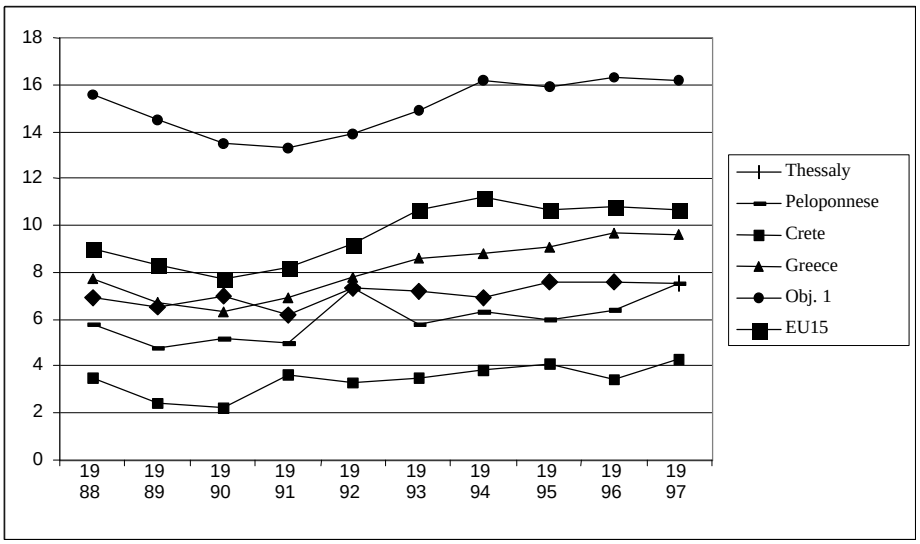
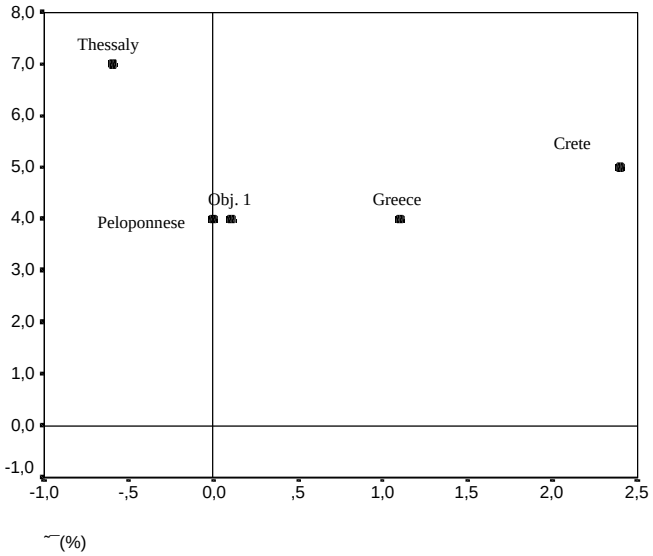


Figure 9 (based on Table 2B in Appendix B) is similar to Figure 3 and presents unemployment data for the three regions under study, all of Greece, O1Rs and the EU. Unemployment is not only, in and of itself, an important indicator of economic performance. Its behaviour during rapid economic growth often reflects changes in frictional unemployment associated with labour-saving restructuring processes that cause serious social and economic problems. Therefore, regions that have managed to grow and at the same time maintain low unemployment are clearly noteworthy.

Figure 9 shows that the regions under study have by far lower unemployment rates than the O1Rs and lower unemployment rates than the EU. Among the three regions, Thessaly has the highest unemployment figure, perhaps because of severe decline of its industrial base during 1988-97. Peloponnese has lower rates, but close to those of Thessaly's, and Crete has consistently lower, and generally stable, unemployment rates throughout the period.

Figures 10 and 11 (based on Table 3B in Appendix B) offer a comparative analysis of productivity and employment growth of the three regions, Greece, and O1Rs, for the periods 1988-93 and 1993-97, respectively. Productivity changes are in relation to EU average, while employment changes are in percentage terms. Following Camagni (1993), we can link the first quadrant of figures 10 and 11 with a relative "virtuous economic cycle", as relative productivity growth is associated with employment growth. The second quadrant may be interpreted as "assisted development," as employment growth is associated with a relative decline in productivity. The third quadrant may indicate a relative "vicious economic cycle", as declines in productivity are associated with employment cuts. Finally, the fourth quadrant may be interpreted as "economic restructuring", as employment cuts lead to relative productivity growth.

Figure 10: Productivity and Employment Change, 1988-93

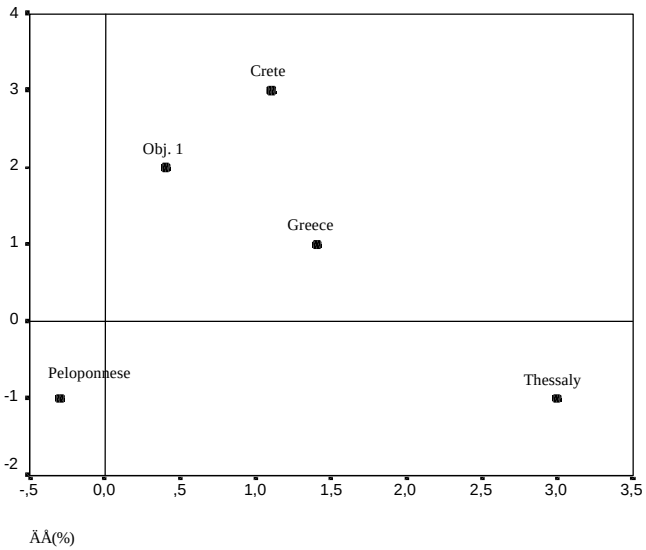


We observe from Figure 10 that during 1988-93, Greece, O1Rs and Crete combined positive relative productivity changes with positive employment changes. Thessaly combined positive relative productivity growth with negative employment growth, while Peloponnese is at the margin, combining positive growth with zero employment growth. Obviously, Crete is in an enviable situation, relative to all of Greece, O1Rs and Peloponnese, in that it combines higher relative productivity growth and higher employment change.

During 1993-97, Figure 11, the picture changes considerably. Crete continues to do better than O1Rs, but does not dominate Greece. The other two regions have switched quadrants. Thessaly has moved from the "restructuring" phase to the "assisted development" phase, possibly thanks to the policies aimed at combating rising

unemployment in industrially declining areas. On the other hand, Peloponnese has moved to the "vicious cycle" quadrant, experiencing a deterioration of its position in relative terms.

Figure 11: Productivity and employment change, 1993-97



Overall, Crete clearly stands out because of its performance. Thessaly follows it from some distance, while Peloponnese is the region with the most problematic performance. Below we attempt to account for these differences.

B. Population, Morphology and Geography

The NUTS II regions under examination are relatively small by EU standards. As Table 4 shows, Thessaly is the largest of the three regions, with a population of 742 thousand people in 1997, followed by Peloponnese, with 670 thousand, and by Crete, with 560 thousand people. In terms of population growth during the 1981-90 period, Crete ranks first, and is followed by Thessaly. Both those regions have growth rates above the national average. The population of Peloponnese has grown during this period at a rate that is lower than the national average.

Table 4: Population: Greece vs. three Regions, 1981-97

	Thessaly	Peloponnese	Crete	Greece
		inhabitants		
1981	695,654	577,030	502,165	9,738,945
1991	734,846	607,428	540,054	10,259,900
1997*	742.254	670.976	560.289	10.486.595
		Population change		
1981-90	5.0	3.1	6.6	4.3

* Estimate

Source: National Statistical Service of Greece, Regional Statistics.

Table 5: Regional Distribution of Population with Post-secondary Education, 1971-1991

Regions	1971	%	1981	%	1991	%
Crete	7396	3.56	9858	3.06	29949	4.27
Thessaly	9252	4.45	13204	4.10	40616	5.80
Peloponnese	8952	4.31	11747	3.65	30301	4.32
Attiki	112348	45.13	185919	57.77	328801	46.98
Greece	207524	100.00	321819	100.00	699829	100.00

Source: National Statistical Service of Greece, Regional Statistics.

Table 6: Percentage of Regional Population with Post-secondary Education, 1971-1991

Regions	1971	1981	1991
Crete	1.62	1.96	5.57
Thessaly	1.40	1.90	5.54
Peloponnese	1.54	2.04	5.03
Attiki	4.02	5.52	9.34
Greece	2.37	3.30	6.86

Source: National Statistical Service of Greece, Regional Statistics.

Tables 5 and 6 present the regional distribution of population with post-secondary education. All three regions have shares of individuals with post-secondary education well below that of Attiki, which accounted in 1991 for 47% of the national population with post-secondary education. Although the three regions under examination have similar shares, Crete and Thessaly seem to have a slightly greater share of educated population (and labour force) than Peloponnese (Table 6). Moreover, while Crete and Thessaly have increased, in the 1971-91 period, their share in the national population with post-secondary education, Peloponnese has not (Table 5). Overall, Tables 5 and 6 indicate a highly unequal regional distribution of human capital, as measured by presence of individuals with post-secondary education, with Attiki's dominating the three regions. The three regions under examination have had different rates of success in maintaining (or attracting) high quality human resources. This observation takes into consideration the fact that a substantial proportion of university graduates work for the public sector, including state-owned enterprises, which is highly centralised in Athens.

Table 7 shows that all three regions under study are characterised by a relatively low, by Greek and EU standards, rates of urbanisation. The urban population as a share of the total ranges from 35% to 44%, with the EU average at about 70%, suggesting possibly little scope for local agglomeration economies. Rural population is still higher than the urban one in Peloponnese and Crete, and urban population has grown relatively slowly during the last two decades.

Table 7: Urban vs. Rural Distribution of Population, 1971-91

		urban	semi-urban	rural
Thessaly	1971	35.8	15.8	48.4
	1991	43.6	16.4	40.0
Peloponnese	1971	29.8	12.4	57.8
	1991	35.9	14.6	49.5
Crete	1971	33.5	10.7	55.8
	1991	41.5	12.3	46.2
Greece	1971	53.2	11.7	35.1
	1991	58.8	12.8	28.4

Source: National Statistical Service of Greece, Regional Statistics.

Table 8: Share of population Living in Plains, Semi-mountainous and Mountainous Areas

		plain	semi-mountainous.	mountainous
Thessaly	1971	67.9	13.2	18.9
	1991	72.8	12.3	14.9
Peloponnese	1971	59.5	22.3	18.2
	1991	64.3	19.6	16.1
Crete	1971	58.3	19.8	21.9
	1991	64.2	18.7	17.1
Greece	1971	67.7	20.3	12.0
	1991	69.0	21.8	9.2

Source: National Statistical Service of Greece, Regional Statistics.

Tables 8 and 9 present the distribution of regional area and population in plains, semi-mountainous and mountainous areas. Clearly, Table 8 shows that the population has moved over time to the plains in all regions. Despite that, semi-mountainous and mountainous areas still maintain a significant share of the population, which to some extent explains the importance of agriculture in all those regions. Among the three regions, Thessaly has the highest share of population living in plains, while Crete has the higher share of population living in mountainous areas. As Table 9 shows, the share of mountainous land is very high in all regions. In Peloponnese, 80 percent of the land is mountainous and semi-mountainous, and the figure for Crete is 77 percent. Thessaly is in a relatively better situation with 37 percent of land being in plains.

Two more characteristics concerning the spatial distribution of economic activity within the three regions deserve mention. First, the urban systems in each of those regions differ considerably. Thessaly has two relatively large urban centres of about 150 thousand people each (the 5^{th} and 6^{th} in the national ranking) and two smaller cities with about 50 and 30 thousand each, respectively. Several towns of about 10 thousand each make up the remainder of its urban system.

Table 9: Share of Land Characterised as Plains, Semi-mountainous and Mountainous

	Plain	Semi-mountainous	Mountainous
Peloponnese	19.9	30.0	50.0
Thessaly	37.0	17.4	45.6
Crete	22.7	27.9	49.4
Greece	28.7	29.0	42.3

Source: National Statistical Service of Greece, Regional Statistics.

Peloponnese lacks an urban centre of size comparable to that of Thessaly's. Its largest city has no more than 50 thousand people (15th in the national rank), while there are another 4 cities with populations ranging from 10 to 30 thousand. Most of its population lives in very small cities and villages. Crete falls somewhere between Thessaly and Peloponnese. It has a large urban centre of about 150 thousand (the 4th in the national rank), a second with a population of about 60 thousand, and 2-3 more with populations ranging from 10-25 thousand people. The rest of the population lives in very small cities or villages. Low rates of urbanisation and few relatively large cities have -- as we have already seen -- consequences for the composition of human capital.

The second noteworthy spatial feature is that Thessaly and Peloponnese are characterised by geographical divides. Crete has a relatively more balanced structure. In Thessaly, the eastern part is more urbanised, more industrialised and more developed. The western part is more mountainous, rural, less industrialised and less developed. The two largest urban centres are in the eastern part. The northern part of Peloponnese, which is close to Athens, is more developed, industrialised and densely populated. The central and southern parts are more rural, and less developed. The more urbanised part of the region is in a short distance from Athens and in many respects a satellite.

A final comment concerns the distance of the three regions from the major economic centres of the country and from international markets. Peloponnese is closest to Athens (the largest national market) than the other two regions. Especially its northern and most developed part could be considered to be at an advantage with respect to proximity to markets. Several industries from Attiki have crossed the regional border and located in the northern part of Peloponnese in order to combine benefits of investment incentives (which are not available in Athens) with a short distance to the metropolis. This prompts two remarks. First, proximity and differences in productive structures have produced a centre-periphery pattern, where Athens successfully invades and exploits the local market of the most urbanised part of the region. Second, the region is far from international markets, as all transportation routes must cross either Italy or the Balkans to reach Western European markets. The existence in the southern part of the region of a civilian airport with regular flights to Athens has not so far worked out as a major transport link. It is therefore likely that Peloponnese stands to benefit from the PATHE Project, a new highway link from Patras to the country's northern border.

Thessaly lies in the middle of Greece. Depending on where one starts from, it is about 3-4 driving hours away from Athens and 2-3 hours away from Thessaloniki. These distances may have exceeded a threshold, allowing the development of two large urban centres and a significant industrial base. The eastern part of Thessaly is crossed by the main north-south national highway, providing relatively good access to the large markets of Athens and Thessaloniki. Access to the western and northwestern part of Greece, however, is limited due to poor east-west transportation links, and a mountain range separating eastern from western Greece. Another disadvantage of the region is that despite its size, urban population and export potential, it lacks a major airport.

Crete is an island quite isolated from the mainland. This has, on the one hand, led to a relative autonomy of its regional market and, on the other, prompted an early search for policies to overcome isolation. As a result, in addition to an effective system of sea links with Athens, Thessaloniki and other major islands, Crete already has two airports with scheduled domestic and international passenger and cargo flights, and numerous international charter flights during the tourist season. Exporters of agricultural products use air freight with an increasing frequency. Therefore, Crete has found ways to overcome considerably its distance from the mainland, and to improve its access to major domestic and international markets. The two airports have facilitated, along with a more favourable climate permitting an extended tourist season from May to October, the rapid development of international tourism, the main economic activity of the island.

Overall, geography, morphology and transport infrastructure have affected in different ways the three regions. Geography would seem to confer Peloponnese an advantage with respect to the Athens metropolitan market, and Thessaly an advantage in the sense of being a central place in Greece. Territorial morphology and poor transport infrastructure, however, limit these advantages for the southern part of Peloponnese and the western part of Thessaly, those regions' less developed areas. Nonetheless, Crete seems to have developed effective transportation links and thus has overcome its geographic isolation.

Several studies have utilised the concepts of population potential and gravity index to examine the spatial structure of Greece. Using the MNE (1993) figures at the prefecture level for 1888 and computing regional averages, we find that Thessaly has a gravity index figure that is about 25% higher than that of Peloponnese and about 55% higher than that of Crete.

C. Sectoral Analysis

Table 10 presents the structure of the economy of the three regions by sector in 1997. The figures for Greece, O1Rs and the EU are also reported. We observe that all three regions have a greater share of employment in agriculture and a lower share of employment in industry and services than the Greek, the O1Rs and the EU averages. Peloponnese has the greatest dependence on agriculture and Crete has the highest share of employment in services.

Table 11 reports the number of industrial firms and their turnover in 1994 for the three regions. We note that Thessaly has by far the largest industrial base, followed by Crete. Thessaly has also the largest average firm size estimated by turnover per firm. Peloponnese comes second in terms of size, despite its low firm density, because of the relatively more industrialised northern part, which is close to Athens.

Table 10: Share of Employment in Selected Greek and O1Rs by sector, 1997

	Thessaly	Peloponnese	Crete	Greece	EU15	O1R
Agriculture	38.6	43.4	37.8	19.8	5.0	10.8
Industry	17.4	16.9	12.5	22.5	29.5	27.5
Services	44.0	39.7	49.8	57.7	65.6	61.7
Total	100.0	100.0	100.0	100.0	100.0	100.0

Source: Sixth Periodic Report on the Social and Economic Situation and

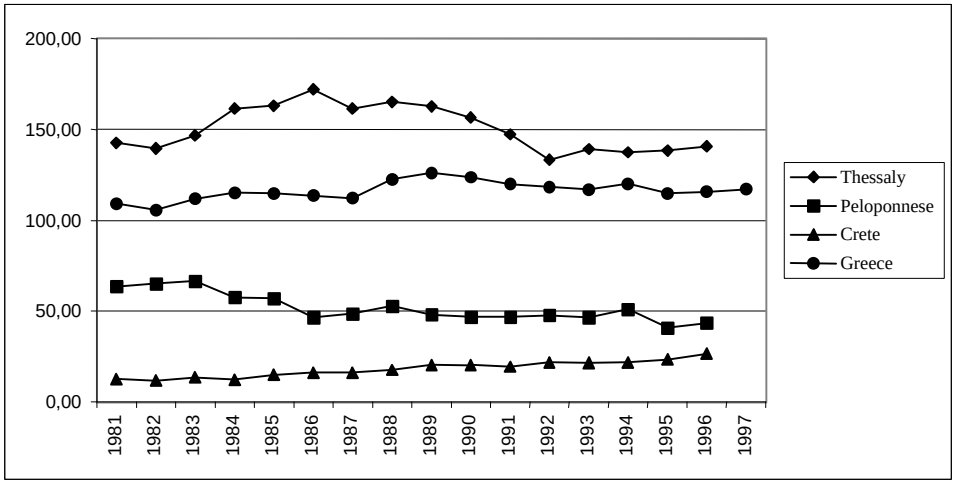
Table 11: Industry, Small Industry and Construction, 1994

	number of manufacturing & handicraft firms	Turnover (mil. GDR)	number of firms/1000 resid.	Turnover/firm (mil.GDR)
Thessaly	2,571	298,495	3.5	116.1
Peloponnese	1,594	184,446	2.4	115.7
Crete	2,305	205,808	4.2	89.3
Greece	51,190	10,720,410	4.9	209.4

Source: National Statistical Service of Greece, Regional Statistics

Electricity consumption for industrial use per capita, which is reported in Figure 12 and is based on Table 4B in Appendix B, is a good measure of each region's industrial base. While household electricity consumption can be used asa a proxy measure of welfare, electricity consumption for industrial use per capita can be used as a proxy for capital (industrial base) and, in a sense, for the size of firms. We observe that Thessaly has an industrial base made up of relatively larger firms, than Crete. The declining trend for Thessaly indicates that the de-industrialisation crisis in late 1980s and early 1990s hit harder larger firms, which are more likely to be exposed to international competition. Despite that, Thessaly still maintains a sizable productive base in industry, mainly concentrated in the two large urban centres in the eastern part of the region, which also lie on the main north-south transportation axis. A similar

Figure 12: Industrial Use of Electricity (MWh/100inhabitants)



decline is also apparent in Peloponnese, as its northern and more industrialised part has also been affected (but to a lesser degree than Thessaly) by industrial decline. On the other hand, the industrial base of Crete seems to be made up of relatively smaller firms, whose growth over time depends on developing successful forward linkages with tourism and backward linkages with agriculture. The latter pattern seems to be missing in Peloponnese and, to some extent, in Thessaly, as well.

Table 12 provides information about the number of enterprises and their turnover in trade and services in 1994. Crete appears clearly in these figures to be a service economy with a larger number of firms in trade and services, a larger turnover, more firms per 1000 residents and considerably higher turnover by firm than the other two regions. This difference may be related to the development of tourism.

Table 12: Firm Size in Trade and Services, 1994

	service enterprises	turnover (mil.GDR)	firms per 1000 resid.	turnover (th. GDR) per firm
Thessaly	2,821	112,989	3.81	40.05
Peloponnese	2,424	82,050	3.68	33.85
Crete	3,609	285,024	6.56	78.98
Greece	49,913	6,947,398	4.79	139.19

Source: National Statistical Service of Greece, Regional Statistics

Figures 13 and 14 (based on Table 5B in Appendix B) show the tourist capacity of the three regions and the levels of international tourism in the period 1981-1997. We see that Crete has a substantially higher capacity per 100 inhabitants than the other two regions and the whole of Greece. Large-scale investment in tourism has taken advantage of good climatic conditions (a prolonged summer session), sunny beaches, clean waters and picturesque villages and transformed the island to an international summer resort. Peloponnese also attracts foreign tourism, but at levels that are not very different in comparison with other regions. Tourism here depends on a combination of sea-resort summer vacation and trips to ancient monuments. The latter however, is run typically from outside the region (Athens) and involves mainly daily trips from Athens. Available accommodations here differ from Crete, in that they are provided mostly by small-scale family-run businesses (rooms to let) that offer limited services and recreation facilities. Thessaly's tourism is primarily domestic, as it lacks the advantages of a prolonged summer season and the existence of historical monuments of the same attractiveness as Peloponnese. Moreover, its accommodations are largely organised on a small-scale family run basis.

Figure 13: Hotel Capacity: Number of Beds per 100 Inhabitants.

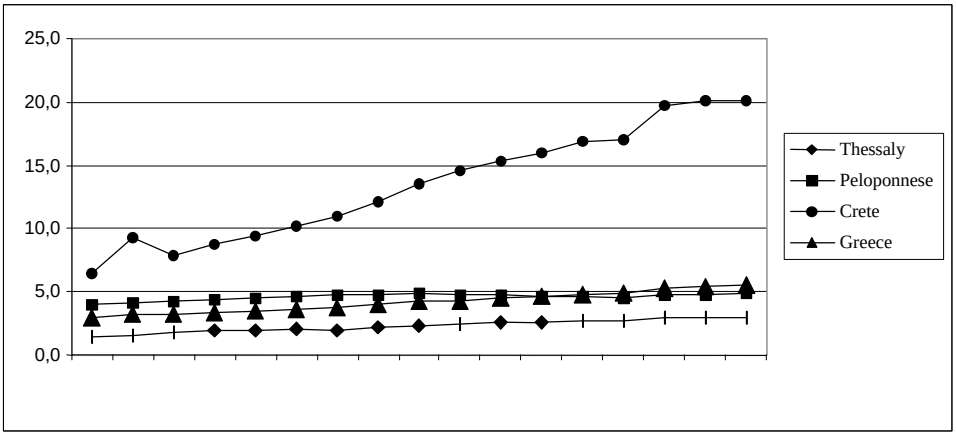
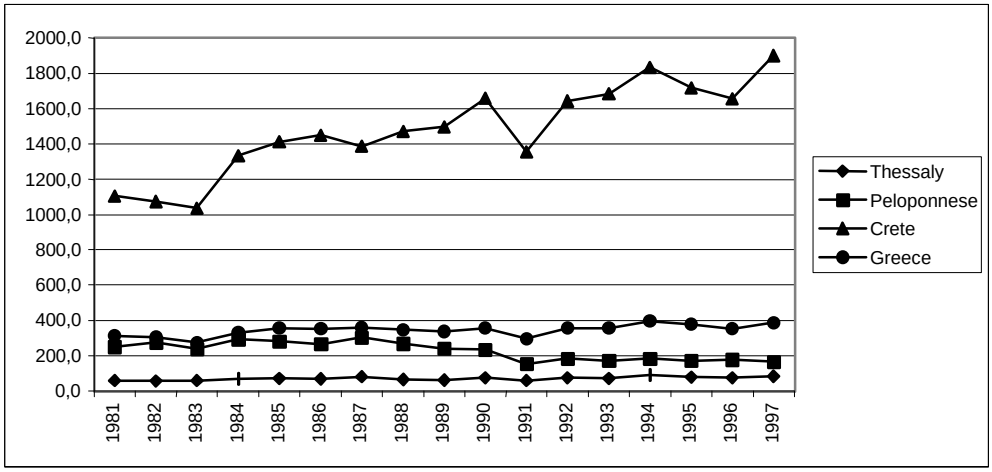


Figure 14: Tourism: Staying Overnight by Foreigners, per 100 Inhabitants.



Summing up, the economic structures of the three regions differ in important ways. Thessaly is relatively more industrial, with more and relatively larger firms. Its industry has, however, gone through a crisis, as many firms belonging to sectors that have been under severe pressure at either the national or the EU levels have been hit, including, in particular, textiles, metallurgy, clothing, and automobiles. Thessaly's potential in agriculture has not been fully explored. Plain lands in the east are used intensively for growing industrial crops. Mountainous western Thessaly grows olive trees, and raises sheep and cattle. Overall, there appears to be little scope for further cost improvements. Local incomes can only improve from the processing of local inputs through forward linkages with industry. There is little local integration of activities. In most cases, local agricultural products are exported to other regions or countries as raw materials.

Peloponnese has to a certain extent similar, but more acute, problems. Due to the region's territorial morphology, agriculture in the central and southern part is mostly dependent on extensive activities (olives and sheep raising). Only the northern plains specialise in citrus fruit production, which is a labour-intensive activity. Therefore, soil and morphology determine to a large extent the type of activities and the type of technology used, making cost-related improvements unlikely. As in the case of Thessaly, local processing of agricultural products – which would increase local value added – is very limited. Industry in this region is mostly concentrated in the north, while the southern and central parts of the region house small traditional units basically serving local demand. With the exception of firms serving the needs of the Athens metropolitan area, the industrial export base of the region is limited. As we discussed in Section 2.B above, a serious impediment to further industrial development is the lack of urban services, as the cities of the region have not grown during the last 3-4 decades, perhaps because of the agglomeration shadow of Athens, maintaining very small sizes that are not conducive to industrial development.

Finally, Crete is the region with the most favourable structural characteristics. The main industry of the island is tourism, which is organised in a more efficient way and offers a great variety of recreational opportunities and services, as well as high quality accommodations. The other two sectors either serve local demand, or feed the tourist industry with local inputs. Crete presents the best available – although far from ideal –

example of forward and backward linkages among sectors and the best available example of regionally integrated economy.

5. REGIONAL POLICIES IN GREECE

Regional policy in Greece has undergone important changes in the 1980s and the 1990s. Notable among them are the enactment of investment incentives laws, the institution of the Integrated Mediterranean Programs (IMPs) and the Community Support Frameworks (CSFs), and a serious attempt to decentralise public administration and to improve the institutional framework under which regional policy is implemented.

A. Institutional Framework of Public Administration

Historically, Greece has been characterised by a highly centralised system of public administration. All important decisions about the allocation of funds, the provision of regional infrastructure and the financial or other incentives provided, have been made centrally by the national government in Athens.

Regional administration (the NUTS II level) did not exist prior to the mid 1980s, when its introduction was instigated by the need to implement and monitor the Operational Programs of the CSFs that had a spatial dimension. The heads of the regional administration units are appointed by the national government, while the regional councils – mainly advisory bodies – are made up of local public officials, such as Prefects, Majors and representatives of professional organisations. Despite local participation, regional administration is not really an autonomous layer of government, but rather a branch of the central government administration, with a specific mission related to the CSF Regional Operational Programs.

Prefectural Administration (the NUTS III level, *nomoi*) was until 1994 also a branch of the central administration, with Prefects appointed by the government. Since 1994, the Prefect and the Prefectural Council are elected in local elections, and in that sense they do comprise a new form of local government. This institutional change should be seen as a positive development towards governmental decentralisation. However, many unresolved issues, including the division of responsibilities and above all intergovernmental fiscal relations, generate tensions among the different levels of public administration and limit the potential contribution of local administration to promotion of local and regional development.

The bottom layer of administration is that of the urban units, that is cities, towns and villages (NUTS V). This is the oldest form of local administration in Greece, with Mayors and City councils being traditionally elected by their constituencies to administer the local provision of public services and infrastructure. This level is the most experienced and best funded. However, its ability to deal with local problems has been hampered, until recently, by the existence of numerous villages with very small populations ranging from 100 to 500 residents. Problems of fragmentation and ineffectiveness of the lower level administration have been addressed by recent

legislation (the Kapodistrias Project), that imposed compulsory consolidation of small municipalities (in close proximity to one another) into larger administrative units, and was met, of course, by fierce opposition.

In sum, certain aspects of public administration in Greece are crucial for the effectiveness of regional policy. First, despite recent efforts to decentralise, the regional administrative structure continues to remain concentrated, as the lower levels of administration are either appointed by the central government, or are dependent on it financially. Second, local government is both under funded and highly fragmented. There are too many small prefectures with a population of about 100-200 thousand people. Even if many problems, such as funding and jurisdictional and legislative conflicts, had been addressed, public administration would still not be very effective, as it lacks sufficient scale to ensure efficient provision of public goods and to implement local development policies. Moreover, in prefectures that contain large urban centres, there is no clear division of jurisdictions between the Mayor and the Prefect. Because of these problems, there is vocal support in the country in favour of a new round of administrative reform, which should reduce the number of administrative units at both the NUTS II and NUTS III level. More specifically, it is argued that the number of prefectures should be reduced to about 30 (from 51, at present) and the number of Regions should be reduced to about 6-7 (from 13, at present).

Despite these problems, Greece has experienced, during in the 1990s, significant initiatives aiming at mobilising local resources and fostering growth, at both regional and local levels. Several prefectures, regions, or even municipalities designed development plans intended to draw on local strengths and to address restructuring of their local economic base, combating unemployment and promoting new business creation. Of course, several of those plans were rather naïve, and lacked realistic objectives and clear policy instruments. Nonetheless, the fact that local initiative was mobilised to a fairly large extent and in a far more organised manner than ever before augurs well for the future.

B. Transportation Infrastructure

Several attempts have been made to evaluate regional infrastructure policies in Greece. Several papers [Louri (1985), MNE (1993), Petrakos et al. (1993)] report evidence that better infrastructure is associated with higher levels of development. Petrakos and Saratsis (1999), however, investigated the impact of the initial level of regional transport infrastructure on the rate of growth of GRP per capita and found no significant effect. These seemingly contradictory results may be reconciled as follows. The existence of good infrastructure may be associated with higher levels of development, but it does not ensure further improvement, since this depends on additional economic and structural factors.

It is often noted [CEC (1986)] that infrastructure constitutes a necessary, though not sufficient, precondition for regional development. However, neither the European nor the Greek evidence points to impressive regional impact of infrastructure investment. Vickerman et al. (1999), for example, observe that regional development policies aimed at creation of infrastructure in lagging regions have not been very successful in

reducing regional disparities in Europe. Moreover, adverse effects are also possible. Improved transportation networks linking large urban centres may intensify disparities, as it is easier for producers in centrally located regions to invade peripheral markets previously protected by remoteness [Krugman (1991), Vickerman et al. (1999)]. Such effects may also materialise in Greece, once the EU-financed transportation networks, currently under construction, have been completed.

Specifically, large transportation projects under way are likely to have impacts on the the three regions we are studying. They will improve the accessibility of central and southern Peloponnese to Athens and to the rest of Greece, and the accessibility of (western mainly) Thessaly to Athens and Thessaloniki. Although these projects are expected to contribute to the national economy, it is not clear whether they will eventually have favourble impacts on all of the regional economies involved, at least according to what one would expect according to new economic geography [Krugman and Venables (1995)].

In contrast, the evidence is more favourable for other types of public infrastructure policies. Vagionis and Spence (1994) have found that the designated industrial areas[6] were successful in promoting employment, while Fotopoulos and Spence (1999) have found that public spending on infrastructure has a positive impact on new manufacturing firm formation. However, a direct test of the regional impact of infrastructure investment on manufacturing output, performed by Lambrinidis et al. (1998), did not yield any statistically significant results.

C. Regional Investment Incentives

The institutional framework for public assistance to business investment in Greece is currently provided by Law 2601/98 of 1998, which amended Law 1262/82 of 1982 and Law 1892/90 of 1990. The basic intention of this legislation is to provide assistance for new investment projects. This assistance includes grants, loans, interest subsidies and tax allowances that are granted to successful applicants in a manner that depends on plant location. Firms wishing to invest in Athens or Thessaloniki receive in most cases practically no assistance. The further away an investment project is located from the metropolitan centres and the country's "development axis", the more generous are the subsidies and other support provided. The country is divided in four support zones, designated by A to D, and each prefecture is assigned to one of these zones. Zone A, which includes Athens and Thessaloniki, is not favoured, and Zone D is most favoured.

This legislation defines eligibility for assistance in terms of a number of criteria, that is in addition to location. Investment projects qualify if they exceed a minimum size, take place in certain particular sectors of the economy (initially industry and mechanised agriculture, but in the latest legislation services and trade were also included), and satisfy certain conditions in terms of production processes adopted (new technologies, environmental protection, etc.) and of new employment positions

[6] Industrial zones at the outskirts of large cities provide special location incentives and are equipped with such essential infrastructures as road, sewage and telecommunication networks.

created. Provisions are also made for support to incoming foreign direct investment, and, perhaps surprisingly, to foreign investments made by Greek enterprises in Balkan countries.

Several papers have attempted to examine the impact of investment incentives on regional development. Louri (1985) and Petrakos et al. (1993) show that regional investment incentives constitute the least important factor in attracting investment and increasing employment, respectively. Petrakos and Tsoukalas (1997) conclude that incentives can be effective in attracting investment only in combination with the special facilities provided by designated Industrial Areas. Georgiou (1991) argues that the influence of incentives on the redistribution of investment in favour of the most heavily favoured areas was probably not decisive. Petrakos and Saratsis (1999) reached similar results, as they found no evidence that higher regional investment incentives lead to higher growth rates of GDP per capita. The failure of regional investment incentives to promote development in favoured regions is apparent. The regions most favoured by the incentives continue to be the least developed ones, nearly 20 years after the introduction of the first comprehensive investment law, Law 1262/82. Even if the incentives do contribute to the creation of new jobs in those regions, as reported by Vagionis and Spence (1994) for the 1980-88 period, it is by no means certain that this will lead to faster economic growth.

Table 6B in the Appendix presents the classification of the Prefectures of Thessaly, Peloponnese and Crete according to investment support zones they belong to, and the assistance they receive for investment projects. This table shows that the most favoured region among the three we are studying is Peloponnese, which has most prefectures in the highly subsidised Zones C and D. The least favoured region is Thessaly, which has two of its prefectures (counting for more than 60% of the population) in Zone B. Crete is between the other two. There is also a special category with greater support than Zone D, which includes the region of Thrace, on in the Greek-Turkish border.

Tables 13 and 14 present the sectoral and regional distribution of private investment projects that have received assistance by Laws 1262/82, period 1982-1990, and 1892/90, period 1990-1995. We observe that during the first period, Crete was the recipient of 13% of total investment at the national level, while Thessaly and Peloponnese have received about 6% and 5%, respectively. We also observe that investment activity in Crete is heavily concentrated in the tertiary sector of the economy (tourism), accounting for 21% of the total investment made in this sector. On the other hand, Peloponnese and Thessaly show a greater presence in the secondary sector (manufacturing), accounting for about 7% of the total investment in this sector. Note however, that Crete also has a significant presence in industry, taking up more than 6% of total investment activity. In terms of the size of average investment projects, we see that Crete attracts investment projects that are larger than the national average and nearly double in size than those in Thessaly and Peloponnese. This is especially apparent in the tertiary sector. In the secondary sector the picture is different, as larger industrial firms invests in Thessaly and smaller ones in Crete. In the primary sector, Peloponnese has larger projects.

The picture in the second period, 1990-1995, differs from that in the first in several important ways. First, Thessaly received a higher share of total investment than Crete. Peloponnese is still last in the list. Second, from the internal allocation of projects we

Table 13: Distribution of Private Investments, 1982-90 (Law1262/82)

	Investments (regional shares)			
	primary	secondary	tertiary	total
Greece	100.00	100.00	100.00	100.00
Crete	4.58	6.43	21.15	13.09
Peloponnese	8.24	6.78	2.76	5.04
Thessaly	12.92	7.12	4.48	6.37
	Investments (sectoral shares)			
	primary	secondary	tertiary	total
Greece	8.10	45.65	46.25	100.00
Crete	2.84	22.43	74.73	100.00
Peloponnese	13.24	61.46	25.30	100.00
Thessaly	16.42	51.01	32.57	100.00
	Average size of investments (Greece=100)			
	primary	secondary	tertiary	total
Greece	100.00	100.00	100.00	100.00
Crete	96.85	51.62	121.50	107.49
Peloponnese	100.06	74.46	58.92	63.66
Thessaly	63.94	89.58	64.42	63.73

Source: Ministry of National Economy, Greece

see that Crete focuses now more in industry than in services. Third, Thessaly has managed to attract, in this period, relatively larger investment projects than the other two regions, especially in industry and agriculture. Perhaps, the industrial decline that

Table 14: Distribution of Private Investments, 1990-95 (Law.1892/90)

	Investments (regional share)			
	primary	secondary	tertiary	total
Greece	100.00	100.00	100.00	100.00
Crete	4.98	3.82	14.16	5.80
Peloponnese	5.53	3.71	3.82	3.80
Thessaly	9.37	6.99	3.22	6.36
	Investments (sectoral share)			
	primary	secondary	tertiary	total
Greece	3.43	77.83	18.74	100.00
Crete	2.95	51.28	45.77	100.00
Peloponnese	5.00	76.14	18.87	100.00
Thessaly	5.06	85.47	9.47	100.00
	Average size of investments (Greece=100)			
	primary	secondary	tertiary	total
Greece	100.00	100.00	100.00	100.00
Crete	134.22	68.08	114.14	85.52
Peloponnese	66.61	63.13	102.52	67.18
Thessaly	130.01	151.23	48.15	121.95

Source: Ministry of National Economy, Greece

hit Thessaly in the late 1980s and early 1990s generated pressures for restructuring, which have apparently been facilitated by the investment incentive laws and especially their provisions for special assistance to industrially declining regions.

Overall, Crete, during period 1982-90, and Thessaly, during period 1990-95, attract larger amounts of private investment than Peloponnese. Crete is preferred by services, although a recent shift in favour of manufacturing is evident. Thessaly is preferred by industry and especially larger-scale industry, while Peloponnese attracts smaller-scale industry. It is clear that the structure of investment incentives over those two periods has not succeeded in directing more, nor larger, projects to Peloponnese, which is the region furthest behind.

D. Investment Incentives and Regional Distribution of Foreign Direct Investment

There are only a few studies of the regional distribution of Foreign Direct Investment (FDI) in Greece. Papandos (1999) compiled data from the Ministry of National Economy (MNE), for the period 1988-1991, and from the Hellenic Centre for International Investment (ELKEDE, a newly established public service to foreign investors interested in Greece), for years 1996-1998. The first set of data cover all investment projects, while the second includes investment projects that have been undertaken with the assistance of ELKEDE. Table 15 and 16 present the distribution of FDI by year in the investment zones.

We note that during the 1988-1991 period the bulk of FDI went to Zone A, which includes the Attiki and Thessaloniki prefectures, which, as we saw above, receive no special assistance under the investment incentives legislation. During this period, the regions of Thessaly, Peloponnese and Crete received less than 1% of FDI each. This distribution is largely explained by the sectoral distribution of FDI, which includes mostly services (such as banking and insurance) or trade. Unfortunately, the MNE has not collected information on the spatial distribution of FDI in the period since 1991. The only data available since 1991 are from ELKEDE, and include projects in which the Centre itself had an active involvement.

Table 15. Distribution of inward FDI flows to investment zones, 1988-91

Year	Zone			
	A	B	C	D
1988	92%	5%	3%	-
1989	58%	20%	22%	-
1990	78%	22%	-	-
1991	87%	13%	-	-

Source: Papandos (1999), MNE (1994) and own calculation.

Although the two data sets are not comparable, some observations are useful. During the last few years the border region of Thrace, a special border zone with higher incentives than even Zone D, has attracted considerable investment activity. This must be interpreted with caution, however. First, the investment projects reported by ELKEDE do not include investments by some large investors (especially in the banking sector), who obviously feel they do not need assistance in deciding where to invest. Second, the magnitude of the annual FDI inflow in the 1988-91 period (as

reported by MNE) is around 140 billion GDR, while the annual sums in the 1996-1998 period (reported by ELKEDE) were around 30 billion GDR. This implies that some sample selection bias is associated with the projects reported by ELKEDE, which appear to be a special subset of inward FDI, that is concentrated in the secondary sector.

Table 16. Distribution of selected inward FDI flows to investment zones, 1996-98

	A	B	C	Thrace
1996	-	21%	32%	47%
1997	33%	24%	7%	37%
1998	-	71%	29%	-

Source: Papandos (1999) and ELKEDE (1998)

Overall, the data indicate that FDI (and especially projects attracted by the tertiary sector of the economy – which are the majority) tend to concentrate primarily in the Athens and Thessaloniki region. They also indicate that the particularly favourable financial incentives granted to the region of Thrace start to pay off, by attracting some international investment activity in industry, perhaps also because of the opening up of Greece's northern borders. In any case, the regions of Thessaly[7], Peloponnese and Crete do not seem to benefit significantly from FDI for two reasons. First, FDI is mainly associated with the tertiary sector (services, banking, insurance, trade), which enjoys significant economies of agglomeration in Athens (and Thessaloniki). Second, the incentives provided to the regions under study are perhaps insufficient to offset either the disadvantages of non-metropolitan locations or the greater assistance provided to Thrace.

E. Implementation of Integrated Mediterranean Projects and Community Support Frameworks I and II

There is by now a baseline of information concerning the effectiveness of the implementation of the Integrated Mediterranean Programmes (IMPs) and the Community Support Frameworks (CSF) I and II in Greece. Georgiou (1994), who examines implementation of the Integrated Mediterranean Programmes, claims that they were stifled by serious administrative and institutional obstacles. These include lack of know-how in planning techniques, dominance of a traditionally centralised administrative apparatus, inadequate supervision and monitoring of the programmes and political clientelism.

The implementation of the Community Support Framework I (1989-1993) for Greece has been analysed by Economou (1997), Bougas (1994), Lyberaki (1996), and others. CSF I was associated with a lower than desired impact on GDP growth in Greece, and registered, in fact, the lowest impact among all EU countries with comparable development problems and programmes. While the impact of CSF I on the annual GDP growth rates of Spain, Portugal and Ireland is estimated at 0.7%, 1.0% and

[7] The Eastern part of Thessaly (Prefecture of Magnesia) has attracted some FDI, thanks to the special incentives granted to it in 1996.

0.7%, respectively, for Greece it is only 0.3%. These differences are despite the fact that the EU contributions per head for Greece were comparable to those for Portugal, and greater than those for Spain.

Factors that might explain the failure of CSF I to have a substantial impact on GDP growth in Greece include, first, the fact that the operational programmes of the CSF I were actually not much more than mere lists of unrelated programs, that were selected by clientist political processes. Second, the programs were dominated by small projects. Such fragmentation satisfied political needs or popular demand, but had only marginal economic effects. Third, several of the projects had small budgets and remained incomplete after the end of the Programme, having neither economic nor functional impact. Finally, "soft" initiatives, networks, innovative actions and supportive services that encourage synergies and joint efforts were largely absent from the IMP and the CSF I[8].

Another important issue is often the lack of clear policy objectives at the regional level. KEPE (1997) reports that in several instances the CSF cofinanced Regional Operational Programs (ROP) that were implemented had neither a clear set of goals nor a clear set of policies to achieve them. As a result, the various policies and programmes have a limited economic impact.

Table 7B in the Appendix presents the allocation of CSF II funds to the three regions under examination. We note, however, that only 30% of the CSF II funds for the 1994-99 period were allocated directly to the 13 Greek regions. The remaining 70% were allocated via multi-sectoral national-level Operational Programmes that included very large public projects, which in several cases (including notably the Athens Metro and several major highways) favoured Athens. We see that each region receives a share that is roughly equal to its share in the national population, with Thessaly and Crete being slightly favoured in terms of per capita figures[9].

We also note that each region exhibited a different mix of priorities in development policies. Crete put more emphasis on policies related to infrastructure projects (23% of the total ROP budget), Peloponnese to tourism (20% of the budget), and Thessaly to development of human resources (19% of the budget). In general, infrastructure and human resources development policies followed by policies related to tourism and rural development take a large share of the ROP projects of the three regions.

[8] To be fair, there is ample scope for learning by doing and catching up in the implementation of the CSFs in Greece. CSF II is estimated by the European Commission to have a significantly higher impact on GDP growth (~1%) than CSF I (~0.3%) and a better internal structure. Unfortunately, its impact on regional disparities in Greece has not been discerned yet.

[9] Differences in per capita figures are also found among the three regions in the allocation of the Programme of Public Investment (PPI) funds. Although PPI funds are supposedly allocated to regions according to "objective criteria," such as population or level of development [Labrinidis et al. (1998), KEPE (1997)], Table 8B in the Appendix shows that the regions under examination have significantly different figures per capita. Among the three regions, Crete receives consistently a higher share of PPI funds, while Peloponnese receives in most years a relatively lower share than Thessaly. These differences may arise either from public pressure or political pressure or simply be due a region's faster rate of fund absorption, which mechanically justifies additional funding.

One needs to be cautious in interpreting some of these general categories, as project selection is occasionally unrelated to the needs and capabilities of the regions. In several instances, programmes were dictated by the European Commission and had not been adapted to local conditions. For example, some programmes related to the development of human resources may be severely criticised as being inappropriate. While this does not apply to funds provided for infrastructure at all levels of education (especially post-secondary), many programmes, especially those aimed at vocational training have faced serious delays in implementation. Moreover, it is now openly acknowledged that some vocational and training programmes cannot effectively deal with the needs of the unemployed, unless they are an integral part of a specific development strategy for each region.

Crete has reportedly designed its ROPs in a relatively more effective and coherent way than Thessaly, while those of the Peloponnese have been criticised as being vague and lacking specific goals [KEPE (1997)]. At the implementation level, a recent report [EC (1999c)] suggests that Crete and Thessaly are among the regions that have done best in this connection (along with Attiki), while Peloponnese is experiencing delays in certain parts of its Regional Operational Program. The Greek experience provides ample support for the notion that planning for development at the regional level depends critically on the quality of planning know-how and on the quality of human resources, that are employed by regional and local administration and are engaged in the planning process. It also requires a deep understanding of the forces and function of regional agglomerations in the Greek economy, which is in agreement with the basic conclusion of Thisse (2000).

6. CONCLUSIONS AND POLICY IMPLICATIONS

This paper has established a baseline of information for understanding the economic performance of the regions of Greece. We have stayed away from factors that go beyond economics and geography broadly construed. Perhaps, as we are about to conclude, it is appropriate to venture briefly into history. Crete, Peloponnese and Thessaly, the three regions that the paper has focused on, do have regional identities of their own that go fairly far back in history. They are not mere administrative subdivisions. Their feudal pasts share the characteristic of being shaped by the clash of East and West, arguably more than all other regions of Greece. Peloponnese is one of the founding regions of the modern Greek State, Thessaly joined Greece fifty years later in 1878, and Crete joined Greece in the early 1900s. All this was the outcome of successful wars with the Ottoman Empire. Perhaps because of the unifying role of a common language and culture, the sequence in which those regions joined Greece does not allow one to predict their relative economic standing. Quite on the contrary, their relative economic performance reflects the extreme centralisation of the Greek State.

The literature we have reviewed has identified a number of factors in operation that have influenced the prospects of Greece for balanced regional development. A first finding points towards a possibly adverse impact of European integration on the regional industrial base of Greece. This has become apparent in regions with concentrations of larger (by Greek standards) industrial enterprises. The cases of Thessaly and other regions, which have experienced de-industrialisation in recent

years, including the closure of a significant number of large enterprises, suggest that the process of economic integration might have had most pronounced effects upon significant regional concentrations of manufacturing activity. Although similar tendencies are also apparent in Attiki and to some extent in Thessaloniki as well, the rapid increase of the tertiary sector of those two metropolitan areas has helped offset possible impact on employment, which was not the case in at least some of the regions.

A second finding concerns the dependence of regional inequality on the business cycle. This finding explains at least part of regional convergence patterns during a decade of industrial recession in the Greek economy. It also implies that economic recovery begins mainly in the major centres of economic activity and does not diffuse automatically to the periphery. This generates a policy problem that is hard to tackle, as the efforts aiming at national convergence to EU-average levels may be accompanied by undesirable increases in disparities among the regions of the country.

A third finding concerns the characteristics of those regions, which have in the past done relatively better. The evidence shows that a critical share of manufacturing and presence of capital intensive enterprises, of high quality human resources and of natural resources suitable for the development of tourism, are factors conducive to regional growth.

While these findings apply generally, our specific analysis of the characteristics of Crete, Peloponnese and Thessaly, the three regions under examination, revealed a number of additional factors that have contributed to differences in performance among the three regions. Initial conditions with respect to geography and climate may have lasting effects on the structural characteristics of the economies of regions, which is in agreement with the notion, recently reaffirmed by the new economic geography, that regional economic development is to some extent a path-dependent process. Geography is clearly a major influence on the distribution of activity among and within the regions of Greece that we have studied. It appears that distance from Athens has enabled Thessaly and Crete to offset the “curse” of proximity to the Athens agglomeration and to develop minimum urban infrastructure. This is not the case for the Peloponnese, whose markets have been overshadowed by Athens. Limited access to EU markets is a serious impediment to any effort to develop export bases, especially in traditional sectors and products in which competition with the other southern European countries is strong.

The analysis has raised an interesting issue with respect to the role of geography in economic development. Although distance from the major world markets is always a disadvantage [Gallup et al. (1998)], proximity can be considered an advantage only under specific conditions. That is, by applying the results of Krugman and Venables (1995) in a regional context, we can argue that proximity to large markets (or metropolitan regions) facilitates growth only if differences in development levels and structures are not too pronounced. Otherwise, it leads to a penetration of product markets by the more dynamic enterprises of the more advanced region. These differences may explain why Peloponnese has failed to take advantage of its proximity to Athens, but Athens has taken advantage of its proximity to Peloponnese.

Lack of spatial and sectoral integration of the economy at the regional and national levels appears also to be hampering performance. As noted before, the process of economic growth has been known, in general, to be associated with increasing regional disparities, because linkage effects between metropolis and periphery are poorly developed. Finally, policies (or the lack of policies) have played a role. The success of Crete in overcoming geographical isolation, by developing effective transportation and by taking advantage of its potential in tourism is a noteworthy lesson. The failure of Peloponnese to fully exploit its historical heritage as a tourism resource is probably due to poorly designed or implemented policies. It is an open question whether policies can completely offset market forces. Despite receiving less assistance than other regions, Crete has attracted a significantly higher share of investment projects.

Table 17 illustrates these points in a qualitative fashion. Ranking the three regions in a relative scale of 1 to 3 with respect to a number of factors that include initial conditions, market processes and policies, gives an overall score that closely tracks the performance of the regions with respect to per capita GDP levels.

Table 17. Factors influencing the performance of the regions

Factors Influencing performance	Relative Rating		
	Thessaly	Peloponnese	Crete
Population growth	**	*	***
Human Capital	**	*	***
Economic structure (dependence on agriculture)	**	*	***
Agriculture (traditional/extensive or mechanized/intensive)	***	*	**
Agriculture locally processed (forward linkages)	**	*	***
Industry (small scale local or large scale export base)	***	**	*
Services (tourism)	*	**	***
Tourism with backward linkages to local industry	**	*	***
Climate (favouring extended tourist season)	*	**	***
Overall degree of regional integration of activities	**	*	***
Morphology	***	*	**
Level of urbanization	***	*	**
Existence of large cities over 100.000 people	***	*	**
Attractiveness to private investment	**	*	***
Accessibility to Athens	**	***	*
Gravity index	**	*	***
Investment support policies	**	***	*
Strategic transport infrastructure – facilities	*	**	***
Public investment program allocation	**	*	***
Allocation of CSF II funds in the regions	**	*	***
Implementation of CSF policies	**	*	***
Research Institution and Universities	**	*	***
OVERALL RATING	**	*	***

*** Highest relative rating
* Lowest relative rating

Although this scoring method is rather crude, and alternative rankings (such as including different factors or assigning special weights to the most important of them) would affect results, the relative ranking is telling. Peloponnese rarely receives the top

ranking (three stars) and Crete rarely receives the bottom ranking (one star). Thessaly is in an in-between position, often nearer the top rather than the bottom of the scale.

Table 17 summarises our basic argument. Policy matters for determining development outcomes, but so do initial conditions related to geography, morphology and economic structure, as well as market forces. Moreover, policies that are designed and implemented at the local level may even cause regional disparities to grow, as locally available human resources, know-how and experience with regional development may favour the more advanced and wealthier regions.

Regional policies implemented the last two decades have not succeeded in reversing the highly concentrated pattern of spatial development in Greece. Yet, despite – or because of – all these conditions, the role of regional policy in Greece is today as important as ever. Perhaps, we have learned three lessons from the Greek experience. First, regional spending must be sensitive to the needs and special circumstances of regions. Second, regional policy must enhance the capabilities of local governments and civic organisations to exercise initiative and to design and implement development plans that accommodate creativity and innovation. And third, regional policy will probably not succeed unless governmental administrative structures of Greece are reformed, by the design of more efficient administrative units and by the improvement of the human resources available to local and regional administration. This would likely have major consequences for the design, implementation and evaluation of the Regional Programs of the Third Community Support Framework, which is by far the largest source of funds to have been made available for regional development so far. The challenge for Greece is to modernise in ways which would make judicious use of its human and natural resources and not exacerbate further its regional disparities. The challenge for regions that have so far been relatively successful is to provide the foundations for sustained growth in the years to come.

Addressing the broader questions associated with regional policy requires a better understanding of the specific economic magnitudes and parameters that characterise the behaviour of individuals and firms and their responses to policy variables. The extent of their importance is highlighted by the examples developed by Matsuyama and Takahashi (1998) and the chances for policy to offset "self-defeating" regional concentration. Thisse (2000) argues persuasively that the design of regional policy must account creatively for the underlying economic fundamentals that are responsible for perceived "regional imbalances." In a second best world, some regional imbalances are inevitable, and others are desirable.

In addition to the problems we have already identified, the design of regional policy in the Greek context would be facilitated by a better understanding of regional forces in personal income determination in Greece. Such questions may be addressed by combining regional and sectoral data with microeconomic data. Such analyses have yet to be conducted in Greece.

7. REFERENCES

Abraham F., and van Rompuy P. (1995), "Regional Convergence in the European Monetary" Union, Papers in Regional Science, Vol. 74, No. 2, April 1995.

Alogoskoufis, G. (1993), "How to Escape The Crisis?" Economikos Tahydromos, No. 2025, 25-2-93, pp. 29-32 (in Greek).

Amin A., Charles D., and Howells J. (1992), "Corporate Restructuring and Cohesion in the New Europe", Regional Studies, 26, 4, pp. 319-331.

Armstrong, H. W. (1995), "Convergence among Regions of the European Union, 1950-1990", Papers in Regional Science, Vol. 74, No. 2, April 1995.

Athanasiou, L.A., Kavvadias, P.A., Katochianou, D.N., and Tonikidou P.I. (1995), "Interregional Analysis and Policies and Basic Data per Region and per Department", Reports 24, No 19, Centre of Planning and Economic Research (KEPE), Athens, (in Greek).

Barro, R. J. (1997), Determinants of Economic Growth, MIT Press, Cambridge.

Barro, R.J., and Sala-i-Martin, X. (1991), "Convergence Across States and Regions", Brookings Papers on Economic Activity I, pp.107-182.

Barro, R.J., and Sala-i-Martin, X. (1992), "Convergence", Journal of Political Economy 100, pp. 223-251.

Barro, R.J., and Sala-I-Martin, X. (1995), Economic Growth, McGraw-Hill, New York.

Baumol, W.J. (1986), "Productivity Growth, Convergence and Welfare What the Long-run Data Show", American Economic Review, December 1986, 765, pp. 1072-1085.

Berry, B. (1988), "Migration Reversals in Perspective: The Long-wave Evidence", International Regional Science Review, Vol. 11, No 3, pp. 245-251.

Bougas, T. (1994), "The Evaluation of Structural Policies," Topos, Vol. 7, pp. 105-120 (in Greek).

Camagni, R. (1992), "Development Scenarios and Policy Guidelines for the Lagging Regions in the 1990s," Regional Studies, Vol. 26, No 4, pp. 361-374.

Camagni, R. (1993), "Interregional Disparities in the European Community: Structure and Performance of Objective One Regions in the 1980s," Suds et Iles Mediterraneennes, Universite de Corte.

CEC (1986), The Contribution of Infrastructure to Regional Development, Final Report. Commission of the European Communities, Brussels.

CEC (1991), The Regions in the 1990s, Fourth Periodic Report, Commission of the European Communities, Brussels.

CEC (1993), "New Location Factors for Mobile Investment in Europe", Final Report, Regional Development Studies, No 6, Commission of the European Community, Brussels.

CEC (1994), "Competitiveness and Cohesion: Trends in the Regions" Fifth Periodic Report for the Social and Economic Situation and the Development of the Community

Regions, Commission of the European Community, Luxembourg, Office for Official Publications of the European Communities.

Chatterji, M., and Dewhurst, J.H.LI. (1996), "Convergence Clubs and Relative Economic Performance in Great Britain, 1977-1991", Regional Studies, Vol. 30, No 1, pp. 31-40.

Dobkins, L. H., and Y. M. Ioannides (2000), "Dynamic Evolution of the U.S. City Size Distribution: 1900-1990," in Huriot, J.-M., and Thisse, J.-F., editors, The Economics of Cities, Cambridge University Press, Cambridge and New York.

Dunford, M. (1993), "Regional Disparities in the European Community: Evidence from the REGIO Databank", Regional Studies, Vol. 27, No. 8, pp. 727-743.

EC (1995), European Economy, Annual Economic Report for 1995, No 59, European Commission, Brussels.

EC (1999a), "Sixth Periodic Report on The Social and Economic Situation and Development of The Regions in the European Union," European Commission, Directorate General for Regional Policy and Cohesion, Brussels.

EC (1999b), European Economy, Supplement A: Economic Trends, No. 4, European Commission, Brussels.

EC (1999c), The 10th Annual Report on Structural Funds (1998), European Commission, http:// www.inforegio.cec.eu.int/wbdoc.

Economou, D. (1997), "The Impact of the First Community Support Framework for Greece: The Anatomy of Failure," European Urban and Regional Studies, Vol. 4, No. 1, pp. 71-84.

Fagerderg, J. and Verspagen, B. (1995), "Heading for Divergence? Regional Growth in Europe Reconsidered," MERIT Discussion Paper 95-014.

Fotopoulos, G., and Spence, N. (1999), "Spatial Variations in New Manufacturing Plant Openings: Some Empirical Evidence from Greece," Regional Studies, Vol. 33, No. 3, pp. 219-229.

Fujita, M., Krugman, P., and Venables, A.J. (1999), The Spatial Economy, MIT Press, Cambridge, MA.

Funke, M. (1995), "Europe's Monetary Future One Market, One Money," Discussion Paper No. DP 1-95, Centre for Economic Forecasting, London Business School, 1995.

Gallup, J. L., Sachs, J. D., and Mellinger, A. D. (1998), "Geography and Economic Development," pp. 127-188, in Pleskovic, B., and Stiglitz, J. E., editors, Annual World Bank Conference on Development Economics, The World Bank, Washington, DC.

Georgiou, G. (1994), "The Implementation of EC Regional Programmes in Greece: A Critical Review," European Planning Studies, Vol. 2, No. 3, pp. 321-336.

Georgiou, G.A., (1991), "Spatial Distribution and Sectoral Composition of Investment under Law 1292/82," Report 4, Centre of Planning and Economic Research (KEPE), Athens (in Greek).

Giannias, D., Liargovas, P., and Manolas, G. (1997), "Regional Inequalities in Greece, 1961-1991," Topos, Vol. 13, pp. 47-61 (in Greek).

Greenway, D., and Milner, C. (1986), "The Economics of Intra-industry Trade," Oxford, Blackwell.

Grimwade, N. (1989), International Trade: New Patterns of Trade, Production and Investment, Routledge, London.

Grubel, H., and Lloyd, P. (1975), Intra-industry Trade: The Theory and Measurement of International Trade in Differentiated Products, Macmillan, London.

Henderson, J. V. (1986), "Efficiency of Resource Usage and City Size," Journal of Urban Economics, Vol. 19, 1, pp. 42-70.

Henderson, J. V. (1988), Urban Development: Theory, Facts, Illusion, Oxford University Press, New York.

Henderson J. V. (1997), "Medium Size Cities," Regional Science and Urban Economics, 27, pp. 583-612.

Ioannides, Y. M. (1998), "Space, Economic Growth and Inequality," Tufts University, November, mimeo.

Ioannides, Y. M. (1999), "Why Are There Rich and Poor Countries? Symmetry Breaking in the World Economy: A Note", Journal of The Japanese and International Economies, 13, 140-149.

Jackson, M., and Petrakos, G. (1999), "Regional Differences in the Impact of EU Integration on the Industrial Structure and Competitiveness of CEFTA Countries," paper prepared for the Phare ACE P96-6071-R Project: Competitiveness of CEFTA Countries: Measurement and Trends in The Period of Preparation to Join The EU.

Kaldor, N. (1970), "The Case for Regional Policies," Scottish Journal of Political Economy, 337-348.

Kavvadias, P.A. (1992), "Regional Development Indicators of Greece," Studies 40, Centre of Planning and Economic Research (KEPE), Athens (in Greek).

KEPE (1997), Evaluation of the Regional Programs of the Community Support Framework II of Greece, Report No 28, Centre for Planning and Economic Research (in Greek).

Krueger, G., and Ciolko, M. (1998), "A Note on Initial Conditions and Liberalization during Transition," Journal of Comparative Economics, 26, 718-734.

Krugman, P. (1991), Geography and Trade, MIT Press, Cambridge.

Krugman, P., and Venables, A. J. (1995), "Globalization and the Inequality of Nations," Quarterly Journal of Economics, .CX, 4, 857-880.

Labrinidis, M., Psycharis, G., and Kazazis, E. (1998), "Regional Distribution and Regional Implications of Public Investment," Research Report, Panteion University, Athens.

Loikkanen, H. A., Rantala, A., and Sullstrom, R (1998), "Regional Income Differences in Finland during 1966-96," Government Institute for Economic Research, Discussion Paper 181, Helsinki.

Levine, R., and Renelt, D. (1992), "A Sensitivity Analysis of Cross- Country Growth Regressions," American Economic Review, Vol. 82, No 4, pp. 942-963.

Louri, H. (1985), Regional Policy and Investment in Greek Manufacturing Industry 1971-1982, Ph. D. Thesis, Oxford University.

Lyberaki A. (1993), "Greece-EC Comparative Economic Performance: Convergence or Divergence? In H. Psomiades and S. Thomadakis (eds.) Greece, the New Europe and the Changing International Order, New York: Pella Publishing Company.

Lyberaki, A. (1996), "Greece-EU Comparative Economic Performance at the National and Regional Levels: Why Diverge?" European Planning Studies, Vol. 4, No. 3, pp. 313-329.

Matsuyama, K. (1995a), "Comment on Paul Krugman's `Complexity and Emergent Structure in the International Economy,'" in Levinson, Jim, et al., (1995), New Directions in Trade Theory, University of Michigan Press, Ann Arbor, 53-69.

Matsuyama, K. (1995b), "Complementarities and Cumulative Processes in Models of Monopolistic Competition," Journal of Economic Literature, 33, June, 701-729.

Matsuyama, K. (1996), "Why Are There Rich and Poor Countries? Symmetry Breaking in the World Economy," Journal of The Japanese and International Economies, 10, 419-439.

Matsuyama, K., Takahashi, T. (1998), "Self-Defeating Regional Concentration," Review of Economic Studies, 65, pp.211-243.

Melachroinos, K., and Spence, N. (1997), "Regional Productivity Dynamics of Manufacturing in Greece," European Urban and Regional Studies, Vol. 4, No 4, pp. 315-332.

Michelis, L., Papadopoulos, A. P., and Papanikos, G. T., (1996), "European Integration and Regional Convergence in Greece", presented in the International Conference on Economic Integration in Transition, Athens University of Economics and Business, Greece, and York University, Toronto, Canada. Athens, Greece, August 21-24, 1996.

MNE (1993), Master Plan for the Development of Transport Infrastructure Greece-2010 Technical Support Study, Volume 2, "Spatial View and Estimations of Socio-economic Variables," Ministry of National Economy, Athens (in Greek).

Molle, W., and Boeckhout, S. (1995), "Economic Disparity under Conditions of Integration - A Long Term View of the European Case," Papers in Regional Science, Vol. 74, No. 2, April.

Myrdal, G., (1957), Economic Theory and Underdeveloped Regions, Hutchinson.

Papandos, Ch. (1999), "The Spatial Distribution of FDI in Greece," Diploma Thesis, Department of Planning and Regional Development, University of Thessaly.

Perroux, F. (1970), "A Note on the Concept of Growth Poles", in McKee, D., Dean, R., and Leahy, W., editors, Regional Economics: Theory and Practice, Free Press, New York, pp. 93-103.

Peschel, K. (1990), "On the Spatial Structure of the World Economy since World War II," in Gehres, et al., editors, Real Adjustment Processes under Floating Exchange Rates, Springer, Berlin/New York.

Peschel, K. (1992), "European Integration and Regional Development in Northern Europe," Regional Studies, 26, 4, 387-397.

Petrakos, G. (1996), "Small Enterprise Development and Regional Policy: Comparative Analysis and Implications for Eastern and Central European Countries," Eastern European Economics, 34, 2, pp. 31-64.

Petrakos, G. (1995), "Development Projects of the Prefecture of Magnesia, Greece" National Employment Office (OAED), University of Thessaly (in Greek).

Petrakos, G. (1997a), "Industrial Structure and Change in the European Union: Comparative Analysis and Implications for Transition Economies", Eastern European Economics, 35, 2, pp. 41-63.

Petrakos, G. (1997b), "A European Macro-Region in the Making? The Balkan Trade Relations of Greece', European Planning Studies, 5, 4, pp. 515-533.

Petrakos, G., and Brada, J. (1989), "Metropolitan Concentration in Developing Countries," Kyklos, Vol. 42, Fasc. 4, pp. 556-578.

Petrakos ,G., Maloutas, T., and Economou, D. (1993), "Spatial Development Policies and Industrial Employment in Urban Areas," Technica Chronica, Area A, 13, 4, pp 285-317 (in Greek).

Petrakos, G., and Zikos, S. (1996), "European Integration and Industrial Structure in Greece: Prospects and Possibilities for Convergence," in Paraskevopoulos et al., editors, Economic Integration and Public Policy, 247-259, Edward Elgar, London.

Petrakos, G., and Tsoukalas, D. (1997), "The Location of Greek Industry and Policies of Regional Development," presented in the 4th Annual Conference of the Regional Science Association, Greek Chapter, Athens 9-10 May 1997, (in Greek).

Petrakos, G., and Christodoulakis, N. (1997), "Economic Development in the Balkan Countries and the Role of Greece: From Bilateral Relations to the Challenge of Integration," Discussion Paper Series, No 1620, CEPR, London.

Petrakos, G., and Pitelis, C (2000), "Peripherality and Integration: The Experience of Greece as a Member of the EU and its Implications for the Balkan Economies in Transition," in Petrakos, G. and Totev, S. editors, The Development of the Balkan Region, Aldershot, Ashgate.

Petrakos, G., and Economou, D. (1999), "Internationalisation and Structural Change in the European System of Urban Places," in Economou, D., and Petrakos, G., editors, The Development of the Greek Cities, 13-44, University of Thessaly Press and Gutenberg, Volos, Greece (in Greek).

Petrakos, G., and Tsoukalas, D. (1999), "Metropolitan Concentration in Greece: An Empirical Investigation," in Economou, D., and Petrakos, G., editors, The Development of the Greek Cities, 247-265, University of Thessaly Press – Gutenberg, Volos. (in Greek).

Petrakos, G., Karaveli, E., and Mardakis, P. (2000), " Recent Developments in the Greek System of Urban Centres," Environment and Planning B, 26.

Petrakos, G., and Saratsis, G. (2000), "Regional Inequality in Greece," Papers in Regional Science, 79, pp. 1-18.

Quah, D.T. (1996), "Empirics for Economic Growth and Convergence," European Economic Review, 40, pp. 1353-1375.

RegioMap, (1995), "Regional Data Bank - Economic Accounts," EUROSTAT, Luxembourg.

Sachs, J. D. (1997), "Geography and Economic Transition," Working Paper, Centre for International Development, Harvard University.

Sala-i-Martin, X. (1994), "Cross Sectional Regressions and the Empirics of Economic Growth," European Economic Review, 38, pp. 739-747.

Sala-i-Martin, X. (1997), "I Just Ran Two Million Regressions," American Economic Review, 87, pp. 178-183.

Siriopoulos, C., and Asteriou, D. (1998), "Testing Convergence across the Greek Regions," Regional Studies, 32, 6, pp. 537-546.

Siriopoulos, K., Labrianidis, L., and Asteriou, D. (1997), "Convergence of GDP per Capita in the Greek Regions," Topos , 13, pp. 63-76. (in Greek)

Thisse, Jacques-Francois, (2000), "Agglomeration and Regional Imbalance: Why? And Is It Bad?" presented at The European Investment Bank Conference on Regional Development Policy and Convergence in the EU, Luxembourg, January 20.

Vagionis, N., and Spence, N. (1994), "Total Factor Regional Productivity in Greece," Environment and Planning C,. 12, pp. 383-407.

Vickerman, R., Spiekermann, K., and Wegener, M. (1999), "Accessibility and Economic Development in Europe," Regional Studies, 33, 1, pp.1-15.

Williamson, J.G. (1965), "Regional Inequality and the Process of National Development: A Description of the Patterns," Economic Development and Cultural Change , 13, July, Part 2, pp. 3-45.

APPENDIX A: REGIONAL INEQUALITIES IN THE PERIOD 1971-91 (NUTS III LEVEL)

Table 1A and Figure 1A present indicators of inequality in welfare for the NUTS III regions of Greece (prefectures), as measured by: (a) GDP per capita by prefecture, at fixed 1970 prices; (b) the number of private cars per 1.000 inhabitants; (c) household consumption of electricity per inhabitant; and, (d) telephones per 1.000 inhabitants for the years 1971, 1981 and 1991. Based on this information a number of interesting observations can be made about the evolution of regional inequalities in Greece.

Table 1A The evolution of regional disparities in Greece in the 1971-1991 period

	Coefficient of Variation ó/ $\bar{x}$			**max/min ratio**		
Variables	**1971**	**1981**	**1991**	**1971**	**1981**	**1991**
GDP per capita	0.24	0.24	0.19	3.37	3.44	2.49
Private cars per 1000 inh.	0.88	0.48	0.40	27.69	14.08	9.44
Household consumption of electric power per capita	0.75	0.33	0.24	20.32	5.60	2.80
Telephones per 1000 inh.	0.53	0.34	0.24	8.03	5.27	3.08

Source: Petrakos and Saratsis (1999).

Figure 1 The evolution of the dispersion of regional welfare indices in Greece in the 1971-1991 period

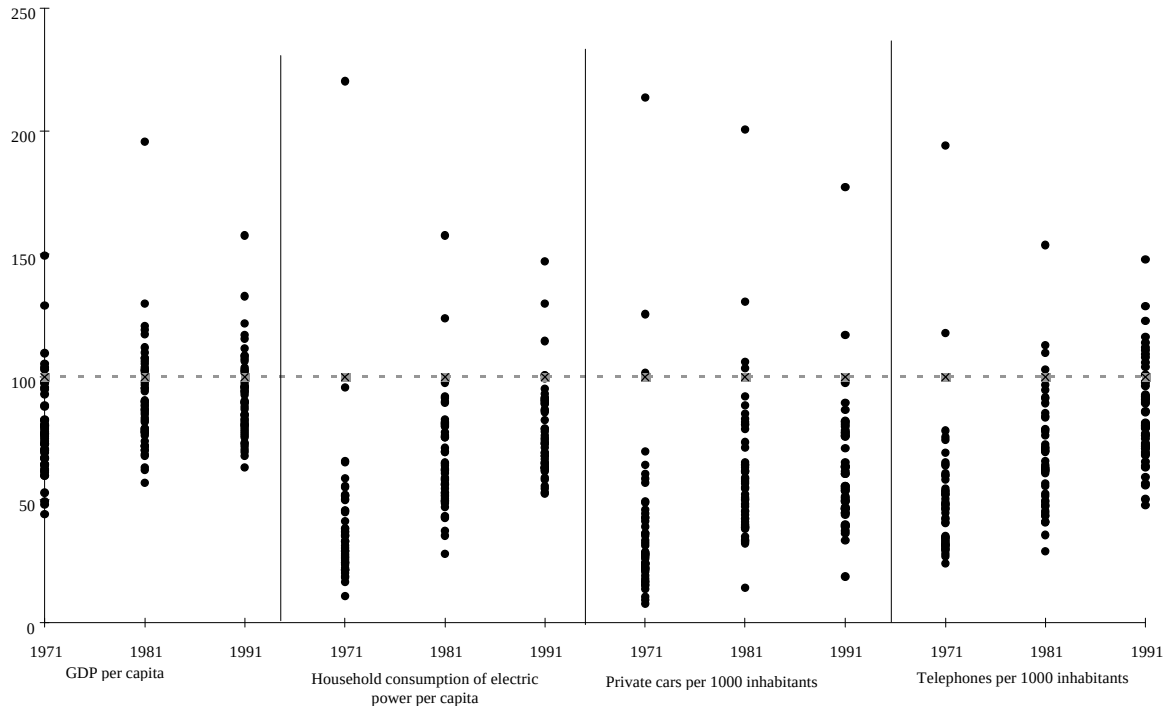
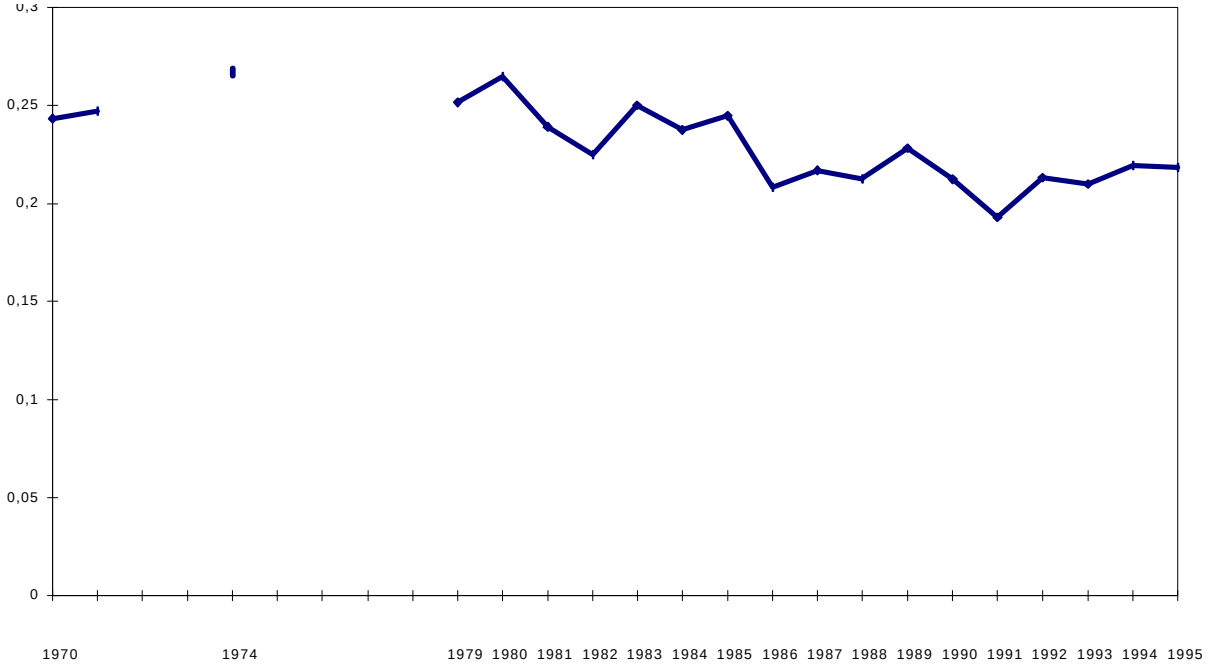


Figure 2 *The Evolution of the coefficient of variation of the GDP per capita in Greece at the NUTS III level 1970 - 1995*



Given that the coefficient of variation and the max/min ratio are both indicators independent of units of measurement, their values are directly comparable for different time periods as well as among different variables measuring welfare. The first observation to be made based on the data presented is that both indicators show a decline in regional inequalities over time, for all variables. We also observe that the indicators of inequality show great differences among the four variables, mainly at the beginning of the time period, and that they decrease over time at different rates. In 1971, the greatest differences occur in the variables cars per 1.000 inhabitants[10] and household electricity consumption per capita. Inequalities according to GDP per capita are noticeably smaller. The decrease in the coefficient of variation and the max/min ratio for "GDP per capita" is relatively small in comparison with the change in the other indicators of prosperity, a fact that raises doubts about the reliability of regional GDP statistics[11].

We also note that, while in 1971 a limited number of prefectures are above the average of the country's prosperity indicators, this picture changes significantly in 1981 and 1991 for GDP per capita and telephones per 1.000 inhabitants, although not for the other two indicators. The distribution of electricity consumption per inhabitant as well as that of private cars per 1.000 inhabitants is such that a limited number of

[10] The indicator of cars per 1000 inhabitants is probably overestimated since it does not include farm vehicles, which are widely in the agricultural regions as general means of transportation.

[11] One obvious problem with regional GDP statistics in Greece is the size of the black market, which is estimated to be around 30 percent of the real economic activity but is unevenly concentrated in the largest and most developed areas. A second problem is that regional GDP is measured on the basis of where output is produced, not where income is received. This causes particular problems of mismeasurement of income affecting Athens especially.

prefectures exceed the national average. Despite the decrease in inequalities in 1991, the prefecture with the highest welfare indicator still exhibits two-and-one half times greater GDP per inhabitant than the one with the lowest prosperity indicator.

APPENDIX B:

REGIONAL STATISTICS FOR CRETE, PELOPONNESE AND THESSALY

Table 1B: GDP per head (in PPS) in Objective 1 regions (EU=100), 1988-96

	Thessaly	Peloponnese	Crete	Greece	Obj.1
1988	54	58	57	58	63
1989	57	57	64	59	64
1990	54	55	61	57	64
1991	56	56	62	58	65
1992	56	56	64	60	65
1993	57	57	68	64	68
1994	59	58	71	65	69
1995	60	58	72	66	69
1996	61	58	72	68	69

Source: Sixth Periodic Report on the Social and Economic Situation and Development of Regions in the European Union, 1999

Table 2B: Unemployment rates in Objective 1 regions, 1988-97

	Thessaly	Peloponnese	Crete	Greece	EU15	Obj. 1
1988	6.9	5.8	3.5	7.7	9.0	15.6
1989	6.5	4.8	2.4	6.7	8.3	14.5
1990	7.0	5.2	2.2	6.3	7.7	13.5
1991	6.2	5.0	3.6	6.9	8.2	13.3
1992	7.3	7.3	3.3	7.8	9.2	13.9
1993	7.2	5.8	3.5	8.6	10.7	14.9
1994	6.9	6.3	3.8	8.8	11.2	16.2
1995	7.6	6.0	4.1	9.1	10.7	15.9
1996	7.6	6.4	3.4	9.7	10.8	16.3
1997	7.5	7.5	4.3	9.6	10.7	16.2

Source: Sixth Periodic Report on the Social and Economic Situation and Development of Regions in the European Union, 1999

Table 3B: Employment change and productivity in Objective 1 regions

		Thessaly	Peloponnese	Crete	Greece	Obj. 1	EU15
Employment change	1988-93	-0.6	0.0	2.4	1.1	0.1	0.1
	1993-97	3.0	-0.3	1.1	1.4	0.4	0.2
Labour productivity	1988	62	64	64	67	76	100
	1993	69	68	69	71	80	100
	1996	68	67	72	72	82	100

Source: Sixth Periodic Report on the Social and Economic Situation and Development of Regions in the European Union, 1999

Table 4B: Electricity consumption for industrial use (in MWh) per 100 inh.

	Thessaly	Peloponnese	Crete	Greece
1981	142.57	63.38	12.48	109.10
1982	139.39	64.98	11.73	105.38
1983	146.72	66.57	13.27	111.72
1984	161.45	57.60	12.25	115.06
1985	163.17	56.97	14.83	114.68
1986	171.96	46.58	16.09	113.60
1987	161.41	48.59	16.13	112.09
1988	165.27	52.75	17.44	122.57
1989	162.77	47.89	20.30	126.00
1990	156.41	46.69	20.19	123.76
1991	147.24	46.69	19.52	119.83
1992	133.23	47.57	21.85	118.43
1993	139.17	46.44	21.36	116.75
1994	137.28	51.01	21.77	119.98
1995	138.35	40.82	23.29	114.89
1996	140.73	43.49	26.49	115.64
1997				117.00

Source: National Statistical Service of Greece, Regional Statistics

Table 5B: Tourism capacity and activity, 1981-97 (per 100 inh.)

	Thessaly			Peloponnese			Crete			Greece		
	beds	staying overnight of domestic	staying overnight of foreigners	beds	staying overnight of domestic	staying overnight of foreigners	beds	staying overnight of domestic	staying overnight of foreigners	beds	staying overnight of domestic	staying overnight of foreigners
1981	1.48	110.84	58.33	4.06	128.15	249.41	6.46	97.42	1105.89	2.94	106.88	314.44
1982	1.53	108.54	55.54	4.17	146.85	275.15	9.33	103.11	1073.01	3.18	107.95	305.99
1983	1.78	99.25	60.41	4.31	141.27	238.88	7.81	103.84	1036.68	3.23	103.27	276.94
1984	1.89	106.18	69.75	4.36	150.36	293.34	8.75	114.30	1334.76	3.37	111.39	331.67
1985	1.97	114.78	72.80	4.47	164.28	282.41	9.41	119.65	1411.73	3.50	115.79	357.27
1986	2.09	109.39	67.59	4.62	141.78	266.60	10.14	106.94	1448.83	3.61	106.12	354.54
1987	1.99	109.71	81.17	4.76	137.68	302.36	10.96	105.67	1387.10	3.75	103.92	361.29
1988	2.19	113.33	65.73	4.82	154.21	268.60	12.08	123.00	1471.96	3.94	112.14	346.51
1989	2.38	123.37	63.74	4.87	171.05	241.58	13.53	124.82	1497.46	4.20	118.79	338.53
1990	2.44	120.39	74.08	4.72	161.91	235.48	14.51	113.42	1658.45	4.31	116.44	357.23
1991	2.53	118.10	58.28	4.73	157.94	152.35	15.39	128.58	1355.63	4.48	117.59	297.48
1992	2.64	129.30	74.81	4.62	160.19	184.05	15.93	119.75	1644.11	4.61	120.34	357.48
1993	2.74	123.17	71.51	4.62	159.61	172.39	16.82	120.86	1682.71	4.81	120.78	357.51
1994	2.77	137.48	90.57	4.53	174.86	184.17	16.98	107.33	1833.89	4.88	122.79	397.95
1995	2.91	141.68	79.40	4.78	163.02	173.62	19.78	134.60	1717.27	5.33	124.74	378.45
1996	2.94	143.72	75.26	4.77	162.89	179.37	20.07	148.72	1654.28	5.46	127.10	353.57
1997	2.96	147.20	83.66	4.87	165.06	166.08	20.05	157.50	1898.44	5.50	131.92	387.81

Table 6B. Classification of the Prefectures of Thessaly, Peloponnese and Crete according to investment incentives zones

Zone	Period 1983-90 Law 1262/82		Period 1990-98 Law 1892/90	
	Rate of subsidy	Prefectures	Rate of subsidy	Prefectures
A	0	-	0	
B	10-25%	Magnesia (TH) Larisa (TH) Iraklio (CR) Korinthias (PE)	15%	Magnesia (TH)^ Larisa (TH)*^
C	15-40%	Trikala (TH) Karditsa (TH) Chanion (CR) Rethimnou (CR) Lasithiou (CR) Lakonias (PE) Argolidos (PE) Arkadias (PE)	25%	Part of Larisa (TH) Trikala (TH) Karditsa (TH)** Chanion (CR) Rethimnou (CR) Lasithiou (CR) Lakonias (PE) Argolidos (PE) Arkadias (PE)**
D	20-50%	Mesinias (PE)	35%	Mesinias (PE) Part of Karditsa (TH) Part of Arkadia (PE)

* Except for a small part going to zone C.
** Except for a small part going to zone D.
^ Partly characterised as industrially declining regions after 1996 receiving further support (zone D)
Source: Ministry of National Economy, Greece

Table 7B. The allocation of ROPs in Crete, Peloponnese and Thessaly, 1994-99

	Crete	Peloponnese	Thessaly
Share of national population	5.2	5.9	7.1
Share of regional CSF II funds	5.96	6.72	8.51
Total funds for the 1994-99 period	435.3 kecu	440.3 kecu	560.9 kecu
Funds per head	810 ecu	727 ecu	767 ecu
Allocation of funds:			
Rural development	13.0	9.1	17.1
Infrastructure	23.2	11.9	16.6
Industry	4.9	0.6	3.6
Human resources	23.3	17.9	19.4
Urban development	0.4	2.0	1.4
Investment	-	16.2	11.1
Support of SMEs	5.7	0.5	0.3
Environment	9.8	6.3	8.2
Local Development	6.6	13.8	15.7
Tourism	12.2	20.6	6.5
Total	100.0	100.0	100.0

Source: Community Support Framework of Greece (1994-1999).

Table 8B: Regional distribution of the Program of Public Investment 1988-95 (mil.dr/1000inh.)

	Thessaly	Peloponnese	Crete	West Macedonia
1988	18.03	25.31	29.45	20.24
1989	21.82	27.69	33.83	27.96
1990	23.59	24.86	37.06	23.13
1991	31.48	28.09	43.20	39.16
1992	42.30	37.49	59.39	61.07
1993	36.73	38.68	64.08	65.50
1994	41.86	37.17	60.51	55.65
1995	55.91	41.18	79.49	80.66

Source: Lambrinidis et.al. (1998)

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