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Public Spending Patterns: the regional allocation of public investment in Greece by political period

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Yannis Psycharis[#]

ABSTRACT

The spatial dispersion of public investment constitutes one of the principal elements and also one of the key issues concerning a country's strategic regional development. Public investment expenditure represents in part the 'social wage' citizens receive, while at the same time it generates external economies for the productive sectors of the economy. Using a dataset that includes total outlays by all central, regional and local authorities, this paper traces the distribution of public investment in Greek prefectures (NUTS 3) over the period 1976-2005. It seeks to highlight the spending pattern governments of that period had followed, to compare the changes (if any) between different periods, and to explain whether redistribution of national wealth or other factors, including political ones, could be contributing to explaining the pattern and its temporal changes.

Keywords: Public investment, regional analysis, territorial public expenditure

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1. Introduction

In recent years the geography of public investment has gained renewed attention. Public investment affects the regional economy in two ways. The first is the short-run effect; an increase in public investment directly and indirectly stimulates economic growth. The second is the long-run effect; public investment creates public capital which provides the economy and society with the necessary infrastructure and upgrades both the social well-being and the development potential of the territories. Classical writers (Buchanan, 1949, 1950, 1952; Scott, 1952; Musgrave, 1959; Oates, 1972, 1998; Samuelson, 1954; Tiebout, 1956; Hirschman, 1957) and more recent advances in empirical work have given prominent position to the role of public investment in economic development (Bennett, 1980; Heald, 1994; Aschawer, 1989). This is why the geographical dispersion of public investment has taken on a renewed political salience for many governments in the contemporary public policy debate (Heald and Short, 2002:714).

This paper examines the regional distribution of public investment in Greece during a 30-year period, starting from 1976 and ending to 2005. In the course of this period the volume of public investment has increased in current prices

by 63 times.[1] However, at constant prices, increases were much less intense; in the year 2005, the volume of public investment was 1.7 times higher than that of the year 1976, whereas the year 2004 was 2.3 higher in comparison to the year 1976. It is also worth noting that the Public Investment Budget as a percentage of GDP fluctuated around 4% for the period 1976-1997, and between 5-6% for the period 1997-2005.

The key objective of the paper is to address comprehensively the regional funding patterns of different governments of the period 1976-2005 and also to consider some plausible explanations for such changes. Despite some earlier work on public investment expenditure in Greece (Psycharis, 1990, 1993, 2000, 2004; Lambrinidis et al.,1998; Rovolis, 1999; Lambrinidis et al., 2005; Mpistikas, 1985; Petrakos and Psycharis, 2004; Psycharis and Georgantas, 2004, Psycharis and Monastiriotis, 2007), this is the first time that the regional distribution of Greek public investment is examined in such detail and for such a long time-period.

2. Geography of Public Finance in Greece: Data issues and sources

Research into the geography of public finance is not at all a straightforward issue. There are tremendous methodological problems when the scale of analysis is changing from the national to a sub-national level. Decisions over a number of issues are of crucial importance for the foundation and limitations of

[1] In 2004, the year of the Athens Olympic Games, public investment volume reached its historical highest level which was 80 times higher than that of the year 1976.

the analysis. Problems involved include, among others, decisions over the determination of the periods, the geographical scale of analysis and on manipulation of statistical data.

Choice of one period of time rather than another is of course arbitrary and occasionally confounding issue. Different periods emerge when the analysis is based on economic cycles rather than on political cycles. Hence, decisions over periods are usually determined by the purpose of the analysis. This also has some limitations. Trends on public spending, per example, that have been observed in one period might have started before the period under study.

Another problem is related to the availability of data at the disaggregated geographical levels since usually only a part of the expenditure has a specific geographical orientation. A large amount of public spending remains unallocated, yet this unallocated amount is not at all geographically neutral. Furthermore, even in cases of geographically identifiable expenditure it is questionable whether these increments ‘in’ the geographical boundary of the prefectures are also ‘in and for’ the prefectures.

Concerning the measurement issues it is quite different to construct a geographical pattern of public expenditure based on the volume of public spending rather than on the per capita payments. The later is the most commonly used measure in order to make comparisons. As we will discuss later this also has some limitations. As regards public investment there is also another issue which is related to what we really measure. The evolution of the

gross amount of public investment is an analysis of flows, whereas the accumulation of public capital is an analysis of capital formation.

Finally, the coverage and content of public investment in the course of a 30-year period is gradually changing and different types of payments have been included in the public investment budget whereas other types have been removed. These changes impact on the regional distribution to the extent that the location of benefits of new programmes (e.g. Life-long learning) is different from that of the beneficiaries of discontinued programmes (Border regions support programmes).

Our analysis focuses on Greece during the period 1976-2005. Greece covers an area of 132,000 km^2, has a population of 11,961,758 inhabitants and is divided into 51 prefectures (in Greek, nomos). Greek prefectures correspond to the level III of the Nomenclature of Territorial Units for Statistics (NUTS) of EUROSTAT, the Statistical Office of the European Union. The average surface of a representative prefecture is 2,587 km2 (range from 356 km2 to 5461 km2). Prefecture is a key feature of the Greek political, administrative and planning structure and also the base unit for constituencies, with the exception of Attiki and Thessaloniki, which contain five and two constituences each respectively. In addition, prefectures had been, and to a very large extent still are, the spatial level on which the attention of regional development policy has been focused for many years. Regions which today play an important role in regional policy didn't exist until 1986; they were legislated for in that year, but they didn't become fully functional until after 1997.

Developing such a comprehensive analysis requires access to data sources different from the conventional ones (see Appendix). The starting point of our analysis was the payments made through the State Investment Programme. The Greek Public Investment Programme (PIP) is part of the Greek Annual Budget; it forms a very important constituent of the State Budget and, of course, is approved by the Parliament. PIP is the main mechanism for providing the Greek economy with infrastructure, and it also encompasses the structural funding from the European Union.

Data that are used in this study include all payments realised by different tiers of public administration; the national (ministerial) level, the regional, the prefectural, and the local. Such data include public investment in infrastructure for the economy's primary and secondary sectors, payments for infrastructure in the form of roads, bridges, ports, airports and tourist facilities, urban infrastructure (primarily water and sewage facilities and housing), social infrastructure (education and health), etc. To obtain a measure of public investment at constant prices, sectoral deflators were used for the different categories of infrastructure investment. All variables are expressed in EURO and at constant 2000 prices. For every variable there are 1650 observations, fifty-one cross-section observations per year.

The assignment of public investment to different prefectures is not at all a straightforward issue. Regionally allocated public investment accounted for some 55% of total public investment in the study period. The remaining 45% remains unallocated and could not be assigned to specific prefecture (for the UK experiences see also Heald and Short, 2002:749; Cameron et. al., 2004).

This includes inter-regional projects or projects that affect the entire population of the country. The current study is based only on the regionally allocated part of the expenditure (regionally identifiable or regionally relevant expenditure).

The analysis presented below is carried out in sub-periods, each determined by the duration of each government in power. These sub-periods are: 1976-81, 1982-89, 1990-93, 1994-2000 and 2000-2004 (see Table 1).

These periods coincide with particular parties' terms in government. Thus, Period I 1976-1981, the 'New Democracy' (ND) party, the Conservative Party, was responsible for the country's government. This was also the period of restoration of democracy after the falling of the dictatorship in 1974. The next period begins in 1982 and covers the period 1982-89. This determines the 'Socialists' Era'. During this period, the 'Panhellenic Socialist Movement' (PASOK) was responsible for the country's government (1981-85, 1985-89). Over the period 1989 to 1990 Greece was governed by three short-lived governments with limited mandates, one of a coalition between the conservative party of New Democracy and the Left, one caretaker government, and one 'national unity' government in which New Democracy shared power with both PASOK and the Left. In 1990, the ND party won the elections and formed a government. Only from the middle of 1990 through 1993 was the conservative party of New Democracy alone in power but, again, its extremely weak parliamentary majority (of one vote) formed a decisive obstacle to the implementation of policy choices. Internal conflicts within the party led to the collapse of the ND government and a victory in the 1993 elections for PASOK, who also won the 1996 and 2000 elections, returning to power and remaining

in power for the entire period 1993-2004 (1993-96, 1996-00, 2000-04). Finally, the ND party won the 2004 elections and returned to power, remaining in office for a second term after the 2007 elections.

Table 1: Periodising of the Post-dictatorial Greek Governments

Period	Governing party
1974-1977	New Democracy (Conservatives)
1977-1981	New Democracy (Conservatives)
1981-1985	PASOK (Socialists)
1985-1989	PASOK (Socialists)
1989	Coalition government - Conservative Party and the Left
1989	Caretaker government
1989-1990	National unity government
1990-1993	New Democracy (Conservatives)
1993-2006	PASOK (Socialists)
1996-2000	PASOK (Socialists)
2000-2004	PASOK (Socialists)
2004-2007	New Democracy (Conservatives)
2007-	New Democracy (Conservatives)

Source: Own representation.

Following this introduction, the regional variations in public spending pattern for these periods are presented with an examination of some reasons for these variations. Then, a presentation of summary statistics summarises the persistence and changes of the pattern over time. The final section concludes.

3. The Geography of Public Finance in Greece by political period

At the outset it is important to emphasize that the most common ranking on regional spending pattern is constructed according to distribution of per capita public expenditure (i.e. Heald, 1994; McLean and McMillan, 2003). Regional comparisons of total spending are meaningless unless a suitable measure is introduced. As Short

(1978:502) states '...population would appear to be the most suitable overall yardstick … since public expenditure as a whole is related to the needs of people'. However, as Anton (2000:431-2) argues '… it is too easy to over-interpret per-person expenditure information… because even relatively small sum can appear large when divided by tiny population. Conversely, more populous states receive very large amounts but, because those expenditures are divided by much larger populations, the data consistently show below-average receipts'. In this paper the principal ranking is based on per capita values. However, the magnitude of public spending is also included in the analysis as well as GDP per capita as 'another *prima facie* indicator of regional needs' (McLean and McMillan, 2003:48).

3.1. Period 1976-1981, New Democracy party in power[2]

In this section stylised facts that have resulted from the analysis are presented in the Table Ia in the Appendix. The analysis is carried out using average public investment expenditure by period. The first columns of this Table shows per capita distribution of regionally allocated public investment over the period 1976-1981. From the bottom line of the Table it can be seen that the regionally allocated public investment per capita over the period 1976-1981 averaged €191.95. The unallocated amount per capita of that period was €163.3. The total average public investment per capita was €355.3. What is presented below, however, is only the regionally allocated part of public investment.

[2] The first elected post dictatorial government was under Konstantinos Karamanlis (1974-1977) who also won the 1977 elections and remained Prime Minister until 10/5/1980, when he was elected President of the Hellenic Republic. Georgios Rallis replaced him as Prime Minister until 21/10/1981.

Table Ia shows per capita public investment for the top-10 / bottom-10 prefectures compared to the national average. As can be depicted from that table there are significant regional variations in the distribution of public investment across Greek prefectures ranking from €467.82 for Evros to €85.02 for Trikala. More specifically, Evros, the North-East boarder prefecture of Greece, with €467.82 public investment per capita is ranked first, receiving public investment two and a half times the country average. Conversely, Trikala, an agricultural prefecture of western Thessaly, with €85.02 public investment per capita is ranked last, with public investment less than half of the country average. The max/min ratio between the 'most benefited' and the 'least benefited' prefecture is 5.5 (Table 7). During this period 23 prefectures receive shares above the country average, and 27 prefectures receive shares below it.

Starting from the 'most advantaged' prefectures, it can be seen that the mountainous prefecture of Evrytania, which received on average €388.80 public investment per capita, holds the second place in the relative ranking. The agricultural prefecture of Serres, with €387.62 public investment per capita, holds the third position in the ranking. Both prefectures had received twice as much as the country average. The agricultural prefecture of Ileia, with €357.11 public investment per capita, holds the 4th place and Ioannina, a prefecture in the region of Epirus (the least well-off region of the country), with €294.48 public investment per capita, holds the 5th place in the ranking. The other five places are held by Voiotia, an industrial prefecture adjacent to Attiki, Pella, which is the industrial prefecture adjacent to Thessaloniki, the mountainous

prefecture of Grevena, the prefecture of Preveza and the Prefecture of Samos Island. All these were the top ten ‘beneficiaries’ of that period.

At the other end of the spectrum, there are the prefectures with public investment per capita well below the national average. As stated above, the prefecture of Trikala, which received €85.02 public investment per capita, held the lowest place. The prefecture of Larisa, with €94.79 public investment per capita, held the 50th and thus second worst place in the ranking. The mountainous prefecture of Kozani, with €98.82 public investment per capita, held the 49th place, third from bottom in the ranking. The agricultural prefecture of Karditsa, with €100.17 public investment per capita, held the 48th place. The prefecture of Fthiotoda, with €101.25, held the 47th place. The prefectures of Imathia, Pieria, Kerkyra, Arta, and Evoia held the bottom ten places in the ranking. All of these ten prefectures received public investment around and below 50% of the national average and were the net ‘losers’ of that period.

Apart from examining the extreme cases it is worth having a closer look at the prefectures of Attiki and Thessaloniki. These two prefectures include the largest urban agglomerations in Greece, Athens and Thessaloniki. Attiki, which holds Athens, the capital of Greece, receives the lion’s share of public investment at nominal values (37,6% of the total), but in per capita terms this prefecture is receiving only 10% above the national average and is holding the seventeenth position in the relevant ranking. Thessaloniki, with per capita public investment 27% below the national average, holds the thirty-fifth position in the ranking.

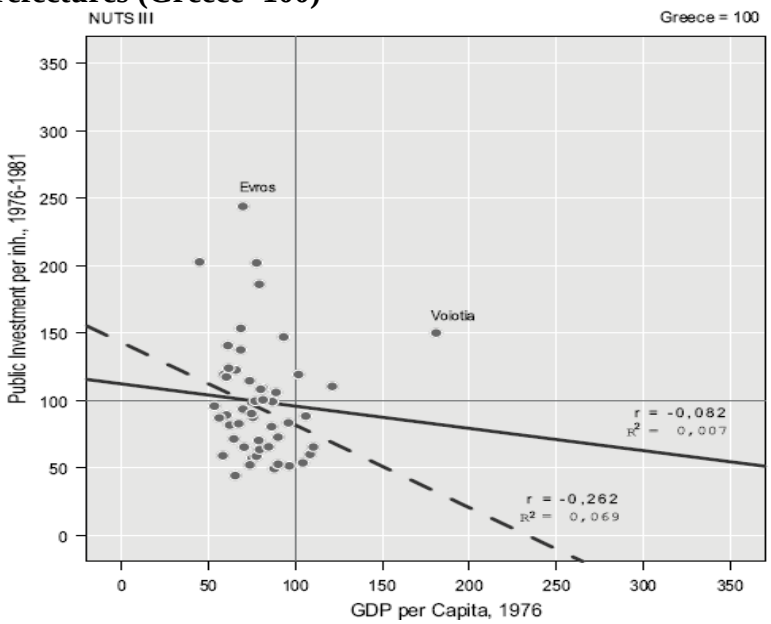
All of this raises a number of questions. Let us examine two of them. Firstly, is there any clear pattern for the regional allocation of public investment during this period? The answer in general is no. No more than a quick glance at the 'winners' and 'losers' lists doesn't seem to reveal any 'clear' geographical pattern emerging so far. The geography of public investment is rather 'patchy'.

Secondly, are there any reasons explaining the relative distribution of public investment during this period? This question cannot be answered without conducting extended work. However, one plausible explanation is that the regional distribution of public investment had been dictated by redistribution of national wealth in favour of the prefectures with higher 'needs'. Some economists believe that distributional issues should form an integral part of the public sector spending schemes. If this had been the case, one would expect to see a negative correlation between the level of economic development (expressed by GDP per capita) and the public support that prefectures received (expressed by public investment per capita). The coefficient correlation between GDP per capita and public investment per capita is presented in Fig.1.

When regional GDP per capita in 1976 is plotted against public investment per capita for the period 1976-81, it seems there is a small negative relationship between the values under study –the slope of the curve shows a relatively small negative gradient– which, however, is not statistically significant, and thus no substantial redistributive effect can be proved. This result, however, has been influenced by outliers; such is the case of Voiotia in the upper right quadrant and Evros in the top left quadrant of the Figure. Even when outliers are excluded still redistribution cannot carry sufficient evidence of geographical

redistribution. Conversely, as it is depicted from the bottom left quadrant, in a large number of cases, prefectures lagging behind in economic development were also lagging in public investment expenditure support.

Figure 1. Scatter-plot of per capita public investment (1976-81) and GDP (1976) for Greek prefectures (Greece=100)



Source: Own elaboration of Regional Accounts of National Statistical Service of Greece and Public Investment of Greek Ministry of Economics and Finance.

As a general conclusion to the preceding analysis, it could be said that the Conservative governments of that period followed a pattern with a principal aim to directing public investment to the country's industrial poles, such as Voiotia, the adjacent to Attiki industrial 'satelite', and Pella, the adjacent to Thessaloniki industrial 'centre' being given priority, and the selective support of particular areas such as Evros (a special circumstances border prefecture), Evrytania (a mountainous and one of the least developed prefectures), as well as certain agricultural areas such as Serres (which was the place of origin for the country's Prime Minister K. Karamanlis) and Ileia (the place of origin of the Minister of Economics Ath. Kanellopoulos). However, the level of under-

development does not seem to have comprised a fundamental factor for the regional distribution of public investment in the period 1976-81. Attiki received the bulk of public investment in nominal terms and above the average in per capita terms. Let us not forget however, that during the 1970s Athens' rate of expansion was particularly high, and as a consequence urban development problems took on a sense of urgency and their resolution demanded substantial infrastructures, something which policy could not ignore.

3.2. Period 1982-1989, Socialist party in power[3]

This period was characterised by the following two elements. Firstly, it was a period when successive PASOK governments were ruling the country (1981-85, 1985-89). Secondly, structural funding from the European Economic Community, which Greece joined in 1981, strengthened the financing of public investment.

In 1981 a political change came about in Greece when the Socialists won the elections and remained in power almost throughout the decade. In this section the degree to which the Socialists' governments reset the geographical priorities for public investment provision and therefore causing a reshuffling of the ranking compared to the previous period will be investigated.

[3] The year 1981 was a turning point in Greek politics since PASOK won the elections and formed the first socialist government. Period 1981-1989 constitutes the 'Socialists Era' under Prime Minister Andreas Papandreou with two consecutive terms in power 1981-1985 and 1985-1989.

As can be seen (Table Ib, Appendix), regionally allocated public investment per capita over the period 1982-1989 averaged €212.73 compared to €191.95 of the previous period 1976-1981.[4] Thus, the socialist governments followed a more expansionary fiscal policy in the 1980s compare to the fiscal policy of the 1970s. What were the geographical consequences of this expansionary fiscal policy?

Firstly, public investment increased in most prefectures. However, important variations still existed between different prefectures, ranking from €714.37 in Evritania to €135.50 in Ileia, with a max/min ratio of 5.2. Evrytania stands first in ranking with €714.37 per capita over the period 1982-1989, enjoying support 4.2 times higher than the country average. Kefallinia with €553.59 holds the second position in the ranking and is enjoying 2.6 times higher support than the country average. The same applies to Voiotia which with €491.11 public investment per capita holds the third place in the ranking and is receiving support 2.3 times above the country average. Rethymni with €454.6 and Evros with €426.4 public investment per capita are holding the forth and fifth places in the ranking respectively. These two 'beneficiaries' receive support twice as much as the country average. In total 34 out of 51 prefectures receive support above the country average.[5] The least favoured prefectures received support only 36% below the country average in comparison to the 46% of the previous period. The vast majority of prefectures were finally benefited from the distribution of national wealth. However, the disparity between the most

[4] The unallocated amount per capita of that period was €180.90. The total average public investment per capita was €393.70.
[5] During the previous period only 20 out of 51 prefectures received support above the country average.

benefited and the least benefited prefectures became more intense! The standard deviation index for that period is 116.4 compared to 83.3 for the previous one. This might sound as a paradox but it is due to the fact that the more benefited prefectures got disproportionably higher support than the less benefited. As a result the gap between the most benefited and the least benefited was increased.

Perhaps the most striking of the several conclusions that can be derived is the relative change in regional rankings across the two periods. Rank order correlation as high as .546 makes clear that significant changes came about over the period 1982-1989 in comparison to the 1976-1981, causing an important reshuffling for the relative position each prefecture holds in the new ranking. In order to trace these changes the transition matrix analysis has been applied. Transition matrix is a very commonly used technique to highlight changes in the rank order and to pinpoint precisely the 'winners' and 'losers', the prefectures that got disproportional higher amounts and were upgraded in the relative climax and vice versa. As the transition matrix table indicates only 20 out of 51 prefectures stayed at the same quartile for both periods. Of the 31 movers, 13 were downgraded and 18 were upgraded. Figure 2 shows these transitions while Table 2 reports the extreme cases of prefectures that were upgraded or downgraded during this period.

Starting from the prefectures that dropped down in terms of investment allocation, incontrovertibly, the most dramatic case is Ileia, which from the 4th position it held in the 1976-81 period, was downgraded to the last (51st) place

in the respective ranking for the 1982-89 period. This severe drop is the most extreme case.

Figure 2. Transition Matrix-Changes in the pattern of public investment allocation: 1982-89 versus 1976-81 (ranking quartiles)

1976-81 (row)	1982-89 (column)					
	42-51	**32-41**	**22-31**	**12-21**	**1-11**	**Total**
42-51	4	3	3			10
32-41	2	4	3	1		10
22-31	1	3	1	4	1	10
12-21	1		2	4	3	10
1-11	2		1	1	7	11
Total	10	10	10	10	11	51

Source: See Figure 1.

Table 2. Changes in ranking for public investment allocation between 1976-81 and 1982-89: a selection of extreme cases

	NUTS III	***1976-81***			***1982-89***			
			R	GR=100		R	GR=100	diff
Negative	gr233 Ileia	357,11	4	186	135,50	51	64	-47
	gr126 Serres	387,62	3	202	155,72	46	73	-43
	gr3 Attiki	211,79	16	110	174,86	43	82	-27
	gr122 Thessaloniki	169,69	27	88	148,04	47	70	-20
	gr124 Pella	282,05	7	147	243,42	26	114	-19
	gr251 Argolida	203,24	19	106	221,18	31	104	-12
	gr253 Korinthia	125,57	38	65	138,48	50	65	-12
	gr231 Aitoloakarnania	179,56	24	94	204,39	35	96	-11
	gr112 Xanthi	171,13	26	89	203,40	36	96	-10
	gr143 Magnisia	139,75	34	73	175,21	42	82	-8
Positive	gr431 Irakleio	125,96	37	66	233,37	28	110	9
	gr133 Kozani	98,82	49	51	181,98	39	86	10
	gr144 Trikala	85,02	51	44	175,23	41	82	10
	gr245 Fokida	190,14	22	99	343,65	12	162	10
	gr242 Evvoia	115,05	42	60	227,65	30	107	12
	gr132 Kastoria	135,00	36	70	271,85	23	128	13
	gr114 Drama	137,08	35	71	276,51	21	130	14
	gr211 Arta	113,28	43	59	251,58	24	118	19
	gr141 Karditsa	100,17	48	52	250,89	25	118	23
	gr433 Rethymni	158,77	31	83	454,61	4	214	27

Source: See Figure 1.

Another striking revelation portrayed in these data is Serres which from 3rd place in the period 1976-81, fell to 46th in the period 1982-89, and downgraded by 43 places. These two prefectures moved from the highest quartile to the

lowest. Both used to be among the beneficiaries of the previous period. Attiki fell from 16th place to 43rd, i.e. it dropped 27 places. Thessaloniki drifted further from the 27th place to the 47th, a drop of 20 places. Finally, the fall in rankings of some other prefectures is also impressive. This is mainly the case for Pella (from 7th to 26th), Argolida (from 19th to 31st), Korinthia (from 38th to 50th), Aitoloakarnania (from 24th to 35th) and Xanthi (from 26th to 36th).

Conversely, there are other prefectures that have improved their position in the ranking. Here the most impressive case is that of Rethymni, which from the 31st position in the 1976-81 ranking rose to 4th in the period 1982-89, changing its relative ranking by 27 positions. The transition Karditsa experienced, from 48th to 25th place, i.e. a difference of 23 places, was also impressive. In development terms, this agricultural prefecture was lagging behind by 20% below the national average in the year 1982. This is not the case for Rethymni, which showed a level of development above the national average. However, this prefecture had among the highest proportions of PASOK voters in the country (51.5% in 1981 and and 57.2% in 1985, the highest percentage PASOK got in any constituency). This perhaps offers an explanation for the observed change. Arta also experienced a substantial upgrading, by 19 places, from 43rd position to 24th. Clearly this prefecture required a boost since its level of development was 25% below the national average; though the fact that it was the constituency and the place of origin of D. Tsovolas, who served for an extended time as Minister of Economics for the governments of this period, should not be unnoticed. Kefallinia, which holds the second place in the ranking and was upgraded by 11 places, was the place of origin for G. Arsenis

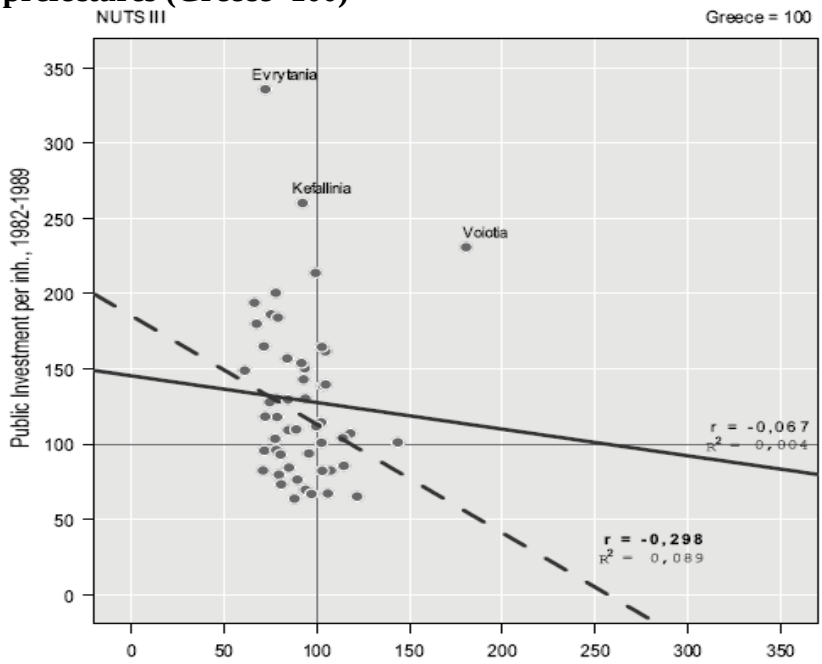
who served as Minister of National Economy for many years in the Socialists' governments of that period. Several studies of the determinants of public spending have found strong indication that modern transfer spending tends to be a function of (geographic) political clout rather than 'need' (Anderson and Tollison, 1991:162). Such discretionary policy has been studied in many other cases in the relative literature and more extended commentary seems warranted for the Greek case.

Apart from these cases, certain other prefectures also show important changes. These are the following: Drama rose by 14 positions, from 35th to 21st, Kastoria by 13, from 36th to 23rd, Evvoia by 12, from 42nd to 30th, Fokida (from 22nd to 12th), Trikala (from 51st to 41st), and Kozani (from 49th to 39th) by 10 and Irakleio by 9 (from 37th to 28th).

On closer inspection, it can be observed that these transitions have a particular geographical reference. The agricultural prefectures of Thessalia, that were neglected the previous period, the majority of the insular prefectures and certain border prefectures, were upgraded. All Kriti's prefectures rose significantly in the rankings, as well as the prefectures of Keffalinia, Zakynthos and Kastoria. On the contrary, Attiki and Thessaloniki lost public investment. Attiki's share in absolute terms was reduced to 28.5% from 37.6% of the previous period. Many of the beneficiaries of the previous period, such as Serres, Pella, Chalkidiki, Ileia, Argolida, all the prefectures of Western Greece (apart from Achaia), as well as Evros, also lost public investment.

In looking for an overall pattern, one might expect that the lower the level of prosperity, in terms of GDP per capita, the higher the level of public investment per capita. Was this system more redistributive when compared with that of the previous period? As Figure 3 shows, although the redistributive curve possesses a negative slope greater than that of the previous period, this slope again is not particularly steep. Hence, redistribution is not on its own a sufficient determinant to explain the reasoning behind the regional distribution of public investments during the period under study.

Figure 3. Scatter-plot of per capita public investment (1982-89) and GDP (1982) for Greek prefectures (Greece=100)



Source: See Figure 1.

The general conclusion is that again in the period 1982-89, a specific geographical pattern of public investment is not emerging. There is not a clear 'North-South divide', nor an 'Athens and rest of country' divide. Neither 'low density' nor 'low income' seems to carry sufficient explanatory capacity. As in the previous period, there is not again a clear geographical pattern for the

distribution of public investment. It seems, however, that important changes have take place in the spatial distribution of public investment, compared with the preceding period. Public spending increased as well as redistribution. The redistribution had also some 'clear' exceptions which were the beneficiaries of the previous period. The 'biased' distribution of funds cannot be examined further in this paper. Indeed, these results are so interesting, and the issue so significant from a political point of view, that it deserves further investigation something that goes beyond the scope of this paper.

3.3. Period 1990-1993, the return of New Democracy[6]

The political instability of the two-year period 1989-90 and the return to power of New Democracy party (1990-93) comprise this period's political characteristics. Another feature of this period is that public investment incorporated the European Funding form the 1st Community Support Framework (CSF) of 1989-93.

Fundamental changes should not be expected during the course of four-year period. However, as Table 1C shows the regionally allocated per capita public investment dropped from €212.73 of the previous period to €200.36.[7] This

[6] Over the period 1989-90 Greece was governed by three short - lived governments. The coalition government between New Democracy and the Left under Tzannis Tzannetakis (form July 2, 1989 to October 12, 1989), the caretaker government under Yiannis Grivas (from October 12, to November 23, 1989) and the 'national unity' government under Xenophon Zolotas in which New Democracy shared power with both PASOK and the Left (November 23, 1989 to April 11, 1990). In 1990, the ND party won the elections and formed a government under Prime Minister Konstantinos Mitsotakis. Period 1990-1993 thus constitutes the return of New Democracy in Greek government.

[7] The unallocated amount per capita of that period was €166.20. The total average public investment per capita was €366.50.

might be attributed to the political instability of the period 1989-90 and also to the limited administrative capacity of the country to absorb the European funds from the 1st Community Support Framework, which officially started in 1989.

The regional spending pattern of that period shows remarkable stability between 1982-1989 and 1990-1993. Rank order correlation as high as .81 reveals that the largest number of prefectures hold the similar position in the two rankings. Figure 4 and Table 3 present the main transitions in the relative positions of the prefectures regarding their participation in national per capita public investment during the period under study.

What stands out immediately and evokes some surprise is that per capita investment in Attiki and Thessaloniki were not only far below average, but drifted further and further being among the lowest in the rankings. Attiki with €137,13 public spending per capita has experienced public investment below the national average by 32% and was ranked 47th, while Thessaloniki with €126,30 showed public investment below the national average by 35% and was ranked 49th. Only five prefectures had per capita public investment below those of Attiki, and only two below Thessaloniki. Thus, an even more substantial downgrading of Attiki –and Thessaloniki– is observed in the rankings in terms of participation in national per capita public investment.

In contrast to the above, there were certain interesting developments in the top places in the ranking. Evrytania with €1000.38 expenditure per capita occupied the first position in the ranking with public investment five times greater than the country average, and seven times greater than those of Attiki. It is clear that

Evrytania benefits from the highest per-capita expenditures. Apart from the fact that Evrytania is one of the most sparsely-populated and mountainous prefectures, it was also the constituency of P. Bakoyannis, a politician who was assassinated by terrorists in 1989 and after that Evryatnia was the constituency of D. Bakoyanni, his spouse, who is also the daughter of the Prime Minister of that period Konstantinos Mitsotakis. Fokida with €663.1 public investment per capita holds the second place in the ranking, enjoying public support three times as high as the country average. Grevena with €588.4 holds the third place in the ranking and Samos with €513.31 occupies the fourth place. Ioannina, with €468.3 is placed fifth. These top five beneficiaries received public support at least two times above the national average. Apart from other reasons, political circumstances have played a role in this development. The majority of these beneficiaries are crucial electoral constituencies; they are single-seat and dual-seat prefectures. Due to the marginal majority, these constituencies became politically crucial for the elections. This fact probably influenced public investments positively, with the goal of gleaning a favourable vote from each respective government. The intense political antagonism and tensions of the period brought additional resources to these prefectures.

Figure 4. Transition Matrix - Changes in the pattern of public investment allocation: 1982-89 versus 1990-93

1982-89 (row)	1990-93 (column)					
	42-51	**32-41**	**22-31**	**12-21**	**1-11**	**Total**
42-51	7	3				10
32-41	2	3	4		1	10
22-31	1	4	2	3		10
12-21			3	3	4	10
1-11			1	4	6	11
Total	10	10	10	10	11	51

Source: See Figure 1.

Table 3. Changes in the pattern of public investment allocation: 1990-93 versus 1982-89: a selection of extreme cases.

	NUTS III	*1976-81*			*1982-89*			
			R	GR=100		R	GR=100	diff
Negative	gr124 Pella	243,42	26	114	177,72	40	89	-14
	gr433 Rethymni	454,61	4	214	335,80	18	168	-14
	gr242 Evvoia	227,65	30	107	174,60	43	87	-13
	gr421 Dodekanisos	327,12	14	154	253,64	27	127	-13
	gr432 Lasithi	350,00	11	165	284,17	23	142	-12
	gr111 Evros	426,45	5	200	340,43	16	170	-11
	gr223 Kefallinia	553,59	2	260	376,17	13	188	-11
	gr232 Achaia	237,84	27	112	182,91	38	91	-11
	gr255 Messinia	319,83	15	150	261,29	25	130	-10
	gr127 Chalkidiki	294,99	19	139	252,25	28	126	-9
	gr3 Attiki	174,86	43	82	137,13	47	68	-4
	gr122 Thessaloniki	148,04	47	70	126,30	49	63	-2
Positive	gr254 Lakonia	197,93	38	93	206,08	32	103	6
	gr114 Drama	276,51	21	130	359,28	14	179	7
	gr125 Pieria	169,38	44	80	184,49	37	92	7
	gr434 Chania	304,03	17	143	430,98	9	215	8
	gr245 Fokida	343,65	12	162	663,11	2	331	10
	gr411 Lesvos	232,47	29	109	316,28	19	158	10
	gr231 Aitoloakarnania	204,39	35	96	269,49	24	135	11
	gr244 Fthiotida	142,10	49	67	198,40	34	99	15
	gr222 Kerkyra	179,30	40	84	305,30	22	152	18
	gr112 Xanthi	203,40	36	96	443,60	7	221	29

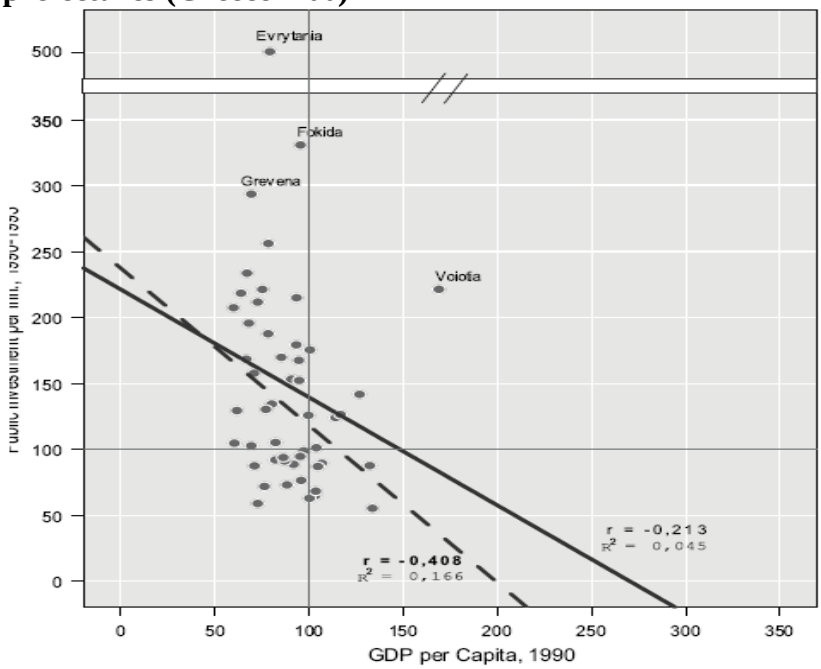
Source: See Figure 1.

As previously stated important changes in the ranking should not be expected during the course of four-year period. As can be seen from the transition matrix 21 out of 51 prefectures remain at the same quartile between the two periods. From the rest 15 were upgraded and 15 were downgraded. However, changes were mild.

Nine prefectures moved down by 10 to 14 places in the ranking. Rethymni (by 14 places), Lasithi, Dodekanisos and Messinia (by 12 places), Evvoia, Kefallinia and Evros (by 11 places), Achaia and Pella (by 10 places). In the same period, seven prefectures improved their position moving up at least 10 places. The most substantial rise was by Xanthi (from 36th to 7th place, a change

of 29 places). Kerkyra's transition (from 40th to 22nd place, a change of 18 places) and that of Fthiotida (from 49th to 34th place, a change of 15 places) were also substantial. Aitoloakarnania rose by 11 places in the rankings, while Fokida, Lesvos and Chania rose by 10 places. Chania was the only prefecture in Kriti where public investment increased. Chania was the place of origin of the Prime Minister K. Mitsotakis.

Figure 5. Scatter-plot of per capita public investment (1990-93) and GDP (1990) for Greek prefectures (Greece=100)



Source: See Figure 1.

Thus, although there are no significant changes in the regional distribution of public investment between the current and the previous period, there were certain interesting cases. The intense political competition during this period resulted in the increase of investment in small and electoral decisive prefectures. Indeed, a large number of small, agricultural, border and mountainous prefectures, with a below-average level of economic development, received above-average per capita public investment. Despite the

fact that there were certain exceptions, the pattern of supporting the less-developed prefectures was more apparent and marked during this period than in any of the preceding periods. Conversely, the most populated areas of Attiki and Thessaloniki drift further in the ranking. As a result of the above, a greater redistribution effect is observed at this period.

Thus, as a general conclusion it may be said that from a redistribution perspective, this period's policy was more redistributive than all those preceding it. Statistically, the inverse relationship is significant, especially when outliers are removed, and is stronger that in any previous period. This was to a great extent a result of the decline of Attiki's relative position in the country's public investment tables. This may also be related with the fact that many 1st CSF projects were small-scale and applied at a regional level. There might be also a case of inertia, especially for short periods of time. More recently, Mackay (2001: 570), observed an extremely high correlation between spending in different regions of the U.K. in succeeding years which led him to the conclusion that "History and habit, custom and practice have a powerful impact on public spending. There is inertia. Last year's spending is an excellent guide to this year's and this year's to next year's."

3.4. Period 1994-2000, the return of Socialists[8]

This period had the following characteristics. Firstly, the period was politically homogeneous, since after 1993 PASOK returned to government and remained in power throughout the period under study. This period also coincided with the implementation of the 2nd Community Support Framework (1994-1999). The larger part of the CSF and also funding from the Cohesion Fund was implemented through the Public Investments Budget. The principal aim of economic policy during this period was to meet the requirements, the convergence criteria of the Maastricht Treaty, in order to secure the country's participation to the European Economic and Monetary Union (EMU).[9] The aim of this section is to present the regional distribution principle for public investments during this period. The analysis again yields very important findings.

As shown in the Table Id, there was a sharp increase in per capita public investment spending during this period. Nationally, regionally allocated public investment per capita over the period 1994-2000 averaged €261.47, which constitutes an increase of 30%, compared to the preceding period 1990-1993.[10] The sharp increase in the total volume of public investment of that period can be attributed to the increased European funding from the second Community

[8] PASOK under Andreas Papandreou won the elections in 1993 and remained in power until 1996 (from October 13, 1993 to January 22, 1996). His last term was disrupted by health and age, and finally stepped down as Prime Minister and leader of Pasok, and was succeeded by Costas Simitis (January 22, 1996). Papandreou died on 23rd of June 1996. Pasok under Costas Simitis won the elections in 1996 and 2000 having two consecutive terms in power (March 10, 2004 to April 9, 2000).

[9] In 1998 eleven EU member-states had met the convergence criteria, and the Euro-zone came into existence with the official launch of the Euro on 1 January 1999. Greece qualified in 2000 and was admitted on 1 January 2001.

[10] The unallocated amount per capita of that period was €248.40. The total average public investment per capita was €509.90.

Support Framework and the Cohesion Fund. However, this increase was also due to the transferring of funding from the European Social Fund and the European Agricultural Guidance and Guarantee Fund-Guidance section, from the Current Expenditure Budget, to the Public Investment Budget. Up to year 1996 these funds had been registered in the Current Expenditure Budget.[11] Having added new programmes in these data it is of some interest to consider the distributional consequences of this increase.

The rank order correlation of .71 shows that there were not significant changes between 1990-1993 and 1994-2000. But comparing 1982-1989 and 1994-2000 the coefficient correlation of .56 indicates that between the two decades 1980s and 1990s there are significant changes in the pattern, comparable to the changes between the 1970s and the 1980s. .

The first point, as can be seen in Table 4, is that after more than a decade of constant decline, Attiki upgraded its position in the public investment rankings by 15 places, from 47th to 32nd place. Thessaloniki likewise rose by 9 places, from 49th to 40th. This increase in Attiki and Thessaloniki has catalytically affected the pattern of regional distribution for public investment during the period under study. It is clear that, during that period a transition to a more centralist system for the spatial distribution of public investments was taking place, leading to a new polarisation between the two large urban centres and the rest of the country.

[11] After the government legislation from the year 1996.

The tendency to strengthen the highly urbanised prefectures appears to be confirmed in the case of Achaia. This prefecture rose by 29 places and reached the 9th place from the 38th which it had occupied in the previous period. This development could probably be related to the fact that this prefecture possesses the third largest city in the country, Patras. In addition, the three aforementioned prefectures constitute the basic transport infrastructure nodes in the country, and were given high priority by the 2nd Community Support Framework 1994-1999. Achaia, Attiki and Thessaloniki are the principal nodes in the Patra-Athens-Thessaloniki-Evzoni (P.A.TH.E.) axis. On these grounds, it is clear why the prefecture of Fthiotida was strengthened and upgraded significantly from 34th to 7th place, moved up by 27 places. Ileia, Chalkidiki and Evros were also upgraded. Chalkidiki was also the area of origin of the Deputy Minister of the Economy Chr. Pahta, responsible for the management of CSF resources. Pieria probably owes its upgrading to the fact that it is on the P.A.TH.E. axis.

Voiotia showed a decline in its relative position by 32 places, probably because certain road infrastructures were completed. Fokida also showed a large decline. Ioannina and Messinia, Karditsa, Xanthi, Evrytania, Pella and Lakonia followed suit. The cases of increases in public investment were more numerous and interesting. The three most urbanized departments –Achaia, Attiki and Thessaloniki– were upgraded. The prefectures along the PATHE axis, such as Fthiotida and Magnisia were also upgraded. Three formerly agricultural prefectures which experienced significant support in the 1970s –Evros, Chalkidiki and Ileia– began to enjoy significant support again. Rodopi, in

Northern Greece, rose from 26th to 12th place. It appears that we have come full circle so that in the 1990s we had returned to a regional distribution principle for public investments reminiscent of that of the 1970s.

Figure 6. Transition Matrix-Changes in the pattern of public investment allocation: 1990-93 versus 1994-00

1990-93 (row)	1994-2000 (column)					
	42-51	**32-41**	**22-31**	**12-21**	**1-11**	**Total**
42-51	6	4				10
32-41	3	2	3		2	10
22-31	1	2	3	4		10
12-21		1	2	5	2	10
1-11		1	2	1	7	11
Total	10	10	10	10	11	51

Source: See Figure 1.

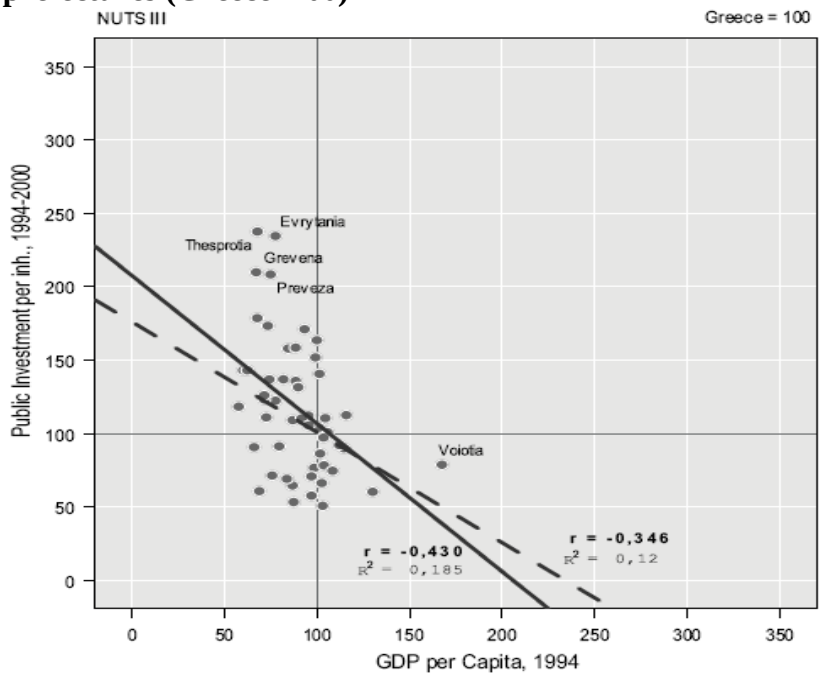
Table 4. Changes in the pattern of public investment allocation: 1990-93 versus 1994-2000: a selection of extreme cases

	NUTS III	*1976-81*			*1982-89*			
			R	GR=100		R	GR=100	diff
Negative	gr241 Voiotia	443,80	6	222	205,81	38	79	-32
	gr255 Messinia	261,29	25	130	180,54	44	69	-19
	gr112 Xanthi	443,60	7	221	290,07	25	111	-18
	gr141 Karditsa	307,36	21	153	225,57	37	86	-16
	gr213 Ioannina	468,33	5	234	321,95	20	123	-15
	gr413 Chios	415,73	11	207	309,37	22	118	-11
	gr433 Rethymni	335,80	18	168	275,83	29	105	-11
	gr114 Drama	359,28	14	179	293,34	24	112	-10
	gr254 Lakonia	206,08	32	103	186,49	42	71	-10
	gr432 Lasithi	284,17	23	142	240,87	33	92	-10
Positive	gr122 Thessaloniki	126,30	49	63	200,19	40	77	9
	gr125 Pieria	184,49	37	92	285,35	28	109	9
	gr134 Florina	211,09	30	105	320,00	21	122	9
	gr252 Arkadia	188,18	36	94	288,49	27	110	9
	gr113 Rodopi	259,57	26	130	374,20	12	143	14
	gr127 Chalkidiki	252,25	28	126	367,74	14	141	14
	gr3 Attiki	137,13	47	68	254,12	32	97	15
	gr233 Ileia	118,33	50	59	238,51	34	91	16
	gr244 Fthiotida	198,40	34	99	447,24	7	171	27
	gr232 Achaia	182,91	38	91	414,51	9	159	29

Source: See Figure 1.

Summing up it can be observed that during the 1990s the Socialist governments followed a pattern that favoured the most populated areas and prefectures on the main road corridors of the country. Most probably this was influenced by the large scale infrastructure projects financed by the Community Support Framework 1994-1999 whose aim was to upgrade the country's main infrastructures. Attiki and Thessaloniki received a substantial amount of public investment per capita and this was a catalyst for the pattern of public investment allocation of this period. Other than that, however, allocation became more redistributive in this period, as can be depicted from the scatter-diagram of Figure 7.

Figure 7. Scatter-plot of per capita public investment (1994-00) and GDP (1994) for Greek prefectures (Greece=100)



Source: See Figure 1.

3.5. Period 2001-2004, the Olympic Games period

This is the period for the preparation of the 2004 Athens Olympic Games. It was anticipated that Olympic Projects would have affected not only the total magnitude of public investment in the country but also the pattern for regional allocation of public expenditure. The 2004 Olympic Games were going to be primarily hosted in Greater Athens, a metropolitan region that already disproportionably accounts for most economic activity in Greece. Further polarization was expected as a result of preparing the region for the games. A widespread consensus on this has led to policy initiatives and actions aiming to countervail spatial unevenness in propelling development. Indeed, this sensitivity to spatial asymmetry of the effects of preparing and hosting the games seems to be uniquely characterizing Greek organizing authorities. The preparations for such enormous and costly events can lead to a distortion in spatial dispersion of national wealth, by benefiting disproportionately selective places against the needs of the other.

There are many interesting conclusions that can be derived from the analysis. Let us start for the mere observation that total volume of public investment during that period increased dramatically. In per capita terms the average amount was €424.19, an unprecedented increase throughout the 30-year study period. Undoubtedly, the most striking of the several facts is that 55,6% of the total (€10.321million) was invested in Attiki. Attiki with €661.89 public investment per capita was ranked 3rd. Another important feature is that only ten prefectures appreciated public investment above the country's average. The

remaining 41 prefectures received below average expenditure support. However, in absolute terms, a large number of prefectures received substantial support during the period of the Olympic Games, probably through the Greece 2004 programme, which was aiming to finance infrastructures throughout Greece.

The rank order correlation 0.709 reveals that the ranking hasn't changed dramatically. The transition matrix and Table 5 report the changes in the relative position of the prefectures.

As it stated above the most striking case was that of Attiki, which was upgraded by 29 places, from the 32nd to the 3rd place in the ranking. Irakleio escalated to the 13th from the 41st place and gained 28 places. Irakleio, the capital city of the prefecture, was one of the four Olympic Cities, the cities of Thessaloniki, Volos, Patra and Irakleion, were going to host football games at the qualifiers-stage. This most probably explains the fact that Magnessia, the prefecture with the capital city of Volos, has been upgraded by 19 places in the ranking. The same applies to Thessaloniki, as well as to Ileia, the place of birth of the Olympic Games. Korinthia, the adjacent prefecture to Attiki has also an impressive progress reaching the 21st from the 48th place.

On the other extreme Preveza droped by 20 places from 4th to the 24th and Chania fall by 19 places, from 11th to 30th. There was also a reduction in relative position for the prefectures of Evros, Kavala, Xanthi, Rodopi, all belonging to East Macedonia and Thrace region.

Figure 8. Transition Matrix-Changes in the pattern of public investment allocation: 1994-2000 versus 2001-04

1994-2000 (row)	2001-2004 (column)					
	42-51	**32-41**	**22-31**	**12-21**	**1-11**	**Total**
42-51	7	2		1		10
32-41	3	3	2	1	1	10
22-31		5	1	4		10
12-21			4	2	4	10
1-11			3	2	6	11
Total	10	10	10	10	11	51

Source: See Figure 1.

Table 5. Changes in the pattern of public investment allocation: 1994-2000 versus 2001-2004: a selection of extreme cases.

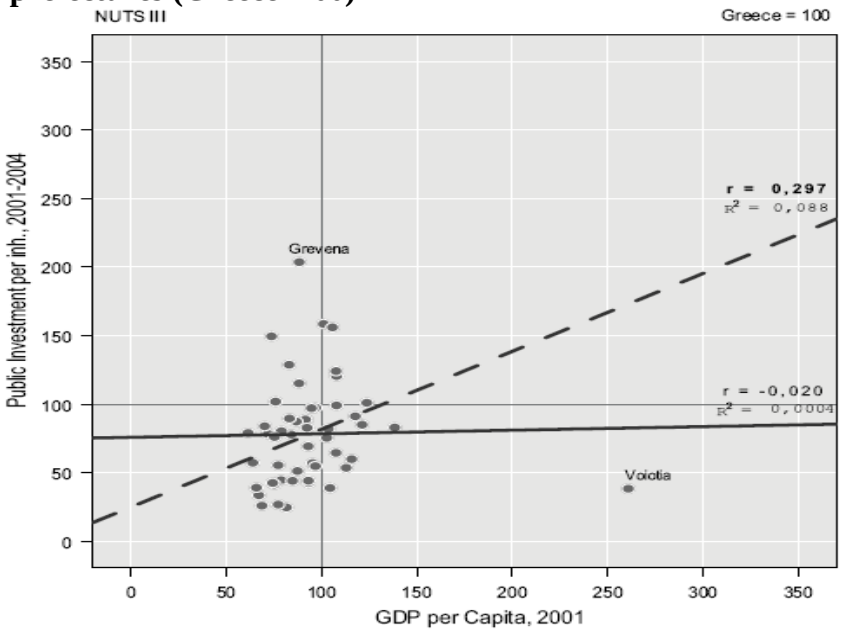
	NUTS III	***1976-81***			***1982-89***			
			R	GR=100		R	GR=100	diff
Negative	gr214 Preveza	544,99	4	208	340,39	24	80	-20
	gr434 Chania	397,17	11	152	293,78	30	69	-19
	gr111 Evros	412,86	10	158	330,17	27	78	-17
	gr115 Kavala	288,93	26	111	186,82	41	44	-15
	gr112 Xanthi	290,07	25	111	188,85	39	45	-14
	gr113 Rodopi	374,20	12	143	331,99	26	78	-14
	gr231 Aitoloakarnania	355,22	17	136	322,59	28	76	-11
	gr211 Arta	237,01	35	91	165,50	45	39	-10
	gr114 Drama	293,34	24	112	242,77	33	57	-9
	gr232 Achaia	414,51	9	159	370,34	18	87	-9
Positive	gr422 Kyklades	343,84	18	132	420,16	11	99	7
	gr122 Thessaloniki	200,19	40	77	253,97	32	60	8
	gr125 Pieria	285,35	28	109	355,91	20	84	8
	gr233 Ileia	238,51	34	91	335,09	25	79	9
	gr142 Larisa	139,11	50	53	187,09	40	44	10
	gr213 Ioannina	321,95	20	123	488,55	8	115	12
	gr143 Magnisia	263,71	31	101	413,05	12	97	19
	gr253 Korinthia	157,33	48	60	352,01	21	83	27
	gr431 Irakleio	194,90	41	75	411,77	13	97	28

Source: See Figure 1.

In sum, the Olympic Games period has caused an unprecedented increase in public investment. Attiki experienced a tremendous increase in the volume of public investment. A distortion in the regional allocation of public investment was occurred. Despite the absence of any clear pattern, the positive sign for the correlation coefficient indicates that there is a positive relationship between level of economic development and the support that prefectures receive. This

results in broadening the gap between the most prosperous and the less developed areas of the country.

Figure 9. Scatter-plot of per capita public investment (2001-04) and GDP (2000) for Greek prefectures (Greece=100)



Source: See Figure 1.

4. Overview and conclusions

The main aim of this paper was to shed light into an under-researched area of modern public policy in Greece namely the geographical pattern of public spending. Tracing public investment over a 30-year period is not at all a straightforward issue.

This paper represents a great effort to construct one of the longest time series with public investment data ever presented in the literature. This is the most consistent dataset that has ever been constructed on regional spending in Greece. Unpublished data on public investment have been collected from a

single official source, guaranteeing consistency. Public investment is expressed in EURO and at constant 2000 prices. The sub-periods are constructed according to the duration of each government in office. Although a government's decision in a set period may have influenced the payment made by another in the following period, the aggregate sums based on a number of years smoothens the trends and gives more plausible results. Having tackled these issues, analysis showed that striking variation exists in the regional allocation of public investment. However, the mere fact of regional variations in per capita public investment is insufficient evidence for judging whether the observed distribution has been 'right' or 'wrong'. The benefit of this paper is that it presents systematically the pattern of public investment allocation in Greece over a long period providing a baseline for further research.

Analysis showed, first, that there are marked inequalities in the flows of public investment across the Greek prefectures. However, there is not a 'clear' pattern for the regional dispersion of public investment in Greece. Neither a North-South/Mainland-Island/Urban-Rural divide nor 'the needs based approach' could carry sufficient explanation for the allocation of public investment. Analysis by period showed that the picture for the regional allocation of public investment is rather 'patchy'.

Second, contrary to what many researchers have portrayed about history and inertia for the stability of the devolved spending in the UK (Mackay and Williams 2005: 819,826) and 'the remarkable stability' of regional spending pattern in the USA (Anton 1982:430) the regional allocation of public investment in Greece is changing over time. The rank order correlations 'as

high as .98, .94 and .98 for the past three decades' for the USA (ibid, 430) and the .995 and .965 for the UK have no comparison with .54, .70 and .70 between the 1970s, 1980s, 1990s and 2000s in Greece (Table 6). The most important changes came about at two different times: between the 1970s and the 1980s and between the 1990s and the early 2000s. The first change between the 1970s and 1980s could be attributed to differences between Conservative and Socialist government policies. The changes between the 1990s and early 2000s could be attributed to the Olympic Games. Both had a tremendous influence on the spatial dispersion of public investment but in the opposite direction; the former towards higher dispersion and the latter towards higher concentration.

Third, the level of underdevelopment - and as result redistribution - does not appear to have constantly and systematically comprised the principal criterion to explaining the regional pattern of resource allocation in Greece during the period 1976-2005. When looking at the overall pattern, one might expect that the lower the level of prosperity, the higher the level of public expenditure. Quite strikingly, however, a large number of lagging behind prefectures in economic development terms had received below-average public investment. This omission was one of the most important findings of the analysis.

Fourth, the policy followed throughout the study period concerning the regional distribution of public investment does not seem to have been dictated by a higher-level strategic regional development plan. For this to have been the case, the government should have systematically monitored and recorded the public capital balance by prefecture, noted potential gaps, omissions, inequalities and needs, and distributed resources accordingly. Sadly, this has not been the case.

In contrast, the regional distribution of public investment seems to be dictated more by faltering, ad hoc interventions based on opportunistic and some times politically myopic criteria, rather than by coordinated interventions dictated by some well-researched plan of recorded needs.

Table 6. Rank order correlation of public investment distribution between political periods

Period	1976-81	1982-89	1990-93	1994-00	2001-04	1976-05
1976-81	1.000	0.564	0.429	0.372	0.229	0.578
1982-89		1.000	0.811	0.565	0.277	0.790
1990-93			1.000	0.715	0.376	0.874
1994-00				1.000	0.709	0.862
2001-04					1.000	0.664

Source: See Figure 1.

Table 7: Summary statistics of public investment regional distribution by period

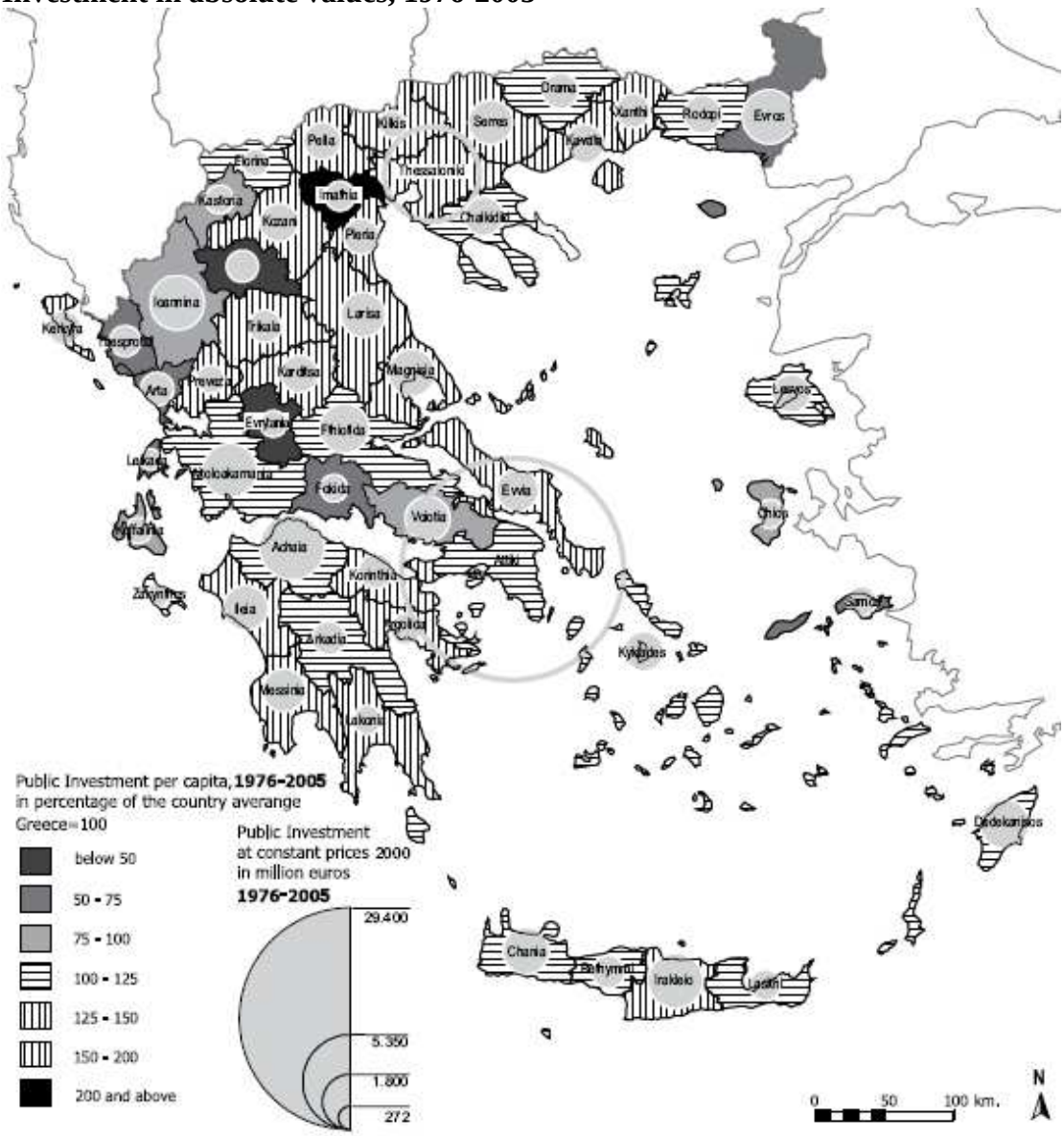
PERIOD	1976-81	1982-89	1990-93	1994-00	2001-04
Maximum	467,816	714,372	1,006,379	621,367	863,966
Minimum	85,016	135,498	111,059	132,449	104,561
Max/min ratio	5.5	5.3	9.1	4.7	8.3
Regional average	190,049	274,423	296,454	305,509	331,863
Standard deviation	83,362	116,485	162,853	120,960	159,117
Coefficient of variation	0.439	0.424	0.549	0.396	0.479
CoV weighted	0.368	0.369	0.480	0.301	0.666
National average	**191,946**	**212,729**	**200,359**	**261,466**	**424,187**
Standard deviation	**83,384**	**132,102**	**189,579**	**128,879**	**184,424**
Coefficient of variation	**0.434**	**0.621**	**0.946**	**0.493**	**0.435**
CoV weighted	**0.364**	**0.377**	**0.524**	**0.308**	**0.473**

Source: See Figure 1.

Last but not least, the regional distribution of public investment seems to be affected by electoral geography. The electoral preferences of prefectures, even the place of origin of certain members of each government, seem to comprise explanatory variables for the regional distribution of public investment. This is consistent with what Mackay and Williams state (Mackay and Williams, 2005: 819) that explaining the pattern ‘great weight has to be given to political

influences'. Obviously this conclusion requires additional evidence, and cannot be generalised nor substitute for other factors, which in conjunction with it, contribute to a better understanding of the regional distribution of public investment in Greece.

Figure 10. Spatial distribution of Public Investment per capita and Public Investment in absolute values, 1976-2005



Source: See Figure 1.

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Appendix

Tables IA-IF. Regional distribution of regionally allocated public investment per capita over the period 1976-2005 and sub-periods (in €, at constant 2000 prices) (top 10, bottom 10, Attiki and Thessaloniki)

(IA)

NUTS III	1976-81	R	GR=100
gr111 Evros	467.82	1	244
gr243 Evrytania	388.88	2	203
gr126 Serres	387.62	3	202
gr233 Ileia	357.11	4	186
gr213 Ioannina	294.48	5	153
gr241 Voiotia	288.01	6	150
gr124 Pella	282.05	7	147
gr131 Grevena	269.99	8	141
gr214 Preveza	263.80	9	137
gr412 Samos	237.80	10	124
gr3 Attiki	211.79	16	110
gr122 Thessaloniki	169.69354	27	88
gr252 Arkadia	122.05	41	**64**
gr242 Evvoia	115.05	42	**60**
gr211 Arta	113.28	43	**59**
gr222 Kerkyra	112.55	44	**59**
gr125 Pieria	109.89	45	**57**
gr121 Imathia	103.13	46	**54**
gr244 Fthiotida	101.25	47	**53**
gr141 Karditsa	100.17	48	**52**
gr133 Kozani	98.82	49	**51**
gr142 Larisa	94.79	50	**49**
gr144 Trikala	85.02	51	**44**
Total	**191.95**		100

(IB)

NUTS III	1982-89	R	GR=100
gr243 Evrytania	714.37	1	336
gr223 Kefallinia	553.59	2	260
gr241 Voiotia	491.11	3	231
gr433 Rethymni	454.61	4	214
gr111 Evros	426.45	5	200
gr412 Samos	412.57	6	194
gr213 Ioannina	396.08	7	186
gr224 Lefkada	391.51	8	184
gr131 Grevena	382.73	9	180
gr212 Thesprotia	350.85	10	165
gr144 Trikala	175.23	41	82
gr143 Magnisia	175.21	42	82
gr3 Attiki	174.86	43	82
gr125 Pieria	169.38	44	80
gr142 Larisa	162.38	45	76
gr126 Serres	155.72	46	**73**
gr122 Thes/niki	148.04	47	**70**
gr121 Imathia	142.83	48	**67**
gr244 Fthiotida	142.10	49	**67**
gr253 Korinthia	138.48	50	**65**
gr233 Ileia	135.50	51	**64**
Total	**212.73**		100

(IC)

NUTS III 1990-93	GR=100		R
gr243 Evrytania	1,006.38	1	502
gr245 Fokida	663.11	2	331
gr131 Grevena	588.42	3	294
gr412 Samos	513.31	4	256
gr213 Ioannina	468.33	5	234
gr241 Voiotia	443.80	6	222
gr112 Xanthi	443.60	7	221
gr212 Thesprotia	437.81	8	219
gr434 Chania	430.98	9	215
gr214 Preveza	424.36	10	212
gr133 Kozani	175.83	41	88
gr144 Trikala	175.57	42	88
gr242 Evvoia	174.60	43	87
gr123 Kilkis	153.41	44	77
gr142 Larisa	146.58	45	73
gr126 Serres	144.24	46	72
gr3 Attiki	137.13	47	68
gr121 Imathia	129.97	48	65
gr122 Thes/niki	126.30	49	63
gr233 Ileia	118.33	50	59
gr253 Korinthia	111.06	51	55
Total	100	**200.36**	

(ID)

NUTS III 1994-00		R	GR=100
gr212Thesprotia	621.37	1	238
gr243 Evrytania	613.62	2	235
gr131 Grevena	548.98	3	210
gr214 Preveza	544.99	4	208
gr224 Lefkada	467.14	5	179
gr412 Samos	453.24	6	173
gr244 Fthiotida	447.24	7	171
gr245 Fokida	427.62	8	164
gr232 Achaia	414.51	9	159
gr111 Evros	412.86	10	158
gr3 Attiki	254.12	32	97
gr122 Thes/niki	200.19	40	77
gr431 Irakleio	194.90	41	75
gr254 Lakonia	186.49	42	71
gr251 Argolida	185.09	43	71
gr255 Messinia	180.54	44	69
gr242 Evvoia	173.10	45	66
gr126 Serres	168.78	46	65
gr144 Trikala	158.71	47	61
gr253 Korinthia	157.33	48	60
gr124 Pella	150.68	49	58
gr142 Larisa	139.11	50	53
gr121 Imathia	132.45	51	51
Total	**261.47**		100

(IE)

NUTS III	2001-04	R	GR=100
gr131 Grevena	863.97	1	204
gr224 Lefkada	672.47	2	159
gr3 Attiki	661.89	3	156
gr212 Thesprotia	634.05	4	149
gr412 Samos	546.18	5	129
gr244 Fthiotida	526.49	6	124
gr127 Chalkidiki	511.29	7	121
gr213 Ioannina	488.55	8	115
gr221 Zakynthos	432.27	9	102
gr243 Evrytania	428.39	10	101
gr122 Thes/niki	253.97	32	60
gr115 Kavala	186.82	41	44
gr123 Kilkis	180.37	42	43
gr254 Lakonia	180.27	43	42
gr144 Trikala	175.49	44	41
gr211 Arta	165.50	45	39
gr242 Evvoia	164.50	46	39
gr241 Voiotia	162.49	47	38
gr126 Serres	142.01	48	33
gr124 Pella	113.30	49	27
gr255 Messinia	109.97	50	26
gr121 Imathia	104.56	51	25
Total	**424.19**		100

(IF)

NUTS III	1976-05		R
	GR=100		
gr243 Evrytania	697.03	1	297
gr131 Grevena	626.30	2	267
gr212 Thesprotia	437.59	3	186
gr412 Samos	412.83	4	176
gr224 Lefkada	402.61	5	171
gr111 Evros	394.47	6	168
gr245 Fokida	390.09	7	166
gr214 Preveza	380.32	8	162
gr223 Kefallinia	349.02	9	149
gr213 Ioannina	348.00	10	148
gr3 Attiki	247.85	29	105
gr251 Argolida	191.80	41	82
gr133 Kozani	189.39	42	81
gr124 Pella	187.88	43	80
gr254 Lakonia	178.05	44	76
gr123 Kilkis	169.35	45	72
gr242 Evvoia	169.14	46	72
gr253 Korinthia	163.92	47	70
gr144 Trikala	162.51	48	69
gr122 Thessaloniki	160.10	49	68
gr142 Larisa	140.10	50	60
gr121 Imathia	118.61	51	50
Total	100	**235.01**	

Source: See Figure 1.

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