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Government spending on regional public services in Greece: Spatial distribution of their evolution before and during the financial crisis.

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Abstract

Greece is still caught in a prolonged recession, which started in 2008. As a result, the economy continues to shrink, which has direct repercussions on the level of private and public consumption as well as on the level government's functions. The present paper attempts to record and depict spatially the evolution of the per capita public spending of the central government on regional services. The specific category of public spending represents a measure of relative welfare as well as a measure of regional development.

For the purposes of the research we applied analytical methods such as descriptive statistics and we used specialized mapping analysis programs and geographical information systems (GIS). The evolution over time is observed on the basis of the annual percentage changes of per capita spending. The period of analysis is 2008-2013 and it includes years before the manifestation of the economic crisis as well as the years of the crisis' peak. The thematic maps that were constructed on the basis of the data clearly demonstrate that government spending on the regions was dramatically reduced during the crisis while the period during which the tightening of fiscal policy had a direct impact on the regions stands out. The crisis does not allow any opportunity for development on the majority of the Greek prefectures.

Key words: Public expenditures, regional public services, spatial distribution, financial crisis, Greece

The strategic role of government expenditures

Greece is presently going through a very critical turn in its political and economic history. The economic and political climate is highly unstable and uncertain which causes negative repercussions for both the private and public sectors. While excessive government expenditures were responsible for the deterioration of public finances, they do not bear the sole responsibility for the government's debt crisis. On the other hand, they have been hit by extreme cutbacks in the name of fiscal austerity.

In a capitalist economy, the government's expenditures and the way they are distributed determine the degree of economic inequality among the citizens as well as the level of functioning or disfunctioning of the public sector. We can therefore claim that the concepts of public spending and public sector are inextricably interrelated. Several economic studies have attempted to explore the relationship between government expenditures and economic growth (Wagner, 1883; Peacock and Wiseman, 1967; Keynes, 1936; Singh and Sahni, 1984; Ram, 1986; Stiglitz, 1988). In the past, there were continuous debates among economists on whether government spending is a driving force of economic growth or inversely, economic growth causes increased government spending.

The distribution of government spending among prefectures reflects, to a large extent, the government's regional policy since an increase in spending on regional services is a measure of potential regional growth and an additional index of social welfare (Oates, 1972; Aschauer, 1989). However, a large part of the relevant literature does not consider that a reduction in government expenditures leads to reductions in the value of public services output either in terms of volume or in terms of quality (Heald, 2003). The economic crisis has affected all the territory of Greece and government spending in the periphery does point to the economic decline or stagnation of individual prefectures.

Government spending in Greece has not been thoroughly investigated, with an important exception, that of public investments. (Psycharis, 2004; Lambrinidis et al., 2005; Psycharis, 2008a,b; Psycharis, 2009). Government spending is defined as payments by public sector agencies in order to achieve specific targets such as the optimum allocation of resources, a fair income distribution, the stabilization of the economy and economic growth (Burkhead and Miner, 2009). Several categorizations exist, the most

common among which is the following: public consumption, net household transfers, subsidies, net transfers abroad, public investments and interest payments on government debt (Maniatis, 2003). The size of government expenditures depends, among others, on the urbanization of the population, the growth of the per capita GDP and technological change (Psycharis, 2009).

The expansion of the public sector is a global phenomenon, which occurred gradually and is probably an outcome of the application of Keynesian economic policies (Karagiannis, 2001). In Greece however, it seems that the increase of the size of the public sector is due to other factors, related to a series of misunderstandings and misrepresentations of Keynesian economic theory and policy (Karagiannis, 2001). Serious defects in the functioning of the public sector are being observed which have direct consequences on the country's growth oriented economic policies. Government revenues as well as government spending have increased overtime, with the highest increase due to the growth of transfer payments. It is worth noting that Greece is among the OECD countries with the highest public sector spending as a % of the GDP. However, despite the high expenditures, the effectiveness of the public sector is rather low (Rapanos, 2009). The goal of every state is to ensure the efficiency and effectiveness of its organizations. The aim is therefore to find a procedure of evaluation and a regime of measurement and controls in order to trace the effective utilization of public spending by every branch of the government and to assess whether each entity functions effectively and efficiently (Halachmi, 2002).

The geography of public spending

Due to the qualitative dimension of many public institutions, it is extremely difficult to quantify the extent of the public sector, as well as to perform comparisons among different countries. For the purpose of comparisons, certain indexes that measure the size of the public sector have been established. The most representative and widely used such index is the ratio of aggregate government spending over GDP or GNP (Georgakopoulos and Loizides, 1986). The increase in the size of Greece's public sector is quite big, starting at about 20% of GDP in the early 60's, reaching 50% by 2000 and declining slightly since then (Rapanos, 2009).

The distribution of expenditures can have a double meaning: on the one hand it refers to the functional distribution among various types of spending and on the other it refers to

their spatial distribution. The first type of distribution relates to the methods and the reasoning behind the decisions to allocate the expenditures to the various categories. The second approach investigates the criteria according to which they are distributed spatially.

The distribution of public spending by category of expenditure is directed according to the policies applied by the government in power (World Bank, 1988). It is based mainly on intense political negotiations and cannot be approached via a unified methodological framework (Tsekeris, 2014). Several theories have been developed in relation to the factors that affect the distribution of public spending (Dunne and Smith, 1984; Coyote and Landon, 1990; Tridimas, 1985; Pitarakis and Tridimas, 1999; Tridimas, 1999). Among others, the distribution of government expenditures depends on the distribution of the voter's incomes (Tridimas, 2001).

As regards the spatial distribution of public goods, it is discussed in the context of welfare, as a large part of the population is discriminated against, in the sense that it cannot enjoy the same public goods and services due to geographical limitations (Grofman, 1982). Public spending is a means of exercising regional policy. In Greece the majority of the population is concentrated in the two metropolitan centers (Athens and Thessaloniki) and important disparities in the spatial distribution of basic economic policy measures are observed de facto (Petrakos and Psycharis, 2004).

The strong regional inequalities in Greece, represent a serious structural problem which is due to a combination of factors such as historical, geological, economic and political (Petrakos, 2009). To this equation, we must add the lack of coordination among politicians, technological and fiscal constraints, as well as political calculations (Tsekeris, 2014). Despite the fact that the Greek government follows the European model of regional policy, the mechanisms of coordination of investment decisions are vague (Psycharis, 2009). It is logical to assume that a country without serious regional inequality problems has no special reason to give priority to regional policy. Conversely, a country with acute regional inequality problems should pay special attention in order to address them (Konsolas et al, 1993).

Data sources

For a better understanding of this paper, we must define and describe both the time period and the spatial framework of our analysis. The period of analysis is from the year

2008 to 2013¹. The year 2008 represents the starting point of the economic crisis in Greece. During this year, the citizens had not realized the extent, depth and length of the impending crisis. In contrast, 2013 can be characterized as the "heart" of the crisis. Every Greek has experienced, at a personal and collective level, financial, social, humanitarian and systemic difficulties due to the crisis. Some may not comprehend the dimensions of the crisis, however they face the consequences on a daily basis. Therefore, it is understood that those two years can form an axis for the observation of the behavior, over time, of government expenditures.

The spatial point of reference is the "prefecture", therefore the analysis will be performed at a NUTS3 level. The reasoning for the choice of this level of analysis is that our data (government expenditures by the ministries' regional branches) are available at this level. Since 2011 Greece has re-organized its regions and prefectures according to the "Kallikratis Program". According to this program, many small municipalities were united under a larger one. The axes of this plan were on the one hand the administrative division of Greece through the redefinition of the borders of the local government units and on the other, changes in the way local government bodies are elected and the extend of their responsibilities. The change in the spatial division of Greek municipalities however, has zero influence on the spatial distribution of public expenditures because the latter are distributed at the prefecture level (which was left unchanged by Kallikratis). As a result we do not have an issue on the comparability of the data between time cuts.

While the data across the years and the spatial unit of analysis are compatible, there exist, a complex methodological problem, which cannot be resolved given the data at our disposal: The expenditures that are reserved for a certain prefecture is not always certain that they concern that same prefecture (Psycharis, 2008a). Moreover, we observe instances where the expenditures that are recorded during a given period concern expenses incurred in the previous period, a fact that points to possible divergence in the real expenditures during the year under review.





The secondary data used in the present study are the government expenditures and more specifically the expenditures that refer to the ministries' regional services. The specific data have been drawn from the tables of the Budget Reports of the respective years (2007-2013) that are published by the Ministry of Finance. More specifically, the

¹ Given that we use annual differences, our data start on 2007.

State Budget Report for a specific year is compiled and presented to the parliament almost two years later, along with the budget of the next year. This in practice means that the State Budget Report of 2013 was compiled and published in October 2014 and the State Budget Report for 2008 was compiled and published at the end of 2009. Therefore, the most recent published accounts from the Ministry of Finance refer to the year 2013. The public expenditures of the Ministries' Regional Services are a specific expenditure category of the regular State Budget.

The Regional Services of the Ministries are grouped in four subcategories, (Finance, Education, Regional, Grants) while each one of them includes a number of services and departments (Table 1).

Table 1.1: Outline of the Ministries' Regional Services

Regional ministerial services			
Financial services	Educational services	Regional Services	Grants to the prefectures
			
Tax specialists Fiscal Audit Customs	Elementary schools Secondary education Education centers Regional Administration of primary and secondary Education Religious Education	Administration and local governments Planning and Development Public Works Environmental and spatial planning Health and Social Solidarity Forests Agriculture	Grants for Health and social Solidarity Grants for Educational expenditures Grants for Agriculture Other grants

Source: Ministry of Finance, authors' compilation

Moreover, the expenditures are codified according to the payment type and may concern any of the regional departments (Table 1.2).

Table 1.2: Type of Expenditure by category

PAYMENTS FOR SERVICES	Public employees salaries Remuneration of staff with other types of work contracts Additional staff benefits Payments for staff travel Payments for other services
PURCHASES OF GOODS AND CAPITAL EQUIPMENT	Purchases of equipment for services, laboratories etc. Purchases of sanitary, pharmaceutical and cleaning materials Purchases of materials for the maintenance and repair of equipment and buildings Purchases of food, clothing, catering, camping and athletic equipment. Purchases of fuel and lubricants Various other purchases Purchases of capital equipment
TRANSFER PAYMENTS	Grants to public sector legal entities Income subsidies and other transfer payments
REPAYMENT OF PAST YEARS' PENDING OBLIGATIONS	Repayment of past years' unpaid obligations from purchases of goods and capital equipment. Repayment of unpaid obligations from additional staff benefits. Repayment of unpaid obligations from travel. Repayment of past obligations from other services Repayment of past obligations from other expenditures
EXPENDITURES THAT CANNOT BE CLASSIFIED IN OTHER CATEGORIES	Repayment of obligations from past fiscal years that cannot be classified in any of the above categories. Payment of obligations from complex transactions.

Source: *Ministry of Finance, authors' compilation*

Methodological approach

As already mentioned above, the data were derived from the Ministry of Finance and refer to the central government's expenditures that relate to the regional services of the Ministries. More specifically, they are secondary data classified in tables per prefecture and per year for the years 2007-2013.

To convert the expenditures to a common unit (per capita), we used the average estimated population of each prefecture for each year. Under the condition of the validity of our data, we calculated the per capita expenditures and their percent changes for each of the prefectures for the period of the study and more specifically for six time cuts. With

the help of descriptive statistics we derived useful conclusions for their spatial distribution. Moreover, with the utilization of thematic cartography we created cartographic representations of their distribution in geographic space. The particular method of visualization is quite notable because it achieves the optimum perception of the data and contributes to the interpretation of the results. For the purposes of the present study, specialized programs of statistical and cartographic analysis as well as geographic information systems (GIS) were utilized.

Results

Below, we provide our conclusions from the percentage annual changes of the per capita expenditures of the regional services of the ministries per prefecture. The general overview projects strong swings from year to year. Through the visual representation, the effects of the crisis and the tough austerity that has been imposed on the government's regional expenditures become clearly visible. Before proceeding with the analysis, we must note that the year 2007 was the beginning of the drop in the expenditures under investigation, as all the prefectures (100%) had negative changes in the per capita spending (Anastasiou and Kalogirou, 2012).

2007-2008

In comparison to the year 2007, our data are visibly improved. In any case, the expenditures do not come near the level of 2006 or of the earlier years, when the economic crisis in Greece did not exist even as an idea. We observe a general tendency for increase spending with some exceptions. More specifically, 43 prefectures display positive changes and only 4 of them negative changes. The prefectures that suffer spending cuts for a second year in a row are Kilikis (-50%), Chalkidiki (-26%), Pieria (-15%) and Piraeus (-12%).

Conversely, 52 percent of the prefectures saw increases in spending in the order of 5% - 25% compared to 2007. Moreover, in 14 prefectures the percent growth in spending was even greater, in the order of 25-50%. These were: Kastoria, Evvoia, Kozani, Preveza, Ioannina, Achaia, Messinia, East Attica, Cyclades, Rodopi, Aetoloakarnania, Argolis, Viotia, Evrytania and Cephalonia. The latter enjoyed a 64% increase in per capita government spending over 2007, the highest among the regions.

As regards the Dodecanese Islands, they demonstrate a positive change of 13% even though in the difficult year 2007 they received the smallest cut and for the second year in a

row they enjoy the highest level of per capita spending among Greece's prefectures. Finally, we observed 7 prefectures that had relatively low levels of spending which stayed unchanged during the years 2007 and 2008. These are: Zakynthos, Thessaloniki, Heraclion, Pella, Corfu, Kavala and Trikala.

2008-2009

The next period under study is generally similar to the previous one. There are no significant changes in the evolution of expenditures. However, we should mention that 2009 was the first year in which the government openly acknowledged the adverse economic conditions facing the country. In addition, this year was marked by important events such as early elections and a change in government. It is likely that these events did contribute to some extent to the determination of the size of the expenditures in each regional service.

During the period 2008-2009, we do not observe important changes. Most of the prefectures saw small percent increases in per capita expenditures. Specifically, 35 from a total of 54 prefectures had small percent increases in spending up to 25%. There are 8 prefectures where expenditures increased by more than average. The highest percent growth was observed in Xanthi, (+36%). Next come the prefectures of West Attika, (+32%), Corinth, (+30%), Drama (+29%), Zakynthos, (+28%), Chania, (+28%), Viotia (+27%) and Athens (+26%).

Moreover, in five prefectures, expenditures declined. Cephalonia, Kilkis, Karditsa, Fokida and Heracleion. The first four had small negative changes relative to 2001, with a maximum decrease of 18%. However, Heracleion, which suffered a steep decline in expenditures during 2007, maintained a low level in 2008 and faced another steep decline of 69% in 2009. As a result, this prefecture had the lowest level (7,22€) of per capita government expenditures in 2009 compared to the rest of the regions. Finally, in six prefectures (Piraeus, Corfu, Florina, Thesprotia, Lesvos, Lakonia and Ileia) per capita expenditures remained relatively flat.

2009-2010

During 2010, the general level of expenditures follows an upward trend. This trend however, does not bring the expenditure amounts back to the pre-crisis levels. During this year, only one prefecture saw a decline by about 19,4 percentage points and this was the

prefecture of Kavala. Moreover, two prefectures, Dodecanese and Piraeus had insignificant changes in per capita expenditures.

Overall, 51 out of 54 Greek prefectures had at their disposal more per capita expenditures during 2010 compared to 2009. Among them, 20 enjoyed increases over 50%. Characteristic examples are Larisa, (+91,1%), Argolida (+130,3%) and Karditsa (+134,7%). The prefecture of Heracleion, experienced a growth of 448% in per capita government spending, starting from a very low level as mentioned in the previous section.

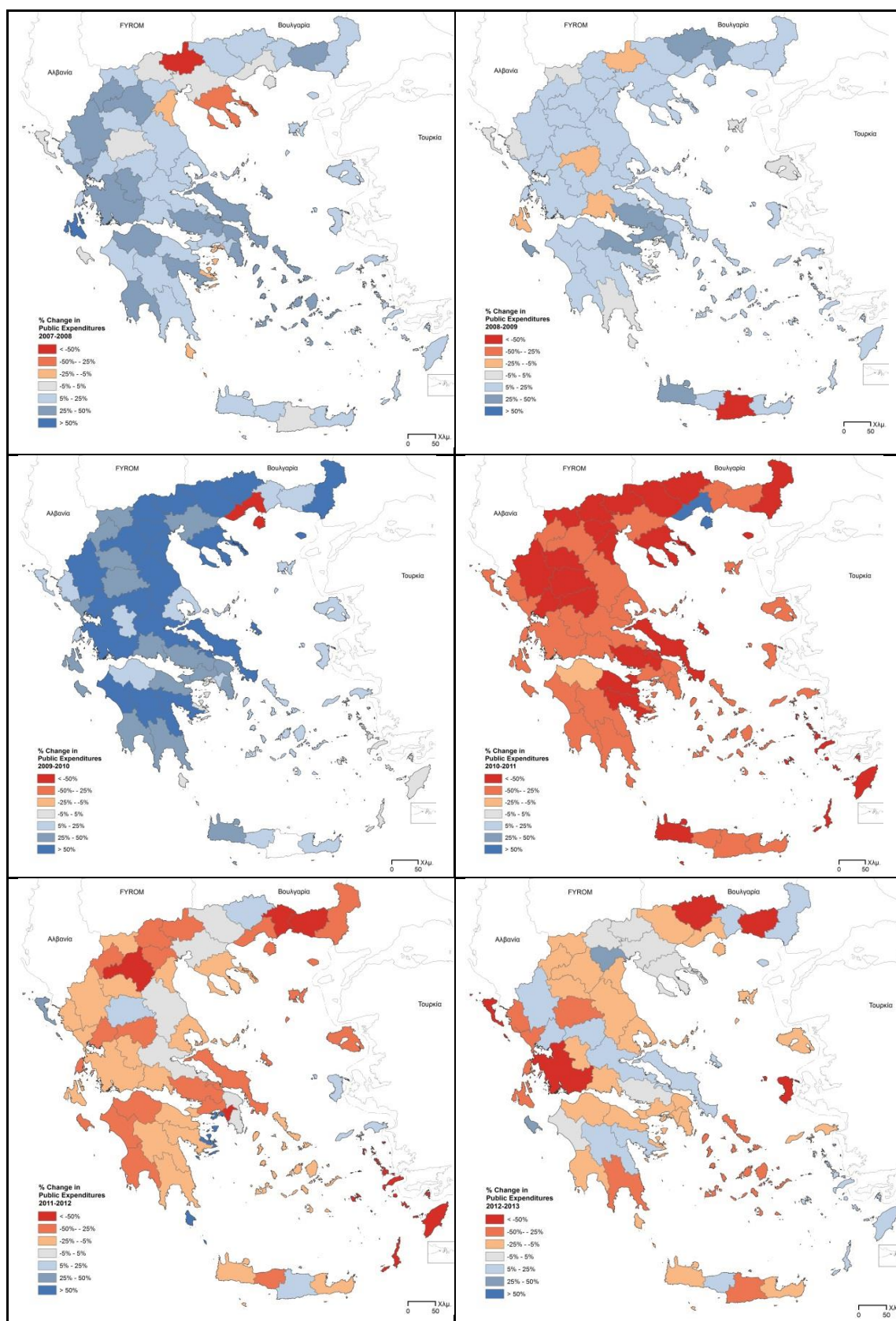
2010-2011

The optimistic picture described above for 2010 is succeeded by a very negative 2011. Few things can be added to the map presented below regarding the percent reductions in per capita regional expenditures across the country. Even though in 2010 there were hopes for an economic upturn -even a slow paced one- in the peripheries of Greece, the developments of 2011 confirmed that the financial crisis is a very complex, multifaceted phenomenon that goes through various phases before it runs its course.

A careful observation and comparison of the maps between the years 2010 and 2011 shows that the two maps are complementary. Almost 90% of the prefectures - 48 of them- present negative percent changes. The highest negative change of 85% is associated with the prefecture of Dodecanese.

The only prefecture displaying a growth in government expenditures (+77,5%) during 2011 is Kavala, which was also the only one that experienced a decline during 2010. Finally, the smallest percent decline (-21%) among the prefectures was presented at Achaia prefecture.

Maps 1.1-1.6: Percent changes of per capita expenditures 2007-2013



Source: Ministry of Finance, authors' compilation

2011-2012

During 2011-2012, we observe that the general economic outlook in the regions remained negative. The government expenditures in the majority of the prefectures continued their negative trend but less strongly compared to the previous year. More specifically, 42 out of 54 prefectures displayed a reduction in per capita expenditures. In 19 areas the negative change was less than 25%, in 22 of them the reduction was in the order of 25-50%, while Dodecanese suffered the largest drop in per capita expenditures (-58%).

Conversely, 7 prefectures (13% of the total) had increased expenditures during 2012. Five of them experienced growth up to 25% while in Piraeus per capita expenditures grew by more than 50% compared to 2011. Finally, in the remaining five prefectures, per capita spending remained stable.

2012-2013

The year 2013 is the third consecutive year during which government regional expenditures continued their downward trend. In 65% of the prefectures expenditures dropped, whereas in just five of them the expenditures remained unchanged. Just one quarter among the Greek prefectures saw increases in the order of 5%-25%. Those were: Arkadia, Karditsa, Evros, Dodecanese, Rethymno, Ioannina, Arta, Argolida, Fthiotida, Xanthi, Evvoia, Imathia, Zakynthos.

The spatial mapping of the evolution of percent changes in public expenditures for the years 2008-2013 provides a clear picture of their course before and during the crisis. The fiscal crisis, after 2011, followed a course, which could not reverse the negative effects of the previous years and instead solidified to a degree a permanent austerity. Within this framework, there are cases of prefectures where we observe consistently high percentage changes -positive or negative- that are presented in table 1.2 below.

Table 1.2: Prefectures with highest negative/positive changes

	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013
Prefectures with strongest negative % changes	KILKIS CHALKIDIKI PIERIA PIRAEUS ZAKYNTHOS	HERACLION FOKIS KARDITSA KILKIS CEPHALONIA	KAVALA DODECANESE PIRAEUS XANTHI ATHENS	DODECANESE PIERIA GREVENA DRAMA ARGOLIS	DODECANESE XANTHI ATHENS RODOPI KOZANI	AETOLO- AKARNANIA CORFU XIOS DRAMA RODOPI
Prefectures with highest positive % changes	AETOLO- AKARNANIA ARGOLIS VOIOTIA EVRYTANIA CEPHALONIA	ZAKYNTHOS DRAMA CORINTH WEST ATTIKA XANTHI	IMATHIA LARISSA ARGOLIS KARDITSA HERACLION	RODOPI ATHENS PIRAEUS ACHAIA KAVALA	DRAMA HERACLION XIOS CORFU PIRAEUS	FTHIOTIS XANTHI EVOIA IMATHIA ZAKYNTHOS

Source: *Ministry of Finance, authors' compilation*

More specifically, Drama, Rodopi, Dodecanese, Piraeus and Xanthi experienced the strongest negative changes at least twice during the period under review. The prefectures that respectively experienced the highest percent changes for at least two years are Argolida, Zakynthos and Piraeus.

Another point to observe is that frequently the prefectures that experienced the highest percentage increases during a certain period were among those with the highest reductions the following period (Zakynthos, Karditsa, Kavala, Piraeus, Athens). This trend is very prevalent especially during the cuts 2009-2010 and 2010-2011.

Conclusions

During the current financial and debt crisis in Greece, significant amounts of government expenditures were devoted to the bailout of financial institutions, leading to a deterioration of regional fiscal imbalances that pre-dated the crisis. However, the fiscal deficit problems are not created only from increased expenditures but also from inadequate tax revenues (Burkhead and Miner, 2009; Maniatis, 2003).

The role of public spending is very important both in the development of lagging regions as well as in the smoothing of regional inequalities. The question to be asked then is how government expenditures are distributed among the prefectures and whether a certain pattern of spatial distribution can be detected.

A review of the visual mapping of the percentage changes in per capita expenditures among the regional entities reveals that since 2010, the crisis does not allow any margin for growth through public spending to the majority of Greece's prefectures. The unsound theory that austerity in government spending can have expansionary results is reflected in the thematic maps of regional government expenditure changes. Naturally, the maps bring out the issue of regional inequalities in per capita and absolute levels.

The present article gives an incentive for further analysis of the per capita regional government expenditures in order to point out, through the appropriate comparisons, whether the distribution of expenditures contribute to the leveling out of regional inequalities or, in the contrary, they reinforce them.

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