

ABSTRACT

The purpose of this study is to assess the level and the evolution of spatial dimensions of the current crisis in Greece among the thirteen regions (NUTS 2) of the country during the period 2008-2010. This is partly because, due to the austerity measures imposed in Greece from its lenders (i.e. IMF and the EU counterparts), the main focus of attention has been on national rather than on regional level, and partly because statistical data are not yet available. The exclusive use of Gross Domestic Product (GDP) for evaluating the spatial dimensions inside the country may lead to erroneous results. However, the crisis has obvious spatial aspects that should not be neglected. Thus, the study suggests the construction of a Composite Indicator for depicting the socio-economic situation of Greece at regional level (NUTS 2). The Composite Indicator takes into account not only GDP per capita but also other demographic and social variables. The findings of the study confirm a trend of the spatial impact of the economic crisis offering valuable insight for both theory and policy-making.

Key words: economic crisis, Greece, Composite Indicator, spatial dimensions

ACKNOWLEDGEMENTS

This thesis would have been taken far longer without the encouragement and the precious assistance of many others. It is enjoyment to acknowledge those who have supported me over the last months. This study is the outcome of months of focused work.

This thesis was developed under the valuable leadership of my supervisor Dr. Marie Noelle Duquenne, whose assistance, interest and support at the beginning until the end of the study, has been an inspiration for me and enable me to do my best. Furthermore, I would like to thank her for her encouragement and guidance, for her thoughtful ideas in both theoretical and technical contribution, her patience and loyalty in order to achieve an efficient partnership.

The study would not have been accomplished without the initial idea and remarkable effort of Dr. Dimitris Kallioras who helped me after long hours of dialogue in deciding the subject and the whole concept of my thesis.

It would be remiss not to thank Miss Evi Kolovou who provided to me all the possible librarian assistance, comments and suggestions.

I am particularly thankful for the time that devotes to me Dr. Serafeim Polyzos giving his advice and experience about constructing composite indicators.

I would like to thank one by one all my professors of my postgraduate studies because from each one I got something new, simultaneously with their valuable and important insights that gave me which helped me at personal and cognitive level.

Finally, I wish to thank my parents for their love, without whom I would never have enjoyed so many opportunities and my friends for their supports in ethical and psychological terms, all the way throughout.

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ACRONYMS

C.I.D. Composite Indicator of Development
C.I.S.E.S. Composite Indicator of socio-economic situation
C.I.W.D. Composite Indicator of Welfare and Development
E.U. European Union
G.D.P. Gross Domestic Product
G.N.P. Gross National Product
I.M.F. International Monetary Fund
J.R.C. Joint Recourse Centre
N.S.S.G. National Statistical Service of Greece
N.U.T.S. Nomenclature d' Unités Territoriales Statistiques
O.E.C.D. Organisation for Economic Co-operation and Development

INTRODUCTION

Crisis is defined as the period during which the proper functions of a system alter the original properties. This change manifests itself in sudden and unexpected way, which changes the normal development of the system. According to this definition, the crisis can be described in several different ways, according to the categories of situations and events in human history, such as natural disasters, epidemics. It is also mentioned as political crisis, economic crisis, and social crisis.

The economic activity, involves the complicated relationships between the actors, rules and interests and it is particularly vulnerable to crises, whose effects are adverse and also catastrophic for the people leading eventually to a “social backwardness”. Such crises pose a test of institutions, structures and changing the balance of forces and bringing that way “new players” into the big “game” of economy.

It is believed that the crises are inevitable and violent reaction of the system in distortions that already exist and are the real cause. The crisis is therefore the visible manifestations of the crisis that already exists.

Furthermore, Regional disparities in Greece are an issue of great concern both for the public opinion and for the politicians and public administration. The scientific debate is often characterized by different estimates, even controversial, not only for the type and level of inequalities, but also for the actions needed to counter them. The fact that half of the country's population lives in Athens and Thessaloniki and the fact that the rest of the country has severe civil population concentrations, gives the image of a highly unequal distribution of infrastructure, services and growth conditions. Some areas of the country seem to give the feeling of being in a regime inside edge (inner periphery) because they are the less developed regions of a country which itself is one of the least developed countries of European Union.

Undoubtedly, the regional problem of Greece is due to indifference and the centralization of central government. It would be very interesting to examine how this picture is going to change in the period of financial crisis in Greece (2008-2010).

This picture is in sharp contrast to the constant and high growth rates of Greece that managed to join Eurozone. In December 2008, Greece was first diagnosed with real severe economic problems, when Athens became headlines in the

international press. The experience of arson and looting in the streets of the capital, took place the time when global economy seems to be gradually recover of the recent financial crisis. Greece is living beyond its means in recent years and increasing the level of debt has a high burden on the national economy. As a result, the Greek government borrowed heavily and went on something of a spending spree during the past decade. Public spending soared and wages in the public sector almost doubled during this time. However, as the money flowed from the funds of the government, income tax, because it was hit by widespread tax evasion. When the global economic downturn hit, Greece was unprepared to face it. Elevated levels of debt in Greece mean that investors are reluctant to lend more money and require a higher premium for doing so.

By the end of 2009, Greece entered an unprecedented fiscal crisis that threatens the stability of even country and European Union finance and Monetary Union (EMU) in its entity. In response these developments and pressure from its European partners, the Greek government has implemented an extensive package of austerity measures. As with elsewhere in Europe, they are geographically horizontal. Nevertheless, due to different regional levels in specialization, GDP per capita and capacity of capital, horizontal measures can have significant spatial effects, affecting different regions disproportionately.

The aim of this study is to examine the spatial dimensions of economic crisis in Greek regions in 2008- 2010at NUTS 2 level, taking into consideration three dimensions, the purely economic, the demographic and the social dimension. The vast majority of the studies that have examined this issue used GDP per capita as an indicator in order to examine the regional welfare. However, an exclusive focus on this indicator is not very informative and could draw misleading conclusions of the spatial dimensions of the crisis in Greek regions.

The subject of the study is topical for two reasons: the first is the financial crisis in Greece shares some common features with other financial crises of the past such as the Great Depression of 1931, the crisis in 1945-1949 in Asia, and the current crisis in Argentina and other European countries of the South. The different between the financial crisis in Greece and the other crises is that the crisis in Greece presents some unique features. These features referred to the political structural system and the regional inequalities in the country that already existed long before the crisis of 2008. These entire particular characteristics referred to the political structural system and

their relationship with concepts such as corruption and turpitude. The first one is the power of interest groups of the country, the second one is the voters that are afraid of reform, the third one is the role of the media and last but not least is the failure of the administration to solve various structural issues and regional inequalities. The second reason is associated with the tension of financial crisis that regards to Greece at total level. If the tension of financial crisis affects Greece totally, then the tension of socio-economic dimension of the crisis should be different inside the country, consequently, the analysis of the socio-economic indicators at regional level at least, should focus on some important spatial effects. In order to end up more valuable conclusions of spatial analysis, it is good idea for spatial analysis to be considered at relatively lower scale, for insistence at NUTS 3 level. However, because of the accessibility, availability and reliability of data, the study was chosen to take place voluntary at NUTS 2 level, even though it is known that this scale of the study (NUTS 2 level) hides some important differences and has some significant divergences.

The rest of the study is organized as follows. Part 1, chapter 1 arrays some thoughts about the current crisis and a short review of the most basic financial crises of the past and the current crisis of Argentina. Chapter 2 provides some evidences of the crisis in Greece and presents the situation of inequalities at regional level. Chapter 3 discusses the spatial impact of the economic crisis within a theoretical approach at first and then presents the immigration as a significant spatial dimension of the crisis in Greece. Chapter 4 presents the spatial dimension of the crisis in Greece in 2008 to 2010 through the development of a composite indicator. Finally, summarises the findings to provide some tentative conclusions.

Part 1:

Financial Crisis

Chapter 1: The current Crisis: some “evidences”

The crisis is not a new phenomenon. At various times Marx appears to associate crises with the tendency for the rate of profit to fall, with tendencies to overproduction, underconsumption, disproportionality and over-accumulation with respect to labour. The distinctive feature of Marxist theories of crisis is their emphasis on the necessity of crisis as an essential and ineradicable feature of the capitalist mode of production, that defines the objective limits of capitalism and the necessity of socialism.

Crises are a cyclical and according to Marx's theory, cyclical crisis is a physiological phenomenon that enforces self-regulating character of capitalist economy. The accumulation of real capital plays main role and financial sector plays subordinate role. Prosperity starts with accumulation of capital. In the prosperity banks function as financial intermediary. At the end of prosperity higher wages reduce industrial demand for loanable money. Then loose credit encourages speculation. When speculators cannot rollover credit, speculations collapse, and crisis starts.

1.1. The generations of crises

Having as a criterion the causes of the crises, there are mainly three generations of crisis (Kaminski and Reinhart, 1999):

- ✓ Crises first generation are those whose cause is the fiscal and monetary policies of countries such as the crises in Latin America in the decades of 1960 and 1970.
- ✓ Crises second generation are those due to countercyclical policies in developed countries. These include the crisis of the European Monetary System in the early 1990's, as well as the self-fulfilling crisis is mainly due to rumors and panic developed in classes of investors without having a problem in the real economy, actually.
- ✓ The crises of the third generation owe to the moral hazard, asymmetric information and in excessive growth of international borrowing and placement in assets that can be characterized as a bubble. Such crises are

the crisis of Mexico in 1994 and the crisis and in South East Asian countries in 1997.

The changes that occurred in recent twenty years in the functioning of the international economy as well as the effect of both globalization and decentralization alter the manner in which manifests and propagates the crisis, the rate of spread and their workarounds. Not only had the propagation played the main role, also the range and the nature of assets in circulation.

The crises of capitalism as an element, represents a shutdown. Through the integration of economic, crisis is transmitted quickly from one economy to the neighbor if they have financial links with the country that the crisis first appeared. For this reason, it appears that the financial crisis presents a wide range of specificities. In the following paragraph, we will try to answer to this main question: what is the financial crisis?

1.2. Main aspects of financial crisis

The crises of capitalism as an element, represents a shutdown. Through the integration of economic, crisis is transmitted quickly from one economy to the neighbor if they have financial links with the country that the crisis first appeared. In other terms, the economic crisis is mainly a financial one. For this reason, it is necessary to examine what we mean by financial crisis.

There is no precise definition of financial crisis, but a common view, according to Jickling M. at CRS Report of Congress (2010), is that “disruptions in financial markets rise to the level of the crisis when the flow of credit to households and business is constrained and the real economy of goods and services is adversely affected”.

Until 1970, the world faced with tree generation of crises thus creating three generations of crisis models. (Eichengreen, 2003)

Starting with the 1931 sterling crisis. This period was when sterling was pegged to gold and after that to the dollar and the world was moving slowly and steadily into the Great Depression. In this period, were starting to develop some doubts about the ability of some countries to sustain the gold standard, and the dominant concerns of international investors were liquidity and safety. This causes

that there were currencies which might leave the gold standard be subjected to standstill agreements objections to planned payments, and avoiding to exposures to banks whose the situation was in doubt. The three mainly gold-losing countries were Germany, Austria and United Kingdom.

Central Bank liabilities decreased in Germany, when the banknote circulation fell by 7,8 per cent, but in Austria and United Kingdom increased. This is what happened with Real GDP in Germany, fell by 7, 6 and retail prices fell by 8, 5 per cent. However, it was less than a decade since Germany had experienced hyperinflation, and fell in demand for banknotes might also have reflected a loss of confidence in the Reichsmark and in ability to remain on the gold standard.

France, the Netherlands and Switzerland all ran down their foreign exchange reserves in 1931, but in each case total reserve of gold and foreign exchange rose by a large amount. United Kingdom's exports were tailing off, the balance of the Central Bank contracted slightly and its foreign investment income was collapsing. (Allen and Moessner, 2012)The result was a steady loss of international reserves.

At that time, the heavy inflow of funds to the United State after Lehman Brothers failed was partly a side effect of a collateral squeeze which took place in the United States. As a result, companies affected such as banks which use their assets as collateral of their borrowings. (Adrian and Shin 2009 and 2010)The realization that Lehman Brothers had been allowed to fail suddenly undermined the credibility of other broker-dealers, such as Goldman Sachs, Merrill Lynch and Morgan Stanley.

The Krugman model for the 1931 crisis provides no explanation for what the governments were doing, presenting a significant weakness. According to Eichengreen in 2003, one explanation for what governments were doing is they were preoccupied with the increased rate of unemployment.

In 1947-1949, Asia faced with a huge crisis. A lesson of the Asian Crisis is that external liberalization can have distractive consequences in the presence of a financial overhang. Current account convertibility created additional scope for other countries to use their blocked sterling balances to purchase imported merchandise and to employ leads and lags to undertake disguised capital account transactions.

Moreover, the crisis in 1949 was a classic example of third generation crisis in which financial factors played the main role. The more interesting phenomenon of this crisis is that the aftermath was not disastrous; in details the growth actually stabilizes and picked up. Why this happened? The reason is not hard to see, because

their liabilities were denominated in the domestic currency, British Banks and organizations were not into bankruptcy. Britain, after World War II, emerged with an unprecedented sovereign debt of 250 per cent of GDP, yet devaluation did not force the government to default. Sterling's system, as an international currency, allowed Britain to avoid these dislocations. (Eichengreen, 2003)

The effects of the devaluation of sterling by the United Kingdom in 1967 examines the critical economic relationships involved in a devaluation and estimates them over a period which spans the devaluation (1960-72). The main relationships considered are:

- ✓ the devaluation effect on import prices
- ✓ the effect of import price changes through the cost of living on the wage-price spiral
- ✓ the induced effect of wage and other cost changes on the price of U. K. traded goods
- ✓ the response of domestic and foreign demand to changes of the relative price of U. K. and foreign goods

Finally, according to a research of International Monetary Fund (IMF), a model was built and simulated to estimate the devaluation effect on the U. K. full employment current balance. Devaluation effects were found to have been favorable and large. Results indicate that the devaluation effect accounted for an improvement of about £1,300 billion (US\$3,100 billion) in the U. K. current balance by 1971, £940 million (US\$2,501 million) in the trade balance, and £331 million (US\$614 million) in invisibles. Nearly 3 per cent of gross domestic product was transferred into the balance of payments as a result of the devaluation. Devaluation effects came through relatively rapidly. Perverse effects on the trade balance which occurred in the first half of 1968 were more than compensated for by favorable effects on private services and other invisibles. The "cost" of the devaluation in terms of inflationary pressures and welfare losses was also high. By 1971, the devaluation had raised both consumer prices and hourly labor earnings by about 5 percentage points and had worsened the terms of trade by about 4½ per cent for goods and 1 per cent for private services. (2010)

According to Eichengreen in 2003, the devaluation of 1967 was the most difficult of this trio to reconcile with the modern theories of currency crises. This was the time, when sterling was pegged to the dollar with the Bretton Woods System. It is

also interesting to mention that Britain was not suffering from high unemployment and in this period prevailed real balance of payments.

As well as these were happening, the growth abroad made investment relatively unattractive. Furthermore, wages rose at the double-digit rates in 1964 to 1966, reflecting the scarcity of labor. In contrast to, prices were pushing up by the stimulation of consumption, dominating expensive monetary and fiscal policies.

The government that came in 1964 into power with the primary objective to promote economic development, and against youth unemployment, memories of the high unemployment over which Labour had presided in the 1920s never being far from its consciousness. It is important to mention that the postwar economy had already demonstrated an ability to function at low levels of unemployment, but for how long? In fact, the explanation for low unemployment was the wage moderation restrained by memories of 1930, then as recollections of earlier era began to fade; it was extremely possible that the period of full employment was already going to a close. (Eichengreen, 2003)

At this point the question is born, in our days after following the above three models of crises, why we failed to anticipate even a new crisis?

First of all, politics continue to lead governments to run policies that create conflicts between internal and external balance. Furthermore, the fact that none of these three British devaluations was contractionary, points up a major constraint on stability, named the problem of origin sin. Last but not least, there is a progress of securitization according to Eichengreen and Hausmann in 1999. Nowadays, the typical emerging market bond issue is held by many thousands of different individual and institutional investors. The being of a large number of investors encourages herding that makes crises more likely and creates collective action problems that render them more difficult to resolve.

The recent financial crisis began in 2007 but became acute when Lehman Brothers filed for bankruptcy on 15 September 2008. This event falsified the prevailing assumption that no systemically important financial institution would be allowed to fail, and shocked US financial markets severely; it was followed by very heavy international flows of funds.

The large flows of dollars in the U.S. created great problems in other financial markets, with the result would be impossible for a commercial bank located outside

the United States that had been financing longer-term US dollar-denominated assets with shorter-term wholesale funding to renew their funding from commercial sources. The crisis of 2008 is the largest financial crisis that hit the global economy after the war. In contrast to previous crisis which started in individual countries and broadcast limited number of countries, the crisis in 2008-2009 began in the most developed economies and transmitted at high speed in the world. This is the different point in contrast with the crises until 1970.

Unlike previous crises, such as the dotcom crash of 2001, the 1991 recession, Black Monday (Monday, 19 October 1987, when the world's stock exchange suffered the worst one-day loss in their history), the 1980s Latin American debacle, the slide of the third World into a vicious debt trap, or even the 1980s depression in Britain and parts of the US, this crisis is not limited to a specific geography. All the pre-2008 crises were localized (Varoufakis, 2011).

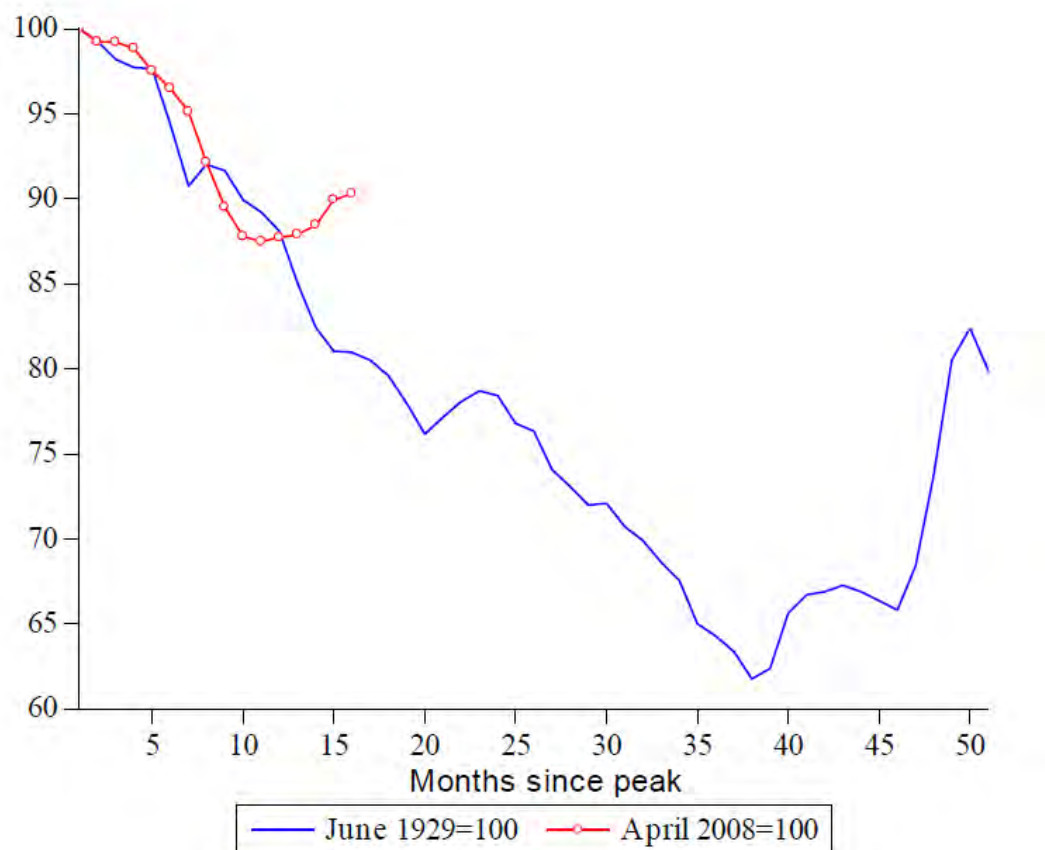
1.3.The causes of the current financial crisis

Everything began when fierce drop in liquidity occurred in 2007 when growing doubts about the value of mortgage-backed securities caused the 'shadow banking system' to begin to contract. The definition of shadow banks includes many broker-dealers and hedge funds, but it excludes most money market mutual funds, which are strictly speaking not leveraged, because investors buy shares which have no guarantee of capital value. Many shadow banks had acquired back-up liquidity guarantees from commercial banks in order to make their ABCP (asset-backed commercial paper programmes) attractive to investors, so that the growing doubts about the assets of the shadow banks, as well as about the mortgage assets of commercial banks themselves, led inevitably in turn to doubts about the soundness of commercial banks.⁷ The flight intensified and turned into a crisis after Lehman Brothers failed. The flight to liquidity and safety was manifested in many ways. (Allen and Moessner, 2012)

The 2008 crisis is notable for many reasons, including most obviously its severity speed. The international span is also been remarkable because industrialized countries have been affected, as well as a large number of developing and emerging economies.

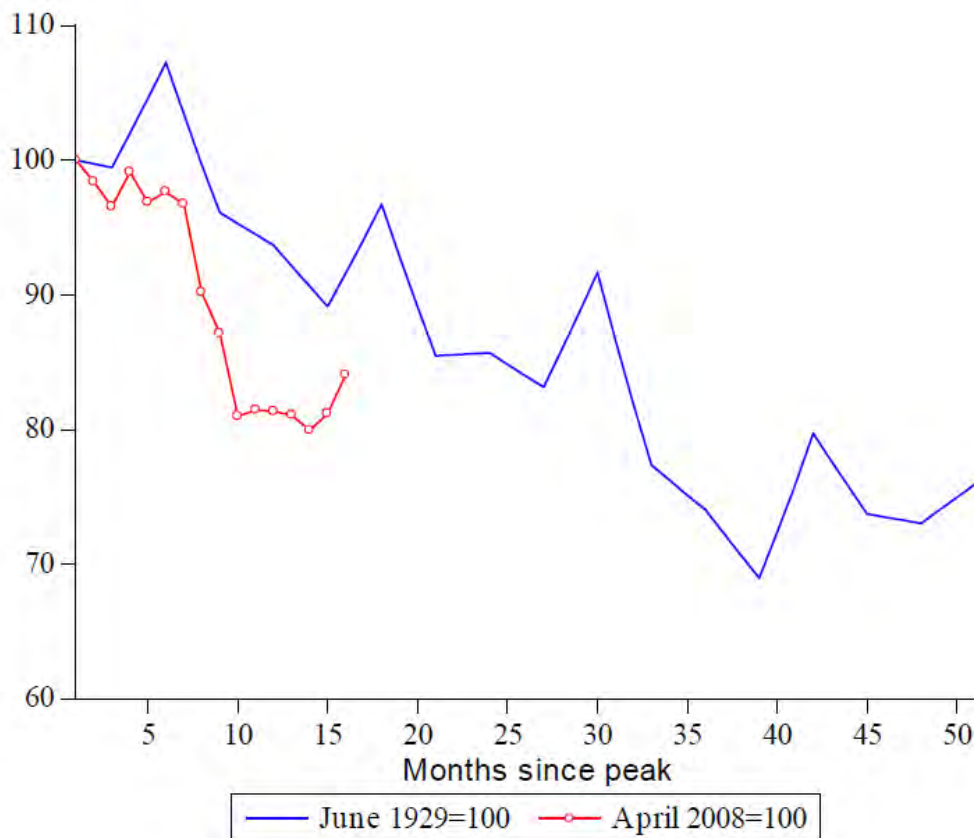
The parallels between the Great Credit Crisis of 2008 and the onset of the Great Depression have been widely commented upon. Many analysts dealt with these two periods of crises. One of them, Paul Krugman posted to his widely read blog a graph comparing the fall in manufacturing production in the United States from its respective mid-1929 and late-2007 peaks (Krugman, 2009).

Graph 1.1: The standard US industrial output indices for the two periods



(Source: Almunia, M. et al. 2010)

The graph 1.1 shows the standard US industrial output indices for the two periods. The solid line (in blue) tracks industrial output from its US peak in July 1929, while the dotted line (in red) tracks output from its US peak in December 2007. While US industrial output fell steeply, it did not fall as rapidly as after June 1929. (Almunia, M. et al., 2010)

Graph 1.2: The value of the world trade (1929 vs 2008)

(Source: Almunia, M. et al. 2010)

The graph 1.2 shows the value of the world trade for the two periods (1929 and 2008). According to the graph, the peak in 1929 was in September, while the peak in 2009 was in July.

The propagation of the crisis in 1931 and 2008 had some common features. First of all, the main characteristic of both is the flight to the liquidity and safety. There was created a sudden suspicion about the safety of assets which had been regarded as secure, and institutions which were thought to be over-exposed to such doubtful assets were subject to the risk of liquidity crises if they had short-maturity liabilities fixed in money value. Furthermore, deposit outflows were not the unique reason of liquidity pressure on banks. In 1931, the central European acceptances of the London merchant banks were a serious problem, as in 2008, were the liquidity and safety in the same way as other markets participants. In both crises, the manager of central's banks international reserves participated in the flight to liquidity and

safety. One difference in these two crises is that eight decades ago, the international transmission of the liquidity pressure was direct, since accepting houses in London were creditors of the debtors who could not reply. But in 2008, it was indirect, as the collateral squeeze which originated in the mortgage market put great pressure on foreign banks in the United States, which in turn transmitted it to other countries.

Furthermore, in both crises, the behavior of creditors towards debtors, and vice versa, and the valuation of assets by creditors, was very important. According to Gorton in 2010, the environment in 2008 was very different. The financial markets dried up because it was very difficult for holders of mortgage-backed securities to know how far they were exposed to subprime mortgage risk. However, there was a very important difference in between two crises. In 2008, central banks provided more liquidity than they had done in 1931. In addition, it is important to mention that the corporation within inter central bank had great results, on 2008 Federal Reserve swap lines relieved many of financial stresses in countries outside the United States that had followed Lehman Brothers, this had not happened in 1931, the international liquidity provision was inadequate.

Eight decades ago, the commercial banks had experienced financial stress in all the countries, as a result commercial bank liabilities were in many cases not regarded as safe. As a result, monetary policy in gold standard countries was very tight and these countries became more intolerable such as United Kingdom in 1931 and United States in 1933. In addition, in 2008 the market participants were much more tolerant of budget deficits than they had been in 1931. Most governments accepted contingent liability for the safety of banks deposits, even though this had the result to affect their own finances.

Many hypotheses have been advanced in the literature regarding potential causes of the 2008 credit crisis; few emerge empirically as robust predictors of the severity of the crisis. There are many reasons why failed to predict the crisis in 2008, the most important are that each country's crisis is different; one would not expect to find any commonality when pooling the data across the countries. Furthermore, the 2008 crisis might be the result of a truly global shock, so long as its incidence varied across the countries in a way that is unrelated to the regulatory, financial and macroeconomic fundamentals. Last but not least, the shock might be a national one that spread contagiously, across countries.

The financial explanation for the 2007-2009 recession holds the declining values of some asset-backed securities and the failure of large financial institutions, among other events and factors, deepened the crisis and accelerated the recession through reduced financial intermediation services that were associated with rising interest rate spreads.

According to Varoufakis in 2011, there are many explanation of why the world economy has arrived in this stage, but only the following four reasons are the most important.

Reason 1: The crisis is principally a failure of the collective imagination of many bright people to understand the risks to the system as whole.

In the United States, the financial sector's debt had shot up from an already sizeable 22 per cent national income in 1981 to 117 per cent in 2008. Although, the households in America saw their debt share of national income rise from the 66 per cent in 1997 to 100 per cent in 2007. In London, the debt was two and a half times Britain's GDP, while households owed a sum greater than one annual GDP. The finger shows that the crash will come, so, how no one saw the crash coming?

The professors of London School of Economics mentioned that they mistook a Great Big Bubble for a Brave New World. This happened because, while they had their fingers on the pulse and their eye on the data, they had made two mistakes: the error of extrapolation and the error of failing prey to their own rhetoric.

Reason 2: Regulatory Capture

The markets determine the price of financial products. The buyers cannot understand the results of the financial product, so they rely on external, institutional information and on well-designed rules that are designed and policed by authorities. This presence helped the banks to attain breathtaking profits for two reasons.

The first one is, if they held on to their newly acquired CDO (collateralized debt obligation), the authorities accepted that a triple A rated CDO was as good as dollar bills of the same face value, the banks did not even have to include it in their capitalization computations. This meant that they could use with impunity their own clients' deposits to buy the triple A rated CDO without compromising their ability to make new loans to other clients and other banks. So as they could charge higher interest rates than they paid, buying triple A rated CDOs enhanced the bank's

profitability without limiting their loan-making capacity. The CDOs were instruments for bending the very rules designed to save the banking system from itself.

The second one is, the alternative way to keeping the CDOs in the bank results was to pawn them off to a central bank, as collateral for loans, which the banks could use them as they wished.

Reason 3: Irrepressible greed

It is believed that humans are greedy creatures who only feign civility. That means that given the wrights chance, humans will steal, plunder and bully.

Reason 4: Cultural origins

Europeans after years of being lectured of the superiority of the Anglo-Celtic model, on the advantages of the flexible labour markets, on how inane it was to think that Europe could retain a generous social welfare net in the era of globalization, on the wonders of an aggressively atomistic entrepreneurial culture, on the wizardry of Wall Street and on the brilliance of the post Big-Bang City of London, the news of the Crash, its sights and sounds as they were beamed all over the world, filled the European heart with an ambiguous mix of Schandenfreud and fear. Nevertheless, most Europeans remain convinced of the Crash's Anglo-Celtic cultural roots. They blame the fascination that English speaking people have with the nation of home ownership at all costs and they find it really hard to hard their minds around an economic model which generates silly house prices by stigmatizing rent-paying non-homeowners while celebrating pretend homeowners.

If Varoufakis considers that the four above reasons are the most important, it is necessary to mention that other authors have a quite different approach. In this context, we should mention the analysis proposed by Born, et al (2009) as regards the determinants of crisis in 2008. They effectively consider predominant the role for current accounts and foreign exchange reserves in determining equity portfolio returns for a cross section of countries, after conditioning for exposure to the United States. Still, most of the analysis has been conducted on a purely national basis, often analyzing only American data.

Through a systematic bibliographical review, we can finally mention some of the **crucial dimensions of the current financial crisis**:

Size and income

According to Reihart 2009, and Calvo and Loo Kung, 2009, smaller countries have fared poorly to the crisis. The importance of the size was felt when smaller nations who had experienced exceptional economic growth and domestic credit expansion during the boom years, such as Iceland. However, a large number of smaller countries with their own currencies also had exposed financial sectors large relative to their domestic governments and economies. (Buiter and Siber, 2009) Size is also relatively correlated with openness. Smaller countries trend to be open in international trade. The crisis also hit developed economies, but richer countries had advantages over poorer ones on responding to the crisis.

Financial policies

Bernanke in 2009 mentioned that the crisis revealed the need for improvement on supervisory practices and international communication, particularly the need for maintaining strong risk management practices in good times as well as bad. Buiter in 2007 argued the numbers of flows in the financial system that existed at the peak of the boom, such as the securization, investors and regulators placing too much faith in the opinions of private rating agencies. Spence in 2008 mentioned that the asset price bubble was fuelled by a combination of excessive systemic risk. Covel et al in 2009 said that the high ratings received by structure instruments are attributable to the expensive confidence that rating agencies had in their own abilities to assess risk.

According to Demirguc-Kunt and Servén in 2009, existing regulatory structures may also have encouraged “procyclicality” into lending behavior through the Basel capital requirements. Basel I contributed to the growth of securitization by assigning lower capital charges to securitized assets, thereby encouraging banks to move assets into off-balance sheet vehicles. However, securitization could not have been the only source of regulatory weakness. In 2009 Hall and Woodward argue that United Kingdom experienced a worse economic crisis than that in the United States because of the lack of extensive securitization activity.

Financial conditions

At the last months of 2008, many countries found themselves precarious financial positions because of the natural pro-cyclicality of bank lending behavior. In 2009, Brunnermeyer argues that there presented a decline in these lending standards during the run-up to the crisis.

The banking sector was exposed to deep financial distress by certain financial market practices. For instance, Cecchetti in 2008 argues that banks typically maintained short terms balance sheets in interbank lending markets. However, every time those markets perceived to size up, banks' liquidity increased.

The weaknesses in financial sector that faced many countries all over the world, manifested themselves in a number of dimensions that left economies exposed when conditions began to turn. During the boom, many countries experienced dramatic increases in the extension of domestic credit, both for investment and consumption, and the leverage of firms and households exploded. With the abrupt decline in the terms of credit extension, consumers and firms found themselves in need of dramatic deleveraging, leading to declines in both of these important components of GDP. Of course some of the factors that created these weaknesses, were outcomes of government policies, thus these policies affected the financial sector and by extension, the entire economy of these countries.

Asset Price Appreciation

The literature reports that the main cause of the global financial crisis is the run-up in real estate values in the United States. The most important fact according to Hall and Woodward in 2009 is the collapse of spending on home building and the resulting recession at the start of 2009 in American economy and compared it to the Japanese example. Feldstein (2008) argues that until housing prices stabilize, it will be impossible for the private sector to properly value mortgage-backed securities.

The real estate boom was created from the loss of investments from more productive areas into "unproductive residential construction". (Buiter, 2009) Furthermore, household balance deteriorated and many homeowners found themselves into a negative housing equality. (Feldstein, 2009)

It is believed that the magnitude of the real estate boom was increased by solvable financial conditions. In the literature mentioned that the housing boom was fueled by a rapid expansion on mortgage lending.

International Imbalances

According to Buiter in 2009, many countries created precarious international financial positions over the boom years that became unsustainable when easy credit extension ceased. In literature, all these sources of imbalances are controversial. It is important to identify the efforts by Asian and oil-exporting governments to build up large currency reserves as a source of the major global imbalances and subsequent excessive asset price appreciation in the west. The most significant example of this is China, which ran huge trade surpluses with developed countries. In fact, those who believe that monetary policy in the United States is a prominent factor that caused the crisis in 2008, often argues that the imbalances would have been there even if Chinese exchange rate would be more flexible. The countries with larger average liabilities towards the United States also suffered larger than average exchange rate depreciations in 2008.

Macroeconomic Policies

It is believed that lax macroeconomic policies created exacerbating current account imbalances and fueling the boom. In addition to, Hall and Woodward in 2009 mentioned that the easy monetary policy at the start of the decade represented “responsible monetary policy to head off deflation rather than an irresponsible contribution to a housing bubble”. Many analysts pointed that lax fiscal policy is a source of vulnerability. Countries such as United States and United Kingdom pursued unsustainable fiscal benefits that exacerbated the expansion of current account deficits. (Buiter, 2009)

Institutional Factors

It is worth mentioning in institutional factors across countries in the period of crisis. According to Acemoglu et al in 2003, the countries with inferior institutional features suffer from increased macroeconomic volatility, to the extent that after controlling for institutional differences, macroeconomic policy differences only play a limited role in explaining cross country volatility differences.

Geography

Equally important factor is the geography. In instance, Eastern Europe attracted investments during the boom time not enjoyed by more remote economies. While all these investments promoted the expansion of these economies, they left these countries more exposed to a reversal of fortune in the wake of a global stop in the credit extension. Similarly, Iceland became an attractive destination because is near to United Kingdom and Netherlands.

1.4 Understanding the Greek crisis in the light of the well-known crisis of Argentina

It is often mentioned that the crisis in Argentina had a lot of commons comparatively with the case of Greece. Consequently, we proceed to an examination of this specific crisis in order to best understand the Greek case and the possible steps. But it is also true that some analysts believe that Argentina is not an appropriate example for the understanding of the Greek case due to the specificities of each one of the two economies and finally the differences of these two crises are much more than the similarities. May be these differences are themselves a source of comprehension?

The Argentine economy is having gone the deepest and longest recessionary process of the postwar period. This process began in late 1998 and, as time passed and the successive stabilization attempts failed, the agents increasingly perceived that the country was entering the obscure realm of economic depression. The consequences of this process are proving to be devastating. In 2002, the democratically elected President was forced to resign and the convertibility regime that had been introduced in 1991 was abandoned. In 2002, the expected rate of growth was -15% and the Peso have lost its value against the dollar. Furthermore, half of the population was living under the poverty line and the country has defaulted on its debt.

This picture is very different from the country's picture in 1991-1998. In this period the economy grew by more than 41% and there was substantial privatization-led process to modernize infrastructure in the context of a programme of structural reforms. Argentina's economy was one of the most successful emerging economies. The favorable investor sentiment permitted the country to place a significant amount of bonds in foreign capital market.

The contrast between two periods 1991-1998 and 1999-2002, gave to us some significant figures. The real GDP in 2002 was 30% lower than 1998, but the productive capacity is roughly the same as in late 1998, when the recession began.

There are three factors that can explain why Argentina's economy has arrived at this point. The first one has to do with the characteristics of the shocks that hit the economy in 1998-1999. The competitiveness and the financial position of Argentina was been effected by the shocks in the decreased prices in exports, a tightening of external credit markets, the appreciation of US dollar and the devaluation of the real in Brazil. The second one has to do with the features of the fiscal, monetary and financial regimes of Argentina which helped to amplify the consequences of the shocks. In details, the prices and the wages were not flexible and the fiscal regime was rigid. Last but not least, the third factor has to do with the currency board that had been in force for more than ten years and had gain the credibility after having passed the test of the Tequila Effect in 1995.

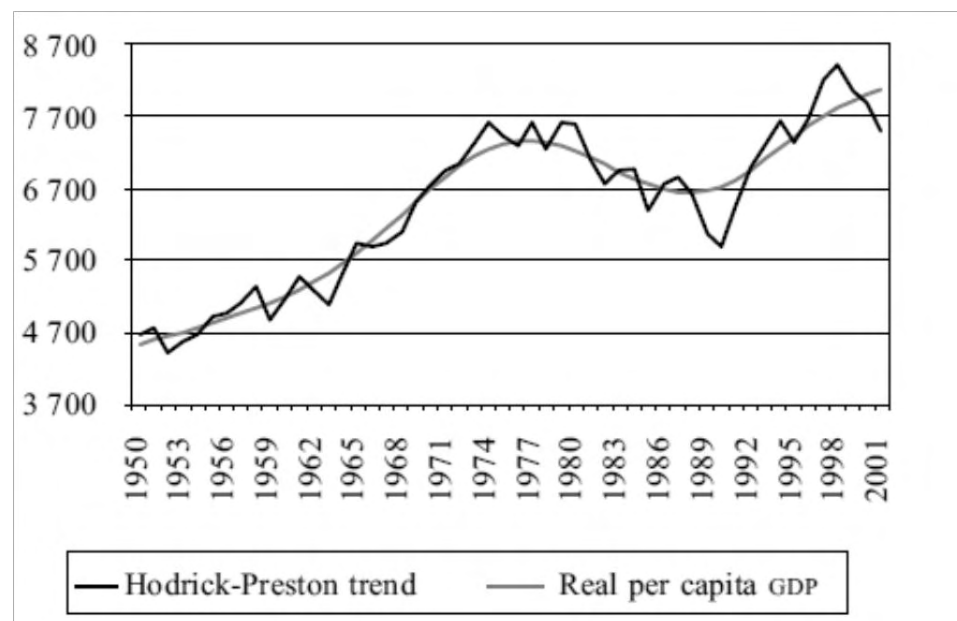
Structural breaks, volatility and the macroeconomy

It is indubitable that Argentina is a highly volatile economy, as the data presents. Two of the most significant features of instability are structural breaks and volatility. According to the available bibliography, periods of turbulence alternate with periods of tranquility, suggesting that it would be advisable to assume changing conditional variance when modeling the stochastic process. In the case of Argentina, structural change matters because of the deep issues that defining the economic structure. This has a relationship with the stability because this structural break is a unique and after this break agents must work out under the new circumstances. (Agenor et al., 2000)

The graph 1.3 represents the evolution of the Argentina's per capita GDP from 1950-2001. According to this graph, the average growth rate is low and the trend shows marked changes associated with macroeconomic and financial crises. As can be seen, the 1975 crisis shows a key breaking point concerning instability and economic policy. From 1975 and on, Argentina abandoned its rather fruitless import substitution import strategy and its economic approach became friendlier in markets. In the 1975-2001 periods, the per capita GDP fell in more years that it grew.

An important effect of macroeconomic instability was that it induced changes in key aspects of the terms of contracts. During the long period of high instability which began in 1975, it is possible to detect substantial changes in the maturities, currency denomination and risk characteristics of contracts. In the case of Argentina, it is a very well documented fact that the maturity of contract is affected by changes in inflation and volatility, as well as by changes in the monetary regime.

Graph 1.3: Argentina real per capita gross domestic product (in constant 2000 pesos)



(Source: Fanelli, 2002)

Although these figures seem to be difficult to recover Argentina's economy, in 2009 the economy recovered rapidly leading to a per capita GDP of Argentina to reach in 2009 to \$ 10,993 from \$ 6,254 in 2002. Unemployment fell from 22% under 10%, while the percentage of people living below the poverty line (\$ 4 a day) decreased to 16.4% in 2009 from 42.3% in 2002, according to the Centre for Social and Labour Studies of Argentina.

In conclusion, it is mentioned that there are a lot of similarities in these two cases. First of all, the crisis in Argentina and the crisis in Greece is mentioned deep recession with all that this involved with the most significant the rising fiscal deficit.

Furthermore, in these two cases during the crises, there are high and rising unemployment rate as a result antigovernment demonstrations and riots are commonplace. In addition, these two countries in order to leave the deep recession the IMF managing aid package consistently the governments legislating one austerity package after another ignoring the will of the people. It is also important to mentioned that in Argentina and in Greece, the loss of confidence austerity measures do not perform and last but not lest mentioned in these two crises recycling of government officials.

Although there are a lot of differences in these two cases. First of all, Greece does not has the opportunity to print money and Argentina has this opportunity is almost impossible to convince investors to get involved in projects and investments, with a currency that has just been released. In 2001, when Argentina was hit by the crisis, there was a positive environment, there was no global crisis and the most financial markets have had a positive path. Clearly this would be inconsistent with the overall situation that should be faced by Greece. Furthermore, Argentina initially made a sharp depreciation and immediate reduction in wages and labor costs, aiming to balance the balance of payments. It is also important to mention that the role that plays European Union. The European Union is trying to prevent the spread of Greek crisis, when lending and helps Greece. For Argentina there was no European Union or the European Central Bank to finance. Last but not least, the rising market value of goods, helped to recover drastically GDP growth in Argentina. A similar positive shock is not expected for Greece.

CHAPTER 2: THE CRISIS IN GREECE

As already mentioned, the first signs of the recent financial crisis visualized in the middle of 2008, as a dramatic increase of public debt in many advanced economies. The relationship between public sector deficits and current account deficits is one of the most comprehensive issues in economic policy and open-economy macroeconomics. It is argued that the relationship of the two deficits is strong and positive. If this is true, national or world current account imbalances can be tackled to the extent that public sector deficits. On the other hand, it is believed that this relationship is more complicated and can not interpret easily.

2.1 The historical of the Greek Crisis

The increase in the public debt has been to so some extent the outcome of the effort by the governments to reduce the private debt that was accumulated during the years preceding the recent financial crisis. (Paul de Grauwe, 2010) According to Kouretas and Vlamis in 2010, in this period, 2009-2010, can be made a number of observations. First, there are periods which private debt increased in the Eurozone, whereas there are some other periods that private debt reduced with an overwhelming speed. Second, during the same period, private debt has risen by an accelerating rate. Third, generally the increase in the private debt was great by far than the increase of the public debt. Forth, during the 2005-2007 economic boom, there is an average annual increase in private debt of the Eurozone countries of approximately 35% of GDP. In contrast, in 2008-2009, during the years of the recession, private debt slows down and public debt growth accelerates.

The conclusion that emerges from the above is that the private debt increased more than the public over the whole period 2008-2010. This have observed in the peak of the current crisis, in October 2008 with governments forced to bail out problematic banks, taking over a major share of the debts of failing financial institutions. In order to increase demand and to make sure that their economies will not fall into deep recession, they followed expansionary fiscal and monetary policies with some stimulus programmes.

The countries with the largest primary balance and interest and growth contributions are Greece, Spain, Portugal and Ireland. According to Mitropoulos and Pelagidis in 2011, the current Greek crisis, appears to have many key players. First of all, beyond any doubt the main responsibility for the debt crisis rests with the Greek governments of the domestic economy adding government debt at a rate, which was much higher than the rest of the Eurozone, in the time that the public debt has already been more than 100% of the GDP. Second, the financial markets and in particular the credit rating agencies have been very myopic in predicting the 2007 US sub-prime mortgage loan crisis. The failure led them to an overreaction in their attempt to unveil potential sovereign debt crises. Greece seems to be the natural target since she had for a long time large budget deficits. Last but not least, another important player is the European Central Bank and Eurozone governments. Eurozone countries and more specifically Germany, failed to provide political and financial support to the countries that was facing a lot of problems. Virus of reason explains why this happened. The stronger is that in Europe there is a lack of political union, which has not yet allowed the formation of federal fiscal budget and a risk scheme within Europe. Until 2010, the European Central Bank did not have a strategy in order to face with the imminent debt crisis.

According to Manolopoulos in Greece's Odious Debt in 2011, here are the headlines of the crisis:

- The single European currency, the euro, consists of 17 dissimilar economies and has failed to create a unified currency area.
- The dramatic announcement on 9 May 2010, including an unprecedented liquidity package of more than €750 billion and the abandonment of the European Central Bank's independence through bond purchases, confirms that the euro was mis-sold as an enterprise to the continent's citizens.
- The peripheral countries of the Eurozone face years of severe austerity measures with an uncertain chance of success, placing strains on their political systems and even on public order.
- The aggregate sovereign debt of Europe is now measured in trillions of euros, at a time when the when the continent faces a demographic squeeze, with expensive pensions liabilities and an ageing society.

- Greece has been allowed to borrow in excess of €300 billion, despite a largely unreformed economy and corrupt public sector and an unreformed political infrastructure with immunity for politicians guilty of financial crimes.
- The global economy has been damaged by an orgy of leverage, in which rent-seeking investment banks have turned money into a commodity, creating destabilizing investments bubbles and excessive levels of government.

A number of factors have contributed to the fiscal crisis that Greece has been experiencing since October 2009. Some of these factors are endogenous; have to do with the structure of the Greek economy itself, the prolonged macroeconomic imbalances that faces and the credibility problem of macroeconomic policy. Other factors are exogenous and have to do with the implications of the recent financial turmoil.

There is no doubt that running consistently widening public deficits in conjunction with declining external competitiveness played the main role on the deteriorating fiscal stance of the Greek economy. (Kouretas and Vlamis, 2010) According to Eurostat, the Greek budget deficit in 2009 was 15, 3% of GDP. As a result, this level of debt increases the borrowing requirements and high levels of accumulated public dept. The Central Government Debt was €298, 5 billion.

In 1999 Makrydakis, Tzavalis and Balfoussias proved by using data for the period 1958-1995, that the Greek government failed to satisfied its inter temporal budget and thus public debt turned out to be unsustainable on the long run. They argued that this happened because of the endogenous factors, and some action should be taken in order to avoid the prospect of eventual insolvency.

The failure of the Eurozone governments to support Greece, while the fiscal crisis was escalating, has led many countries, especially Germany to legal skepticism and if it is illegal to help one country in a financial difficulty. However, in the Maastricht Treaty is mentioned that “where a Member State is in difficulties or is seriously threatened with severe difficulties caused by natural disasters or exceptional occurrences beyond its control, the Council, acting by a qualified majority on a proposal from the Commission, may grant, under certain conditions, Community financial assistance to the Member State concerned.” Another exogenous factor that played very important role in the instability of the Greek economy was the lack of

solidarity funds at an European lever. The members of European Union have the same monetary policy but economic policy is still in the hands of national policy makers. Whenever a crisis occurs at the EU periphery, there is no adjustment mechanism in place to deal with such a crisis at a supranational level.

In 2009, Greece facing with the problem of borrowing, and at the beginning of 2010 the Greek government designed and adopted a fiscal consolidation programme in order to reduce the public debt and provide the framework to improve stability and growth to the economy. The situation changed dramatically after October 2009, when a new government in Greece announced that the budget deficit was significantly higher than that previously reported: from 3.7% of GDP reported in the 2009 convergence programme to 5.4% reported by the outgoing government on 2 October 2009, to 12.7% reported by the new government in December 2009 and to 15.5% as officially agreed by Eurostat in November 2010. Clear evidence of misreporting and data manipulation led to an unprecedented credibility crisis, pushing the spreads for Greek government bonds to unattainable levels (over 1,000 basis points in March 2010), and consequently destabilizing the Greek economy, as economic confidence collapsed and fears of a deep recession materialized – further pushing up the government debt and the budget deficit. The situation got out of control by the spring of 2010 leading to an acute fiscal (sovereign debt) crisis, with a possible default becoming seemingly inevitable. Under the fear of the implications that a Greek default, inside the Eurozone, would have politically for the EMU project and economically for the other member states, the European Union agreed, together with the IMF and the ECB and literally on the 11th hour¹, an emergency rescue package in the form of an €110bn loan to the Greek government (paid in four installments over a two-year period). The rescue package entailed a set of provisions for the implementation of a range of austerity measures and accompanying structural reforms aiming at recovering public finances and helping the economy regain some of its lost competitiveness. As the public-financial situation worsened and the economy kept sliding into an ever-deepening recession, the austerity measures became gradually more severe and more encompassing, raising significant public discontent but also weakening further domestic demand and investor confidence. Indeed, rumors about a Greek default did not subside until very recently, when first the IMF and then the EU signaled that they would consider extending the loan facility to a horizon of up to 10 years. (Kouretas and Vlamis, 2010; Monastiriotis, 2011)

Pelagidis and Mistsopoulos in 2006 provided a comprehensive analysis between the various government branches, interest groups, voters and the media in the context of the weak Greek institutions.

Without any doubt, the current political situation, calls for a group of politicians who will not be affected and will mostly not be pressed by the interest groups and that will have the sufficient knowledge to use the power of the government, even though the administration is a weak tool to implement policies.

The role of the media is an obstacle to reform. According to Tullock in 2003, the role of the media is especially critical in the effort of politicians to inform the voter groups that they target. The media take advantage of the high cost of documenting and publicizing any misinformation by trading their ability to guide the opinion of voters. This huge force at the disposal could use it to constantly remind the public the need for renewal of the political situation and the need for a government citizen-centered over any other interests and to promote the reform of the political situation.

2.2 Economic growth and Regional inequalities in Greece

The persistence of regional inequalities within countries in the course of economic integration/globalization has dictated the continuous investigation of their causes and, on the theoretical level, the contestation of the neoclassical paradigm of convergence – which coincides with that of ‘disequilibrium’ space theories assuming more advanced stages of economic integration. Yet, regional imbalances are rarely taken into consideration in discussions or analyses concerning a country’s structural weaknesses including its relatively low competitive position.

In particular, for the European Union, many analysts have pointed out that half on the income inequalities, existing between members states are contributed to regional inequalities within individual countries which threaten the cohesion of European Union. According to Galbraith in 2011, globalization in contemporary economies plays the main role in determining the movements of inequalities between countries. The period 1972-1980 is one of moderately declining inequality and the period 1980-2000 as one of rising inequalities. He argues that “economic crises tend to raise unemployment, shift the share of income towards capital and worsen the distribution of pay”.

Many studies on EU economic cycles also show that regional disparities tend to rise in periods of severe recessions and fall in periods of economic growth (Petrakos and Psacharidis 2004, Petrakos 2009). Monastiriotis in 2011 believes that the adoption of austerity measures increased significance after the outbreak of the current crisis, 2008-09. Many evidence show that the unequal geographical impact of these developments has been substantial.

First of all, the spatial distribution of population in Greece is a serious problem which consists of two parts; the first part is about the timeless depopulation of the region and the lack of medium-sized urban centers. In 1961-2001, four regions of the country and twenty one prefectures significant population decrease. In parallel, the population of Athens and Thessaloniki note significant increase. The second part of the problem is about the over-concentration of population in relation to available infrastructure in Athens, which creates operational problems in the production system metropolis serious problems erode quality of life of its inhabitants.(Petrakos 2004)

The regional inequalities constitute major problems of key concern to both the general public and among politicians and Public Administration.

The scientific dialogue but also those carried out in the media is often characterized by different considerations and even contrasts, both the kind and the amount of inequality, and on the actions needed to address them. The official position of scientists is that relative to the rest of the EU, Greece has relative disparities in development levels of regions and prefectures such as these are measured by per capita Gross Domestic Product.

Some other people believe that this is not true. The fact that half of the country's population lives in the greater area of Athens and Thessaloniki, and the fact that the rest country does not have significant urban population concentration, gives the picture of a country with particular unequal distribution of infrastructure, services and development opportunities.

In addition to, some areas feel that they are in a regime of inner periphery, because they are the less developing regions of a country which itself is one of the less developing countries of the European Union. This would often create a sense of abandonment, sometimes express strong criticism of the "State of Athens" that appears to be indifferent to their fate.

Undoubtedly the opinion about regional problem of the country due to the indifference and the centralization of the central government has many supporters. On

the other hand, it is very important to mention that the last twenty years there have been great efforts through policies for the development of Greek regions.

According to Petrakos and Psycharis in 2004, the absence of regional development policies is almost certainly contributes to growing inequality, not the opposite applies. The existence of regional policy does not automatically guarantee the reduction of regional disparities, either because it is not good either because sufficient in resources or why the other economic and geographic factors that tend to reinforce inequalities are stronger.

The debate on the regional disparities is not politically neutral. The direction is reasonable to affect the distribution of national and community resources even same the allocation of State at various spatial levels (local, regional, national). Therefore, the direction of this debate cannot be objective and often affected by many factors and political considerations.

According to Polyzos in 2011, one of the greatest problems facing the post-war Greece is the wide economic and social disparities at a national level. A phenomenon that directly or indirectly affects its economic development while threatening with many deserted mountain and disadvantaged regions. These inequalities have created a situation which is evident the delay and the dependence of the periphery by the center.

Regional inequalities in Greece were increased in the first three post-war decades. The empirical investigations few, that is why there are still significant gaps and great uncertainties in the geographical features of the particular region. There is also an incomplete picture regarding the underlying causes of the key changes in the regional economic productive structure, the unfolding of these changes over time as well as the pragmatic effect of the spatial policies implemented. (Polyzos and Sofios, 2008)

Public investment has always been one of the most important instruments for pursuing macroeconomic policy objectives. This kind of investment mainly includes spending relevant to the functioning of public services and utility sector, spending on the creation of new or the improvement of existing infrastructure as well as subsidies to certain types of private investment. Therefore, public and private investment can be an important source of income generation for regional economies - not least by creating new employment. These investments also have a positive effect on the level of infrastructure in the non-urban areas and create favorable conditions for economic

development (Polyzos 2005). Consequently, investment increases not only local demand and income levels, but also the levels of local supply due to improvements in productivity.

In Greece, economic activity is highly concentrated in a few regions, with Attica, the broader region of the capital city of Athens, accounting for some 40% of population and just short of 50% of national GDP. Industrial activity is also largely concentrated there, as is the incidence of foreign-owned and export-oriented manufacturing (Petrakos and Psycharis, 2004; Monastiriotis and Jordaan, 2011). The remaining regions have very low specializations, mainly in tourism (island regions, especially the South Aegean and Crete), agriculture (accounting for over 30% of employment in Thessaly, Peloponnese, Eastern Macedonia and Thrace, Western Greece and parts of Central Greece and Central Macedonia), and light manufacturing (Central Greece and Central Macedonia), with financial and other business services accounting for less than 5% everywhere in the country outside the main urban regions of Athens and Thessaloniki.

Table 2.1 shows the superiority of the Attica region (followed by South Aegean) in terms of per capita GDP while Table 2 shows the concentration of economic activity in Attica and Central Macedonia (the region of the sub-capital, Thessalonica). Furthermore, dynamic sectors, representing “entrepreneurial activity”, are mostly concentrated in Attica, followed by Central Macedonia. As a result, 50% of the country’s GDP is produced in Attica and 14% in central Macedonia.

TABLE 2.1: Per capita GDP in Greek regions (2008)

Region	Per Capita GDP(country=100)
Attica	137,67
South Aegean	103,76
Sterea Ellada	90,95
Crete	90,26
Peloponnesus	82,14
Western Macedonia	82,12
Ionian Islands	79,05
Central Macedonia	78,06
Thessaly	73,88
Epirus	78,18
Northern Aegean	72,19
Eastern Macedonia and Thrace	67,22
Western Greece	64,43

Source: Greek National Statistical Authority. Regions - NUTS II level.

TABLE 2.2: Gross value added by region and sector of production-2008 (% in the country's gross value added)

Regions	Primary sector	Secondary sector	Tertiary sector
Eastern Macedonia and Thrace	8,4	4,5	3,3
Central Macedonia	20,3	17,0	12,7
Western Macedonia	11,9	6,3	4,2
Thessaly	11,9	6,3	4,2
Epirus	4,7	2,4	2,2
Ionian Islands	1,6	1,3	1,7
Western Greece	11,2	5,1	1,7
Sterea Ellada	9,6	10,0	2,9
Peloponnesus	9,4	7,5	3,4
Attica	4,9	34,3	55,0
North Aegean	2,0	2,3	3,0
South Aegean	2,0	2,3	3,0
Crete	9,8	3,9	4,9
Country total	3,7	19,0	77,3

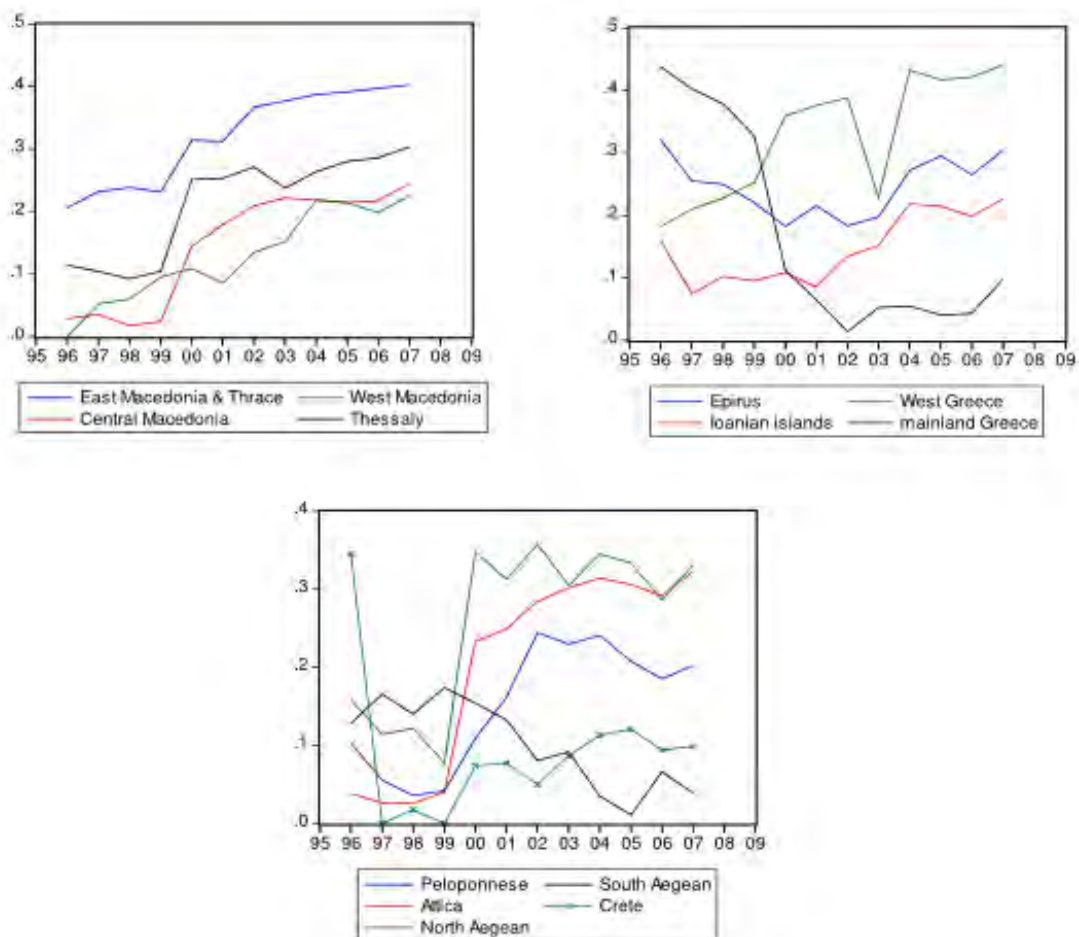
Source: Greek National Statistical Authority. Regions - NUTS II level.

The persistence over time, and in most cases the widening, of regional inequalities in Greece has been confirmed by the empirical analysis of Caraveli & Tsionas (2011) and graphically presented in Graphs 1 and 2, which show the rising divergence of all regions from the national average and the capital region respectively.

Graph 2.4 shows rising disparities of all regions relative to the country average. It is important to mention that Sterea Ellada and South Aegean are the

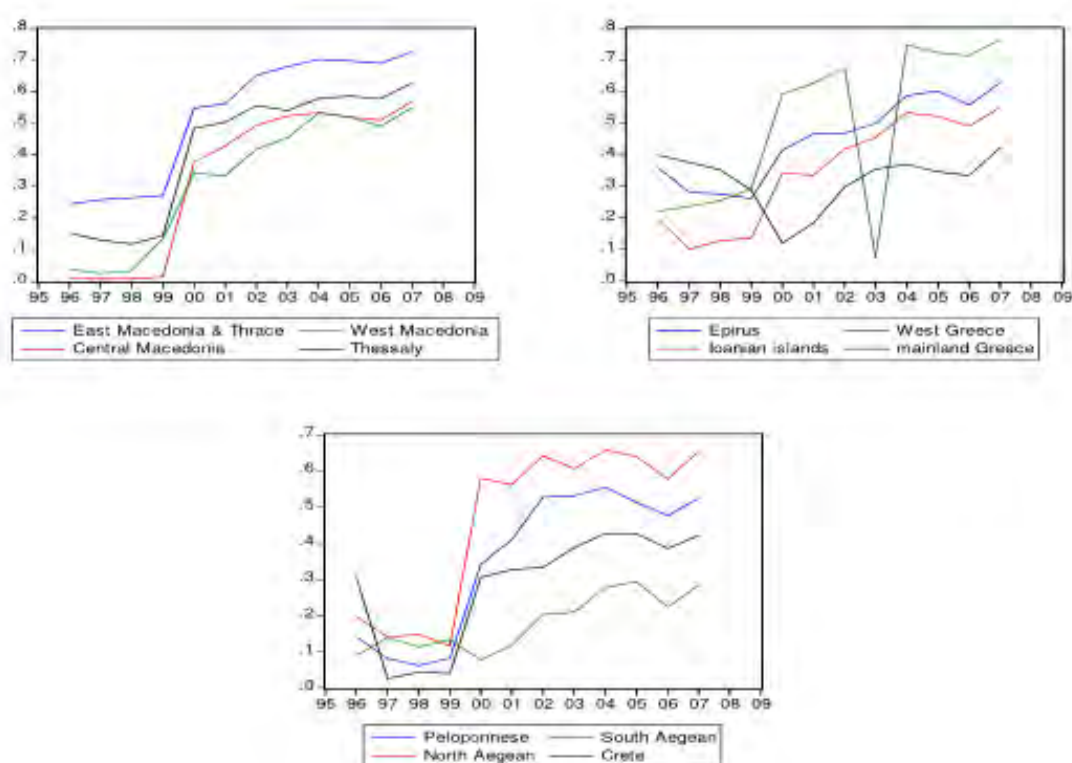
exception, until 2002 their divergence from the average decreases and increases thereafter. Furthermore, in 2003, Western Greece presents a “break” on its divergence.

Graph 2.4: Regional disparities in Greece (relative to national DDP per capita)



Source: (Caraveli and Tsionas, 2011)

In graph 2.5, all regions are shown to diverge from Attica, with the exception of Western and mainland Greece, which show convergence in certain periods (2003 and 2000, respectively) and divergence afterwards². The reversal of this trend towards divergence is basically due to the revision of GDP after 2003, which upgraded the position of prefectures and regions heavily oriented towards tertiary sector activities (mostly Attica & South Aegean) – e.g. tourism, trade, public administration, real estate, etc. - at the expense of mountainous as well as inland prefectures of Sterea Ellada.

GRAPH 2.5: Regional disparities in Greece (relative to Attica' GDP per capita)

Source: (Caraveli and Tsionas, 2011)

To summarise, the financial crisis in Greece shares some common features with other financial crises of the past such as the Great Depression of 1931, the crisis in 1945-1949 in Asia, and the current crisis in Argentina and other European countries of the South. The different between the financial crisis in Greece and the other crises is that the crisis in Greece presents some unique features. These features referred to the political structural system and the regional inequalities in the country that already existed long before the crisis of 2008 according to the above. A number of factors have contributed to the fiscal crisis that Greece has been experiencing since October 2009. Some of these factors are endogenous; have to do with the structure of the Greek economy itself, the prolonged macroeconomic imbalances that faces and the credibility problem of macroeconomic policy. Other factors are exogenous and have to do with the implications of the recent financial turmoil.

Part 2:

The socio-economic Crisis in Greece:

*a tentative of evaluation through a
composite indicator*

CHAPTER 3: SOME SPATIAL IMPACTS OF THE ECONOMIC CRISIS IN GREECE

3.1. A theoretical approach

The European Union of 27 countries has evolved from the European Coal and Steel Union of a few developed countries in a comprehensive economic and political union. (EU 2011) People and countries with huge differences and particularities remained part of any successive configuration and enlargement of the Union. Countries of South Europe and eastern socialist republics joined the initial core of the developed Western economies. Nowadays, between the members of the European Union, different levels economic and social development is distinguished. In one hand, there is the group of western and northern countries, such as Germany, Finland, the Netherlands and Denmark. On the other hand, is the group of countries that are in the periphery of Europe, such as Spain, Portugal, Italy, Greece, and Ireland? Finally, there is a third group that includes countries of former Eastern economies, completing the transition from socialism to capitalism, such as Bulgaria, Romania, Poland and Latvia.

The existence of many different countries in a broad geographic area designates the regional problem at various levels. The current economic crisis has affected almost all the countries of Europe but the European South and the former eastern socialist republics have suffered the most.

The effects of the crisis are not the same in all countries and all regions, given the large regional disparities and different growth rates. The real impact of the recession is determined by various factors, some of them are endogenous and some others are exogenous. This existence designates the regional problem at three levels. The first level concerns the groups of countries mentioned above. The second level variations exist within countries and finally, at third level, the differences are between regions across the national borders. Furthermore, at NUTS 2 level, islands and less favored regions belonging to countries with different levels of development face common problems and difficulties generally. (Gaki et al, 2012)

Regardless of the causes that led to the crisis and all the other factors that sustain and determine its duration, its effect is captured in a series of data and indicators. According to official statements and official statistics, an important deterioration in income and employment is actually expected. Furthermore, the continue rise in interest rates of bonds of the indebted countries, complicates the recovery effort considerably, keeping the uncertainty and risk in high levels. (Argyroy and Tsoukalas, 2011) Many studies argue that while disparities between member countries are decreasing gradually, the disparities within countries are increasing. As a result, the gap between central, rich, developed regions and less developed regions are expanding. (Heidenreich and Wunder, 2008)

3.2 Economic Crisis, development and regions

Although the crisis and the recession are international, they are affecting regional economies in different ways, for example depending on the region's existing strength and weaknesses. This includes the size of their internal market and their access to larger external market, as well as endowments in natural resources and in physical human and knowledge capital. Similarly, the density of the existing networks of firms matters, and the sectors in which they are concentrated. It is also important, the region's sectoral structure, and the response of national and regional governments. This includes the broader national factors, notable the extent to which the country as whole was in a robust state before the crisis, with sustained growth, limited unemployment, the lack of external and internal balances and the south institutional frameworks.

The extant of regional fragility can be assessed with various indicators in accordance with the aim pursued. A classic indicator is the population density whose interpretation in developed countries has not the same meaning as in under-developed. For European countries, regions with low density levels are mainly rural and remote areas with limited attractiveness. For these reasons, there are classified as fragile. In less developed countries, the problem is quite different: the fragility concerns more precisely regions with high levels, suffering from a demographic pressure.

Among the most widely used indicators, even if it is often subject to strong criticism, we cannot neglect the GDP per capita due to the fact that it provides an assessment of the country or region's capacity to produce and consequently to create wealth. Another important dimension of fragility concerns the employment level and its complement the unemployment rate.

Effectively, the lower rate GDP per capita in most of the central Europe as well as in regions of Greece, Portugal, Spain and Italy, reflects the lowest productivity and employment rates. The productivity levels are in relationship with the availability of human and knowledge capital, the market access and the functioning of institutions.

According to many studies, periods of economic growth are associated with regional convergence as business opportunities spread to less developed regions, while several recessions can trigger regional divergence as more vulnerable regions are more seriously affected in downturns. In some countries, downturns can lead to narrower interregional disparities. (Davies et al., 2010) According to Featherstone in 2011, in 2008 crisis known as "European sovereign debt crisis" affects not only the weakest regional economies that reach a step before bankruptcy but it also destabilizes the entire monetary system of the Eurozone.

The impact of the economic crisis is an important decline in employment and the rapid increase in unemployment. In part 3 of this thesis will follow comprehensive reference to indicators from database 2008-2010, for Greece at NUTS 2 level.

3.3 A Specific spatial dimension of the crisis: Migration flows and population distribution

Before examining the possible impact of the crisis on migration flows and population distribution, it is necessary to replace this question in its historical context, taking into account that Greece was traditionally an emigration country and ore recently became an immigration one.

Over the past decades, the issue of immigration has been quite salient on states' political agendas. Governments are focused about who enters their country, for the sake of national security and of course of economic competitiveness. Nowadays this consideration

seems to be more familiar than ever. During periods of economic booms, immigration is expansionary and even tolerated by the public. In economic downturns, there are increased pressures for restrictive policies as unemployment rises. Research on public attitudes toward immigration supports this relationship. (Duncan and Waldorf, 2010)

Immigration in Greece has emerged as one of the major social issues with serious political and economic repercussions. Modern Greece has always been a country for emigration, similarly to the other countries of south Mediterranean area. The two World Wars and the 1947-1949 had resulted to increased unemployment leading to serious economic repercussions. Between 1951 and 1881, 12% of the Greek population emigrated to countries like France, Belgium and primarily to Germany. (Kasimis and Kassimi, 2004; Venturas, 2004).

Conversely, during the 1970s and 1980s, Greece seems to be one of the most popular destinations for immigrants from Poland, Africa, South Asia and Egypt. However, in 1990, the percentage of illegal immigrants arrived at the more highly figure. The percentage of immigrants in Greece instigated various reactions at economic and social level. The question is why Greece became a popular destination for immigrants?

3.3.1 Reasons for immigrating to Greece

In Europe much political such as economic turbulences resulted in the changed nature of immigration flows. First of all, in 1991 the collapse of Union of Soviet Socialist Republics (USSR) fragmentation was followed by the subsequent collapse of all the socialist countries in and around Balkans. Furthermore, in 1989 the fall of the Iron Curtain and the reunification of Germany was the milestone of a new era to come with unpredictable consequences for all communist countries, whose demised economies led to the disintegration of the pre existing regimes for the adoption of more liberal policies economically and socially. The situation became worse with the disintegration of the Former Republic of Yugoslavia, the war in 1992-1995 and the bombarding of Kosovo in 1998, leading thus to the displacement of millions of people, searching for a better future. (Kasimis and Kassimi, 2004)

First of all, the legal framework of Greece about the entry, the residence and the employment does provide an opportunity structure for the geographical and socio-economic mobility of the immigrants. However, the right of immigrants to legal

residence and free movement across the European Union is one other factor that provides Greece as one of the most popular countries for immigration. Furthermore, the “familistic welfare capitalism model”, according to Papadopoulos in 2006, that until recently characterized Greece and bore many resemblances with other South European economies found an unexpected safety valve in the use of cheap and often undeclared migrant labour.

Geographically, Greece is in the South of Europe; with its numerous islands and a coastal line of 15,000 kilometers it is difficult to guard all possible entries. Greek immigration policies have been traditionally lenient compared with the ones in the Northern Europe and immigration policy was almost nonexistent until the mid-1990s, because tourism is a very profitable sector of the Greek economy and the control borders were never harsh. Also, the northern part of the country borders with Albania, FYROM, Bulgaria and Turkey. This facilitates access to the country through the main land, minimizing the cost of transport.

3.3.2 The flight of immigrants from Greece of crisis is a fact

During the last years more and more legal immigrants return to their country of origin due to the crisis in Greece and therefore due to the increased unemployment. Despite the measures from the Greek government, such as the reduction of the social insurance stamps necessary for the issue of stay permits or purchasing these stamps legally and not from the black market, the introduction of independent stay and work permits for family reunion stay permit holders, the reliefs of couples and measures in order to avoid the exodus of immigrants, the flight of immigrants from Greece of crisis is a fact. (Maroukis. 20--; Kotzamanis and Duquenne, 2012; Kasimis and Kassimi, 2004)

The Labour Force Survey records a steady increase in unemployment of immigrants since the beginning of 2009, surpassing by almost five percentage points the equivalent general average rate of unemployment during the first quarter of 2011. In absolute numbers, the number of unemployed immigrants between 2008 and 2011 exceeds the number of working immigrants. (See table 3.5)

Table 3.3: Unemployment rate of aliens

	Unemployment rate of Aliens	General average of unemployment rate
1st quarter 2008	7,4%	8,3%
1st quarter 2009	10,7%	9,2%
1st quarter 2010	14,5%	11,4%
1st quarter 2011	19,8%	15,9%

Source: National Statistical Service of Greece, Labour Force Survey

3.3.3 Some evidences from the 2011 census in Greece

In the context of the crisis, the census of 2011 is an interesting source of information, especially if we can compare its results with those of the previous one in 2001. According to Kotzamanis and Duquenne (2012), the census in 2011 was conducted under much more difficult conditions than the previous one in 2001. First of all, the preparation became in suffocating timeframes, this had been effects on selection and training of enumerators and supervisors, as well as limited and insufficient information of the general public especially with immigrants. In additional, the census items at the end of a decade characterized by a significant change of immigration flows in our country and the result was a change in the analogy between legal and illegal immigrants. Furthermore, the census conducted in a difficult economic and social environment due to the crisis of 2008. For these reasons, the comparison between the two last censuses has to be implemented with a lot of precautions.

In accordance with the 1011 census in Greece, the permanent population was 10.787.690, of which the 49, 2% was male and the 50, 8% was female. Comparing these data with the results of the previous census in 2001, we observe a population decline about 146.000 people. This first result is important because during the same decade, we observe a global positive natural balance (Total births– total deaths). (Table 3.4). The net variation of population between the two censuses is nothing else than:

$$\Delta POP = (\text{Births} - \text{Deaths}) + (\text{Immigrants} - \text{Emigrants})$$

$$\Delta POP = \text{Natural Balance} + \text{Migratory Sold} = NB + MS$$

With Births and Deaths = cumulative annual births and deaths during the decade.

In other terms, if $\Delta\text{POP} < 0$ with $\text{NB} > 0$, it results ineluctably that the Migratory Sold during the last decade was negative. Unfortunately, we have no time series concerning the Migratory Sold, year by year. So we are necessary obliged to reason in terms of “Apparent” Migratory Sold, while it is not possible to determine when the situation has really changed. We only can suppose that, this result is partly linked with the crisis.

Obviously this depopulation did not characterize all regions of Greece. From the thirteen regions of Greece, only two increase their population (Crete and Southern Aegean), three of them are stable (Central Macedonia, Epirus, Eastern Macedonia-Thrace), while seven regions present a significant decrease of their population in figures -5,7% to -1,3%. This decrease is due to a combination of negative natural balance and negative migratory balance. It is worth to mention the negative impression by the depopulation of Attica, the region with the highest (in absolute terms) number of immigrants.

At this point it is necessary to mention that the data at regional level hide significant dissonance between the 325 municipalities that the regions are composed. In 189 municipalities we note a decrease in population in comparison with the 136 municipalities in which an increase in population is observed. In details, 56 municipalities represent a positive percentage change in population higher than 11%, while a significant number of municipalities have an impressive population growth greater than 23, 5%. In contrast to, 84 municipalities note a significant decrease in population, 24 of whom, according to the data of the census lost their population, between 2001 and 2011, 23% to 66%.

The data from census in 2011 highlight some clear trends. First of all, the central municipalities of Athens and Thessaloniki are characterized by a loss of population. Unlike, population growth is marked in the peri-urban municipalities of Athens and Thessaloniki, municipalities that are located very close to Athens and Thessaloniki. In the case of the Urban Areas of Athens, we observed an important growth for the coastal municipalities located in East Attica. Secondly, the central municipalities of the great urban areas of regions such as Irakleio, Patra, Larisa, Ioannina, continue to be a guarantee attraction. Furthermore, there is a lack of capacity in municipalities of highland. Last but not least, most of the islands

municipalities, except of Crete and Corfu, note small changes in their population percentage. (Kotzamanis and Duquenne, 2012)

Table 3.4 Population Growth and Migratory Sold 2001-2011

% of Urban Population	Variation (%) of Population	Variation (%) of Urban population	Migratory Sold in % of 2001 Population			Variation (%) of Population	Migratory Sold in % of 2001 Population
2011	2001-2011	2001-2011				2001-2011	
76,3	-1,1	0,5	-1,4			Δpop	MS
					GREECE	-1,1	-1,4
64,4	0,2	6,4	0,8		Eastern Macedonia-Thrace	0,2	0,8
78,5	0,3	2,4	-0,9		Central Macedonia	0,3	-0,9
57,4	-3,6	4,8	-2,5		West Macedonia	-3,6	-2,5
48,5	0,1	2,7	2,3		Epirus	0,1	2,3
68,5	-1,0	4,7	0,0		Thessaly	-1,0	0,0
35,5	-0,8	-3,4	0,9		Ionian Island	-0,8	0,9
61,6	-5,8	-1,4	-5,0		West Greece	-5,8	-5,0
59,4	-1,9	1,2	0,1		Sterea Ellada	-1,9	0,1
98,7	-1,7	-2,0	-3,2		Attica	-1,7	-3,2
51,0	-3,3	-0,6	-0,4		Peloponnesus	-3,3	-0,4
48,7	-2,9	1,3	0,2		North Aegean	-2,9	0,2
60,6	3,5	0,9	0,2		South Aegean	3,5	0,2
61,5	4,8	8,2	2,0		Crete	4,8	2,0
					REGIONS (NUTS 3)		
67,3	-3,8	-0,7	-1,0		Dramas	-3,8	-1,0
63,4	-2,0	-3,5	0,0		Kavalas	-2,0	0,0
69,6	-0,9	12,1	0,8		Evrou	-0,9	0,8
64,0	8,0	17,7	3,3		Xanthi	8,0	3,3
56,8	0,7	9,7	1,5		Rodopi	0,7	1,5
65,2	-1,3	-0,2	-2,2		Hmatherias	-1,3	-2,2
93,0	2,4	1,6	-0,6		Thessalonikis	2,4	-0,6
49,4	-6,9	12,2	-4,0		Kilkis	-6,9	-4,0
53,7	-3,0	1,7	-2,3		Pellis	-3,0	-2,3
69,4	0,2	5,9	-0,6		Pierias	0,2	-0,6
53,0	-9,3	-0,1	-4,0		Serron	-9,3	-4,0
52,9	9,4	16,2	8,7		Chalkidiki	9,4	8,7
53,4	-2,5	5,1	2,9		Grevenon	-2,5	2,9
54,6	-6,3	-0,4	-4,9		Kastoria	-6,3	-4,9
64,1	-2,4	4,8	-2,4		Kozani	-2,4	-2,4
43,2	-5,0	11,7	-3,9		Florina	-5,0	-3,9
41,0	-7,8	-4,4	-2,7		Artas	-7,8	-2,7
34,8	0,0	1,2	2,0		Thesprotias	0,0	2,0
52,5	4,3	3,2	5,2		Ioannina	4,3	5,2
56,1	-1,1	9,3	1,0		Preveza	-1,1	1,0
48,4	-5,6	4,1	-0,6		Karditsas	-5,6	-0,6
74,4	0,8	7,3	-0,9		Larisa	0,8	-0,9
77,9	-0,6	1,1	0,0		Magnisia	-0,6	0,0
58,8	-1,2	6,0	2,3		Trikala	-1,2	2,3

24,0	4,8	-12,3	3,4		Zakynthou	4,8	3,4
38,1	-6,0	-9,2	-3,8		Kerkyras	-6,0	-3,8
38,3	3,4	9,3	5,1		Kefallonias	3,4	5,1
39,5	8,2	20,0	12,6		Lefkadas	8,2	12,6
56,3	-3,8	1,6	-2,4		Aitolia and Akarnania	-3,8	-2,4
72,8	-2,9	0,0	-4,0		Achaïas	-2,9	-4,0
46,8	-13,2	-9,4	-9,7		Ileias	-13,2	-9,7
68,1	-4,8	-2,4	-3,8		Voiotias	-4,8	-3,8
62,2	1,7	6,9	2,7		Evoias	1,7	2,7
36,6	2,9	-0,1	8,8		Evritanias	2,9	8,8
60,0	-6,7	-2,1	-4,0		Fthiotidas	-6,7	-4,0
28,0	6,5	-4,7	12,7		Fokidas	6,5	12,7
98,7	-1,7	-2,0	-3,2		Attica	-1,7	-3,2
51,5	-5,2	-5,0	-4,3		Argolidas	-5,2	-4,3
49,5	-5,1	4,6	0,8		Arkadias	-5,1	0,8
57,5	0,4	0,0	1,2		korinthias	0,4	1,2
37,0	-4,0	0,8	0,1		Lakonias	-4,0	0,1
53,3	-4,0	-1,5	-0,3		Messinias	-4,0	-0,3
44,0	-4,2	-3,1	-1,1		Lesvou	-4,2	-1,1
44,8	-2,2	6,6	1,4		Samou	-2,2	1,4
61,2	-0,8	5,1	1,8		Chiou	-0,8	1,8
76,4	1,3	0,2	-3,1		Dodekanisou	1,3	-3,1
34,9	7,3	3,5	6,0		Kykladon	7,3	6,0
67,6	4,9	6,9	0,5		Irakleiou	4,9	0,5
55,1	-0,5	6,4	0,4		Lasithiou	-0,5	0,4
42,8	8,4	13,7	5,1		Rethimnou	8,4	5,1
62,7	5,5	9,8	4,0		Chanion	5,5	4,0

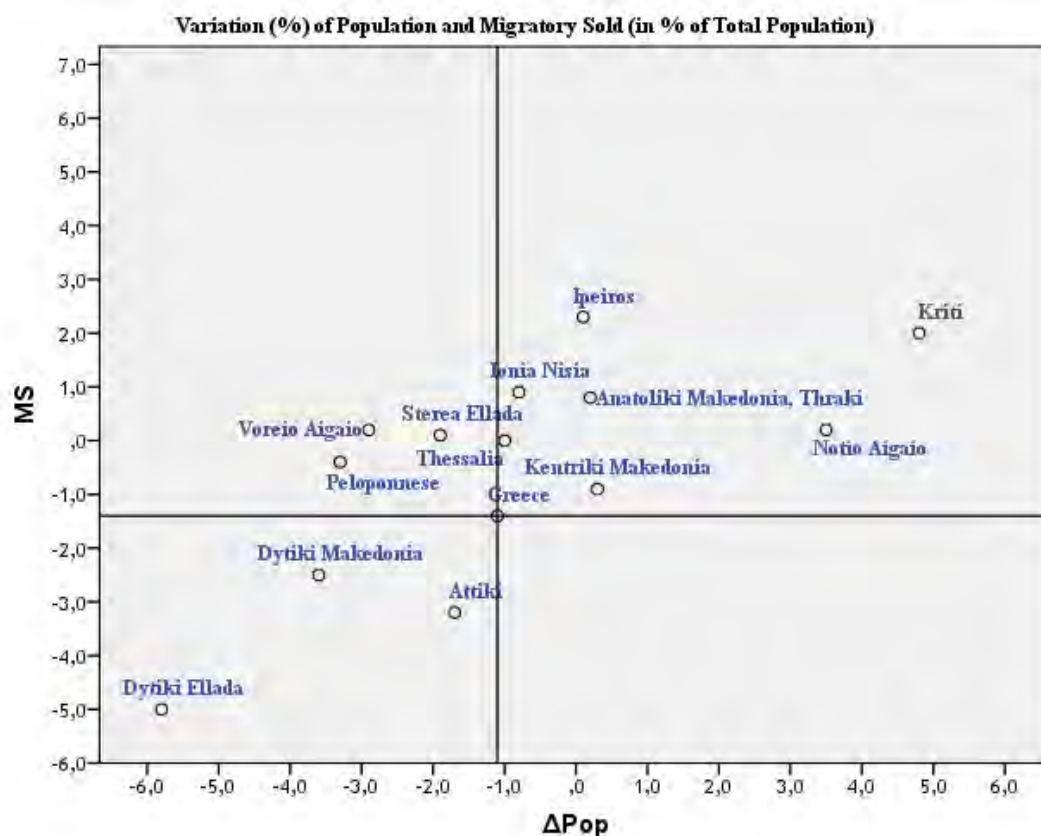
Source: ELSTAT, Population Censuses 2001, 2011, (own treatments)

To summarize, the Greek population has suffered a reduction of 1, 1% during the last decade while its net migration is largely negative, with the decrease reaching 1,4% of the total population of 2001. Some regions have been especially affected by this phenomena as for example: Ileias (-9,7%), Kastoria (-4,9%), Argolida (-4,3%) while the decrease reaches -4,0% in Kilkis, Serron, Florina, Achaia, Fthiotida. At this opposite, some island regions (not all of them) are characterized by a net positive migratory sold, especially Lefkada (+12,6%), Kykladon (+6%).

The general trend at national level seems to be very different from that noted during the period 1991-2001. Consequently, it seems that the crisis had some effects in terms of migration and population distribution: while before the crisis (2001), the migration contributed mainly to the demographic growth of the country and the regions, the pattern is very different in 2011 which corresponds to the crisis period. Greece continues to confront a major problem in terms of natural balance as it was the

case in 2001 but now, the country did not benefit anymore of a positive migratory sold except for some regions and more especially Crete and Epirus (Graph 3.6).

Graph 3.6 Variation (%) of Population (ΔPop) and Migratory Sold (in % of Total Population)



(own treatment)

To close up, many studies argue that while disparities between member countries of European Union are decreasing gradually, the disparities within countries are increasing. As a result, the gap between central, rich, developed regions and less developed regions are expanding. Although the crisis and the recession are international, they are affecting regional economies in different ways, for example depending on the region's existing strength and weaknesses. According to many studies, periods of economic growth are associated with regional convergence as business opportunities spread to less developed regions, while several recessions can trigger regional divergence as more vulnerable regions are more seriously affected in downturns.

Furthermore, as we try to demonstrate, a specific spatial dimension of the financial crisis is the immigration and more generally the population movement. Some evidences from the available data show that the reduction of the population living in Greece between 2001 and 2001 is definitively a fact. Moreover, this new tendency inevitably raises a series of questions about the population dynamics of the country and consequently its future economic dynamics. The limited natural balance without a positive migratory sold will lead to an increased aging population and eventually a real problem in terms of population renewal with possibly a lack of human capital.

CHAPTER 4: THE SPATIAL ASPECT OF THE CRISIS THROUGH THE ANALYSIS OF A COMPOSITE INDICATOR

4.1. The meaning of a composite indicator

In general, measure of economic growth is all final goods and services produced annually in an economy. The production of an economy can be defined as the total production operates within a country's borders as for example Greece, from the established operators, they can be Greek or foreign ownership, whenever refers to Gross Domestic Product. (GDP) Also, the total output of an economy can be defined as a productively Greek business interest, regardless of where that they are located, inside or outside of the country, this interpretation refers to the Gross National Product. (GNP)

There are three methods to estimate GDP. The first one is the method of final cost, which measures the value of all the goods or services according to the purpose for which they were produced or used. A second way of calculating the GDP is the income method. Last but not least, using the added value is the value added every now on inputs purchased from other firms.

The cons of GDP as an indicator of economic development, unfortunately, are many. First of all, the products which are not moving through the purchase or transfer them hidden from the authorities are not counted in GDP. It is also important to mention that the GDP does not measure the subsistence which is quite large in countries especially not as developed compared with others. Another situation that causes problems in measuring GDP is the gray economy, in this case for reasons of tax evasion or trade in products moving through the market that there are not official. Prerequisites for this improved efficiency are the development of requisite knowledge and techniques, better organization of services and ensuring the public integrity.

As noted in recent years, to define and measure the growth has surpassed the confines of sufficient means, as expressed by GDP, and turned to assessing the effect it has in the availability of these instruments over improve the conditions of human development . Nowadays, the question is not whether production increases but if the increased redound to live better and more people, have medicinal care, access to

education, to summarize with a few words if you enjoy a high standard of living. For these reasons there is an urgent need for the creation and existence of other indicators.

Statistical indicators are important for designing and assessing policies aiming at advancing the progress of an economy and, consequently, the progress of a society. The accurate measurement of welfare and development comprises, thus, an issue of extreme importance. The most commonly used measure of welfare and development is the index of per capita GDP.

As already mentioned GDP and therefore the per capita GDP is not a measurement of welfare and development since it may exhibit increase while incomes for the majority of citizens may change disproportionately (or even decrease). However, it is, often, used as such an indicator, on the rationale that all citizens would benefit from their country's increased economic activity. The major advantage of per capita GDP as an indicator of welfare and development is its frequent, wide and consistent measurement. The majority of the countries provide regular information on per capita GDP (usually on a quarterly basis), following specific methods of measurement, allowing comparisons (both between places and across time) to be made.

Per capita GDP, though it is often positively correlated with welfare and development, has come under increasing criticism since its measurements present noticeable difference with widespread perceptions. In February 2008, the President of the French Republic, Nicholas Sarkozy, unsatisfied with the present state of statistical information about the economy and the society, asked Joseph Stiglitz, Amartya Sen and Jean-Paul Fitoussi to create a "Commission on the Measurement of Economic Performance and Social Progress (CMEPSP)". The aim of CMEPSP has been to identify the limits of GDP as an indicator of economic performance and social progress, including the problems with its measurement; to consider what additional information might be required for the production of more relevant indicators of social progress; to assess the feasibility of alternative measurement tools, and to discuss how to present the statistical information in an appropriate way.

Thus, the need for the construction of a composite, more encompassing, index of welfare and development is imperious. Composite indicators – which are synthetic indices of individual indicators – are being developed in a variety of economic performance and policy areas. They provide simple comparisons of countries or regions that can be used to illustrate complex and sometimes elusive issues in wide

ranging fields, for example, environment, economy, society or technological development. These indicators often seem easier to interpret by the general public than finding a common trend in many separate indicators and have proven useful in benchmarking country performance. However, composite indicators can send misleading policy messages if they are poorly constructed or misinterpreted. Their "big picture" results may invite users (especially policy makers) to draw simplistic analytical or policy conclusions. Instead, composite indicators must be seen as a starting point for initiating discussion and attracting public interest. Their relevance should be gauged with respect to constituencies affected by the composite index. (Nardo et al., 2005; Freudenberg, 2003)

As already mentioned, composite indicators are increasingly recognized as useful tools in an analysis and public communication. This is because they are able to capture and describe complex concepts with a simple measure that can be used to benchmark performance and to assist comparisons. Composite indicators do stir controversy, since their use presents advantages and disadvantages. Yet, over the recent years a proliferation in their use, in various policy domains, is evident. (Kallioras, 2012b).

4.2. Advantages and disadvantages of Composite Indicators

According to Saisana and Tarantola in 2002, an indicator is a quantitative or a qualitative measure derived from series of observed facts that can reveal relative positions in a given area. When evaluated at regular intervals, an indicator can point out the direction of change across different units and through time. In the context of policy analysis, indicators are useful in identifying trends and drawing attention to particular issues. They can also be helpful in setting policy priorities and in benchmarking or monitoring performance. A composite indicator is formed when individual indicators are compiled into a single index on the basis of an underlying model. The composite indicator should ideally measure multi-dimensional concepts which cannot be captured by a single indicator alone, for example, competitiveness, industrialization, sustainability, single market integration and knowledge-based society. (Table 4.5)

Table 4.5: Strengths and Weaknesses of Composite Indicator

ADVANTAGES:	DISADVANTAGES:
Composite Indicators:	Composite Indicators:
<ul style="list-style-type: none"> • can be used to summarize complex of multi-dimensional issues, in view of supporting decision-makers • can provide the “big picture” (they can be easier to interpret instead of trying to find a trend in many separate indicators) • can help attracting public interest (by providing a summary figure) • can help to reduce the size of a list of indicators (or to include more information within the existing size limit) 	<ul style="list-style-type: none"> • may send misleading, non-robust policy messages • may invite politicians to draw simplistic policy conclusions (because of the “big picture” that provide) • involve stages (i.e. selection of sub-indicators, weighting, treatment of missing values) where judgment has to be made • increase the quantity of data needed

At this point, is worth to note that composite indicators are much like mathematical or computational models. In the sense that their construction owns more to the craftsmanship of the modeler than to universally accepted scientific rules for encoding. As for models, the justification for a composite indicator lays in its fitness to the intended purpose and the acceptance of peer’s acceptance. (Nardo et al., 2005)

Various questions and doubts expressed, at times, on the construction of composite indicators. A general criticism that is frequently addressed at composite indicators is the arbitrary character of the procedures used to weight their various components. The problem is not that these weighting procedures are hidden, nontransparent or non-replicable – they are often very explicitly presented by the authors of the indices, and this is one of the strengths of this literature. The problem is rather that their normative implications are seldom made explicit or justified. In fact, methodological issues need to be addressed transparently prior to the construction and use of composite indicators to avoid data manipulation and mis representation. Following are the steps which have a significant importance before proceeding with the construction of composite indicators according to Nardo et. al (2005):

1. Theoretical framework- A theoretical framework should be developed to provide the basis for the selection and combination of single indicators into a meaningful composite indicator under a fitness-for-purpose principle.
2. Data selection- Indicators should be selected on the basis of their analytical soundness, measurability, country coverage, relevance to the phenomenon being measured and relationship to each other. The use of proxy variables should be considered when data are scarce.
3. Multivariate analysis- An exploratory analysis should investigate the overall structure of the indicators, assess the suitability of the data set and explain the methodological choices, e.g., weighting, aggregation.
4. Imputation of missing data- Consideration should be given to different approaches for imputing missing values. Extreme values should be examined as they can become unintended benchmarks.
5. Normalisation- Indicators should be normalised to render them comparable.
6. Weighting and aggregation- Indicators should be aggregated and weighted according to the underlying theoretical framework.
7. Robustness and sensitivity- Analysis should be undertaken to assess the robustness of the composite indicator in terms of e.g., the mechanism for including or excluding single indicators, the normalisation scheme, the imputation of missing data and the choice of weights.
8. Links to other variables- Attempts should be made to correlate the composite indicator with other published indicators as well as to identify linkages through regressions.
9. Visualization- Composite indicators can be visualized or presented in a number of different ways, which can influence their interpretation.

10. Back to the real data- Composite indicators should be transparent and be able to be decomposed into their underlying indicators or values.

4.3. Quality framework for Composite Indicators

4.3.1 Quality dimensions of framework

Developing a quality framework for composite indicators is not an easy task. In fact, the overall quality of the composite indicator depends on several aspects, related both to the quality of elementary data used to build the indicator and the quality of procedures used to do it. The IMF uses five quality dimensions which are the followings:

- Assurance of integrity: What are the features that support firm adherence to objectivity in the production of statistics, so as to maintain users' confidence?
- Methodological soundness: How do the current practices relate to the internationally agreed methodological practices for specific statistical activities?
- Accuracy and reliability: Are the source data and statistical techniques adequate to portray the reality to be captured?
- Serviceability: How are users' needs met in terms of timeliness of the statistical products, their frequency, consistency, and their revision cycle?
- Accessibility: Are effective data and metadata easily available to data users and is there assistance to users?

4.3.2 Quality dimensions of basic data

The selection of basic data should be the specific which minimizes the quality of the final results. The dimensions are the followings:

- Relevance: In the context of composite indicators, relevance has to be evaluated considering the overall purpose of the indicator. A careful evaluation and selection of basic data have to be carried out to ensure that the right range of domains is covered in a balanced way.
- Accuracy: In the context of composite indicators, accuracy of basic data is extremely important. Here the issue of credibility of the source becomes crucial. The credibility of data products refers to confidence that users place in

those products based simply on their image of the data producer. One important aspect is trust in the objectivity of the data. This implies that the data are perceived to be produced professionally in accordance with appropriate statistical standards and policies and that practices are transparent.

- Timeliness: In the context of composite indicators, timeliness is especially important to minimize the need for estimating missing data and for revisions of previously published data.
- Accessibility: In the context of composite indicators, accessibility of basic data can affect the overall cost of production and updating of the indicator over time. It can also influence the credibility of the composite indicator if poor accessibility of basic data makes it difficult for third parties to replicate the results of the composite indicators. In this respect, given improvements in electronic access to databases released by various sources, the issue of coherence across data sets can become relevant. Therefore, the selection of the source should not always give preference to the most accessible source, but also look at other quality dimensions.
- Interpretability: In the context of composite indicators, the wide range of data used to build them and the difficulties due to the aggregation procedure require the full interpretability of basic data. The availability of definitions and classifications used to produce basic data is essential to assess the comparability of data over time and across countries. Therefore, the availability of adequate metadata is an important element to assess the overall quality of basic data.
- Coherence: In the context of composite indicators, two aspects of coherence are especially important: coherence over time and across countries. Coherence over time implies that the data are based on common concepts, definitions, and methodology over time, or that any differences are explained and can be allowed for. Incoherence over time refers to breaks in a series resulting from changes in concepts, definitions, or methodology. (Saisana, 2012; Nardo et al., 2005; Freudenberg, 2003)

4.4. Developing a new Measure- Composite Indicator for depiction the socio-economic situation of Greece (CISES)

“[...] it is hard to imagine that the debate on the use of composite indicators will ever be settled [...] official statisticians may tend to resent composite indicators, whereby a lot of work in data collection and editing is “wasted” or “hidden” behind a single number of dubious significance. On the other hand, the temptation of stakeholders and practitioners to summarise complex and sometime elusive processes (e.g. sustainability, single market policy, etc.) into a single figure to benchmark country performance for policy consumption seems likewise irresistible.”

Andrea Saltelli, JRC

The aim of this chapter is to estimate the tension of the spatial dimensions of Greece in the years 2008 to 2010 at a regional level. The vast majority of studies that have examined this issue, used GDP per capita as an indicator of regional welfare. Recognizing the deficiencies related to GDP, the question which arises here is whether it would be feasible to construct a composite indicator for the prefectures of the country, which can include as many as possible aspects of developmental identity of each region that are very difficult to be captured adequately by a single indicator such as GDP per capita, in order to get as much as possible, a safer picture of Greece's crisis problem at regional level.

Light of the above, at this point of my thesis is going to represent the creation of a composite indicator which aims to capture the current socio-economic situation of Greece, at a regional level.

The creation of the composite indicator has a simple target, to describe with an easy, reliable and convenient method the current socio-economic situation of Greece at regional level, namely NUTS 2 level for the years 2001 to 2010.

4.4.1. Construction of the composite indicator

The composite indicator that we are going to construct is a relatively simple one: it will be limited to restrictive but major dimensions of the under studied question: except the economic one, we introduced the social aspect through unemployment and the demographic one, consequently to the above analysis (paragraph 3.3.).

4.4.2. Selection of uni dimensional indicators

The purpose of the Composite Indicator for socio-economic situation of Greece (CISES) is to highlight the economic potentiality of the thirteen regions the county, taking to a count the main social component. In order to measure the economic potentiality of the regions, we receive as a first indicator Gross Domestic Product (GDP) per capita in PPS. GDP per capita is the ratio between the level of gross domestic product, expressed in purchasing power standards and total population. GDP per capita in PSS is obtained by converting GDP to a fictive currency using special conversion factors. Purchasing power parties reflect the prices ratios between the regions and are the same time expressed in eliminates, without taking account the inflation.

In order to achieve economic growth of a region it is appropriate to combine GDP per capita and human resources. Regions with a positive demographic structure and population growth present an ex ante advantage. Furthermore, the population growth can be interpreted as an indicator of attractiveness. As a result, the second indicator is the Rate of Demographic Growth. We also take into account that regions with the highest rate of population density may not be anymore so attractive. Consequently, the third indicator that we study is the Density of Population which reflects the result of socio-economic and demographic attractiveness. It is important to mention that, alternatively we should use an indicator as the percent of population living in urban areas. But as it is well known, ELSTAT defines a commune (Dimotiko diamerisma) as urban when the population of its biggest locality (oikismos) is more than 2000 inhabitants. We considered this threshold as not very pertinent and for this reason; we preferred to use the population's density.

Economic potentiality does not necessarily mean shortage of socio-economic inequalities. Therefore, in order to construct a valuable composite indicator as well as in order to define properly the social dimension of the CISES, we should have a

variable which relates to the rate of population at risk poverty. Nevertheless, due to the deficiency of the data at NUTS 2 level of the rate of population at poverty risk, we were not able to use this index. It is believed that the risk poverty is associated closely with the rate of unemployment and especially with the long term unemployment. Therefore, in order to determine the social dimension of CISES, we use three indicators as the Rate of Young population's Unemployment (15-24 years old), the Rate of Total Unemployment, and last but not least, the Rate of long term unemployment (more than 1 year in unemployment). It is worth to mention that in order to construct a coherent composite indicator, we use the complement of unemployment rates that is employment rates. Effectively, all the indicators introduced in the composite indicator should be read in the same way: low levels correspond to a delicate situation while high levels to a good situation. For this reason, the calculation of the composite indicator is based on the employment rates.

At this point, it is also important to mention that this study is not considered in some significant variables such as country's infrastructure and country's internalization. These variables are relatively difficult to construct, especially at regional level. Moreover, as have been emphasized by Seck P. in 2008 (Construction des indices Composites, BRDH/BRA, Atelier Technique Régional sur la mesure du développement Humain, Dakar), the composite indicator has nothing to do with the complicated composite indicator, because a creditable composite indicator should be interpreted in order to come out objective and not hypothetical conclusions.

Consequently, our composite indicator consists of three dimensions that are summarized in the following table.

Table: 4.6: Selected indicators for the construction of the Composite one

Dimensions	Indicator	Selected indicators	Units
Economic	Id1	Rate of economic growth	GDP pc in PPS
Demographic	Id2	Rate of demographic growth	% of annual growth
	Id3	Population density	Hab per km ²
Social	Id4	Rate of young population's unemployment	(in %) 15 – 24 years
	Id5	Rate of total unemployment	(in %) 15 years or over
	Id6	Rate of long term unemployment	(in %) more than 1 year in unemployment

4.4.3 Spatial scale and accuracy of data

One of the most important prerequisite for the construction of a composite indicator concerns the accuracy and availability of the data. For this reason, we decided to collect the necessary data at NUTS 2 level for years 2001 to 2010, before and after the beginning of the financial crisis. Moreover, in order to avoid errors in coherence, reliability, interpretability, timeliness, accessibility, we also decided to use a unique source of data that is the EUROSTAT database.

Although it is known that also other valuable and accurate databases were able to offering us additional indicators, it was decided to use exclusively the data from EUROSTAT for the following reason. The first and foremost reason is that EUROSTAT is the eminently official source of data for the European Union, therefore is the official source of data and for Greece. Furthermore, the indicators were selected from the regional database of EUROSTAT, based on these data the European Union planning and developing the regional policy. Secondly, by using one specific source of database ensures higher coherence and reliability. Finally, less important is that EUROSTAT provides easier accessibility.

4.4.4 Calculation of the composite indicator

Two aspects have to be clearly taken into account: (a) the Comparability of initial indicators' values and (b) the choice of weight for each dimension and indicator: 2 alternative solutions have been considered.

Calculation phases:

A. Statistical treatment of index

With some missing values, in some case, we use “interpolation” in order to estimate the missing values at different years. More precisely, the problem concern three regions: Ionian Islands, North and South Aegean. Due to the fact that these three regions are all insular, it was absolutely necessary to proceed to this correction.

B. Standardized indicators

As it appears at the Tables .in the appendix, each initial indicator is expressed in quite different units. For this reason, the calculation of the Composite indicator requires the transformation of these indicators in standardized ones, as followed:.

$$ZId_i = 100 * [(Id_i - Id_{min}) / (Id_{max} - Id_{min})]$$

C. Construction of the Composite Indicator of Socio-Economic Situation

C.I.S.E.S is defined as follows:

$$CISES = \sum_{i=1}^k w_i \times ZId_i$$

Where: ZId_i = simple indicator

k = number of simple indicators, in the present work, $k = 6$.

w_i =weight assigned to each indicator ($i= 1, \dots, 6$)

We considered two different patterns of weights:

- (a) For the first one, each initial indicator has exactly the same weight. In other terms, the Composite Indicator is the arithmetic average of the six initial indicators.
- (b) The second one is based on different weights for each initial indicator. An identical weight was affected to each one of the three dimensions (1/3) while within each dimension the indicators have the same weight. Consequently, due to the fact that each dimension has not the same number of items, we obtained finally a weighted Composite Indicator. More precisely:

Table: 4.7 Weighted pattern

Dimensions	Weight	Indicators	Weight within dimension	W_i
Economic	1/3	ZId1	1	1/3
Demographic	1/3	ZId2	1/2	1/3
		ZId3	1/2	1/3
Social	1/3	ZId4	1/3	1/3
		ZId5	1/3	1/3
		ZId6	1/3	1/3

4.4.5. Interpretation of the Indicator CISES

The implementation of the two above methods of calculation gave the following results that are presented in Table 4.8 to Table 4.10 and Graph 4.10.

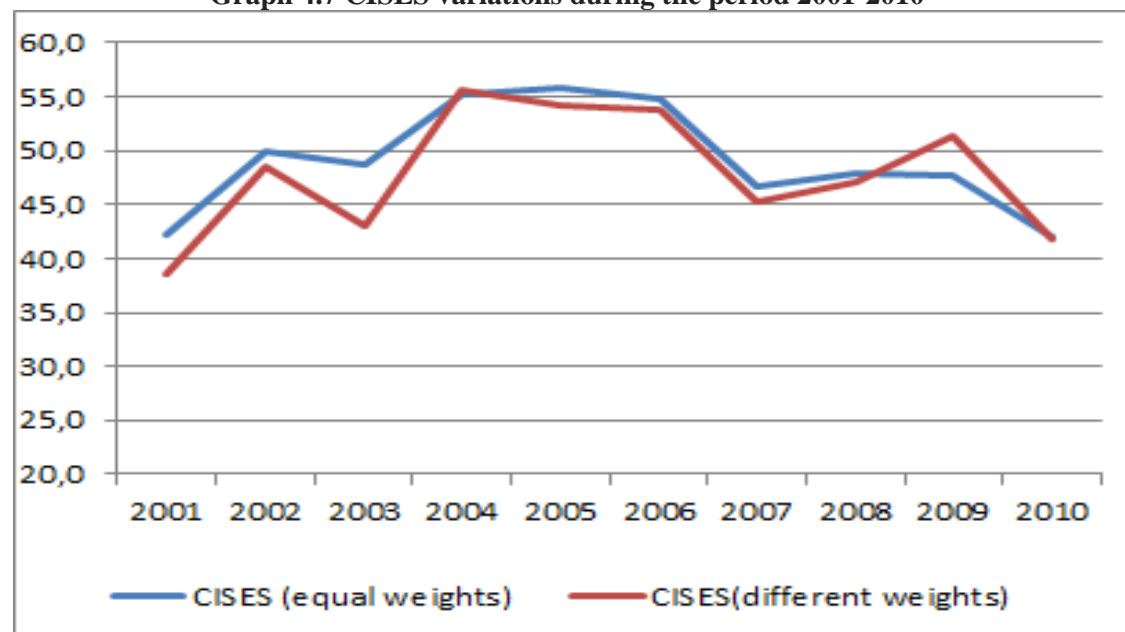
First and foremost, the Composite indicator for the Socio-Economic Situation of Greece presents relevant modulation which depends on the different definition of the weights that we gave to each dimension (Table 4.8).

Table: 4.8 National Composite Indicator with equal and different weights for each simple indicator

Greece	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
CISES (equal weights)	42,1	49,9	48,8	55,3	55,7	54,8	46,6	47,9	47,6	42,0
CISES(different weights)	38,6	48,5	43,1	55,5	54,3	53,8	45,3	47,1	51,4	41,7

(own treatment)

In details, CISES with the same weights for each dimension, notes different figures from CISES with different weights for each dimension. Undoubtedly, CISES shows at national level the same general trend, while the weighted CISES presents greater extreme values in 2003 and 2009. This fact was expecting by us, due to the weighted system that we use in order to focus more on the purely economic dimension.

Graph 4.7 CISES variations during the period 2001-2010

(own treatment)

Beyond this general trend, we note a decrease of the indicator during the last two years, which is more pronounced in the case of the weighted indicator. This should reflect that the social dimension of the crisis is revealed with a time lag.

Secondly, it is important to mention that the values of CISES in 2009 show some irregularities. Such irregularities seem to be generated by the values of the indicator GDP per capita at this year, especially for the Region of Sterea Ellada. For this reason we should be very careful in the interpretation of the figures of CISES in 2009.

Furthermore, weighted CISES and non-weighted CISES show that the ranking of the regions before and after the appearance of the crisis in 2008, presents some differentiations, confirming that the spatial dimensions of the financial crisis in Greece during the years 2008-2010 is a fact.

Table: 4.9 Composite Indicator with equal weight for each simple indicator

GEO/TIME	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Greece	42,1	49,9	48,8	55,3	55,7	54,8	46,6	47,9	47,6	42,0
Northern Greece	38,5	38,3	44,2	47,3	40,4	47,3	41,3	37,7	34,4	28,9
Eastern Macedonia - Thrace	53,2	39,2	47,6	40,0	43,6	29,4	40,2	38,1	27,2	24,2
Central Macedonia	44,2	42,5	50,9	52,0	41,6	54,1	47,4	41,2	39,5	32,5
West Macedonia	7,4	19,8	4,8	12,1	15,1	12,4	13,5	16,7	11,6	11,6
Thessaly	24,9	31,7	42,1	53,3	46,6	55,5	34,8	37,1	39,7	30,9
Central Greece	29,9	42,3	42,5	45,8	45,1	43,3	34,8	30,2	33,2	41,4
Epirus	18,6	28,2	37,9	53,6	34,9	41,2	38,3	25,8	28,7	37,7
Ionian Islands	Na	Na	49,2	66,5	70,6	52,2	Na	Na	51,0	41,4
West Greece	35,0	38,1	48,4	42,4	50,3	40,2	27,6	25,8	29,6	44,7
Stereia Ellada	12,3	30,7	39,0	33,6	35,9	33,6	27,1	30,2	19,5	37,8
Peloponnesus	37,9	53,2	43,6	49,0	41,8	55,3	37,9	32,2	46,1	46,7
Attica	62,1	77,4	70,6	81,9	87,0	81,0	73,0	76,5	76,1	64,4
Aegean Islands, Crete	59,2	53,4	55,4	60,6	60,3	60,3	56,7	62,4	57,6	51,3
Northern Aegean	62,8	30,7	53,3	37,8	35,0	41,7	Na	Na	54,3	41,4
Southern Aegean	55,5	41,4	54,4	62,4	67,8	60,6	Na	Na	54,1	54,5
Crete	60,7	65,2	57,8	65,4	64,5	66,0	60,2	62,0	58,7	55,7

(own treatment)

Table: 4.10 Composite Indicator with different weight for each simple indicator

GEO/TIME	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Greece	38,6	48,5	43,1	55,5	54,3	53,8	45,3	47,1	51,4	41,7
Northern Greece	34,6	36,2	41,3	53,5	34,6	47,7	44,5	37,4	37,1	29,1
Eastern Macedonia - Thrace	49,1	27,6	44,1	42,2	46,0	26,8	50,0	40,4	37,0	37,2
Central Macedonia	37,7	38,4	46,6	59,9	33,0	55,4	51,9	38,1	41,8	30,9
West Macedonia	11,4	36,5	6,0	20,3	26,8	22,2	24,8	32,2	19,7	21,4
Thessaly	25,4	33,4	43,2	56,4	35,8	54,7	24,2	36,2	38,8	24,2
Central Greece	25,8	38,1	36,6	46,7	40,1	39,3	32,3	24,6	32,1	43,7
Epirus	19,6	27,9	41,6	59,9	27,1	36,0	41,7	21,7	37,9	45,8
Ionian Islands	Na	Na	49,5	61,5	67,9	46,1	Na	Na	39,9	33,5
West Greece	34,7	37,6	47,2	43,6	47,8	37,3	23,5	22,4	24,4	48,2
Stereia Ellada	11,1	25,2	27,1	34,9	31,5	23,0	22,3	29,3	18,9	48,9
Peloponnesus	26,5	43,7	34,8	48,9	34,1	59,4	34,7	21,5	48,1	43,1
Attica	59,8	77,1	64,1	78,9	90,3	80,8	72,5	76,1	79,3	62,9
Aegean Islands, Crete	50,3	51,6	45,5	52,2	55,2	55,1	49,4	60,7	59,3	43,5
Northern Aegean	64,6	20,6	57,9	25,3	32,7	46,4	Na	Na	52,0	28,0
Southern Aegean	44,9	42,8	46,6	52,6	68,0	52,6	Na	Na	60,7	45,5
Crete	50,1	63,0	43,7	57,7	55,9	58,7	46,5	57,4	57,1	52,7

(own treatment)

In details, as it was expected, Attica regardless the way of calculating CISES, remains at the first position in the ranking of the thirteen regions. Attica seems to be more resistant to the crisis, as the stronger and more attractive region of all, despite the fact that Attica is also confronted to a significant decline of the absolute value of the composite indicator after 2008. The impact of the crisis affected Attica, but the socio-economic situation of this region (in relative terms) was at a very good level before the crisis, so that Attica was hit by the crisis but due to her previous good situation, the effects of the crisis are not so much obvious, at least until 2010.

Table 4.11 Ranks of the 13 Regions of Greece with non weighted CISES

GEO/TIME	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Attica	2	1	1	1	1	1	1	1	1	1
Crete	3	2	2	3	4	2	2	2	2	2
South Aegean	4	5	3	4	3	3			4	3
Peloponnesus	7	3	9	8	8	5	6	6	6	4
West Greece	8	7	7	9	5	10	8	8	9	5
North Aegean	1	9	4	11	11	8			3	6
Ionian Islands			6	2	2	7			5	7
Sterea Ellada	11	10	11	12	10	11	9	7	12	8
Epirus	10	11	12	5	12	9	5	9	10	9
Central Macedonia	6	4	5	7	9	6	3	3	8	10
Thessaly	9	8	10	6	6	4	7	5	7	11
Eastern Macedonia - Thrace	5	6	8	10	7	12	4	4	11	12
West Macedonia	12	12	13	13	13	13	10	10	13	13

(own treatment)

Table 4.12 Ranks of the 13 Regions of Greece with non weighted CISES

GEO/TIME	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Attica	2	1	1	1	1	1	1	1	1	1
Crete	3	2	8	5	4	3	4	2	3	2
Sterea Ellada	12	11	12	11	11	12	10	7	13	3
West Greece	7	6	4	9	5	9	9	8	11	4
Epirus	10	9	10	4	12	10	5	9	9	5
South Aegean	5	4	6	7	2	6			2	6
Peloponnesus	8	3	11	8	8	2	6	10	5	7
Eastern Macedonia - Thrace	4	10	7	10	6	11	3	3	10	8
Ionian Islands			3	2	3	8			7	9
Central Macedonia	6	5	5	3	9	4	2	4	6	10
North Aegean	1	12	2	12	10	7			4	11
Thessaly	9	8	9	6	7	5	8	5	8	12
West Macedonia	11	7	13	13	13	13	7	6	12	13

(own treatment)

Conversely, the economic potentiality of Western Macedonia is too low. This region is placed at the end of the rank of the regions before and after the crisis.

Despite that, the values of the weighted CISES and non weighted CISES at 2010 for Western Macedonia seem to be in a satisfactory level. In addition, Central Macedonia seems to have suffered a lot by the crisis of 2008 comparative with the years 2004 to 2007.

It is very important to mention that two regions appear in a relatively better situation as regards the impact of the crisis and this is observed for the two different composite indicator: Crete and Southern Aegean, especially with the weighted CISES, appear to be two of the strongest and most attractiveness regions after the year of 2008, consequently, the purely economic impact of the financial crisis is distinct.

In details, Crete for the years 2004 and 2005 was on the fourth and fifth rang of the attractiveness of the regions but, in 2010 is the second region, after Attica, with good level of attractiveness. Furthermore, North Aegean presents a very good socio-economic situation for the years 2004 to 2010.

Furthermore, the region of Thessaly seems to have been significantly influenced by the crisis of 2008, according to the composite indicator, expressed by the two ways of calculating. More specific, with weighted CISES in 2010, Thessaly is at the twelfth region of Greece, while not important difference appears with non weighted CISES. However, Peloponnesus, Epirus and Sterea Ellada seem to have a steady trend, according to the non weighted and weighted composite indicator.

To summarize, it was possible to detect some spatial dimension of the financial crisis in Greece (at NUTS 2) according to the above construction of the Composite Indicator of the socio-economic situation of Greek regions in 2008 to 2010. However, we must be very careful in the conclusions we can draw from this statistical analysis. Indeed, the results depend on the reliability and the availability of the time series data. Moreover, we have data only for the two first years of the crisis (2009-2010), so it is possible to produce only provisional results. Furthermore, we still highlighted the problems of data reliability, especially as regards the GDP pc in 2009 showing certain irregularities.

CONCLUSIONS

The fiscal problem in Greece has three components: the rapid aging of the population leads to unfavorable financial outlook and created pressures for increases pension. In this context, our analysis of the natural balance and migratory sold provides results that we can characterized as disturbing for the future of the country.

Furthermore, the political cycle creates pressure for increased wages and employment in the public sector beyond the capabilities of the economy by funding from resources mainly from abroad. Finally, the fiscal diversion of 2009 and the deficiency of Greek government, led to the adoption of a program in order to reduce the deficit with significant structural interventions. By the end of 2009, Greece entered an unprecedented fiscal crisis that threatens the stability of even country and European Union finance and Monetary Union (EMU) in its entity. In response these developments and pressure from its European partners, the Greek government has implemented an extensive package of austerity measures. As with elsewhere in Europe, they are geographically horizontal. Nevertheless, due to different regional levels in specialization, GDP per capita and capacity of capital, horizontal measures can have significant spatial effects, affecting different regions disproportionately.

Immigration is a specific spatial dimension of crisis but its evolution reflects quite well the general socio-economic situation of the country. During the last years more and more legal immigrants return to their country of origin due to the crisis in Greece and therefore due to the increased unemployment. Despite the measures from the Greek government, in order to avoid the exodus of immigrants, the flight of immigrants from Greece of crisis is a fact. The data from census in 2011 highlight some clear trends. First of all, the central municipalities of Athens and Thessaloniki present population loss. At the contrary, population growth is confirmed in the around municipalities of Athens and Thessaloniki, municipalities that are located very close to these two main urban centers. Secondly, the central municipalities of the great urban areas of regions such as Irakleio, Patra, Larisa, Ioannina, continue to be a guarantee attraction. Furthermore, there is a lack of capacity in municipalities of highland. Last but not least, most of the islands municipalities, except of Crete and Corfu, note small changes in their population percentage.

The purpose of this study was to try to assess the level and the evolution of the spatial dimensions of the current crisis in Greece among its thirteen regions during the period 2008-2010. This assessment was mainly based on the construction of a composite indicator. The purpose of our indicator (CISES) was also to put in evidence that the exclusive use of Gross Domestic Product per capita for evaluating the spatial dimensions inside the country may lead to imperfect results and may be “erroneous”.

Whereupon, our wish was that the estimation of CISES will indicate a more objective and representative picture of the socio-economic situation of Greece at NUTS 2 level for the years 2008 to 2010. In order to measure the economic potentiality of the regions, we retained as first indicator, the Gross Domestic Product (GDP) per capita in PPS. GDP per capita is the ratio between the level of gross domestic product, expressed in purchasing power standards and total population. GDP per capita in PSS is obtained by converting GDP to a fictive currency using special conversion factors. Purchasing power parties reflect the prices ratios between the regions and are the same time expressed in eliminates, without taking account the inflation.

In order to achieved economic growth of a region it is appropriate to combine GDP per capita and human resources. Regions with a positive demographic structure and population growth present an ex ante advantage. Furthermore, the population growth can be interpreted as an indicator of attractiveness. As a result, the second indicator is the Rate of Demographic Growth. Regions with high rate of population density may not be an attraction. The third indicator that we studied is the Density of Population which reflects the result of socio-economic and demographic attractiveness.

Economic potentiality does not necessarily mean shortage of socio-economic inequalities. Therefore, in order to construct a valuable composite indicator as well as in order to define properly the social dimension of the CISES, we examined a variable which relates to the rate of population at risk poverty. Nevertheless, due to the deficiency of the data at NUTS 2 level of the rate of population at poverty risk, we were not able to use this index. It is believed that the risk poverty is associated closely with the rate of unemployment and especially with the long term unemployment. Therefore, in order to determine the social dimension of CISES, we also take into consideration the important question of employment and unemployment, not only at total level but by distinguishing the well-known problem of unemployment for the

young population (15-24 years old) as well as the long term unemployment (more than 1 year in unemployment).

The results of the empirical analysis are able to contribute to a better understanding of the crisis problem in Greece at a regional level. The strong historical, political and economic factors that have influenced the level and the type of spatial dimensions of crisis appears to still have such power, so as do not allow the risk management policies of the country to reduction the impacts of the crisis of 2008. Attica is the stronger and more attractive region of all, despite the fact that this region presents significant decline of the value of the composite indicator after 2008 as well as a decline of population. The impact of the crisis affected Attica, but the socio-economic situation of this region was at a very good level before the crisis. Consequently Attica maintains its first position in the ranking of the 13 regions of Greece.

At the opposite, the difficult situation (as regards its rank) of Western Macedonia is quite a constant during all the examined period. Western Macedonia found at the end of the rank of the regions before and after the crisis. The values of the weighted CISES and non weighted CISES at 2010 for Western Macedonia are especially low comparatively to the national average.

We also have to mention the case of Central Macedonia (which includes the second main urban center of the country). It seems to have suffered a lot by the crisis of 2008 comparative with the years 2004 to 2007. Crete and Southern Aegean appear to be two of the strongest and most attractiveness regions after the year of 2008, consequently, the purely economic impact of the financial crisis is quite different. North Aegean presents a very good socio-economic situation for the years 2004 to 2010. The region of Thessaly seems to have been significantly influenced by the crisis of 2008, while Peloponnesus, Epirus and Sterea Ellada seem to have a steady trend, according to non weighted and weighted composite indicator.

The assumptions regarding the near and longer term future of Greece are many. The most common is that in short term the debt is going to lead the country to suffocation. Otherwise the implementation of a national development plan is necessarily. Institutional reforms represent the only option in order to achieve the rescue of the Greek economy. These reforms will bring spectacular development benefits by abolishing vast barriers to investment and entrepreneurship. In order to

make the necessary institutional measures, it is required the support of public, which is disgruntled and disappointed.

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