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Financial Performance of Local Government Organizations: The Case Of Municipalities of the South Aegean Region

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Abstract: *Financial ratios have been a key tool of financial analysis in the corporate world for a very long time. However, the adjustment of financial indicators to the evaluation of Municipalities is relatively recent. In the present work, the critical presentation of the financial situation of the Municipalities of Karpathos, Patmos and Kalymnos, which are the three Municipalities of the South Aegean Region of Greece, took place, in order to determine whether these Municipalities were affected by the economic crisis, in terms of financial strength. The analysis shows that there are significant differences in the general liquidity ratios between the three Municipalities, with the Municipality of Patmos showing higher prices and the Municipality of Kalymnos the lowest. However, these prices do not seem to be affected by the economic crisis and in fact, from 2012 onwards there seems to be a significant improvement, especially in the Municipalities of Patmos and Kalymnos. The dependency index for all three Municipalities remains stable over time and is at levels that do not justify the assumption that the dependence of Municipalities on Central Government has increased or decreased.*

JEL: *H76, M48, R51*

Key words: *financial crisis, State and Local Government, financial ratios, financial health*

1. INTRODUCTION

Financial ratios have been a key tool of financial analysis in the corporate world for a very long time. However, the adjustment of financial ratios to the evaluation of Municipalities is relatively recent. Essentially, a financial ratio is a mathematical tool that aims to: (Lytton et al., 1991) (i) objectively measure the financial condition of an entity; (ii) provide a way to monitor financial progress over time; and (iii) allow a borrower, a financial services professional or a researcher to determine the financial framework under which an organisation can take on more debt or expense liabilities, further penetrating the financial sector of the economy.

Banks and other financial institutions, for example, use financial ratios as a key determinant of their lending policies and conditions under which proceed to grant loans, with financial ratios often being used as concepts that provide relevant information related to effects of credit risk (Duca & Rosenthal, 1994).

Financial services professionals, financial advisers, financial analysts, and financial managers of companies and organisations often use financial ratios to obtain information about an entity's current and future financial stability. In some cases, financial ratios showing unsatisfactory, low values, can lead to reduced access to products and financial services, to higher service-related costs and increased risk of bankruptcy (Birkenmaier, 2012).

The use of financial ratios came from corporate finance and accounting, where they were used to assess a company's profitability, liquidity and solvency. In 1985, Griffith suggested that financial authors, financial advisers, and financial services professionals should adopt financial ratios-based technique to assess the financial stability of economic entities. He proposed 16 financial ratios used to measure the liquidity, solvency and overall financial condition of an organisation or a business (Garrett & James, 2013).

Additional research on the use and value of financial ratios of economic entities has led to widespread acceptance among academics and professionals working in the field of financial services. Today, financial ratios are used almost universally as a basis for receiving and monitoring financial recommendations by financial services professionals when working with clients, as well as a key determinant for lending decisions (Zanin, 2017).

As mentioned earlier, financial ratios are widely used as a diagnostic tool to assess the strengths and weaknesses of economic entities. In this sense, financial ratios tend to be used as descriptors, rather than as forecasts, of the financial condition of an organisation or a business. It is important to note, however, that another value associated with the use of financial ratios is the trend analysis.

Given the dynamic within and between variables over time, financial ratios can provide an accurate picture of a household's financial costs and savings, or the expenses and income, for example, of a company. Consequently, accurate forecasting of financial ratios should provide financial managers and those providing financial services with a way to measure the financial position of the organisation in the coming years (Zanin, 2017).

Although conceptually true, the accurate forecasting of financial ratios, based on traditional linear modeling techniques, was vague. Instead of making projections about spending and savings based on very specific estimates, the managers of financial of companies and organisations, financial institutions and other financial services professionals were forced to forecast the future financial condition based on trends, crises and expectations.

The lack of reliability in forecasting the values of financial ratios underscores the limitations associated with traditional linear valuation techniques. As explained above, there are many factors that can have direct, as well as indirect, transnational and mediation relationships with an organisation's financial resources. Conventional valuation models (e.g. least squares regression, logistic regression, probability models, etc.) are not particularly suitable for capturing underlying interactions and side effects between factors commonly related to financial ratios (Shapiro & Gorman, 2000).

The present research enriches the literature on unfolding the fundamentals examination of the Municipalities performance. Our key contributions are as follows: (i) we investigate the financial performance of the Local Government Organizations, by using their balance sheets from 2007 to 2014; (ii) we demonstrate a mixture of ratios that all together form a very interesting snapshot, both useful to practitioners and academics; and (iii) our results show that there are significant differences in the ratio analysis between the three Municipalities, stemming from the crucial differences they face upon multiple variables.

The outstanding part of this study is structured as follows: in Section 2, the existing literature is revealed; in particular, we focus upon the measurement of financial prosperity and soundness of Local Government Organisations. We proceed with Section 3, presenting the impact the economic crisis in Greece had upon the Local Government Organisations. In Section 4, we employ a time-series analysis based on the study of the balance sheets of three Municipalities of the South Aegean Region for the years 2007 to 2014 and we show the results. We conclude and discuss in Section 5.

2. EXISITNG LITERATURE

2.1. The Concept of Financial Prosperity of Local Government Organisations

Various terms corresponding to different methodological approaches for the analysis of financial prosperity were used in the literature. The concept of economic or financial condition is one of the most widely used terms. In this sense, Honadle et al. (2003) noted that the financial condition of local institutions is a term closely related to the concept of financial prosperity and Wang et al. (2007) pointed out that this concept represents an organisation's ability to meet its financial obligations in a timely manner.

As financial condition is a concept that is not immediately observable, the literature has focused on evaluating the various aspects or dimensions that make it up. Groves et al. (1981) noted that the financial condition consists of the following dimensions: (i) *Cash flow solvency*, which means the ability of the organisation to produce enough cash and have the necessary liquidity to pay its bills, (ii)

fiscal solvency, i.e. the ability of the organisation to produce sufficient revenue during the normal financial period to meet its obligations and not to show reduced profits, (iii) *long-term solvency*, i.e. the long-term ability of an organisation to pay all the expenses of its business, including the expense obligations that usually appear in each annual budget, as well as those that appear only in the years to be paid, and finally, and (iv) *service-level solvency*, which refers to whether a public organisation can provide the level and quality of services required for the general health and prosperity of a community.

It is worth noting that the above approach has been adopted by the International City-County Management Association (ICMA) since 2003 and is implemented locally in many US States.

Another important contribution for the local level to the issue of financial soundness of Municipalities and Local Government Organisations in general is proposed by the Canadian Institute of Chartered Accountants, CICA (2009), which evaluates this concept through the dimensions of: (i) *sustainability*, which determines as the extent to which a public administration organisation can maintain its existing financial obligations without increasing its relative debt or tax burden for the economy in which it operates, (ii) *flexibility*, which determines as the extent to which a Local Government Organisation can change its debt or the tax burden of the economy in which it operates to meet its existing financial obligations; and (iii) *vulnerability*, which determines as the extent to which a Local Government Organisation depends on funding sources beyond its control or influence or is exposed to risks that could affect its ability to meet its existing financial obligations.

Many ratios have been used to assess the financial condition. It should be noted that there was no common view on their selection, use and implementation. In contrast, the financial condition of Local Governments and socio-economic variables are interrelated aspects (Honadle et al., 2003). The characteristics of the socio-economic environment are varied in nature, as they include variables of economic sector, soil nature, population structure and population movements, and economic policies developed by state public organisations (Honadle et al., 2003).

In addition, ICMA (2003) includes in "environmental factors" the differences in population size, population density, unemployment rate and business activity. Wang et al. (2007) analysed the relationship between financial condition and population (population size and growth rate) and economic factors such as per capita income, gross national product and percentage change in personal income, and concluded that these variables can be used to forecast the financial condition with a certain level of accuracy.

As noted earlier, the study of the financial soundness of public organisations and entities is a special case in relation to the study of private companies and profitable organisations. In the first case, understanding the final information and how to use that information in a particular policy is crucial. It must first be determined what exactly the analysis of the financial condition of such an organisation means. Financial condition is a concept that, at its most basic level, is the ability of a public body to meet its current and future financial commitments (Wang, 2014). However, as Jacob & Hendrick (2013) note, deconstructing and analysing such a definition leads to a higher level of operational complexity.

McDonald (2018) and Jacob & Hendrick (2013) provide similar definitions based on the financial timetable. For example, the short-term health of an organisation focuses on whether an economic entity has sufficient cash to meet its 30-60 day obligations. Fiscal solvency focuses on the ability of an entity to have sufficient revenue in a financial cycle to cover expected expenses. The long-term financial condition includes not only the annual expenses but also the long-term liabilities. The final definition offered by Groves et al. (2003) and McDonald (2017) pertains to the ability of a Local Government to provide adequate services to the citizens.

An analysis of the financial condition is particularly suitable for state and Local Governments. It can also be useful for non-profit organisations, although the data sources in this case are different. It is important for stakeholders and those involved in Local Governments to be able to understand the economic and demographic environment in which such an entity operates, as well as its final structure, and to be able to assess the financial condition of the organisation with the use of methodologies and best practices within this broader context.

As mentioned below, the International City/County Management Association (ICTM) Financial Trends Monitoring System (FTMS) provides a comprehensive structure for examining the financial condition of public organisations that takes into account not only the economic measurements but also the impact of intergovernmental policies, policy, economic and demographic trends, and management structure through the use of metric scales (Groves et al., 2003).

Hendrick (2011) describes a "financial condition process" that includes the political environment, the general environment, as well as the policies and practices that have an interactive effect on the final condition. Berne & Schramm (1986) discuss a framework for measuring the financial condition that incorporates resource availability and expenditure pressures.

Similarly, the framework that fits in most cases, Honadle et al. (2003) examine financial soundness and good financial condition at local level, from the perspective of issues over which local municipal authorities have control, such as the means of financing municipal services, but also the factors in which local municipal authorities have minimum control, such as Central Government policies and the institutional framework within which Municipalities and communities should operate legally.

Finally, fields in which local authorities have absolutely no control, such as natural disasters, ahould also be taken into account. The point is that the analysis of the situation of all these conditions, as well as the other aspects of public budgeting and financial management, cannot be considered in the framework of a closed system perspective, but should be assessed from an open system perspective. This requires stakeholders to assess the framework, decide which information is most important and explain it in explicit terms. However, in the context of this dissertation, the defined framework is the assessment and analysis of the balance sheet data of the selected Municipalities.

2.2. Measuring the Financial Soundness of Organisations

The financial resources of the Municipalities are particularly important. They are central to a Local Government's ability to provide or extend a programme or perform a service. Public administration concerns about the adequacy and effective management of these resources date back to the early twentieth century with the work of the New York Bureau of Municipal Research, as this organisation sought to improve the financial position of New York as a means of improving municipal services (McDonald & Gabrini, 2014).

Greater attention to the condition of public finances began to be given in the 1970s with the impending New York's fiscal crisis (Arnett, 2013). The experience of New York and others facing bankruptcy in the 1970s and 1980s shaped this concept of fiscal soundness used today in the literature. In simple terms, financial condition is the ability of a Local Government to balance its financial obligations with the available flows of income (Jacob & Hendrick 2013). A Government is considered financially sound if its resources meet its obligations, while if it does not have the necessary resources then it may face fiscal pressure.

While the concept of fiscal soundness is simple, determining the financial status of a Local Government is not. Public finance researchers have attributed this to a poorly defined concept and to the fact that it is a concept that is inherently difficult to be measured (Benson et al., 1988). The measurement systems that emerged depend on the preferences of the researcher, their unit of analysis and the available data. As a result, there is a great deal of disagreement in the literature on how this concept can best be measured (Maher & Nollenberger, 2009).

Dozens of measurement approaches have been used in the literature and even more have been developed by professionals in the field, who have often used a version of a method from the relevant literature that has been modified to suit the needs of Local Government Organisations. Some states have developed their own systems for measuring the financial soundness of their Local Governments (Pew Charitable Trusts, 2016).

North Carolina, for example, monitors the audits of its Local Governments for signs of specific financial problems and approves the issuance of the entire debt. Ladd & Yinger (1989) developed a measure that incorporated the ability of a Local Government to raise revenue in relation to the tax burden and expenditure needs.

The International City/County Management Association has developed the Financial Trends Monitoring System (FTMS), which incorporates 36 different financial ratios in 11 regions, which was mentioned earlier. In recent years, the FTMS has been updated to include 42 ratios that incorporate environmental and organisational factors, as well as economic factors (Nollenberger et al., 2003). Despite the usefulness of these approaches, it is difficult to assess and give specific and true guidance on the real financial condition of the Local Government.

The next chapter will refer to the analysis based on ratios, which is the method that will be applied in the context of this dissertation, while it is deemed appropriate to refer to the Brown 10-point test (1993) and the Wang, Dennis and Tu solvency test (2007).

3. The Economic Crisis and Local Government Organisations in Greece

3.1. The Economic Crisis in Greece

The Greek Local Government is an administrative, political, social, participatory and developmental institution. Its administration, elected by the citizens, operates in accordance with an action plan. In many cases, citizens participate under the terms and conditions of the administrative body, i.e. the municipal or regional council, in the discussion on how to implement this plan, without the right to vote (Galanos, 2014).

Citizens also participate in decision-making as members, or even in positions of responsibility and administration, of distinct legal entities, which the local authority has the right to establish in order to promote cultural, social, educational, intellectual and economic development issues The Local Government implements the planned policies of the state, as they are expressed through the actions and initiatives of the Government, and adapts them to the reality of the local communities.

At this point, it is worthwhile to take a brief historical look back at the economic crisis in Greece, in order to make clear its impact on all sectors of the state and the market, and therefore on Local Government. To strengthen the Eurozone, EU members agreed in the 1990s to what became known as the Stability and Growth Pact (SGP). The pact was designed to enforce fiscal discipline and control lending by individual countries. Countries with deficits can sometimes print money and create inflation to ease their debt difficulties, but joining the Eurozone has ruled out that option. Despite the Pact, the Greek Government showed chronic deficits and excessive borrowing since the adoption of Euro in 2001. However, its bond rates, which usually rise when a country runs deficits, have generally remained low (Belke & Drege, 2013).

The financial institutions may have assumed that any country with a debt crisis would be rescued by EMU and thus, they were complacent about the Greek deficits. Government lending helped pay for public services, public wage increases and other social expenses. Warnings about the condition of the economy were largely considered undesirable. The economic environment and the current situation, however, changed dramatically in 2009. Subsequently, the new Government revealed that Greece's budget deficit was much higher than originally estimated, reaching 15.6% of GDP in 2011 (Belke & Drege, 2013).

Bond markets began to lose confidence in the Greek economy. The European Union and the Eurozone did not have institutionalised procedures in place to help the Greek Government address its budget deficits. Unable to pass on its debts, Greece had to seek help from the IMF and the eurozone member Governments. To avoid the bankruptcy of the Greek Government, various international organisations took action. The so-called "troika" - the European Commission, the ECB and the IMF - had to come to terms with three different pressures. First was the fear of "contamination" in the European banking system, as French and German banks held much of Greece's debt. Already weakened by the losses from the global financial crisis, they were worried about compensating the additional cost of providing debt relief to Greece (Busch et al., 2011).

The banks had mistakenly assumed that all public debt was risk-free. Thus, they decided to lend to the Greek Government under the disputed assumption that it had sufficient capital to absorb a Greek bankruptcy. All the banks in Europe feared that the relief of the Greek debt would be a precedent. The bonds issued by other European Governments suddenly became risky, making it more expensive for

these Governments to borrow. The loss of investor confidence thus affected the entire European financial system.

A second pressure came from Europeans outside Greece. They did not agree to "forgive" the Greek Government's failure to keep its fiscal finances in order. Many economists feared that imposing harsh austerity on Greece would strangle its economy, making it even more difficult for the Government to repay its debts. However, the Germans and others in Europe considered that Greece had to suffer the consequences of its alleged behaviour (Busch et al., 2011).

A third pressure came from Greek citizens, who accused their Government and Greek creditors of deception. Young Greeks, salariat and retirees should sacrifice their vested rights over the mistakes of irresponsible political leaders and bankers. Greek leaders and their rescuers came up with a three-year rescue plan in May 2010. The plan imposed harsh austerity on the Greek Government and its people to reduce the Greek budget deficit. The cuts included tax increases, reduced pensions, cuts in public sector wages and looser labour market regulations to restore competitiveness and growth. In return, the Government received € 110 billion in loans from European countries and the IMF. The ECB also intervened to buy Greek bonds in the secondary market (Cowen, 2015).

The plan seemed to work at first. Yields on Greek bonds decreased. Greece closed the deficit at 5% of GDP. But fiscal resolution has had an economic impact. The Greek economy sank into a great crisis. At the beginning of 2012, the Greek debt was restructured. The restructuring was nominally volunteer. Most bond investors participated in it, as the alternative would be to default on bonds. In return, the Greek Government received a new package of formal emergency loans that was extended in instalments over a period of three years, so that it could cover its costs while continuing budget cuts. Once again, the mix of cuts and financial sacrifice worked, up to a point. In 2013, Greece achieved a small primary budget surplus - the budget deficit excluding interest payments. But again, the situation led to a new recession that cumulatively reached 25% of GDP (Cowen, 2015).

Thus, the implementation of adjustment programmes resulted in the closure of many companies, especially small and medium-sized ones, the abolition of collective bargaining in the private sector and, consequently, the reduction of wages in the private sector, the high unemployment rates at all ages and at all levels of education, but especially among university graduates, the failure to repay loans contracted for housing and consuming purposes (Gkekas et al., 2014).

Despite the limited financial resources and staff reductions, the Local Government developed initiatives to coordinate social groups at the local level to support the homeless and the unemployed and to provide social and health services to citizens, while its contribution to the support of refugees and immigrants at the local level proved to be decisive and contributed to the transformation of citizens' feelings about xenophobia (Katsimardou & Boua, 2012).

3.2. The Effect of Local Government from the Crisis - Quantitative and Qualitative Data

As noted earlier, since 2008, Greece has suffered from an unprecedented economic and financial crisis, the consequences of which continue to affect the daily lives of citizens and which has also had a major impact on local and regional authorities. In 2011, the Kallikratis programme introduced a major reorganisation that gave new responsibilities to Municipalities and strengthened their powers by entrusting new operations at the local level, such as the environment and quality of life, health, education, culture and sports, rural development, forestry, livestock and fishery. This new law had been in preparation for several years, but was hastily enacted due to the need for economic rationalisation and the reduction in the number of civil servants as a result of austerity measures. The thorough review of the country's territorial organisation led to a reduction in the number of Municipalities from 1.034 to 325 and the abolition of 54 prefectures, which were replaced by 13 regions (Blanas et al., 2013).

However, budget-cutting measures taken by the Central Government as a result of the public finance crisis have reduced financial transfers from the Central Government to Municipalities and regions, making it difficult for Municipalities to carry out their new operations effectively, which has an impact on the ability of local authorities to invest.

The following section provides some basic data in order to better understand the Greek financial condition at the municipal level (Leotsakos et al., 2014).

(i) National and municipal revenue.

Although national public sector revenue in Greece (42% of GDP) is similar to the EU average (45% of GDP), Greece has by far the lowest level of municipal revenue (3% of GDP and 8% of public sector national revenue) in the EU-27 after Malta and Cyprus (the average level in the EU-27 is 16% of GDP and 36% of public sector national revenue)

(ii) National and municipal expenditure.

Although the percentage of GDP spent by the national public sector in Greece (52% of GDP) is almost similar to the EU-27 average (49% of GDP), the public expenditure of Municipalities in Greece (3% of GDP and 6% of national public expenditure) appears to be much lower than the EU average (17% of GDP and 34% of national public expenditure)

(iii) Direct investments of the public sector.

In GDP, the direct investments of the public sector are slightly lower in Greece (1.9% of GDP) than in the EU-27 (2.3% of GDP); and compared to the national public expenditures, the direct investments of the Central Government are also lower than in the EU-27 (3% and 5% of total public expenditures, respectively). With regard to the situation in the Municipalities, the direct investments are lower in Greece (0.6% of GDP) than in the EU-27 (1.5% of GDP)

(iv) Public sector debt.

Although the national debt of the public sector in Greece (171% of GDP) is much higher than the average debt of the EU-27 (83% of GDP), the debt of the Greek public sector of Municipalities is much lower (0.9 % of GDP and 0.5% of public debt) than the EU-27 average (12% of GDP and 15% of public debt). Compared to the national level and the EU average, revenue and debt at the municipal level in Greece are very low, which prevents local authorities from spending on investment in their territory and in particular on upgrading the supply of necessary services to their citizens. This is a serious issue, given the growing capabilities introduced by the 2011 Kallikratis programme.

3.3. The Effects of the Economic Crisis on Poverty and Intra-Urban Inequality

The financial crisis of 2008 had several implications both at the national level and at a regional and urban scale, which in many cases resulted in the intensification of socio-spatial segregation at the neighbourhood level, within or between cities (Donald et al., 2014). The worrying fact is that absolute levels of inequality have increased during this period of recession, while at the same time the population living in extreme poverty in certain neighbourhoods has also increased, both in absolute size and in relative numbers (Kneebone et al., 2011).

Poverty becomes even more concentrated in the areas of large urban settlements, feeding intra-urban inequality. Of course, this intra-urban inequality after the crisis has emerged as an additional force in the already existing phenomenon of social polarisation within cities (Boterman et al., 2018). The roots of this pre-crisis urban social divide can be found in the gradual transformation of the professional structure in city neighbourhoods (Panori et al., 2019), as well as in additional forms of inequality, such as educational inequality (Florida & Mellander, 2016).

Over the last decade, Greece has undoubtedly experienced the economic crisis more intensely than any other European country. With regard to social conditions, there has been a sharp increase in the number of people living in poverty or social exclusion, especially after 2010. The severity of the economic crisis is even clearer when comparing the Greek case with the overall picture of the 27 countries of the European Union. Poverty risk rates have risen sharply in Greece between 2004 and 2015, while EU-27 average values show a much smaller increase over the period under review. Even more diversity can be seen in the case of material deprivation, as trends between the two quantities under study move in opposite directions (Panori & Psycharis, 2019).

A closer look at these data shows that, especially after 2010, there was a significant deterioration of absolute social conditions in Greece, despite the small initial improvement in poverty and social

exclusion rates at the beginning of the economic crisis and in particular, the years 2008 and 2009. In particular, the risk-poverty rates have increased significantly, reaching their maximum values in 2012 and 2013 (23.1% in both cases), starting from an initial value 19.9% in 2004, while material deprivation rates have increased to 40% in 2015, starting from 25% in 2004. At the same time, when considering the additional aspects of social exclusion, significant negative effects of housing and health conditions have also been reported in the literature (Ifanti et al., 2013).

The previous findings refer to absolute changes in living conditions. However, when exploring related changes in income inequality and poverty, interesting facts come to light, without strongly supporting the hypothesis that inequality has increased dramatically during the recession (Katsimi et al., 2013). On the contrary, there are indications that austerity led to an initial reduction in income inequality in Greece during the first years of the recession due to a significant shrinkage of wages (Matsaganis & Leventi, 2014). Matsaganis & Leventi (2014) try to thoroughly investigate the distributive impact of different policies on the evolution of the Gini index for the case of Greece during the period 2009-2014.

Their findings show that there is a positive effect on overall inequality in cases where the policies implemented mainly affect households at the highest levels. In addition, the measures related to the promotion of certain social groups, such as cuts in non-health benefits, have a negative impact on inequality. Furthermore, additional data show that the persistently high unemployment rates and the general negative economic environment seem to have increased consumption inequality, increasing the risk of long-term consequences for the results of poverty and inequality (Kaplanoglou & Rapanos, 2018).

3.4. Actions of the Local Government During the Crisis

In Greece, neoliberal austerity policies were chosen to deal with the economic crisis, with an emphasis on individualism and the market economy, which underestimated the social impact. Greece's structural hardships, combined with the remaining welfare model and a very weak result of social transfers, have forced low-income groups to bear the burden. Changing the model of prosperity by moving to the commercialisation of social policy was a key political choice (Karagianni, 2012).

In this context, the Local Government must fill the resulting gap and take on an expanded role due to the mass transfer of responsibilities from the Central Government. In the last five years, local authorities have faced a wide range of social risks, either recently appearing or existing, but quite enlarged due to the unfavourable economic conditions. Although Municipalities have struggled to adapt to the ever-changing regulatory framework, delays in building mechanisms to prevent social repercussions and a lack of preparation for assimilating administrative reforms are limiting factors to the effectiveness of their social structures (Gkekas et al., 2014).

Social policy continues to be implemented fragmented by different organisational entities operating in parallel, which makes it impossible to integrate strategic planning and results into the transient (funded) nature of interventions. New types of structures that were created, such as those designed primarily to tackle poverty, as well as support and networking structures, are not enough to meet real needs.

In terms of financing, the Municipalities made an effort to make the most of the co-financed European programmes, as the own resources were reduced in accordance with the "Memorandum of Cooperation" signed with the creditors of Greece. However, this carries the risk of over-reliance on external aid and prevents long-term planning. Eventually, it turns out that Local Government has largely replaced the role of the state in social policy, but the overall rating remains low and the way structures are built, the lack of financial resources, the staff and the organisational gaps make it difficult to meet the growing volume of social problems.

Local Governments, in order to implement a modern social policy, must first strengthen decentralised governance based on three pillars: increase the share of managed funds and at the same time redesign alternative forms of financing with the participation of all social partners supporting employment at a local level to meet the long-term needs of qualified staff, promote cooperation and mutual assistance

networks, which will help coordination of actions, complementarity and the creation of a management information system to investigate effectiveness and ongoing evaluation (Gkekas et al., 2014).

Moreover, voluntary action as a responsibility of the local authority is provided by law (Law 3463/2006, article 75). The Local Government coordinates and encourages groups of volunteers to promote the citizens' interests. The Municipalities, as a first-class Local Government and as a public authority closer to the citizen, promoted the coordination of groups of volunteers to deal with the crisis.

The first voluntary action developed at the initiative of the citizens was to support families affected by unemployment. Due to the confidentiality of personal data, there are no accurate data on families who experienced welfare problems during the crisis, other than those at or below the poverty line. The safest sample is the actual situation, obvious to every citizen, especially during the first period of the crisis (2010-2012), when the reduction of staff in private companies and the financial difficulties of entrepreneurs, especially in family businesses were created, resulting in the first wave of unemployment, which resulted in the emergence of a large number of homeless, as they could not cover the cost of housing (Galanos, 2014).

4. RESEARCH RESULTS

This chapter presents in detail the results of the research based on the study of the balance sheets of three Municipalities of the South Aegean Region for the years 2007 to 2014. The selected Municipalities are the Municipality of Karpathos, the Municipality of Kalymnos and the Municipality of Patmos. The reason that the specific Municipalities were selected was the fact that they had similar characteristics in relation to both their population data and their funding needs.

4.1. The Municipality of Karpathos

4.1.1. General Liquidity Ratio

Table 1 presents the evolution over time of the General Liquidity Ratio for the Municipality of Karpathos in the period 2007-2014, as well as the way it is derived. Note that this ratio is derived from the formula:

General Liquidity Ratio = [Current Assets (Available funds (Cash) + Receivables + Reserves)] \ Short-term Liabilities

and, according to Niarchou (2004), shows the ability that the business or organisation has to cover any of its liabilities within a fiscal period. Finally, it is worth noting that an acceptable value for businesses, which does not give worrying signs of lack of liquidity, is the value that approaches or exceeds 2.

According to Table 1, the value of the ratio for the years before the beginning of the economic crisis is very satisfactory, as the current assets of the Municipality are able to cover more than three or four times its short-term liabilities. However, in the next 2 years there is a significant drop in the value of the ratio, which continues in 2011, with the result that this year the value of the ratio is marginally above 1. In the following years, however, the value returns to the values it had before the beginning of the crisis, even if chronologically Greece is still in the vortex of the economic crisis.

4.1.2. Instant Liquidity Ratio

Table 1 presents the evolution over time of the Instant Liquidity Ratio for the Municipality of Karpathos in the period 2007-2014, as well as the way it is derived. Note that this ratio is derived from the formula:

Instant Liquidity Ratio = [Available Funds (Cash) + Receivables] / Short-term Liabilities

This ratio, like the previous one, shows the ability of the business to cover its liabilities within a fiscal period, with the difference that its calculation does not include reserves, as they are more difficult to liquidate if an immediate need arises. Finally, it is worth noting that an acceptable value for businesses is 1.

It is noted that in Table 1, only the individual data have been added, which were not already known, while the calculations have taken place in the accompanying excel worksheet. The picture that emerges from the study of the data in the table is quite different from the conclusions that emerged

from the general liquidity ratio of the Municipality, as the direct liquidity ratio gets for chronic values below 1, although in most cases, the value tends marginally to it. The only period when the value of this ratio approaches 2 is in 2011, while it is worth noting that in the immediately preceding year, the ratio gets its lowest value.

4.1.3. Return on Assets Ratio

Next, the two most important return ratios are presented, namely, the Return on Equity Ratio and the Return on Assets Ratio. Table 1 presents the evolution over time of the Return on Assets ratio for the Municipality of Karpathos in the period, 2007-2014, as well as the way it is derived. Note that this ratio is derived from the formula:

Return on Assets Ratio = Net Operating Profits / Total Assets

The economic significance of this ratio lies in its ability to measure the return on total assets of the business, which is closely related to the ability of the business to attract investment capital (Kantzas, 2006).

It is noted in advance that in case the business or organisation under study shows losses for a certain period of time, then the calculation of the ratio has no economic significance, but is given simply for reasons of continuity of analysis. The picture that results from the study of the data of the table is that of a ratio that in the specific Municipality takes very low values over time, while in several cases the said Municipality presents period losses. However, it should be noted the significant increase in the value of this ratio in the last two years of the study, which is due to the large increase in municipal profits. On the other hand, the almost constant course over time of the value of the assets of the Municipality in question is underlined.

4.1.4. Return on Equity Ratio

Table 1 presents the evolution over time of the Return on Equity Ratio for the Municipality of Karpathos in the period, 2007-2014, as well as the way it is derived. Note that this ratio is derived from the formula:

Return on Assets Ratio = Net Operating Profits / Total Equity

The economic significance of this ratio lies in its ability to measure the return on capital contributed by the businesses themselves, which is linked to the assessment by the businesses of whether the exposure is worth the risk (Kantzas, 2006).

It is noted that in this case as well the negative values of the ratios are given only for reasons of continuity of the analysis. The picture that results from the study of the data of the table is analogous to the picture of the Return on Assets since, as it is easy to observe, the amount of Equity of the Municipality is almost the same with the amount of its Assets, perhaps with the exception of the first two years of the study. Thus, the values of this ratio remain low as well, when they are not negative due to the losses of the Municipality and show a significant increase in the last two years of the study due to the multiplication of the organisation's profits in that period.

4.1.5. Debt to Equity Ratio

Table 1 presents the evolution over time of the Debt to Equity Ratio for the Municipality of Karpathos in the period, 2007-2014, as well as the way it is derived. Note that this ratio is derived from the formula:

Debt to Equity Ratio = Total Debt / Total Equity

The economic significance of this ratio lies in its ability to provide information on the extent to which the organisation or business is financed with borrowed capital. Thus, the level of security is predicted, as the lower the values of this ratio, the more the organisation finances its needs with its own means (Kyriazopoulos, 2012).

According to the data in Table 1, over time, the value of this ratio is very low, as there is no time period in which the value of the ratio exceeds 14%. This is to some extent expected as the organisation under study is a Municipality of a country and it is reasonable that it may not be possible to make extensive use of lending. However, even in this case, the years 2009 and 2011 seem to record

the highest value of the ratio, while on the contrary, after 2011 there is a continuous decrease, which results from both the reduction of the liabilities of the Municipality and the increase of its equity.

4.1.6. Fixed Assets to Total Assets Ratio

Table 1 presents the evolution over time of the Fixed Assets to Total Assets ratio for the Municipality of Karpathos in the period, 2007-2014, as well as the way it is derived. Note that this ratio is derived from the formula:

Fixed Assets to Total Assets Ratio = Total Fixed Assets / Total Assets

This ratio, together with the supplementary ratio that expresses the ratio of Current Assets to Total Assets, are the most characteristic " balance sheet ratios", which provide useful information on the structure of the organisation's funds. It is understood that the optimum balance between Current and Fixed Assets depends on the sector of activity of the economic unit (Kyriazopoulos, 2012).

According to the data in the table below, over time, the value of this ratio is particularly high, as there is no time period during which the value of the ratio falls below 79%. It is worth noting that from 2007 to 2011 there is a continuous increase in the ratio under study, which, however, is due more to the decrease in Total Assets than to the increase in Fixed Assets. In fact, given that the latter remain relatively stable during this period, it may be concluded that the increase in this ratio is due to a decrease in the Current Assets of the Municipality in question. In the following years, there is a small increase in both elements of this ratio.

4.1.7. Autonomy Ratio

Table 1 presents the evolution over time of the Autonomy Ratio for the Municipality of Karpathos in the period, 2007-2014, as well as the way it is derived. Note that this ratio is derived from the formula:

Autonomy Ratio = Total Regular Revenue / Total Revenue

This ratio, as well as the following ones, refer specifically to the evaluation of the performance of Local Government organisations and are found in several relevant surveys. It is noted that, as in the case of the "classic" ratios that were noted before, specific ratios were selected and not all of them. It is understood that the higher the value of this ratio, the more degrees of freedom of policy-making the respective Municipality has, as it is easier to budget regular from extraordinary revenue and therefore, to enable the Municipality to plan its actions.

According to the data in the table below, over time, the value of this ratio is quite volatile, although in general, for most years of the analysis, the price remains above 50%. The value of the ratio initially, in the first years of the study, decreases, losing in 3 years almost 25% of its size, however then it increases again. It is noted that in the last two years of the analysis the ratio shows its highest value, something that has been observed in the analysis of other ratios so far.

4.1.8. Dependency Ratio

Table 1 presents the evolution over time of the Dependency Ratio for the Municipality of Karpathos in the period, 2007-2014, as well as the way it is derived. Note that this ratio is derived from the formula:

Dependency Ratio = Total Regular Grants / Total Revenue

This ratio also pertains specifically to the evaluation of the performance of the Local Government Organisations. It is understood that the higher the value of this ratio, the less degrees of freedom of policy-making the respective Municipality has, as the grants by definition come from the central administration and therefore they are not Equity. Therefore, it is possible for them to change without the ability of the Municipalities to react and, therefore, to significantly influence its economic policy.

According to the data in the table below, over time, the value of this ratio is quite volatile, although in general, for all years of the analysis, the value remains below 50%. The value of the ratio initially, in the first years of the study, increases to 51% in 2009, a value that is the highest observed. Then follows a downward trend, with the result that in 2014 it is formed for the first time below the limit of 30% of Total Revenue. Finally, it is worth noting that the volatility of this ratio is more due to the

change in the amount of Total Revenue than to the change in the amount of Regular Grants. The latter, with the exception of the years 2009 and 2011 which show a significant increase, the remaining years are almost unchanged and are set at approximately 1,100,000 euros per year for this Municipality.

4.1.9. Total Revenue per Resident Ratio

Table 1 presents the evolution over time of the Total Revenue per Resident Ratio for the Municipality of Karpathos in the period, 2007-2014, as well as the way it is derived. Note that this ratio is derived from the formula:

Total Revenue per Resident Ratio = Total Revenue / Municipality Population

This ratio also pertains specifically to the evaluation of the performance of the Local Government Organisations. It is understood that the higher the value of this ratio, the more efficient the respective Municipality is for its residents in monetary terms. At this point it should be noted that the table below presents the number of permanent residents of the Municipality based on the official census of ELSTAT (Hellenic Statistical Authority) 2001 for the years up to 2010 and the corresponding census of 2011, from this year onwards.

According to the data in the table below, over time, the value of this ratio shows a timeless increase, which cumulatively seems to exceed 40% for the entire period under study. Of this increase, the largest percentage seems to be due to the increase in Total Revenue and a smaller percentage to the decrease in population, as recorded in the 2011 census compared to the previous measurement. Finally, it is worth noting that only two years out of the total of eight there is a decrease in the value of this ratio.

4.1.10. Total Taxes per Resident Ratio

Table 1 presents the evolution over time of the Total Taxes per Resident Ratio for the Municipality of Karpathos in the period, 2007-2014, as well as the way it is derived. Note that this ratio is derived from the formula:

Total Taxes per Resident Ratio = Total taxes, fees, etc./ Municipality Population

This ratio also pertains specifically to the evaluation of the performance of the Local Government Organisations. It is understood that the higher the value of this ratio, the more its residents are burdened in monetary terms. And in this case, Table 1 presents the number of permanent residents of the Municipality based on the official census of ELSTAT 2001 for the years up to 2010 and the corresponding census of 2011, from this year onwards.

According to the data in Table 1, over time, the value of this ratio is quite volatile as, while until 2011 there seems to be a clear trend of increasing per capita taxes and fees of the Municipality, which cumulatively reaches 25% for the period 2007-2011, then, there is a decrease, which results in the return per capita burden in 2014, to the levels of 2007.

Table 1. Municipality of Karpathos - Performance Fundamentals (2007-2014)

Year	CA	STL	GLR	AF	RE	ILR	NOP	TA	ROA	TE	ROE	LI	D/E	FA	FA/TA	RR	TR	A/R	RG	D/R	Res	TR/Res	TT	TT/Res
2007	2,639,952	609,617	4.33	1,112,325	1,524,627	0.73	-197	17,913,258	-0.001%	12,555,023	-0.002%	1,326,749	10.6%	9,915,071	79.0%	2,173,653	3,295,566	66.0%	1,121,913	34.0%	6,565	502.0	1,064,279	162.1
2008	2,823,426	838,195	3.37	1,159,098	1,661,328	0.70	-127,81	21,218,665	-0.602%	15,884,473	-0.805%	1,430,513	9.0%	13,061,047	82.2%	1,734,237	3,036,964	57.1%	1,302,727	42.9%	6,565	462.6	1,242,244	189.2
2009	3,447,799	2,071,332	1.66	1,549,698	1,898,101	0.82	86,119	25,743,032	0.335%	22,767,222	0.378%	2,973,389	13.1%	19,319,423	84.9%	1,840,378	3,756,777	49.0%	1,916,399	51.0%	6,565	572.2	1,170,143	178.2
2010	2,949,455	1,551,856	1.90	953,544	1,995,911	0.48	408,75	27,043,149	1511%	24,594,402	1662%	2,3882,322	9.7%	21,644,947	88.0%	2,562,167	3,797,562	67.5%	1,235,395	32.5%	6,565	578.5	1,212,952	184.8
2011	2,532,894	2,377,964	1.07	1,659,187	875,706	1.89	181,77	26,223,829	0.693%	22,755,634	0.799%	3,132,615	13.8%	20,222,740	88.9%	2,404,287	3,936,187	61.1%	1,531,900	38.9%	6,226	632.2	1,265,758	203.3
2012	3,617,364	1,106,432	3.27	1,640,996	1,976,367	0.83	242,72	25,407,225	0.955%	23,142,886	1049%	1,802,192	7.8%	19,525,522	84.4%	1,853,898	3,052,167	60.7%	1,198,269	39.3%	6,226	490.2	935,281	150.2
2013	4,597,766	1,439,923	3.19	2,233,752	2,364,013	0.94	1,088,895	27,309,151	3987%	24,715,169	4406%	2,073,318	8.4%	20,117,403	81.4%	2,711,568	3,871,522	70.0%	1,159,954	30.0%	6,226	621.8	950,097	152.6
2014	5,255,579	1,152,057	4.56	2,511,804	2,743,775	0.92	989,94	27,478,559	3603%	25,165,619	3984%	1,719,407	6.8%	19,910,040	79.1%	3,027,719	4,310,406	70.2%	1,282,687	29.8%	6,226	692.3	1,009,802	162.2

Source: Balance sheets of the Municipality of Karpathos 2007-2014.

Notes: CA (Current Assets), STL (Short-term Liabilities), GLR (General Liquidity Ratio), AF (Available Funds), RE (Receivables), ILR (Instant Liquidity Ratio), NOP (Non Operating Profits), TA (Total Assets), ROA (Return on Assets Ratio), TE (Total Equity), ROE (Return on Equity Ratio), LI (Liabilities), D/E (Debt to Equity Ratio), FA (Fixed Assets), FA/TA (Fixed Assets to Total Assets Ratio), RR (Regular Revenue), TR (Total Revenue), A/R (Autonomy Ratio), RG (Regular Grants), D/R (Dependency Ratio), Res (Residents), TR/Res (Per Capita Income), TT (Total Taxes), TT/Res (Per Capita Taxes & Fees).

4.2. The Municipality of Patmos

The following are the data for the Municipality of Patmos. It is noted that in this paragraph there is no extensive reference to the technical issues presented in the previous paragraph, but directly follows the analysis of the ratios.

4.2.1. General Liquidity Ratio

According to the data in Table 2, the value of the ratio for all the years of the period under study is quite satisfactory, as it takes values that are well above the value of 2, with the exception of only the year 2010, when the ratio takes its minimum value, which is marginally less than the limit of 2. In 2012, the ratio takes its highest value, to return, however, in the coming years to its usual levels. This year there is a significant reduction in the short-term liabilities of the Municipality, which explains the large increase in this ratio.

4.2.2. Instant Liquidity Ratio

The calculation of the Instant Liquidity Ratio for the Municipality of Patmos led to the discovery of a particularly interesting feature for this Municipality. As the value of the reserves should be deducted from the current assets, it was found that there was no such value recorded in all the balance sheets of the Municipality, except for the last one and only for the year 2014. Respectively, it was found that the Municipality had no long-term liabilities. Therefore, the values of the Instant Liquidity Ratio are the same as those of the General Liquidity Ratio with the exception of 2014, when there is a very small decrease in the value of the ratio due to the deduction of an amount of 128 thousand euros, which represents the value of the municipal reserves for 2014.

4.2.3. Return on Assets Ratio

The picture that results from the study of the data of the table is that of a ratio that in the specific Municipality takes very low values over time, while in several cases the said Municipality presents period losses. However, the marginally positive value of this ratio in the last four years of the study should be noted, although this value actually remains marginally zero. This result seems to be a consequence of the losses or the minimum profits of the Municipality in the years under study.

4.2.4. Return on Equity Ratio

The Return on Equity Ratio of the Municipality of Patmos presents a picture similar to that of the previous ratio, not only because the numerator in the calculation formula remains the same, but also because the Equity of the Municipality falls by a minimum amount less than the value of its Assets, as the amount of its –short-term liabilities only– is a small fraction of the value of the Municipality's Equity.

4.2.5. Debt to Equity Ratio

As is obvious from what has preceded, the values of the Debt to Equity Ratio of the Municipality of Patmos are expected to be almost zero due to the minimum liabilities of the Municipality to foreign suppliers and lenders.

4.2.6. Fixed Assets to Total Assets Ratio

The Fixed Assets to Total Assets Ratio of the Municipality of Patmos also shows marginal behaviour, as its values approach 1 over time, and the size of the value of Current Assets of the Municipality is much smaller than the Total Fixed Assets of the Municipality. It is characteristic that during the whole period under study, the ratio has lost only one percentage point in total.

4.2.7. Autonomy Ratio

The value of this ratio is quite volatile, although in general, the value remains below 50%. The value of the ratio initially, in the first years of the study, decreases, losing in 3 years almost 25% of its size, however then it increases again. It is noted that in the last three years of the analysis, the ratio shows its highest value, something that has been also observed in the analysis of other ratios so far.

4.2.8. Dependency Ratio

The value of this ratio is quite volatile, although in general, for all years of the analysis, the value remains above 50%, with the exception of 2013, when it is marginally smaller. The value of the ratio initially, in the first years of the study, increases to 64% in 2009, a value that is the highest observed. Then follows a downward trend, with the result that in 2014 it is formed for the first time below the limit of 50% of total revenue.

4.2.9. Total Revenue per Resident Ratio

The value of this ratio shows a decrease, which cumulatively seems to exceed 25% for the entire period under study. Of this decrease, the largest percentage seems to be due to the decrease in Total Revenue. Finally, it is worth noting that for only one year out of a total of eight there is an increase in the value of this ratio.

4.2.10. Total Taxes per Resident Ratio

The value of this ratio shows relative stability, with the exception of 2009 when there is a significant increase. However, over time, the taxes and fees that correspond to each resident are around 60 euros, while it is worth noting that in 2014 they took their lowest value.

Table 2. Municipality of Patmos - Performance Fundamentals (2007-2014)

Year	CA	STL	GLR	AF	RE	ILR	NOP	TA	ROA	TE	ROE	LI	D/E	FA	FA/TA	RR	TR	A/R	RG	D/R	Res	TR/Res	TT	TT/Res
2007	,648,833.7	608,672.51	2.71	1,648,833.77	608,672.51	2.71	-34,945.85	104,641,267.39	-0.03%	04,032,594.8	-0.03%	608,672.51	0.59%	102,992,433.62	98.42%	1,037,042.22	2,398,755.84	43.23%	1,361,713.62	56.77%	3,053	786	188,048.55	62
2008	,760,844.1	583,106.29	3.02	1,760,844.17	583,106.29	3.02	-138,119.32	104,990,689.03	-0.13%	04,407,582.7	-0.13%	583,106.29	0.56%	103,229,844.86	98.32%	858,196.00	2,357,644.77	36.40%	1,499,448.77	63.60%	3,053	772	174,615.98	57
2009	,607,816.1	535,297.62	4.87	2,607,816.16	535,297.62	4.87	317,192.94	107,450,364.47	0.30%	06,776,707.4	0.30%	535,297.62	0.50%	104,842,548.31	97.57%	1,007,499.54	2,848,835.03	35.37%	1,841,335.49	64.63%	3,053	933	306,906.01	101
2010	,748,762.4	880,512.16	1.99	1,748,762.49	880,512.16	1.99	-472,260.84	108,077,611.47	-0.44%	07,184,239.3	-0.44%	880,512.16	0.82%	106,328,848.98	98.38%	1,070,734.25	2,619,910.06	40.87%	1,549,175.81	59.13%	3,053	858	157,123.94	51
2011	,178,096.7	885,645.87	2.46	2,178,096.78	885,645.87	2.46	305,984.14	108,841,172.79	0.28%	07,870,359.9	0.28%	885,645.87	0.82%	106,663,076.01	98.00%	1,011,650.90	2,438,157.36	41.49%	1,426,506.46	58.51%	3,047	800	210,331.15	69
2012	,311,274.0	347,390.62	6.65	2,311,274.00	347,390.62	6.65	88,684.44	108,852,013.80	0.08%	08,379,708.2	0.08%	347,390.62	0.32%	106,540,739.80	97.88%	939,675.29	1,935,898.85	48.54%	996,223.56	51.46%	3,047	635	180,698.52	59
2013	,173,481.2	1,275,551.39	2.49	3,173,481.23	1,275,551.39	2.49	104,500.45	110,650,975.90	0.09%	09,253,704.2	0.10%	1,275,551.39	1.17%	107,477,494.67	97.13%	930,109.31	1,831,937.00	50.77%	901,827.69	49.23%	3,047	601	183,856.64	60
2014	,296,293.4	873,760.49	3.77	3,167,356.48	873,760.49	3.62	302,976.72	111,088,603.32	0.27%	10,089,682.5	0.28%	873,760.49	0.79%	107,792,309.87	97.03%	815,457.25	1,791,904.88	45.51%	976,447.63	54.49%	3,047	588	136,673.41	45

Source: Balance sheets of the Municipality of Karpathos 2007-2014.

Notes: CA (Current Assets), STL (Short-term Liabilities), GLR (General Liquidity Ratio), AF (Available Funds), RE (Receivables), ILR (Instant Liquidity Ratio), NOP (Non Operating Profits), TA (Total Assets), ROA (Return on Assets Ratio), TE (Total Equity), ROE (Return on Equity Ratio), LI (Liabilities), D/E (Debt to Equity Ratio), FA (Fixed Assets), FA/TA (Fixed Assets to Total Assets Ratio), RR (Regular Revenue), TR (Total Revenue), A/R (Autonomy Ratio), RG (Regular Grants), D/R (Dependency Ratio), Res (Residents), TR/Res (Per Capita Income), TT (Total Taxes), TT/Res (Per Capita Taxes & Fees).

4.3. The Municipality of Kalymnos

The following are the data for the Municipality of Kalymnos. It is noted that in this case, too, this paragraph does not make extensive reference to the technical issues presented in the previous paragraph, but directly follows the analysis of the ratios. It is also noted that there are no data for the year 2007 due to the fact that 2008 was the first year that the diplographic system was met and a balance sheet was prepared in the said Municipality.

4.3.1. General Liquidity Ratio

According to the data in Table 3, the value of the ratio for all the years of the period under study seems to be quite problematic, as for all years the value of the ratio is very low, while only after 2012 there is a small improvement, which results in reaching the limit of 2 in 2014.

4.3.2. Instant Liquidity Ratio

The calculation of the Instant Liquidity Ratio for the Municipality of Kalymnos led to the confirmation of a characteristic which, as noted in the study of the previous Municipality, is related to the complete lack of reserves on the part of the Municipality. Therefore, in this case as well, the values of the Instant Liquidity Ratio are identical to those of the General Liquidity Ratio.

4.3.3. Return on Assets Ratio

The picture that results from the study of the data of Table 3 is that of a ratio that in the specific Municipality takes very low values over time, while in several cases the said Municipality presents period losses. However, it should be noted that in the second half of the period under study the situation seems to be improving significantly.

4.3.4. Return on Equity Ratio

The Return on Equity Ratio of the Municipality of Kalymnos presents a picture similar to that of the previous ratio, not only because the numerator in the calculation formula remains the same. Special mention, however, should be made in the year 2008, when there is a negative value of Equity in the Municipality, a fact that with the combination of losses would give the distorted picture of a positive ratio and for this reason it was considered appropriate not to calculate the ratio for this year, as the resulting numerical result lacks economic significance.

4.3.5. Debt to Equity Ratio

By the same reasoning, we do not take into account the negative Debt to Equity Ratio of 2008. However, it should be noted the problematic situation that prevailed in the Municipality until 2011, with a huge proportion of Debt to Equity, which, however, seems to be corrected in the coming years.

4.3.6. Fixed Assets to Total Assets Ratio

The Fixed Assets to Total Assets Ratio of the Municipality of Kalymnos shows a behaviour, in which, although its values do not approach 1 over time, are for almost all years at least 80%.

4.3.7. Autonomy Ratio

The value of this ratio is quite stable and generally remains below 50%. Over time, there is also an upward trend from the level of 38% in 2008 and after a brief decline to 31% the following year, to the level of 45% in the period 2012-2014.

4.3.8. Dependency Ratio

As expected, the value of this ratio is complementary to the value of the previous ratio and therefore, its average value is at levels more or less (as for example in 2009) above 50%.

4.3.9. Total Revenue per Resident Ratio

The value of this ratio shows a decrease, which cumulatively seems to exceed 20% for the entire period under study. Of this decrease, the largest percentage seems to be due to the decrease in total revenue. Finally, it is worth noting that for only two years out of a total of eight there has been an increase in the value of this ratio.

4.3.10. Total Taxes per Resident Ratio

The value of this ratio shows a relative stability, with the downward trend becoming more noticeable after 2012. However, over time the taxes and fees corresponding to each resident are about 100 euros, while it is worth noting that in 2013 they had their lowest value.

Table 3. Municipality of Kalymnos - Performance Fundamentals (2007-2014)

Year	CA	STL	GLR	AF	RE	ILR	NOP	TA	ROA	TE	ROE	LI	D/E	FA	FA/TA	RR	TR	A/R	RG	D/R	Res	TR/Res	TT	TT/Res
2007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2008	632,208.08	6,722,244.33	0.09	467,486.31	164,721.77	0.09	-914,094.00	5,036,451.57	-18.15%	-1,685,792.76	1.8%	6,722,244.33	-399%	4,404,243.49	87%	2,794,605.30	7,309,652.28	38.2%	4,515,046.98	61.8%	16,576	441.0	1,935,624.97	116.8
2009	615,074.61	3,019,062.67	0.20	496,757.94	118,316.67	0.20	-538,834.00	8,282,846.43	-6.51%	2,941,678.78	-18.32%	5,341,167.65	182%	7,667,771.82	93%	2,675,899.52	8,513,005.02	31.4%	5,837,105.50	68.6%	16,576	513.6	1,726,243.96	104.1
2010	818,675.92	6,205,682.44	0.13	265,437.33	553,238.59	0.13	-2,681,572.23	11,001,843.01	-24.37%	2,818,211.51	-95.15%	8,183,631.50	290%	10,183,167.09	93%	2,835,854.68	7,547,710.56	37.6%	4,711,855.88	62.4%	16,576	455.3	1,782,377.80	107.5
2011	1,939,943.06	5,903,659.43	0.33	449,906.53	1,490,036.53	0.33	619,494.43	14,512,582.38	4.27%	6,937,271.93	8.93%	7,575,310.45	109%	12,572,639.32	87%	2,782,510.52	7,273,780.21	38.3%	4,491,269.69	61.7%	16,441	442.4	1,766,407.78	107.4
2012	3,838,143.39	4,145,159.30	0.93	3,290,129.17	3,290,129.17	1.59	2,597,322.34	23,413,342.48	11.09%	17,601,989.27	14.76%	5,811,353.21	33%	19,507,445.85	83%	2,766,529.45	5,937,644.83	46.6%	3,171,115.38	53.4%	16,441	361.1	1,775,406.80	108.0
2013	3,897,350.62	2,824,636.43	1.38	766,749.92	3,130,400.70	1.38	75,827.21	22,870,876.55	0.33%	18,380,046.21	0.41%	4,490,830.34	24%	18,904,503.24	83%	2,379,582.79	4,913,689.04	48.4%	2,534,106.25	51.6%	16,441	298.9	1,379,173.78	83.9
2014	4,943,839.88	2,477,150.66	2.00	1,493,260.14	3,450,579.74	2.00	1,137,246.20	24,176,301.70	4.70%	20,032,957.13	5.68%	4,143,344.57	21%	19,182,090.83	79%	2,599,425.48	5,731,184.97	45.4%	3,131,759.49	54.6%	16,441	348.6	1,532,487.31	93.2

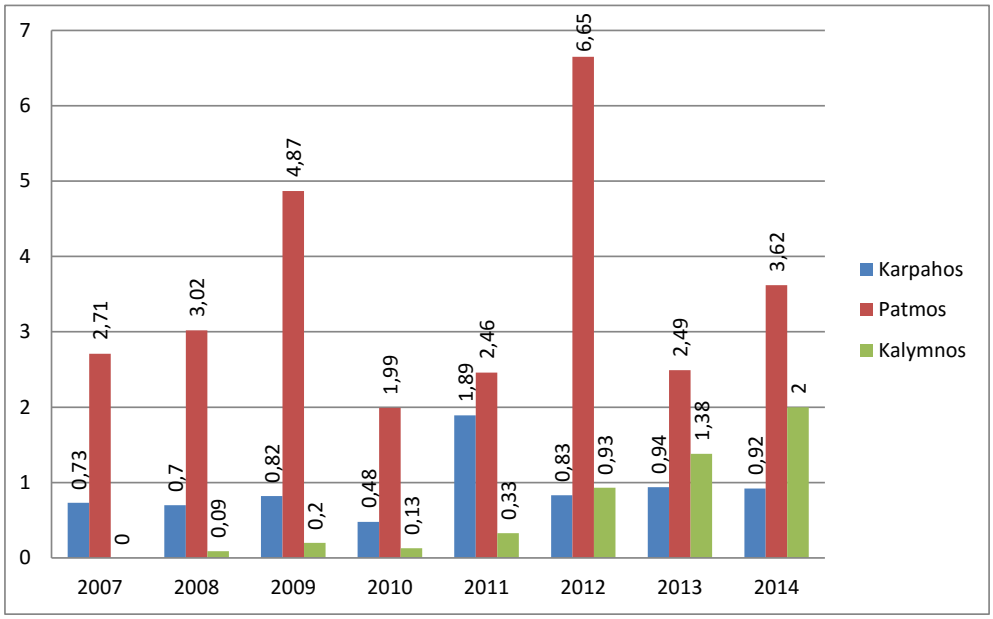
Source: Balance sheets of the Municipality of Karpathos 2007-2014.

Notes: CA (Current Assets), STL (Short-term Liabilities), GLR (General Liquidity Ratio), AF (Available Funds), RE (Receivables), ILR (Instant Liquidity Ratio), NOP (Non Operating Profits), TA (Total Assets), ROA (Return on Assets Ratio), TE (Total Equity), ROE (Return on Equity Ratio), LI (Liabilities), D/E (Debt to Equity Ratio), FA (Fixed Assets), FA/TA (Fixed Assets to Total Assets Ratio), RR (Regular Revenue), TR (Total Revenue), A/R (Autonomy Ratio), RG (Regular Grants), D/R (Dependency Ratio), Res (Residents), TR/Res (Per Capita Income), TT (Total Taxes), TT/Res (Per Capita Taxes & Fees).

5. CONCLUSIONS & DISCUSSION

The comparison between the values of the ratios for the three Municipalities is presented in this section. In Chart 1, it becomes obvious that there are significant differences in the General Liquidity Ratios between the three Municipalities, with the Municipality of Patmos showing the highest values and the Municipality of Kalymnos the lowest ones. However, values do not seem to be affected by the economic crisis and in fact, from 2012 onwards, there seems to be a significant improvement, especially in the Municipalities of Patmos and Kalymnos.

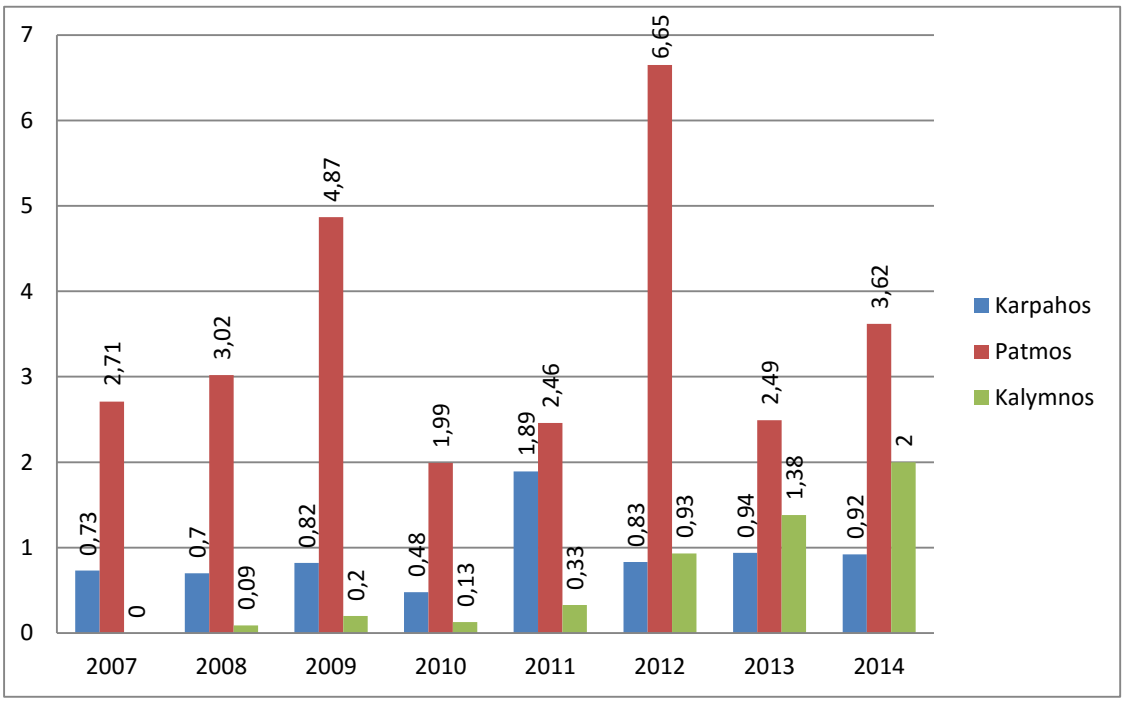
Chart1. Diagrammatic, over time comparison of the General Liquidity Ratio of the Municipalities of Karpathos, Patmos and Kalymnos.



Source: Authors' calculations.

In Chart 2, it becomes clear that the Municipality of Patmos continues to show high values of the Instant Liquidity Ratio, due to the lack of Reserves, as noted in the previous chapter. On the other hand, the Municipality of Karpathos clearly shows reduced values of the ratio, making its differentiation more intense in relation to the Municipality of Patmos, when the values of the Municipality of Kalymnos are stable. However, in this ratio too, there is no obvious effect of its value in the period under study.

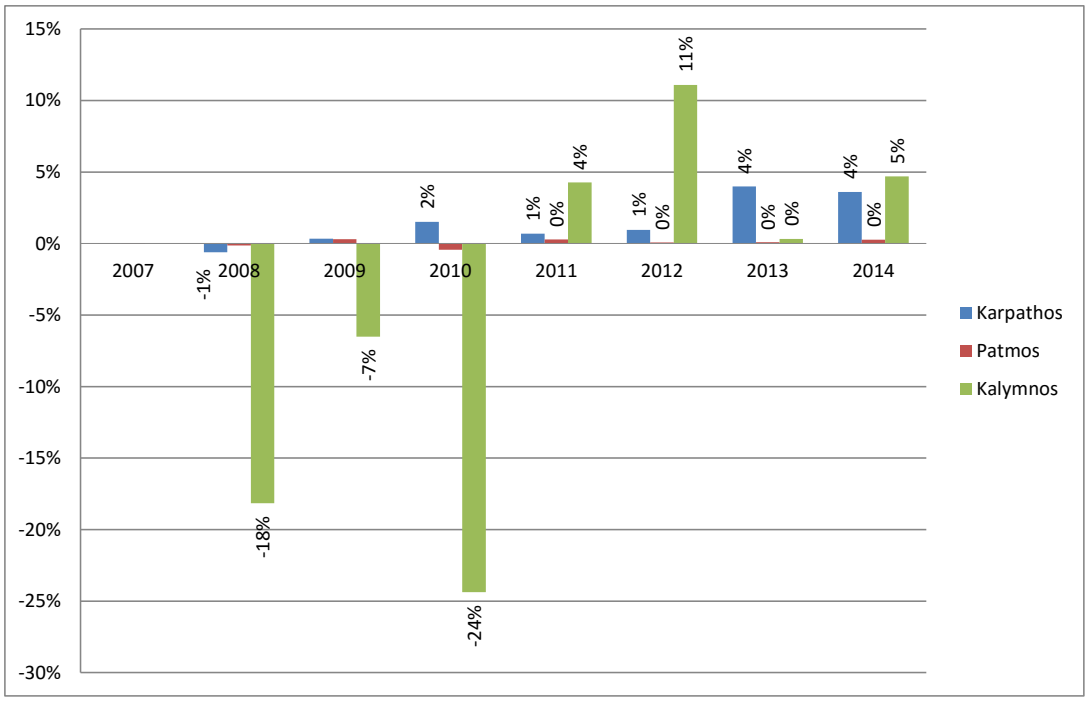
Chart2. Diagrammatic, over time comparison of the Instant Liquidity Ratio of the Municipalities of Karpathos, Patmos and Kalymnos.



Source: Authors' calculations

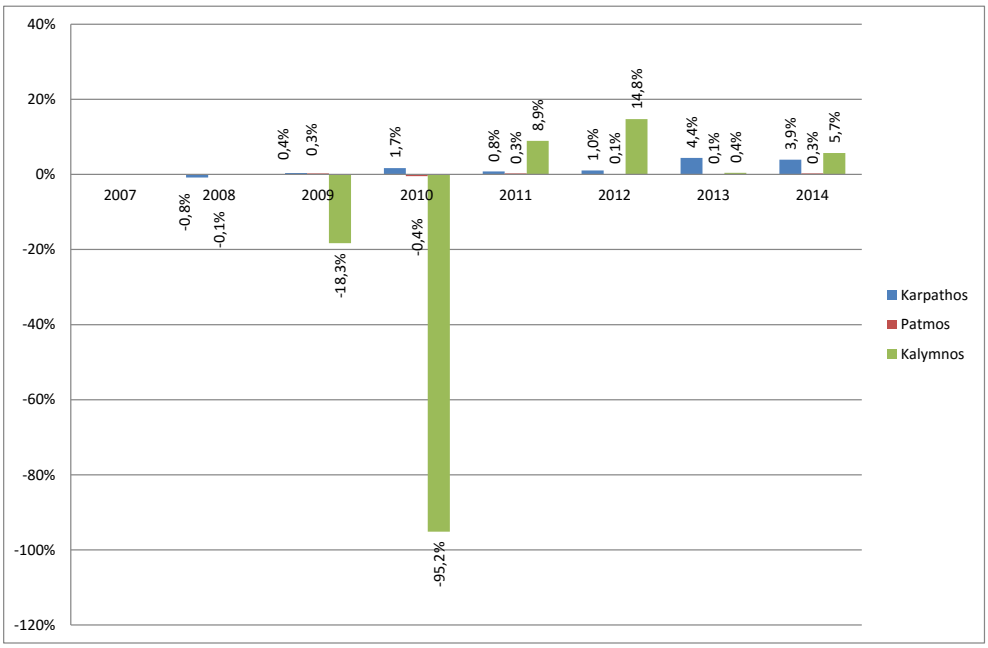
In Charts 3 & 4, which show the Return on Assets, and Equity respectively, it is not easy to draw useful conclusions due to the very low values for all three ratios and especially for the Municipality of Patmos.

Chart3. Diagrammatic, over time comparison of the Return on Assets Ratio of the Municipalities of Karpathos, Patmos and Kalymnos



Source: Authors' calculations

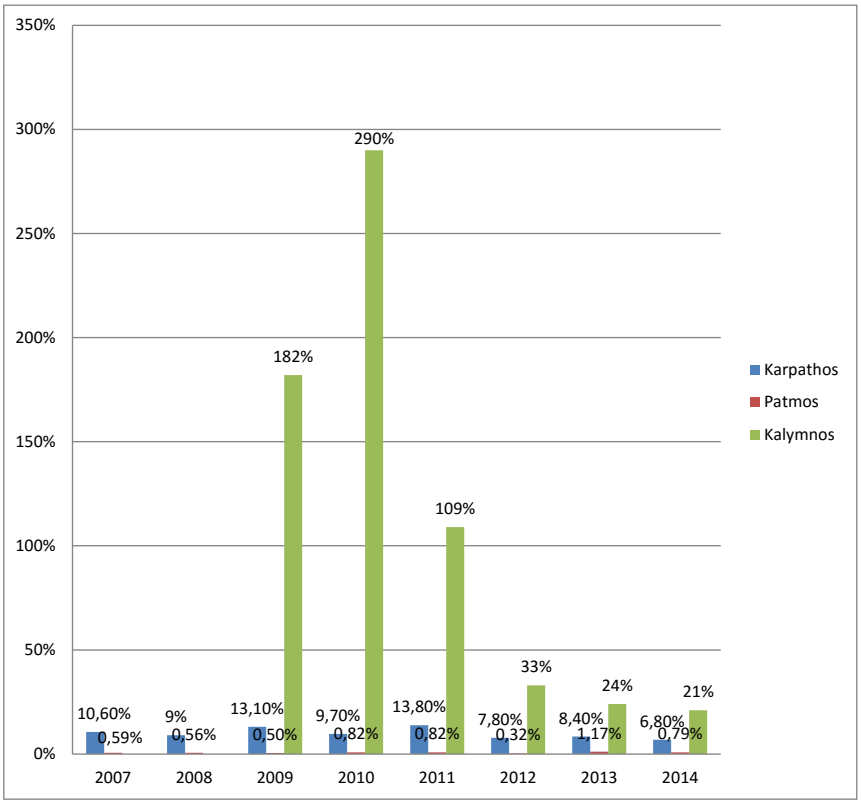
Chart4. Diagrammatic, over time comparison of the Return on Equity Ratio of the Municipalities of Karpathos, Patmos and Kalymnos



Source: Authors' calculations

The comparison of the values of the Debt to Equity Ratio shows again the almost zero borrowing of the Municipality of Patmos, in contrast to the Municipality of Karpathos, where there is a borrowing of about 10% of the value of the Municipality's Equity, but with a tendency to decreaseμια during the last years of research. On the contrary, the Municipality of Kalymnos shows huge proportions of Debt to Equity, especially for the years before 2012 (Chart 5).

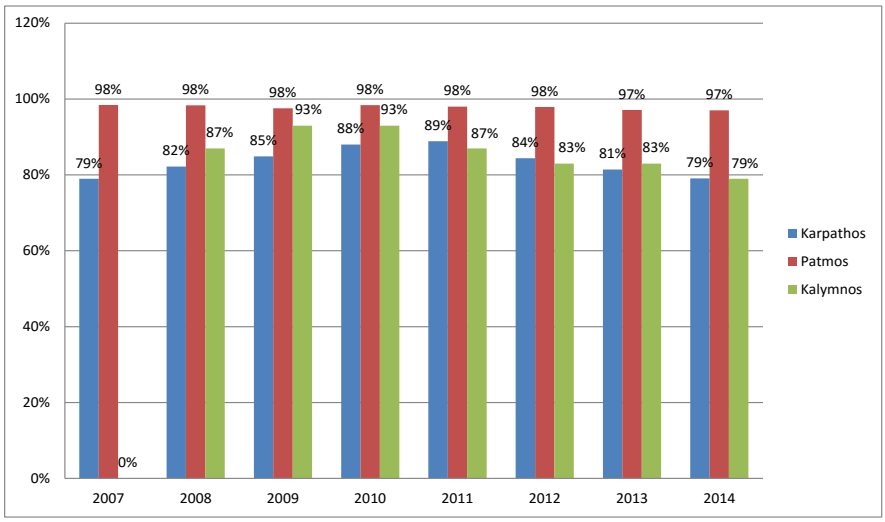
Chart5. Diagrammatic, over time comparison of the Debt to Equity Ratio of the Municipalities of Karpathos, Patmos and Kalymnos



Source: Authors' calculations

Moreover, as shown in Chart 6, all three Municipalities maintain a particularly high proportion of their Fixed Capital to the total of their Assets, a fact that in any case is related to the nature of the organisation. However, even in this case it seems that the Municipality of Karpathos has less, proportionally, Fixed Capital, compared to the Municipality of Patmos, which presents as such almost all of its Assets. The ratio values for the Municipality of Kalymnos are even lower.

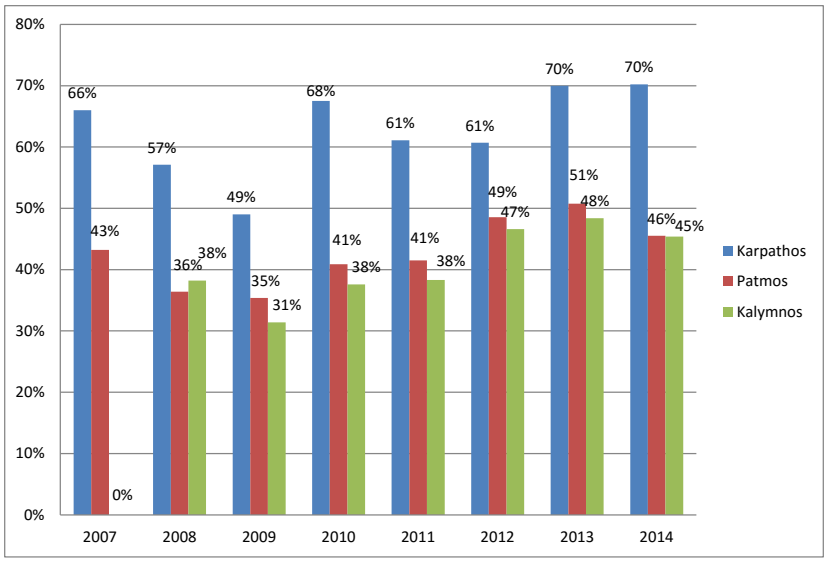
Chart6. Diagrammatic, over time comparison of the Fixed Assets to Total Assets Ratio of the Municipalities of Karpathos, Patmos and Kalymnos



Source: Authors' calculations

The Autonomy Ratio presents a different picture, after comparing the three Municipalities. There is a clear difference between the trend of the Municipality of Karpathos, where the same revenue from grants always exceed half the revenue, and on the other hand, in the Municipality of Patmos and the Municipality of Kalymnos, this is never possible (Chart 7).

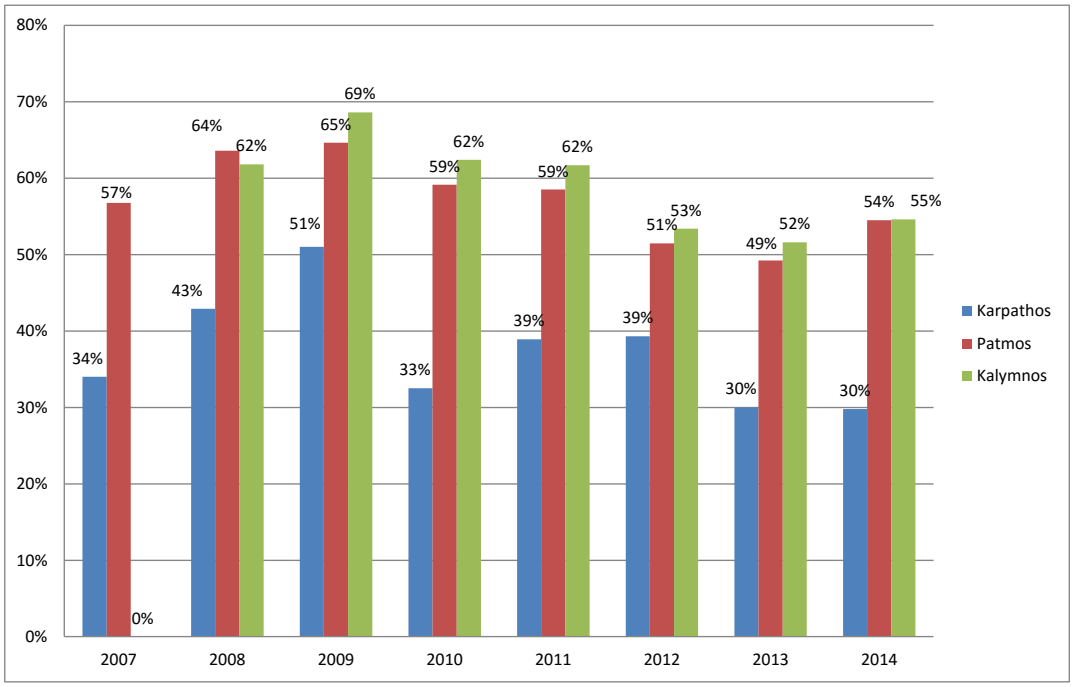
Chart7. Diagrammatic, over time comparison of the Autonomy Ratio of the Municipalities of Karpathos, Patmos and Kalymnos



Source: Authors' calculations

The Dependency Ratio, moreover, confirms the previous picture. There is a clear difference between the trend of the Municipality of Karpathos, where regular grants never exceed half the revenue, and on the other hand, in the Municipality of Patmos and the Municipality of Kalymnos, it is never possible for them to be less than half the revenue. Thus, one could say that the Municipality of Patmos depends to a greater extent financially on the central administration, in contrast to the Municipality of Karpathos (Chart 8).

Chart8. Diagrammatic, over time comparison of the Dependency Ratio of the Municipalities of Karpathos, Patmos and Kalymnos

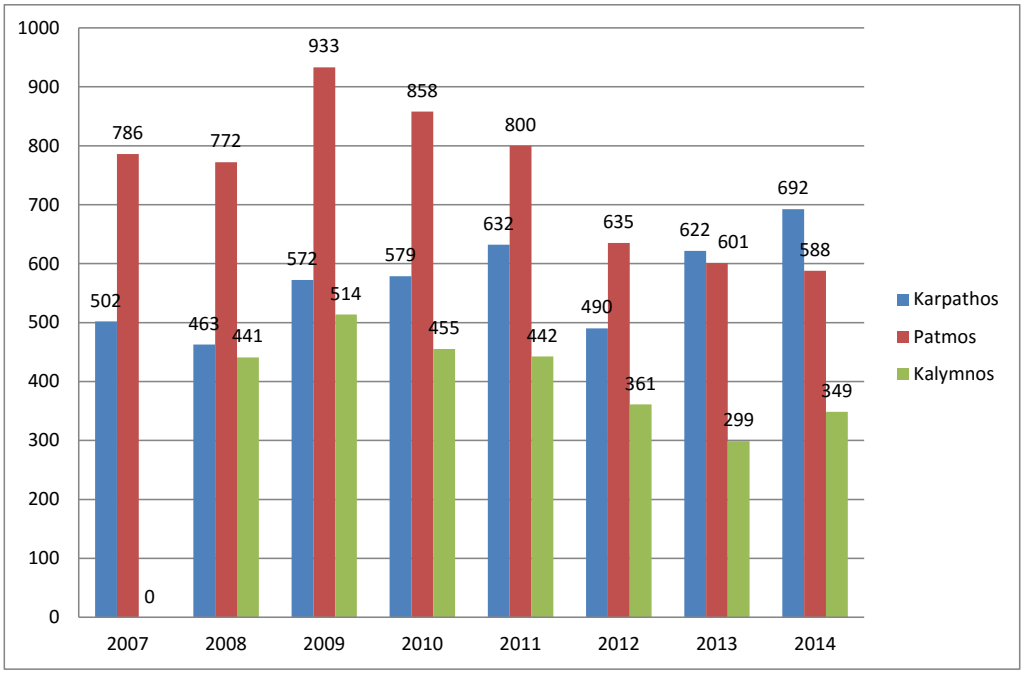


Source: Authors' calculations

Finally, with regard to the average burden and the average benefit of the residents of the two islands in relation to the municipal revenue and fees, to which Charts 9 & 10 refer, one could observe that on the one hand the average municipal revenue per resident is almost double in Patmos in relation to Karpathos until 2011 and then, the picture is reversed in the coming years. On the other hand, the

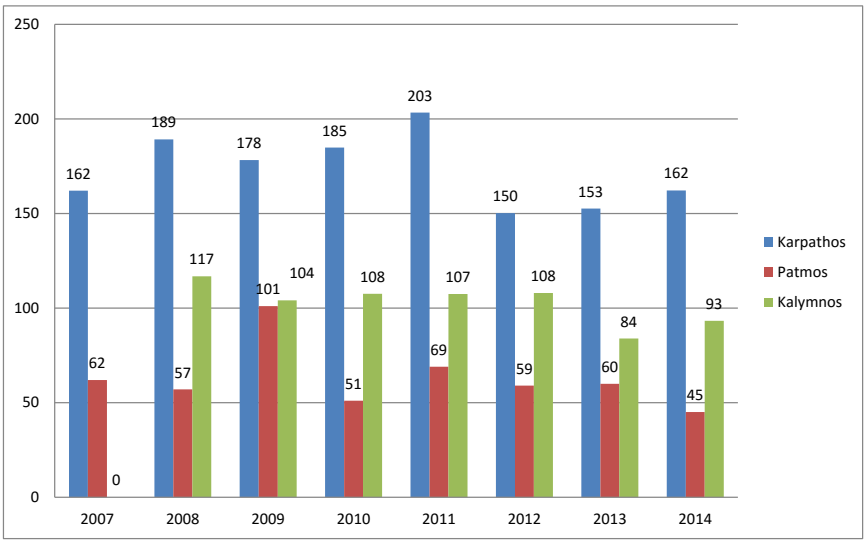
municipal fees per resident are three times higher in Karpathos compared to Patmos, while at both islands they show relative stability over time. Kalymnos presents a picture with the lowest revenue per resident, while in the case of taxes it is higher than Patmos and lower than Karpathos. Besides, it is noted that for Kalymnos the values are significantly lower.

Chart9. Diagrammatic, over time comparison of the Total Revenue per Resident Ratio of the Municipalities of Karpathos, Patmos and Kalymnos



Source: Authors' calculations

Chart10. Diagrammatic, over time comparison of the Total Taxes per Resident Ratio of the Municipalities of Karpathos, Patmos and Kalymnos



Source: Authors' calculations

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