“Greek tourism sector and signs of resilience”

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As the economic crisis becomes more intense, affecting regions’ economic activities to different degrees, new issues have aroused regarding the ability of each region to respond positively to these changes by maintaining its performance at high levels. As a result, the notion of resilience, and in particular economic resilience, has become a field of study for many researchers. Regional economic resilience is defined

as the ability of a region to recover successfully from shocks that affect its economy. The term has two meanings: the first one is based on equilibrium analysis, in which resilience is the ability of a region to return to a pre-existing state in a single equilibrium system and the second one defines resilience in terms of complex adaptive systems and refers to the region's ability to adjust and change as response to sudden pressures, shocks and negative impacts.

The aim of this paper is to investigate the impact of economic crisis on Greek regions and to assess the displayed degree of resilience. More specifically we focus on regional resilience regarding tourism industry. Tourism, an important economic activity and a fast growing industry worldwide, is one of the main sources of income for many countries, including Greece. Its importance and contribution to Greek economy is significant, especially given the poor performance of most other economic sectors. In 2014 tourism's contribution to GDP was more than 20%. According to the Greek Tourism Confederation (SETE), in 2014 the volume of paid employment provided by the tourism industry increased by 23 percent. During July 2014, Greece's tourism industry generated 137,139 jobs, compared to the same month in 2013.

For the purposes of the paper we will use data for three periods: 2007 (i.e. the beginning of the crisis), 2010 (i.e. on the middle of the crisis), 2013 (i.e. on the peak of the crisis). Data refer to NUTS 2 regions and involve: 1) GVA for the tourism industry, 2) Employment in the tourism sector, 3) Number of arrivals (national and international tourists), 4) Number of nights spent (national and international tourists), 5) Number of establishments, 6) Number of available beds. A first analysis of the above data shows that tourism was affected slightly by the economic crisis. In fact, some regions showed an increase on specific tourism indicators. Decrease has been observed on data referring to national tourists, GVA and employment. In order to assess the regions' degree of resilience we introduce an index which is formed by the aforementioned indicators and reveals if a region is economically resilient, shock resistant or non- resilient. Results show that the country's tourism industry could be considered as resilient. Nevertheless, there are significant variations in the resilience of tourism among regions. It is noticeable that the degree of resilience depends on the region's geographical position i.e. whether it is a mainland or an island region. As a result new issues have aroused regarding the investments on tourism per region and the necessity for a regional tourism planning and policies.

Key Words: Greece, economic crisis, tourism industry, regional economic resilience
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1. Introduction

In recent years all regions worldwide are facing many unexpected phenomena such as terrorist attacks, climate change, corporate bankruptcies, economic crisis and so on, that undermine their function and their structures. It is remarkable that each region responds differently to these upheavals: some regions can successfully overcome these shocks, while others do not, some regions can react directly and quickly and others more slowly. Thus, in recent years, the interest of scholars has been focused on the study of a new concept known as regional resilience. Regional resilience contributes to the comprehension of this different behavior of regions as a result of the incurred shocks. Nevertheless, the basic question about why some regions manage to overcome short-term or long-term shocks and maintain a high quality of life for their residents while others fail, leads at an increasing interest in understanding what resilience actually means, how it functions and which factors influence it. In the present research we will draw our attention on the impact of one of the most important and serious disturbances that affect all regions nowadays, that of the economic crisis. As tourism sector is a fast growing industry worldwide and constitutes one of the main income sources for many countries, including Greece, we seek to investigate how the economic crisis has affected the tourism industry and how regions are resilient against this shock.

This paper aims to investigate the impact of economic crisis on Greek regions and more specifically its impact on tourism industry both nationally and per region. Tourism industry is the backbone of the Greek economy and contributes significantly to the formation of its GDP. Its importance to Greek economy is significant, especially given the poor performance of most other economic sectors. As a consequence it is very important to identify the extent to which it was affected by the economic crisis. In addition to this, we aim to investigate whether the extent to which each region affected by the crisis depends on whether the region is mainland or coastal. Moreover, in this paper we seek to examine the way in which Greek regions respond to this upheaval and to assess the extent to which they are resilient as far as tourism industry is concerned. It is worth noting that as we refer to the resilience of regions after an economic shock, it is more correct to refer to economic regional resilience. Economic regional resilience comprises three dimensions: 1) the ability of a region to withstand external pressures, 2) the ability of a region to respond

positively to external changes, 3) the ability of a region to be adapted or to learn long term (Foster, 2007; Ficenec, 2010; Hill et al., 2010; Hudson, 2010; Pendall et al., 2010; Pike et al., 2010; Simmie and Martin, 2010; Davies, 2011). In this paper we will examine only the first two dimensions, as the shock -economic crisis- hasn't finished yet. More specifically, we evaluate the adaptability of regions, tourism destinations and actors to the socio-economic changes and the degree of resilience of each region during the economic crisis i.e. whether they can cope with it, overcome it and recover from it.

The paper is structured as follows: in Section 2 we present the literature review that frames our study. More specifically, it consists of the analysis of four parts: tourism sector and economic crisis, regional development and tourism, regional resilience and regional resilience in tourism. In Section 3 we draw our attention in the case of Greece. We discuss the importance of tourism industry in Greece and we present some evidence of this. In Section 4 we present the methodology used in order to meet the objective of our research, while in Section 5 we display analytically our findings. Finally, in Section 6 we describe analytically the conclusions in which we ended.

2. Literature Review

2.1. Tourism Sector and Economic Crisis

According to UNWTO tourism comprises the activities of persons travelling to and staying in places outside their usual environment for not more than one consecutive year for leisure, business and other purposes not related to the exercise of an activity remunerated from within the place visited. As a consequence tourism sector concerns all the economic activities carried out within tourism. It should be noted that in literature sometimes it is used the term "tourism sector" and sometimes the term "tourism industry". Within this paper we would prefer the term tourism sector as tourism comprises businesses which undertake many different activities such as accommodation and food service activities, transportation, retail services etc. and industries are identified as the sum of all businesses which undertake a similar activity. According to Guduraš (2014) tourism is a complex and multidimensional phenomenon that both affects and it is affected by various factors. More specifically, in every society touristically developed we can clearly distinguish the economic,

environmental and socio-cultural impacts of tourism. But at the same time the tourism sector itself is influenced by several factors. The vulnerability of tourism destinations to socio-economic and environmental shocks is widely recognized (Sharpley, 2005). Tourism destinations, regions and actors around the world are confronted with various challenges, such as coping with climate change, demographic shifts and economic turmoil. According to Dwyer et al. (2009) there are six trends that highly influence tourism: political, economic, environmental, technological, demographic and social trends. Within this paper we focus our interest only on the impact of economic trends and more specifically of economic crisis on tourism sector.

The recent economic crisis was a quite unprecedented episode in terms of its severe and worldwide implications and because of the strong and coordinated global policy responses that followed it. The economic downturn affected all sectors, but especially those that produced goods or services which didn't satisfy basic needs. As a result the tourism sector was directly affected by the diffusion of the economic recession. Firstly the fact that the consumption of tourism products do not satisfy the basic needs of the population and is not a priority for consumption and the fact that tourism products are included in the category of relatively high value goods lead to the recession of tourism sector (Borza,). The decline of international tourism started during the second semester of 2008, becoming one of the latest sectors to feel the effects of the global recession (UNWTO, 2009). The economic crisis may affect the tourism sector at two different levels: externally and internally. On the one hand external threats include the recession, the currency fluctuations and the taxation. On the other hand internal challenges concern rising costs, falling revenues and unprofitability at the tourism sector (Kapiki, 2012).

2.2. Regional Development and Tourism

Tourism sector can play an important role in the economic development of a country considering its contribution to the balance of payments, production and employment for a destination's residents and government (Sinclair, 1998; Soukiazis and Proença, 2008). Concurrently, tourism sector enhances the economy of each region separately. More specifically, tourism can act as a way to distribute development from economic centers to less developed regions. Thus, tourism development tends to be used as an instrument to narrow regional gaps and to promote regional development (Soukiazis and Proenca, 2008; Li et al., 2016). More

specifically, regarding regional development, it is a process which is divided into two levels: the external and the internal. As far as the external level is concerned, it includes the region's flows with the external environment i.e. the rows of products, services, capital and information (North 1955; Loukissas, 1982). On the other hand, the internal level concerns the internal differentiation which includes the workforce's specialization, the improvement of its capacities and generally the region's re-organization. As a consequence, tourism covers both of these levels as on one hand it creates flows for the region and its external environment and on the other hand it contributes at the shift of its social and economic structure. As a result tourism must be analyzed under both of these visuals in order to adequately present its real impact as a factor of social and economic change.

Although tourism plays an important role for each region both economically and socially, since it is the connection between the region and the external world and economy, there isn't a commonly accepted view concerning the impact of this sector on regions' development. According to literature there are three main views which are summarized as follows:

1. Tourism brings social-economic changes in regions and encourages their development (Stylidis, 2014; Garcia et al., 2015),
2. Tourism brings many people in small communities undermining their culture and their environment (Loukissas, 1982), and
3. Tourism is a form of economic exploitation and neo-colonial domination (Matthews 1977; Loukissas, 1982).

Foster (1964) was the first who examined the different effects of tourism in the various communities, while Cohen (1979) stressed the importance of both benchmarking and the need to identify the economic, social and cultural conditions prevailed in a region which in combination with tourism's development contribute to regional development. So it is important for each region to be aware of these conditions as their existence will favor tourism's development.

In addition to these, the importance of tourism in regional level is booming because tourism contributes to the decline of unemployment. This is achieved, firstly, because it offers new jobs and also because it replaces the activities that lose their competitive advantage. This means that the primary sector is diminished and it is replaced by the sector of tourism. Moreover, tourism has a multiplier effect in the regions. More specifically, besides creating new jobs, at the same time regions'

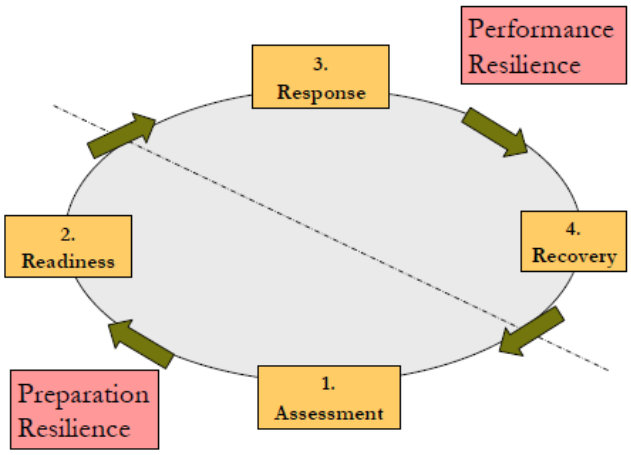
revenues increase improving transport's services, constructions, trade, food industry etc. Therefore, there is a close relationship between tourism and other economic activities (Proenca και Soukiazis, 2008). As such, tourism development is widely recognized as a positive instrument for promoting regional economic growth (Chou, 2013).

2.3. Economic Regional Resilience

In recent years the interest of science of Regional Development has been expanded to new concepts not directly linked to regional development. One of these concepts is the regional resilience. The concept of regional resilience is a relatively new field of study and is used to refer to systems and their ability to cope with external shocks and surprises. More specifically, Regional resilience is a measure of the amount of change a region can undergo and still retain the same controls on structure and function or remain in the same domain of attraction (Carpenter et al., 2001; Holling, 2001; Walker et al., 2002; Lebel et al., 2006). The study of this concept requires the consideration of: 1) the amount of change that a system can undergo, while retaining its structure and functions, 2) the degree to which a system can create, sustain or reorganize its capacity to learn and adapt (Christopherson et al., 2010; Pendall et al., 2010).

Regional resilience is defined as the ability of a region to prevent, prepare, respond and "recover" after a disturbance so as this disturbance not to stand as an obstacle to its development (Foster,2006; Hill et al, 2008) (Figure 1). According to the following figure, the process of resistance is divided into two parts: the preparation for durability and its application.

Figure 1: Framework for assessing Regional Resilience



Source: Foster, 2006

According to Proag (2014) the concept of resilience takes two forms: the hard resilience and the soft resilience. When referring to hard resilience, we mean the direct strength of structures, when placed under pressure, so as to reduce their probability of collapse, while soft resilience concerns the ability of systems to absorb and recover from the impact of shocks without fundamental changes in their structure.

Regional resilience is characterized by three dimensions:

- The ability of a regional economy to withstand external pressures (Foster, 2006; Hill et al., 2008; French et al., 2009; Hudson, 2010; Simmie and Martin, 2010; Davies, 2011).
- The ability of a region to respond positively to external changes (Hill et al., 2008; Ficenec, 2010; Davies, 2011).
- The capacity a region has to adjust in long terms and to learn (Pendall et al., 2010; Pike et al., 2010; Simmie and Martin, 2010; Davies, 2011).

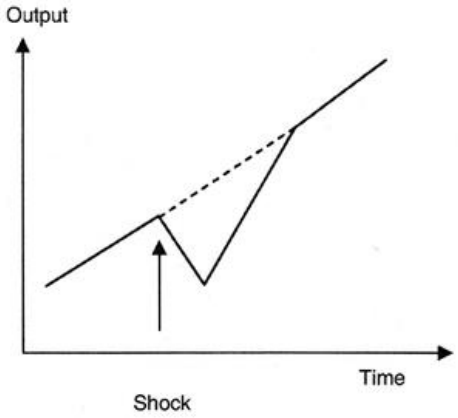
As it is reasonable, there are several factors that affect a region's ability to be resilient. However, it is worth noticing that the importance of each factor is different in each region and changes over time (Christopherson et al., 2010; Hudson, 2010). This fact shows that it is not enough just to have these factors in one region to ensure regional resilience, but appropriate processes, structures and conditions should be applied as well (Polese and Shearmur, 2006; Chapple and Lester, 2007), which will contribute to the timely implementation of policies (Bristow, 2010; Christopherson et al., 2010; Simmie and Martin, 2010; Wolfe, 2010). According to Christopherson et al. (2010) some of the factors that favor the development of resistance are:

- The existence of a regional system that supports innovation and learning (learning region).
- The existence of a modern production base which has modern infrastructure, experienced, skilled and innovative workforce.
- The existence of a supportive financial system to provide funds.
- The existence of competitiveness, which will contribute to the vitality of the region and will increase the capacity to adapt easily and quickly to new conditions through different business networks that will exist.
- A diversified economic base, i.e. the economy of each region does not rely exclusively on one industry. Also the region must be differentiated and in terms of type of business and sources of energy, food and general goods that are useful for its inhabitants.
- The existence of partnerships between universities and regional economies and between firms and local organizations.
- The existence of a supportive system of governance that encourages the existence of all these factors.

As far as the measurement of resilience is concerned, according to Kallioras, "the resilience of a region is measured based on the evaluation of its ability to maintain a successful path of development (development path) after a disturbance, whether success is perceived in terms of traditional indicators such as growth or change of employment, or in terms of a synthetic index (composite indicator)" (Kallioras, 2011). When referring to maintaining a successful development path this does not necessarily mean that a region should return to the same development path (Briguglio et al., 2006; Christopherson et al., 2010). As a consequence, there are several forms of resilience.

One such form is the engineering resilience (Figure 2). This form of resistance is focusing its attention on the elasticity or otherwise ability of a region to absorb the impact of a disturbance without undergoing significant structural changes (Walker et al., 2006; Pendall et al., 2010; Simmie and Martin, 2010). Its main idea is that a disturbance moves the economy of a region outside of the path followed, but the economy has the skills to self-corrected it back to its original state (equilibrium). In this approach the time required to return to its original state plays an important role: the quicker returns, the more resilient is considered.

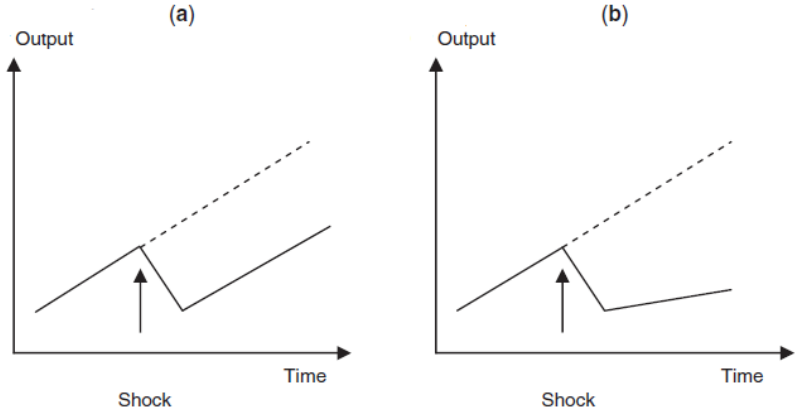
Figure 2 Engineering Resilience



Source: Martin, 2012

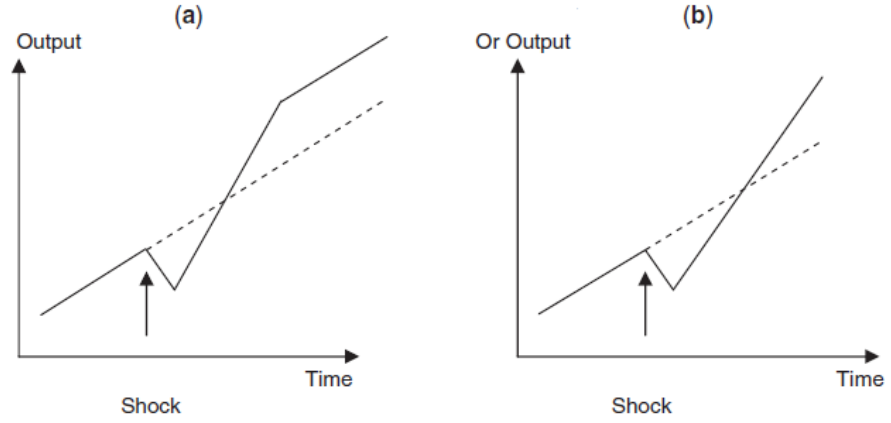
Another form of resilience is the ecological resilience. According to Hill et al. (2008) this type of resilience gives an opportunity for the region not to follow a path, which is not very efficient. On the contrary, it allows the region to choose that point that gives the optimal economic performance. However, the opposite can happen as well. This general idea in economics is defined as hysteresis. The shortfall can bring a complete change in an economy and move the path after a shock at a point different from what it was before the disturbance. Figures 3 and 4 show the effects of a crisis on a region's development pattern (Martin, 2012).

Figure 3: Negative effects of crisis on a region (Ecological Resilience)



Source: Martin, 2012

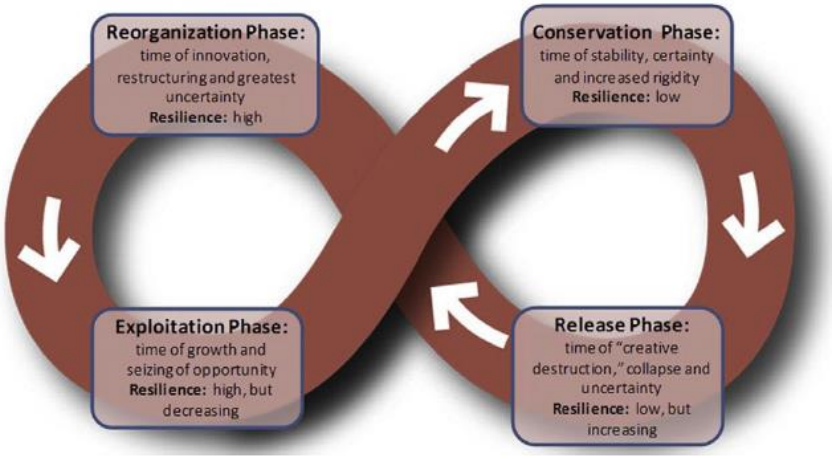
Figure 4: Positive effects of crisis on a region (Ecological Resilience)



Source: Martin, 2012

Finally, another form of resilience is the adaptive resilience (Carpenter et al., 2005). A region's probability to deal with various shocks depends largely on its ability to adapt to various conditions of the environment. This explanation is given in the framework of the theory of complex adaptation. Regional resilience in this context indicates the ability of a regional economy to adjust its structures when it suffers some disturbance so as to continue its growth and thus is presented as a dynamic process. For a region, the likelihood of such success being sustained over the long term will depend crucially on its ability to adapt to changing circumstances over time and to adjust to external shocks as and when these occur. This approach is the most dominant as regions are not looking to achieve a new equilibrium nor are they looking to simply "bounce back" to their pre-challenge state (Cowell, 2013). Instead, the concepts of adjustment and adaptation are generally regarded as more useful in analyzing regional resilience. Adaptive resilience is most often explained through the use of diagram 5 (Cowell, 2013) which depicts the four phases –conservation, release, reorganization, exploitation- of a region's adaptive cycle as is adjusts to internal and external changes (Figure 5). Each phase is related to the process of adaptive resilience, exhibited by the system's susceptibility to shocks and reflects the characteristics of a region and the level of resilience that it has during this time.

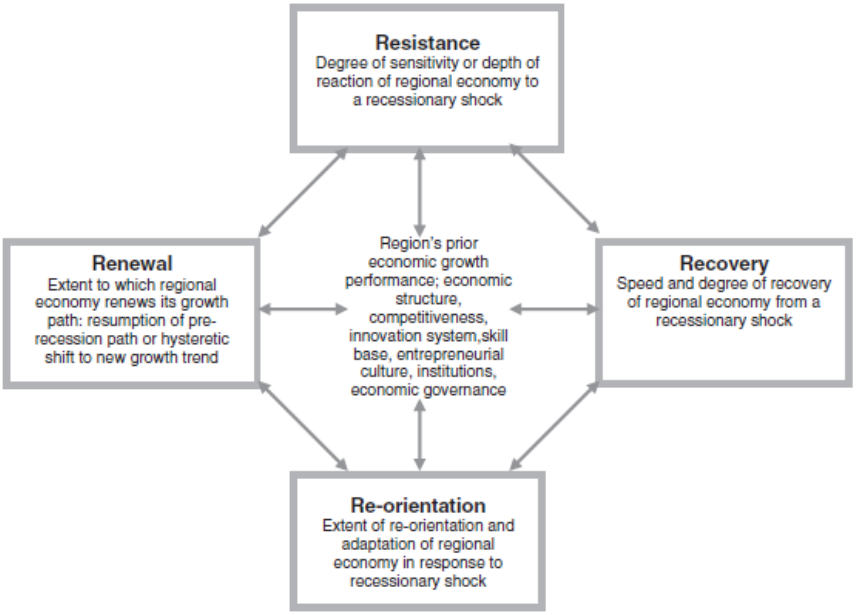
Figure 5: Four-phase cycle of system adaptation and change



Source: Cowell, 2013

According to Martin (2012) the most basic ways through which regions respond after each disorder are resistance, recovery, re-orientation and renewal or resumption (Figure 6). The following figure analyzes these responses.

Figure 6: A region's responses



Source: Martin, 2012

Summarizing, regions according to their degree of resilience after a disorder, are classified in the following three categories (Briguglio et al., 2006; Hill et al., 2008). Initially, there are the economically resilient regions, i.e. regions that, after the shock suffered, they improve and grow more or at least return to the original

condition that they had before affected by the incident. Another category of regions are the shock-resistant ones. These regions withstand such riots and did not "escape" from their course because of these. Finally, there are the non-resilient regions which cannot meet these disorders because they cannot return to their original state and are classified as non-persistent.

2.4. Resilience and Tourism

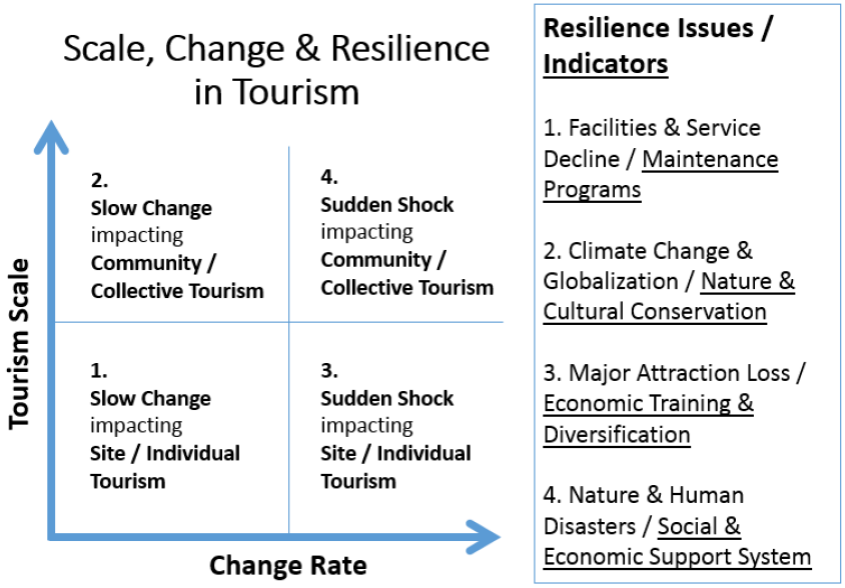
Tourism destinations, regions and actors around the world are confronted with various challenges such as climate change, demographic shifts and the economic crisis. Under these circumstances the question arises whether these regions are capable to overcome these surprises and to continue their development as far as their tourism is concerned i.e. where these regions are resilient or not.

Tourism resilience has been defined as the ability of social, economic or ecological systems to recover from tourism induced stress (Tyrrell and Johnston, 2008; Orchiston et al., 2016). According to Nelson et al. (2007) in order to investigate the resilience of tourism systems we have to consider them as interrelated social, economic and ecological systems which not only have to face the change that exists, but also have to ensure the flexibility that is needed for the region in order to be developed. We stress the word interrelated as the collaboration between the tourism actors of a region and their activities undoubtedly will improve the performance both of these actors and of the whole destination because the tourist will understand that is part of a joint product development process (Beritelli et al., 2007; Pansiri, 2008; Saxena and Ilbery, 2008; Luthe and Wyss, 2014). In this context Folke et al. (2005) suggest that a resilient region has to dispose two characteristics:

1) Diversity in order to be prepared for the turmoil, and
2) Flexibility so as to respond to this one.

According to Lew (2014) there is a scale (Figure 7) which presents four types of tourism contexts and resilience depending on whether: 1) the shock is sudden or not (horizontal axis), and 2) it is about private entrepreneurs or shared public interests (vertical axis). This model is based on the idea that private entrepreneurs have a totally different focus in addressing resilience issues than public interests. Moreover, it assumes that people manage slow changes with different manner in comparison with sudden changes.

Figure 7: Scale, Change and Resilience in Tourism



Source: Lew, 2014

Observing the figure we note that each "box" presents a specific set of resilience issues for those operating within that context. Starting from the first box which illustrates slow change and individual entrepreneurs i.e. facilities and service decline, it appears that the last tries to modify their services in order to satisfy the changing needs of tourists and as a result to ensure their viability. On the other hand in such a case when we have a community and it has to face a slow change i.e. a shift in the ecosystem we note that it turns at natural and cultural conservation i.e. green certifications, corporate responsibility practices and so on. The third case happens when we have a sudden shock –a flood or an economic crisis- and an individual entrepreneur has to face it. In this case the problem is that the disturbance may lead at the loss of a tourist attraction or of a main tourist market due to political or economic developments. In such a case in order to overpass this change and the region to be regarded as resilient, the entrepreneur should have care to have diversification concerning its customers, its suppliers etc. The last "box" concerns the sudden shocks the community has to deal with. Economic crises, natural disasters constitute some examples of these changes. In this case the community needs a social and economic support system in order to respond at this disruption and recover quickly. As far as natural disasters are concerned, according to Winter (2011) the tourism sector can support the preparation and response by supporting public education and awareness about similar disasters which hit tourist attractions.

It is worth noting that although there is a framework which enables the evaluation of tourism sector's resilience, existing tourism studies on resilience tend to focus mainly on one aspect of resilience of tourism systems and more specifically on ecological/environmental resilience (Becken, 2013). Within this paper we focus on the ability of economic systems to recover from tourism induced stress.

3. The case of Greece

The role of tourism is of vital economic importance, particularly for small countries with a privileged geographical location and favorable weather conditions. In this "category" of countries belongs Greece. Tourism is one of the most important sectors in Greece and it has a positive impact on development of Greek economy. The main benefits of tourism are income creation and generation of jobs. In addition to these, given the dispersal of tourist destinations around the country, tourism in Greece has a catalytic role in the dispersion of national income in the country's regions being the most important source of welfare for many regions. Even during the recent crisis, the tourist industry in Greece has been one of the mainstays of economic growth and employment, with a continued growth in tourist arrivals and tourist nights spent there. Below we present certain charts which reveal the importance of tourism sector in Greek economy.

Chart 1 presents the direct contribution of Travel & Tourism to GDP. We observed that in 2014 the direct contribution of Travel & Tourism to GDP was €11.8bn (7.0% of GDP). This is forecast to rise by 3.6% to €12.3bn in 2015. This primarily reflects the economic activity generated by industries such as hotels, travel agents, airlines and other passenger transportation services (excluding commuter services). But it also includes, for example, the activities of the restaurant and leisure industries directly supported. Moreover, the direct contribution of Travel & Tourism to GDP is expected to grow by 3.6% to €17.5bn (7.9% of GDP) by 2025. Chart 2 depicts the total contribution of Travel & Tourism to GDP in 2014 and its evolution. The total contribution of Travel & Tourism to GDP (including wider effects from investment, the supply chain and induced income impacts) was €29.4bn in 2014 (17.3% of GDP) and is expected to grow by 3.2% to €30.3bn (17.6% of GDP) in 2015. It is forecast to rise by 3.7% to €43.8bn by 2025 (19.8% of GDP).

Chart 1: The direct contribution of Travel & Tourism to GDP

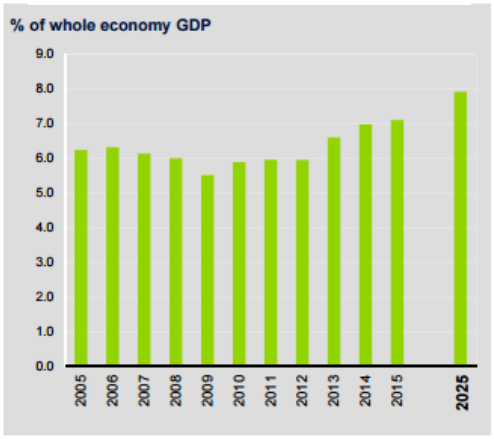
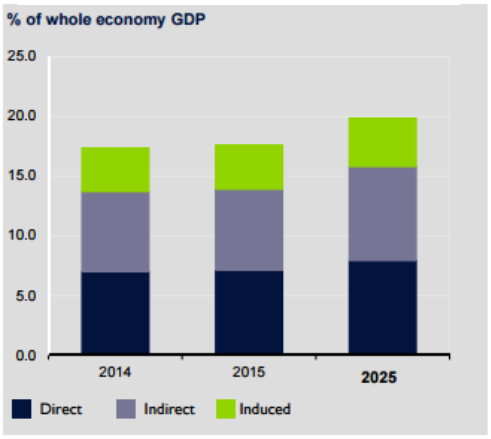


Chart 2: The total contribution of Travel & Tourism to GDP



Source: World Travel and Tourism Council, 2015

Charts 3 and 4 depict the direct and total contribution of Travel & Tourism to employment. According to chart 3 Travel & Tourism generated 340.500 jobs directly in 2014 (9.4% of total employment) and this is forecast to grow by 3.8% in 2015 to 353.000 (9.5% of total employment). This includes employment by hotels, travel agents, airlines and other passenger transportation services (excluding commuter services). It also includes, for example, the activities of the restaurant and leisure industries directly supported by tourists. By 2025, Travel & Tourism will account for 446.000 jobs directly, an increase of 2.4% over the next ten years. According to chart 4 the total contribution of Travel & Tourism to employment (including wider effects from investment, the supply chain and induced income impacts) was 700.000 jobs in 2014 (19.4% of total employment). This is forecast to raise by 3.9% in 2015 to 727.000 jobs (19.7% of total employment). By 2025, Travel & Tourism is forecast to support 951.000 jobs (22.2% of total employment), an increase of 2.7% over the period.

Chart 3: The direct contribution of Travel & Tourism to employment

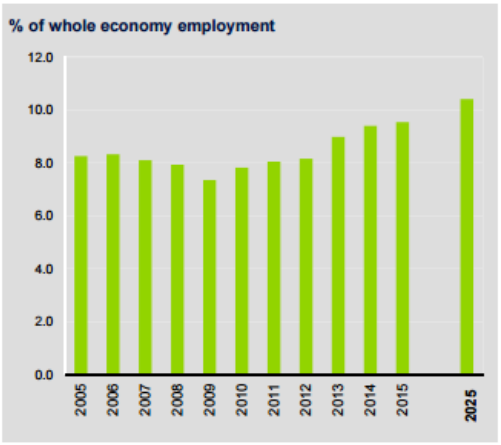
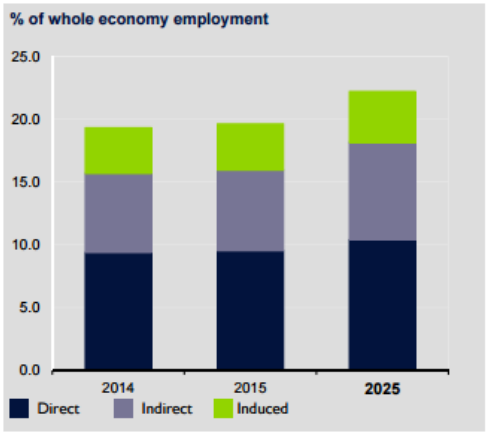


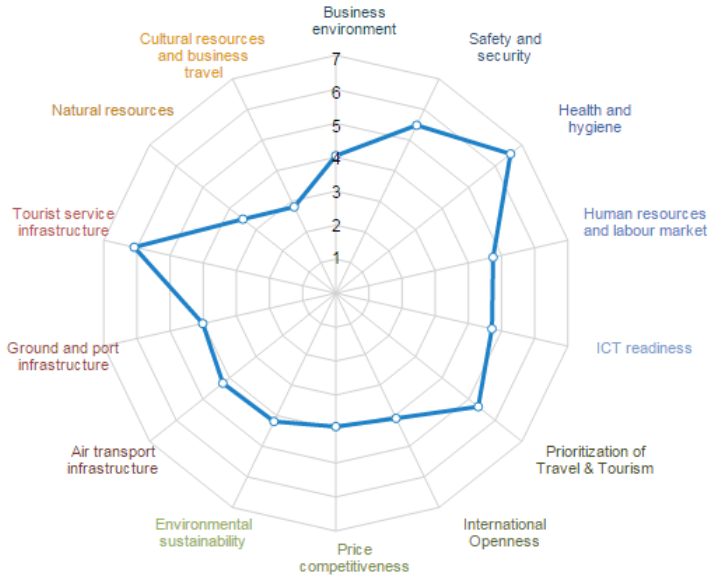
Chart 4: The direct contribution of Travel & Tourism to employment



Source: World Travel and Tourism Council, 2015

Internationally, according to the Travel and Tourism Competitiveness Report (2015) Greece holds the 31st place (its score is 4,4), marginally better from 32nd in 2013. The country's performance is illustrated at the following chart, where 7 represents the optimum value a country can have and 1 the minimum. In general terms, as we can notice, its performance is satisfactory enough in all dimensions apart from natural and cultural resources.

Chart 5: A performance overview of Greece concerning tourism sector



Source: World Economic Forum, Travel and Tourism Competitiveness Report, 2015

Table 1 depicts analytically all dimensions of tourism sector, their values and the average value of each dimension worldwide. We notice that the performance of

Greece in tourism sector is high enough since the value of each dimension is refrained from the average.

Table 1: The performance of Greece in tourism sector

Dimension	Value	Average
Business Environment	4,0	3,76
Safety and Security	5,5	3,81
Health and Hygiene	6,6	6,04
Human Resources and Labour Market	4,7	3,99
ICT Readiness	4,7	3,62
Prioritization of Travel & Tourism	5,4	5,22
International Openness	4,1	2,50
Price Competitiveness	3,9	4,84
Environmental Sustainability	4,2	3,29
Air Transport Infrastructure	4,2	2,46
Ground and Port Infrastructure	4,0	3,10
Tourist Service Infrastructure	6,1	5,18
Natural Resources	3,5	1,71
Cultural resources and Business Travel	2,8	1,47

Source: World Economic Forum, Travel and Tourism Competitiveness Report, 2015

Therefore, the significance and the dynamism of this industry for the Greek economy are obvious. Moreover, it is evident that Greek tourism is one of the few sectors of the national economy which is competitive at a global level. This dynamism is the starting point on which policies for tourism must be expressed, which tackle the major weakness of Greek tourism i.e. the seasonality (about 60% of arrivals and revenues incurred the 3rd quarter of the year and only the 6% and 3%, respectively, during the first one).

4. Methodology

The aim of this paper is to investigate the impact of economic crisis on Greek regions and more specifically its impact on tourism industry both nationally and per region as tourism industry is the backbone of the Greek economy and contributes significantly to the formation of its GDP. In addition to this, we aim to investigate whether the extent to which each region affected by the crisis depends on whether the region is mainland or coastal. Moreover, in this paper we seek to examine the way in

which Greek regions respond to this upheaval and to assess the extent to which they are resilient as far as tourism industry is concerned.

In order to investigate sufficiently these issues we used the following indicators concerning tourism sector:

- The Gross Value Added (GVA) of tourism sector,
- The number of tourists arrived (national and international tourists),
- The number of nights spent in the destination (national and international tourists),
- The number of beds,
- The number of establishments that each region disposes and
- The number of employees in tourism sector.

The choice and the use of those indicators are not accidental, as according to Faulkner (2000) the most common resilience perspective in tourism has been on the recovery of tourism industries and tourist arrival numbers. Moreover, regarding the employment and the GVA we used these indicators in order to examine both the impact of economic crisis on two main macroeconomic indicators related directly to tourism sector and the ability of each region to face this upheaval.

Data refer to years 2007, 2010 and 2013 and are collected from Eurostat for the case of educational data. We choose these periods of time so as to have data before the crisis, during and on the top of the crisis. In order to investigate the impact of economic crisis on tourism industry we calculate the percentage changes of these indicators among 2007-2010 and 2007-2013. Thereby, we examine how the escalation of economic crisis has affected the examined indicators.

Regarding the assessment of resilience shown by the regions in the tourism sector we used the model proposed by Proag (2014). According to that model a region's resilience can be measured by the following index:

$$Resilience\ Efficiency = \frac{Output\ Under\ Shock}{Normal\ Output}$$

This model will be applied twice: the first time as output under shock is accounted the data of 2010 and as normal output the data of 2007. The second time as output under shock is accounted the data of 2013 and as normal output the data of 2007. In this way we assess the degree of resilience and how it changes as the crisis is evolved. When the value of this index is greater than 1, then the region is considered

resilient. When the value of this index is smaller than 1, then the region is not resilient. The greater the value, the more resilient the region is considered.

Finally, in order to investigate whether the extent to which each region affected by the crisis depends on whether the region is mainland or coastal, we apply the independent sample t- test or the non-parametric test Mann Whitney when the conditions are not fulfilled.

5. Findings

This section includes the main findings of our research. First of all before starting the presentation of the main findings per region, we consider that we should refer to the evolution of these indicators nationally. According to table 2 we observe that in general terms the tourism sector hasn't adversely affected by the economic crisis. Almost all indicators (apart from GVA and employment) present an increase in both the period 2007-2010 and the period 2007-2013. It is noticeable the fact that the unique indicators that are in decline are those related with the macroeconomic indicators.

Table 2: Evolution of indicators in Greece

Indicators	2007	2010	2013	Percentage Change 2007-2010	Percentage Change 2007-2013
Gross Value Added (GVA)	10.160,00	9.812,00	9.524,00	-3,43%	-6,26%
Total Employment in Tourism Sector	1.383,00	1.296,00	1.048,50	-6,29%	-24,19%
Total Arrivals	15.695.509,00	15.840.595,00	16.008.948,00	0,92%	2,00%
Total Nights	64.085.524,00	65.059.095,00	70.065.554,00	1,52%	9,33%
Number of Beds	700.933,00	764.437,00	773.269,00	9,06%	10,32%
Number of Establishments	9.207,00	10.008,00	9.677,00	8,70%	5,10%

Figure 8 depicts the percentage change of the examined indicators the period 2007-2010. As far as the total arrivals and nights spent in the destination are concerned, we observe both positive and negative changes. The highest increase is presented at the region of Thessaly, while the greatest reduction is observed at Epirus.

Generally, the total arrivals are increased in six regions (Central Macedonia, Thessaly, Ionian Islands, Peloponnese, South Aegean, Crete), while the total nights are increased in only four regions (Central Macedonia, Thessaly, South Aegean, Crete). Moreover, we observe that in all regions the number of beds and the number of establishments are increased. More specifically, in both indicators the highest change is observed at the regions of Western Macedonia and Thessaly, while the lowest change at Attica. Finally, concerning the macroeconomic indicators (GVA and employment) the negative changes are more intense. More specifically, all regions apart from Attica, South Aegean and Crete present a decline concerning the GVA. As far as employment's change is concerned only five regions (Eastern Macedonia, Western Macedonia, Thessaly, Epirus, Peloponnese) present an increase.

Figure 8: The percentage change of indicators between 2007-2010

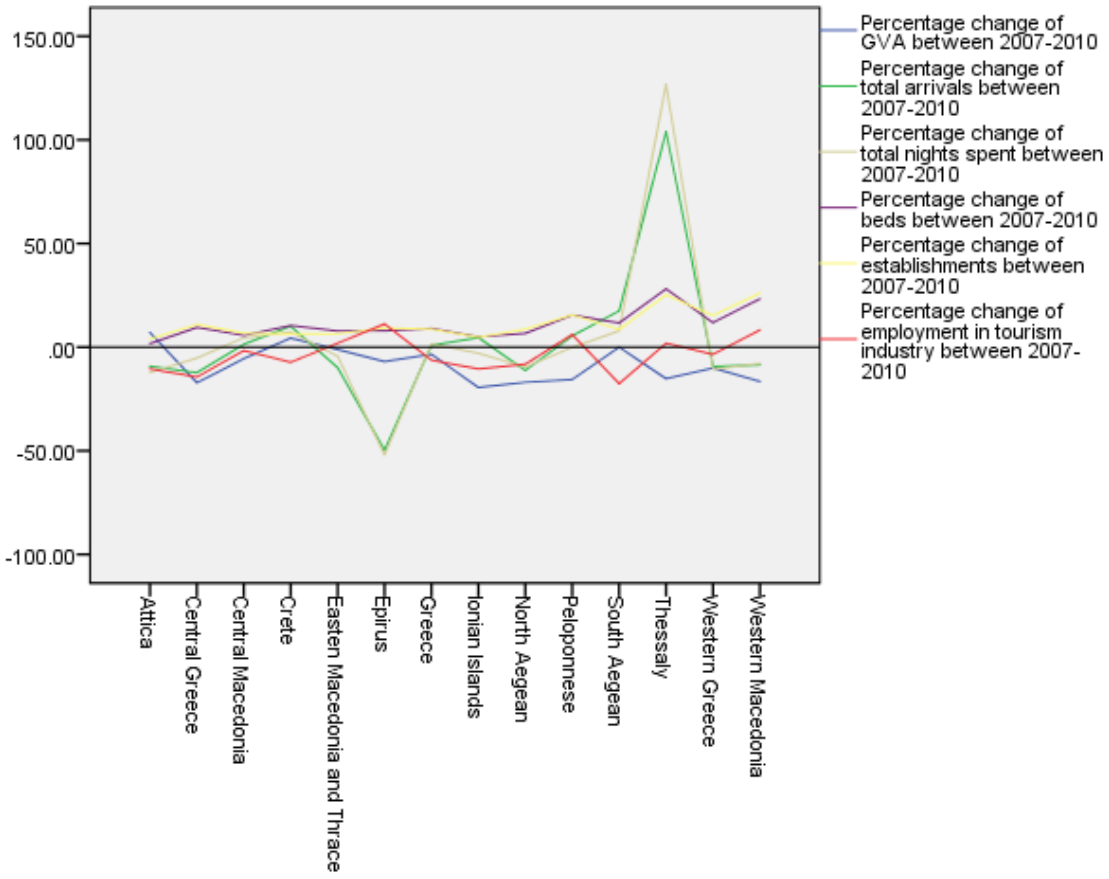
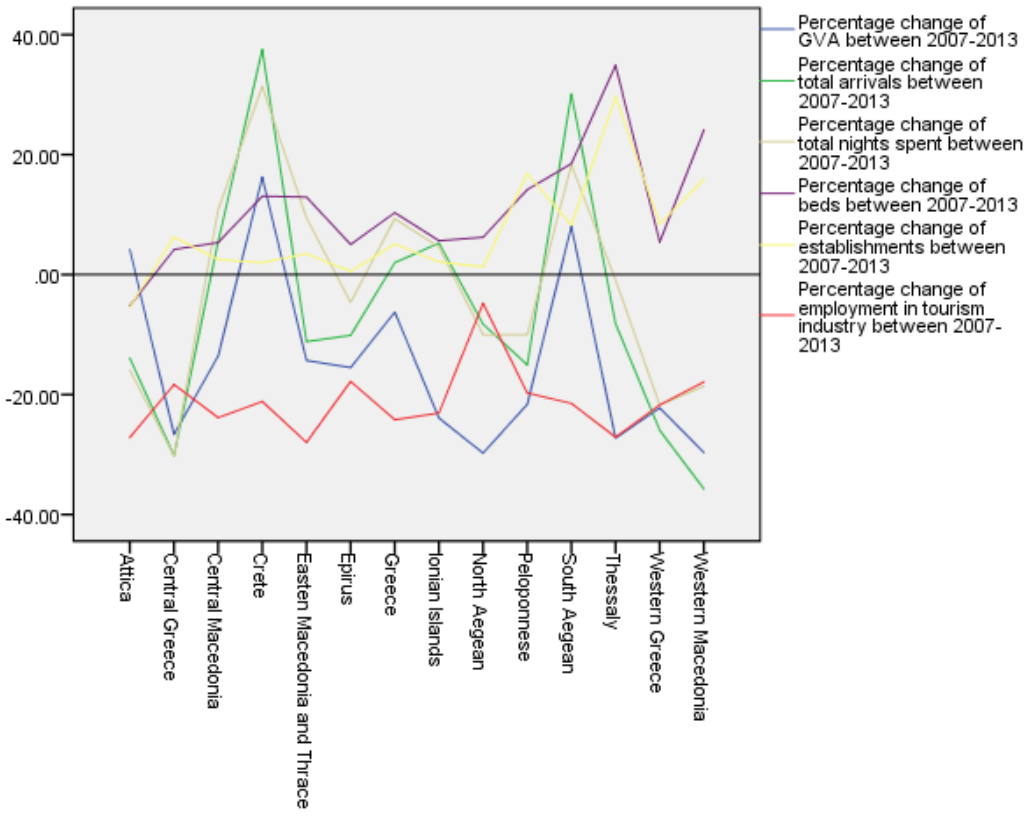


Figure 9 illustrates the percentage change of the examined indicators the period 2007-2013. The fluctuations are more pronounced in comparison with those of the period 2007-2010. Concerning total arrivals coastal regions are in a more favored position as among the four regions which present increase (Central Macedonia, Ionian Islands, South Aegean, Crete) three of them are island and in North Aegean the

percentage change between 2007-2013 is better than that between 2007-2010. Moreover, it is worth noticing the change of Thessaly which the period 2007-2010 was extremely high (103.96%), but in 2007-2013 had a decline (-8.16%), Epirus which presented an improvement over time (-49.69% → -10.13%) and Peloponnese which despite having a positive sign in 2007-2010 (5.42%), the period 2007-2013 fell (-15.04%). Regarding total nights spent in destinations the most pronounced changes due to crisis are appeared in Thessaly which despite having increased the first three years (126.78%), the period 2007-2013 decreased and in Eastern Macedonia and Thrace, Epirus and Ionian Islands where it is observed an improvement over time. Although the percentage change of beds' number is positive for the majority of regions (except for Attica), it is lower the period 2007-2013 than that observed in 2007-2010. Only six regions present a real raise (Eastern Macedonia and Thrace, Western Macedonia, Thessaly, Ionian Islands, South Aegean, Crete). Simultaneously, despite the fact that the number of establishments is increased, the growth in 2007-2013 is less than that in 2007-2010. Finally, as far as GVA and employment are concerned the situation was worsened. GVA was decreased in all regions apart from South Aegean and Crete where there is a growth and the employment in tourism sector fell in all regions.

Figure 9: The percentage change of indicators between 2007-2013



The following three figures are focused on two macroeconomic indicators (GVA and employment) and on arrivals. They depict the percentage change of these indicators compared with the change in Greece generally. We observe that the changes of these indicators are more intense at regional level than at national level. Moreover, these graphs present a better view of regional changes compared with the changes in Greece in 2007-2010 and in 2007-2013.

Figure 10: The relative percentage change of GVA

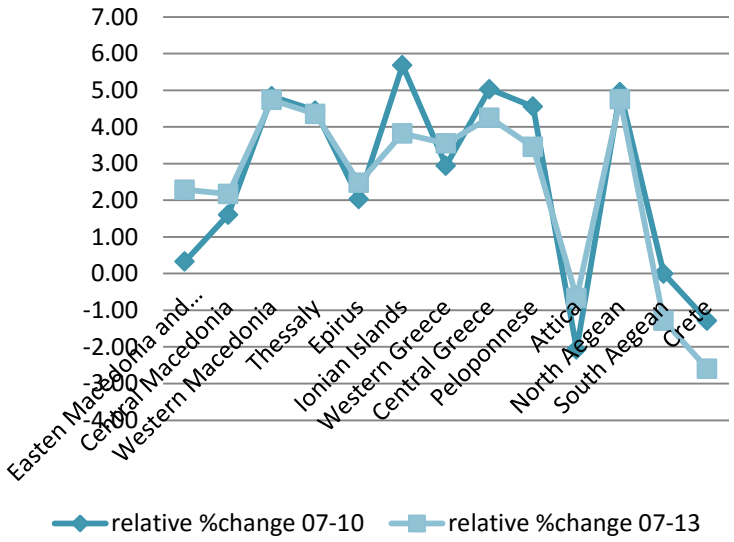


Figure 11: The relative percentage change of employment

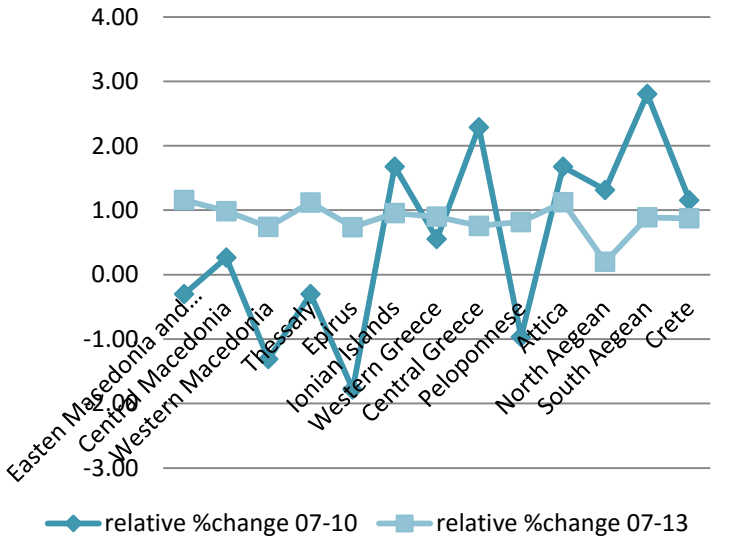
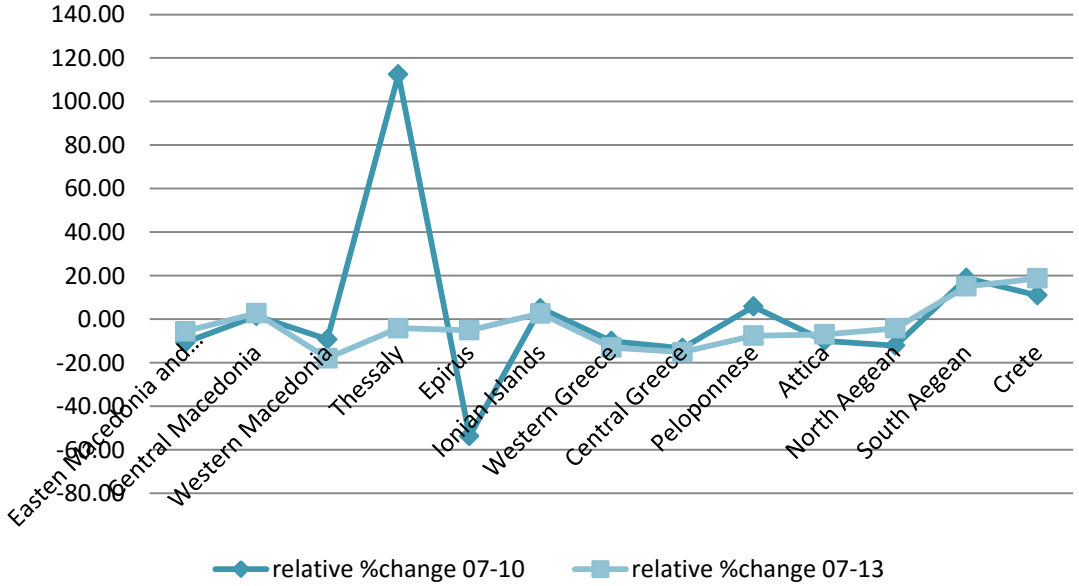


Figure 12: The relative percentage change of arrivals



In order to investigate whether the extent to which each region affected by the crisis depends on whether the region is mainland or coastal, we apply the independent sample t-test or the non-parametric test Mann Whitney when the conditions are not fulfilled. The following tables present the results of these tests.

Before applying t-test we seek to examine if the condition of normality is fulfilled, so we run a normality test (table 3). We form the following hypotheses:

H_0: The population is normally distributed

H_1: The population is not normally distributed

If the resulting p-value of the test of normality is less than 0.05, the null hypothesis is rejected and it is concluded that the population is not normally distributed. In our case all variables are normally distributed, as sig>0.05, apart from arrivals where sig=0.002<0.05. As a result we choose the Independent Samples T-test for the GVA and the employment and the non-parametric test Mann Whitney for the arrivals.

Table 3: Tests of Normality

	Type of Perfecture	Shapiro-Wilk
		Sig.
GVA relative %change 2007-10	Mainland	0,227
	Island	0,261
Arrivals relative %change 2007-10	Mainland	0,002
	Island	0,763
Employment relative %change 2007-10	Mainland	0,786
	Island	0,250

At table 4 we examine whether the observed changes at GVA and employment in 2007-2010 depend on whether the region is mainland or coastal. According to Independent Samples T-test, firstly, we have to examine the equality of variances. We form the following hypotheses:

H_0: The population variances are equal

H_1: The population variances aren't equal

If the resulting p-value of Levene's test is less than 0.05, the null hypothesis of equal variances is rejected and it is concluded that there is a difference between the variances in the population. In our case the p-value of Levene's test in all cases is greater than 0.05 (0.152, 0.228> 0.05), so we accept the null hypothesis and we

continue with the t-test for the equality of means. In the context of t-test we form two new hypotheses:

H_0: The two population means are equal (there is no difference between mainland and coastal regions)

H_1: The two population means aren't equal (there is difference between mainland and coastal regions)

If the resulting p-value of t-test is less than 0.05, the null hypothesis is rejected and it is concluded that there is a difference between mainland and coastal regions. In our case the p-value of t-test regarding the GVA is greater than 0.05 (0.861> 0.05), but concerning the employment is less than 0.05 (0.037>0.05). This means that regarding the GVA there is no difference between mainland and coastal regions. On the other hand as far as employment is concerned there is difference between mainland and coastal regions.

Table 4: Independent samples t-test

		Levene's Test for Equality of Variances	t-test for Equality of Means
		Sig.	Sig. (2-tailed)
GVA relative %change 2007-10	Equal variances assumed	0,152	0,861
	Equal variances not assumed		0,884
Employment relative %change 2007-10	Equal variances assumed	0,228	0,037
	Equal variances not assumed		0,014

Table 5 presents the results of the non-parametric test. We form two hypotheses:

H_0: The two population medians are equal (there is no difference between mainland and coastal regions)

H_1: The two population medians aren't equal (there is difference between mainland and coastal regions)

If the resulting p-value of Mann Whitney test is less than 0.05, the null hypothesis is rejected and it is concluded that there is a difference between mainland and coastal regions. In our case the p-value is greater than 0.05 (0.330>0.05), so we accept the null hypothesis and as a result regarding the arrivals there is no difference between mainland and coastal regions.

Table 5: Test Statistics

	Arrivals relative %change 07-10
Mann-Whitney U	11,000
Wilcoxon W	56,000
Z	-1,080
Asymp. Sig. (2-tailed)	0,280
Exact Sig. [2*(1-tailed Sig.)]	0,330

At this point we repeat the same procedure to examine whether the observed changes at GVA, employment and arrivals in 2007-2013 depend on whether the region is mainland or coastal. We run the test of normality and then proceed to the appropriate test. According to table 6 we observe that GVA and arrivals follow the normal distribution, so we proceed to the Independent Samples T-test. Concerning the employment we proceed to the non-parametric test Mann Whitney.

Table 6: Tests of Normality

	Type of Perfecture	Shapiro-Wilk
		Sig.
GVA relative %change 2007-13	Mainland	0,157
	Island	0,292
Arrivals relative %change 2007-13	Mainland	0,750
	Island	0,580
Employment relative %change 2007-13	Mainland	0,106
	Island	0,019

Table 7 presents the results of the Independent Samples T-test. We observe that regarding GVA there is no difference between mainland and coastal regions (0.409>0.05). On the other hand as far as arrivals are concerned there is difference between mainland and coastal regions (0.005<0.05).

Table 7: Independent Samples Test

	Levene's Test for Equality of Variances	t-test for Equality of Means
	Sig.	Sig. (2-tailed)

GVA relative %change 2007-13	Equal variances assumed	0,006	0,236
	Equal variances not assumed		0,409
Arrivals relative %change 2007-13	Equal variances assumed	0,088	0,005
	Equal variances not assumed		0,049

As far as the relative percentage change of employment in 2007-2013 is concerned, according to table 8, there is no difference between mainland and coastal regions (0.503>0.05).

Table 8: Test Statistics

	Employment relative %change 07-13
Mann-Whitney U	13,000
Wilcoxon W	23,000
Z	-0,774
Asymp. Sig. (2-tailed)	0,439
Exact Sig. [2*(1-tailed Sig.)]	0,503

According to the model proposed by Proag (2014) we formed the following tables which present the resilience efficiency in tourism industry per region both the period 2007-2010 (table 9) and 2007-2013 (table 10). When the value is greater than 1, then the region is considered resilient and when it is smaller than 1, then the region is not resilient. The greater the value, the more resilient the region is considered.

According to table 9 we observe that concerning GVA there are three regions resilient (Attica, Crete, South Aegean). Nevertheless, the value of the index is high enough in all regions. The less resilient region is considered the region of Ionian Islands. Regarding the employment on tourism sector there are five resilient regions (Epirus, Western Macedonia, Peloponnese, Thessaly, Eastern Macedonia and Thrace), while the less resilient region is South Aegean. It is noticeable the fact that we have values near the unit. This means that regions have the appropriate capacities to deal with the crisis. As far as the total arrivals are concerned there are six resilient regions and concerning the total nights spent at the destination there are five resilient regions. In both cases the less resilient region is Epirus whose value is far below the unit. Finally, as far as the number of beds and the number of establishments are concerned

all regions are considered as resilient, but more resilient are considered the regions of Thessaly and Western Macedonia.

Table 9: Resilience efficiency in tourism industry per region 2007-2010

Perfecture	GVA	Employment	Total Arrivals	Total Nights Spent	Number of Beds	Number of Establishments
Eastern Macedonia and Thrace	0.99	**1.02**	0.90	0.96	**1.08**	**1.06**
Central Macedonia	0.94	0.98	**1.01**	**1.05**	**1.06**	**1.07**
Western Macedonia	0.83	**1.08**	0.91	0.92	**1.23**	**1.26**
Thessaly	0.85	**1.02**	**2.04**	**2.27**	**1.28**	**1.25**
Epirus	0.93	**1.11**	**0.50**	**0.48**	**1.08**	**1.09**
Ionian Islands	**0.81**	0.89	**1.05**	0.97	**1.05**	**1.05**
Western Greece	0.90	0.97	0.91	0.89	**1.12**	**1.15**
Central Greece	0.83	0.86	0.88	0.95	**1.10**	**1.11**
Peloponnese	0.84	**1.06**	**1.05**	**1.00**	**1.15**	**1.16**
Attica	**1.07**	0.89	0.91	0.88	**1.02**	**1.04**
North Aegean	0.83	0.92	0.89	0.90	**1.07**	**1.09**
South Aegean	**1.00**	**0.82**	**1.17**	**1.08**	**1.12**	**1.09**
Crete	**1.04**	0.93	**1.10**	**1.07**	**1.10**	**1.06**

According to table 10 we ascertain that the escalation of the economic crisis has negatively affected certain indicators, as their resilience efficiency the period 2007-2013 recedes in comparison with that the period 2007-2010. More specifically,

as far as the GVA is concerned, three regions remain resilient and indeed two of the three present a higher level of resilience (South Aegean, Crete). Concerning the employment the resilience efficiency was reduced in all regions, apart from North Aegean. As a result there isn't any resilient region. Regarding total arrivals there are only four resilient regions (Crete, South Aegean, Central Macedonia, Ionian Islands). The less resilient region is Western Macedonia. It is noticeable that the resilience efficiency has been reduced at the majority of regions, especially at Thessaly and Peloponnese. Moreover, it is worth noticing that Epirus has increased resilience efficiency compared with that in 2007-2010. As far as total nights are concerned there are five resilient regions, while the less resilient region is Central Greece. Finally, regarding the number of beds and establishments all regions are considered as resilient except for Attica whose value is near to 1.

Table 10: Resilience efficiency in tourism industry per region 2007-2013

Perfecture	GVA	Employment	Total Arrivals	Total Nights Spent	Number of Beds	Number of Establishments
Eastern Macedonia and Thrace	0.86	**0.72**	0.89	**1.09**	**1.13**	**1.04**
Central Macedonia	0.86	0.76	**1.06**	**1.11**	**1.05**	**1.03**
Western Macedonia	**0.70**	0.82	**0.64**	0.81	**1.24**	**1.16**
Thessaly	0.73	0.73	0.92	0.99	**1.35**	**1.30**
Epirus	0.84	0.82	0.90	0.95	**1.05**	**1.01**
Ionian Islands	0.76	0.77	**1.05**	**1.05**	**1.06**	**1.02**
Western Greece	0.78	0.78	0.74	0.78	**1.05**	**1.08**
Central Greece	0.73	0.82	0.70	**0.70**	**1.04**	**1.06**
Peloponnese	0.78	0.80	0.85	0.90	**1.14**	**1.17**

Attica	**1.04**	0.73	0.86	0.84	**0.95**	**0.95**
North Aegean	**0.70**	0.95	0.92	0.90	**1.06**	**1.01**
South Aegean	**1.08**	0.79	**1.30**	**1.18**	**1.18**	**1.08**
Crete	**1.16**	0.79	**1.38**	**1.31**	**1.13**	**1.02**

6. Conclusions

In recent years Greek tourism has undergone some changes which were consequences of the international economic crisis. Within this research we investigated the impact of economic crisis on tourism sector and we assessed its resilience per region using certain indicators: total arrivals, total nights spent at the destination, number of beds, number of establishments that each region disposes, the Gross Value Added of tourism sector and the employment at tourism sector. Data show that tourism in Greece was affected by the crisis.

More specifically, the greatest negative effect is observed on the macroeconomic indicators (GVA and employment). In 2007-2010 all regions apart from Attica, South Aegean and Crete suffered a fall in GVA. These reductions are more pronounced during the period 2007-2013, where only South Aegean and Crete have a positive change. Concerning employment in 2007-2010 the economic crisis negatively affected eight regions, while in 2007-2013 this decline is more pronounced and concerns all regions. As far as total arrivals are concerned in 2007-2010 seven regions have been negatively affected by the crisis, while in 2007-2013 this impact is much more pronounced. Regarding total nights spent at the destination, although in 2007-2010 there are six regions in decline, in 2007-2013 there is only one region (Epirus) that has a positive change. Finally, despite the fact that the beds and the establishments are increased in all regions (except for Attica which presents a reduction in 2007-2013) both the 2007-2010 and 2007-2013, the growth rate for the period 2007-2010 is higher compared with that in 2007-2013.

As far as our question about whether the extent to which each region affected by the crisis depends on whether the region is mainland or coastal is concerned, we conclude that the GVA's change isn't affected whether the region is mainland or coastal neither in 2007-2010 nor in 2007-2013, employment's change is affected by

the "type" of region only in 2007-2010, while arrivals' change is affected only in 2007-2013.

Finally, as far as the resilience efficiency of tourism sector is concerned, we note that tourism sector can be characterized less resilient in 2007-2013 compared to 2007-2010. This means that as the economic crisis escalates, the resilience efficiency of tourism sector is diminished. More specifically, regarding GVA only three regions (Attica, South Aegean, Crete) are considered as resilient in both periods, while in employment we observe a differentiation: in 2007-2010 there are five resilient regions (Eastern Macedonia and Thrace, Western Macedonia, Thessaly, Epirus, Peloponnese), in 2007-2013 there isn't any resilient region. Concerning total arrivals in 2007-2010 there are six resilient regions (Central Macedonia, Thessaly, Ionian Islands, Peloponnese, South Aegean, Crete), while in 2007-2013 only four regions are considered as resilient (Central Macedonia, Ionian Islands, South Aegean, Crete). Regarding total nights spent at the destination there are five resilient regions both in 2007-2010 (Central Macedonia, Thessaly, Peloponnese, South Aegean, Crete) and in 2007-2013 (Eastern Macedonia and Thrace, Central Macedonia, Ionian Islands, South Aegean, Crete). As far as the number of beds and establishments is concerned; all regions are considered as resilient in both periods, except for Attica in 2007-2013. Therefore, the value of the index is higher in 2007-2010 revealing higher resilience efficiency.

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