REGIONAL TOURISM RESILIENCE AND RECOVERY IN TIMES OF CRISES

Eleni GAKI[*]

University of the Aegean, Department of Business Administration, Business School, Chios, Greece, e-mail: e.gaki@aegean.gr

Nikolaos Iason KOUFODONTIS

University of the Aegean, Business School, Chios, Greece, e-mail: ikouf@aegean.gr

Abstract: Regional resilience is typically described as the ability of a region to withstand shocks and recuperate from various crises. This paper examines the quantitative aspect of tourism resilience and focuses on tourism employment. The aim is to highlight the distinct potential of each Greek region to recover from the ongoing pandemic, based on its calculated tourism resilience. This empirical research uses secondary data and calculated indices developed for evaluating regional resilience. Statistical data from official sources provides information regarding regional employment with focus on tourism. Preliminary findings show that important differences are evident between regions regarding their resilience and their subsequent ability to recover from ongoing crises. Estimated resiliency is not always accompanied by a corresponding recovery, especially on the tourism sector. Regions with a strong tourism industry seem to have a stronger resilience than regions that base their development on other industries and this is an indication but at the same time shows the potential of tourism for the development of a region.

Key words: tourism, resilience, crisis, resistance, recovery, NUTS-2 (European Nomenclature of Territorial Units for Statistics at level 2)

* * * * * *

INTRODUCTION

Economic crisis, natural disasters, terrorism and most recently the pandemic have affected regions' development. Regions, however, do not respond in the same way to these shocks. Some of them seem to be prepared and deal with the shocks in a successful way (Cirer-Costa, 2020), while others seem to be unprepared and fail to cope with the consequences of these shocks. It is therefore accurate to say that some regions seem to be more resilient than others. In addition to that, this resilience is correlated, among other things, to the regions' prominent industry, often affected by strengths and weaknesses of individual firms (Kaczmarek et al., 2021). Resilience is a concept that was initially used in engineering and ecology. Holling (1973) was the first to introduce resilience as the notion that "determines the persistence of relationships within a system and is a measure of the ability of these systems to absorb changes of state variables, driving variables, and parameters, and still persist" (Holling, 1973:17). Over the last decades the concept has been embraced and refined by economists and regional scientists. Regional resilience measures the ability of a region to withstand shocks and recover from various crises. According to Walker and Lee (2004) resilience is "the capacity of a system to absorb disturbance and reorganize while undergoing change so as to still retain essentially the same function, structure, identity, and feedbacks" (Walker and Lee, 2004:2). Folke et al. (2010) on the other hand, defined resilience as "the capacity of a system to absorb disturbance and reorganize while undergoing change so as to still retain essentially the same function, structure and feedbacks, and therefore identity, that is, the capacity to change in order to maintain the same identity" (Folke et al., 2010:3). According to Martin et al (2016) the notion of resilience describes how a region or a system reacts and recovers from a shock (Martin et al., 2016:564), while Di Pietro et al. (2021) are seeing resilience as the economic system's ability to recover from an external disturbance (Di Pietro et al., 2021:287).

The concept of resilience can be used by researchers in order to study and analyze the effect of shocks on regions and the consequent behavior of the regions. The question that still remains to be answered is what are the key elements that make regions react differently to shocks and what are the factors of a successful reaction. This research focuses on the impact of several crises at the regional level. More specifically the emphasis is placed on tourism activity as the most dynamic sector of the Greek economy. The aim of this paper is to highlight the distinct potential of each Greek region to recover from an economic crisis or the ongoing pandemic, based on its calculated tourism resilience. It is examined whether regions, based on the level of participation in the tourism industry, have different levels of resilience.

Reaction and recovery of a region after a crisis appears to be influenced by the characteristics of the region and each region has a distinct resilience. If the relationship between regional attributes and resilience proves to be a solid and measurable dependency, then it can be strategically utilized not only to predict the potential outcome but also to take measures that could improve the chances and speed of the recovery. The importance of this research lies to the fact that regions seem to react differently to various crises and shocks. The regions' characteristics determine that reaction and if the reaction can be predicted, then it can change or even improve. The paper is structured as follows: in Section 2 we present

[*] Corresponding author

the relevant literature review that frames our study, regarding regional resilience and development, the impact of tourism and the importance of tourism in the Greek economy. Section 3 includes the methodology of the research and Section 4 presents the main findings. Finally, Sections 5 and 6 contain the discussion and conclusions, respectively.

LITERATURE REVIEW

Resilience is a concept that was initially used in engineering and ecology. After the first use of the term by Holling (1973) regional economists used it to identify the reaction of a region to various shocks and crisis. According to Foster (2007) resilience "is the ability of an economy to anticipate, to prepare, to respond and to recover form a shock". Martin and Sunley (2007) in their work defined resilience as "the capacity of a regional or local economy to withstand or recover from market, competitive and environmental shocks to its developmental growth path, if necessary, by undergoing adaptive changes to its economic structures and its social and institutional arrangements, so as to maintain or restore its previous developmental path, or transit to a new sustainable path characterized by a fuller and more productive use of its physical, human and environmental resources". Later on, Briguglio et al. (2009) reported that resilience "has been used in at least three ways in relation to its ability to: recover quickly from adversity,

Figure 1. Types of resilience for a region under shock
(Source: authors)

to withstand the effect of adversity, and to avoid adversity altogether" (Briguglio et al., 2009:233). On the other hand, Kallioras (2011) stated that "resilience of a region is measured based on the evaluation of its ability to maintain a successful path of development 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". The economic crisis of the previous years enhanced the meaning of resilience as it can also reveal how different regions can deal with shocks (Martin, 2018). Towards this end, Bishop (2019) revealed that regions with a strong and diverse knowledge stock show higher regional resilience. In addition, Giannakis and Bruggeman, (2020) in their research indicated that resilience is different among urban, intermediate and rural regions, while Brown et al. (2020) highlighted the connection between firm resilience to regional resilience. These definitions and many more have a common ground, considering resilience as the region's ability to react to shocks. For example, Martin (2012:6) presented a region's development path, using a line that shows a region's path which is interrupted by a shock. A shock moves a region's economy outside of the path followed, but the economy has the ability to return to its pre-shock growth trend. But this is not always the case.

Region's show different levels of resilience, or even have no resilience. Figure 1 represents the different ways that a region can respond to a crisis. If high resilience is supplemented by capability for adaptation and innovation, a successful recovery can not only re-establish the previous rate of progress but it can also result in a higher rate; leading eventually to an improved development path. This could happen, if the region manages to respond successfully, building upon its resiliency, while taking advantage of the new conditions and turning the threat into an opportunity (case "A" in Figure 1). In a more typical case, a moderately resilient region will eventually recover from the crisis, albeit not necessarily fully, resulting in lower levels and rate of development (case "B" in Figure 1).

Finally, a non-resilient region might lose all development momentum as result of the crisis, entering a challenging period of decline (case "C" in Figure 1). The concept of resilience in tourism has been approached from a variety of paths. Tyrrell and Johnston (2008) define resilience as "the ability of social, economic or ecological systems to recover from tourism-induced stress" and consider it a part of the broader tourism sustainability issue". Other researchers, such as Espiner et al (2017) further support this unbreakable relationship between sustainability and resilience. In connection with crises, resilience is often examined in conjunction with specific catastrophes such as natural disasters (Kim and Marcouiller, 2015; Bhati et al., 2016) or terrorism (Mansfeld, 1999). Research examining disasters often evolves around the concept of crisis management (Filimonau and De Coteau, 2020). Prayag (2018) argues that relevant research should be shifted towards resilience instead of crisis management. According to Cochrane (2010) resilience can often explain the deviations from the typical linear tourism destination life cycle described by Butler (1980).

Further, complexity and chaos theories combined with geography aspects shape the intricate equations of sustainability and resilience as argued by Calgaro et al. (2014). Tourism resilience has a deeper social, political, and economic basis, as described by Cheer and Lew (2018) and it can be affected by a multitude of crises at various levels and scales. Alebaki and Ioannides (2017) describe a range of local, national, and global influences in their paper about the resilience of Greece's wine tourism. Individual societal factors such as wellbeing and behavior competencies also constitute an integral part of the resilience framework, as suggested by Sheppard and Williams (2016).

Dependency of a region is often a factor that results in lower resiliency as Watson and Deller (2021) argue. Further, they note that even within regions there are pockets where the opposite is true i.e. "where greater dependency enhanced economic resiliency". This suggests that as part of a regional science-oriented analysis, the spatial dimension is not always easy to measure and identify correctly, without the risk of false generalizations.
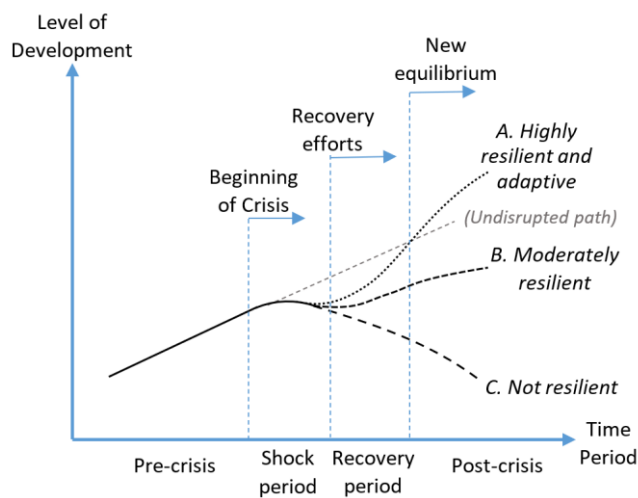
Holder (1980) argues that tourism is more flexible and adaptive than other activities and therefore economies based on tourism are in general more resilient. The findings of Cellini and Cuccia (2015) examining resilience in Italy after the recent financial crisis, support this view. This is one of the main aspects examined in this paper. Tourism resilience of Greek regions has been assessed before in the view of recovery from a single calamity, the financial crisis of the early 2010s (Karoulia et al., 2015). However, this is one of the few studies that examines the role of consecutive crises for specific destinations. More specifically, the aim of this paper is to highlight the distinct potential of each Greek region to recover from the ongoing pandemic, based on its calculated tourism resilience.

MATERIALS AND METHODS

Several methods have been developed to measure regional resilience (Martin and Sunley, 2015; Psycharis et al., 2014; Proag, 2014; Lagravinese, 2015; Giannakis and Bruggeman, 2015; Radulescu and Meleca, 2020). This paper uses the approaches proposed by Martin (2012), Martin and Sunley (2015) and Lagravinese (2015) and measures the effect of a shock on an economy while identifying 2 separate phases:

- The first phase takes place when the shock occurs and
- The second takes place during the period where a region is recovering from the shock.

This empirical research uses secondary data. Statistical data from official sources (Greek Statistical Authority, 2021; INSETE, 2021) provides information regarding GDP, GVA and regional employment with focus on tourism. Specialized tourism resilience and recovery indices are calculated for each one of the 13 Greek regions, for different time periods covering the past decades. More specifically, the periods covered are:

- During (2009-2015) and just after the economic crisis (2016-1019)
- During (2019-2020) the pandemic.

Two indices are calculated, Resistance Index and Recovery Index (Lagravinese, 2015). Resistance index (βres) is calculated by using the following formula (Martin, 2012; Lagravinese, 2015). This formula is applied to Regional Employment and Regional Employment in Tourism Sector based on data from datasets retrieved from Hellenic Statistical Authority.

$$\beta_{res} = \frac{\Delta E_i - \Delta E_N}{|\Delta E_N|} \ (1) \quad \beta_{rec} = \frac{\Delta E_i}{\Delta E_N} \ (2)$$

Where ΔE_i is the percentage change of the value of the variable in region i and ΔE_N is the percentage change of the value of the variable in the country. Positive values of βres indicate that the region exhibits greater 'resistance' to an adverse shock compared with the rest of the country. Negative values of βres indicate that the region is less resistant than the country as a whole. Finally, values equal to zero indicate that there is no difference to the national effect. Recovery index (βrec) is calculated by using the following formula (Martin, 2012; Lagravinese, 2015).

This formula is applied to Regional Employment and Regional Employment in Tourism Sector based on data from datasets retrieved from Hellenic Statistical Authority. Positive values of βrec indicate that the region exhibits a stronger (relative to the country) performance after the recession period. Negative values of βrec indicate that the region exhibits a weaker (relative to the country) performance after the recession period.

Finally, values equal to zero indicate that there is no difference to the national effect. The values of these indices indicate whether and to what extent a region has a tourism industry that is resistant and secondly if and to what extent a region has a strong tourism industry that is able to withstand the crisis and recover from it.
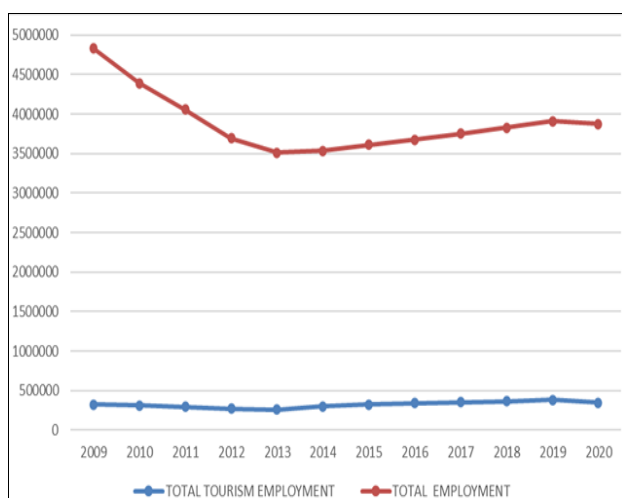

Figure 2. Employment and Employment in Tourism, 2009-2020 (Source: Hellenic Statistical Authority (2021). Regional Indicators: Employment by NUTS-2 Regions for the years 2009 to 2020. Data last updated on May 2021. INSETE (2021). Regional Indicators: Employment in Tourism by NUTS-2 Regions for the years 2009 to 2020. Data last updated on May 2021)
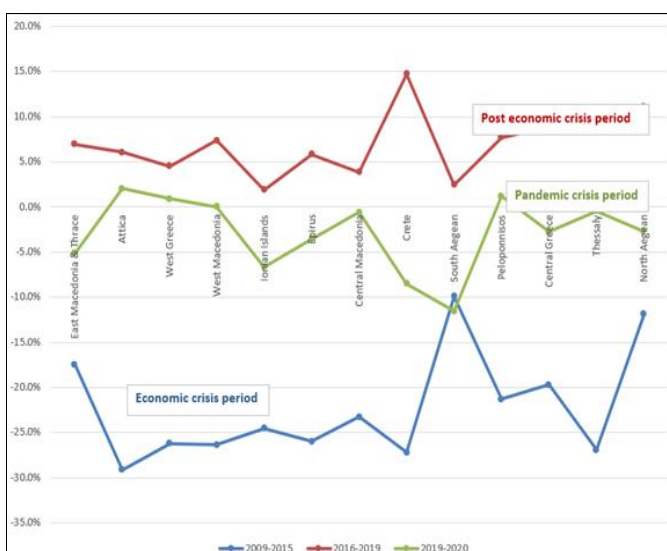

Figure 3. % Change of Total Employment, per region (Source: Hellenic Statistical Authority (2021). Regional Indicators: Employment by NUTS-2 Regions for the years 2009, 2015, 2016, 2019, 2020. Data last updated on May 2021)

RESULTS AND DISCUSSION

This paper is constructed around a specific major indicator of regional tourism development, namely the employment in the tourism sector. Several other factors and variables were also analyzed, although not presented or described herein. These include regional tourism attributes and data from both the supply side (attributes and resources) as well as the demand side (tourist demographics and flows). These additional factors and the conclusions from the related findings are briefly referenced in the discussion section of the paper, in conjunction with relevant findings of other researchers.

Figure 2 represents employment and employment in the tourism sector for the period 2009-2020. Total employment declines when the economic crisis starts and then starts to grow again at the end of it. A slight decrease is also seen when the pandemic starts. On the other hand, regarding employment in tourism, no major fluctuations are present.

Figures 3 and 4 show the percentage change of employment and employment in the tourism sector. Regarding total employment, there is an extreme decline in all regions during the economic crisis, although some of them, such as the island regions of South and North Aegean, seem to have experienced a smaller decline. Employment in tourism, on the other hand, recorded an increase during the economic crisis in specific island regions such as the Ionian islands, the South Aegean and Crete. But regarding the covid period there is a decline, mostly on island regions.
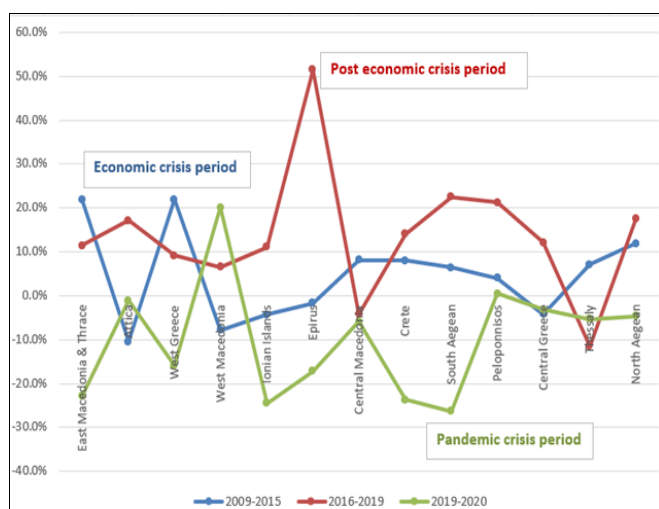

Figure 4. % Change of Employment in Tourism, per region (Source: INSETE (2021). Regional Indicators: Employment in Tourism by NUTS-2 Regions for the years 2009, 2015, 2016, 2019, 2020. Data last updated on May 2021)
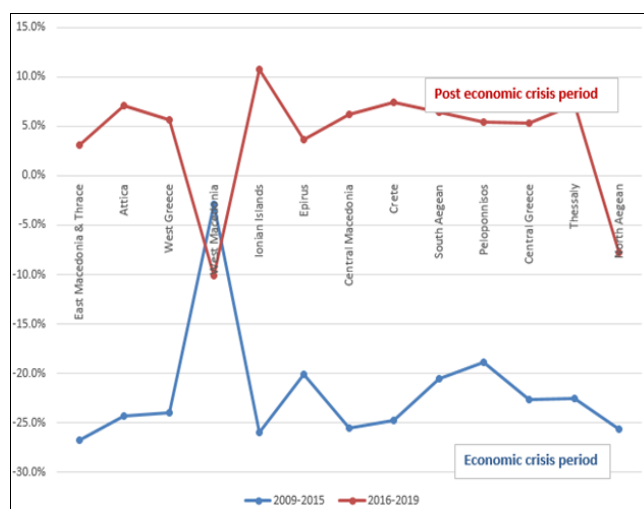

Figure 5. Change of Per Capita GDP (Source: Hellenic Statistical Authority (2021). Regional Indicators: GDP per Capita by NUTS-2 Regions for the years 2009, 2015, 2016, 2019. Data last updated on May 2021)
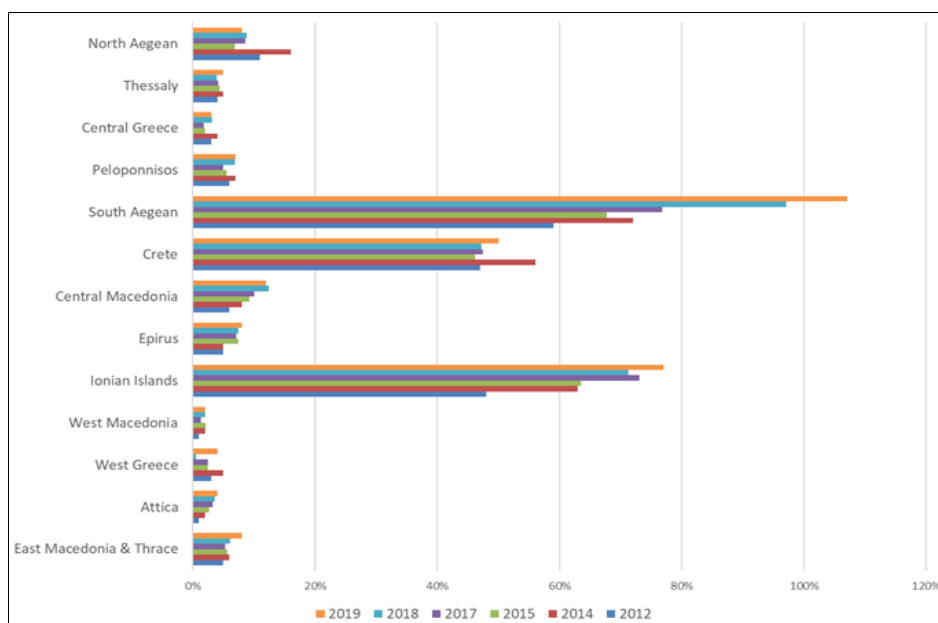

Figure 6. Regional Per Capita GDP (Source: Hellenic Statistical Authority (2021). Regional Indicators: GDP per Capita by NUTS-2 Regions for the years 2012, 2014, 2015, 2017, 2018, 2019. Data last updated on May 2021)

Figure 5 presents the percentage change of per capita GDP in every region. It is noticed that, during the economic crisis, every region experienced a significant decline, except West Macedonia. On the other hand, post crisis results show an increase in every region, except West Macedonia and North Aegean. Regarding the contribution of tourism on GDP (Figure 6) we notice - as was expected - that the greatest contribution is on well-established tourism destinations, such as South Aegean, Crete, Ionian Islands, and that there is a notable increase from 2012 to 2019. Table 1 presents the values of Resistance and Recovery Index as calculated for total employment and employment

on tourism, for two shock periods. The first period is referring to the economic crisis, i.e. 2009-2012 and the second one to the pandemic, i.e. 2019-2020. As we have seen, negative values in both indices suggest that a region is less resistant or has a

weaker (relative to the nation) performance after the recession period, in comparison to the whole country. In the case of the economic crisis, there is no region with negative values in both indices, although there are urban and rural regions such as Attica, West Macedonia, Epirus that experience negative values in Resistance Index, indicating a small resistance to economic crisis. This finding is in agreement with previous researchers who stated that the economic crisis affected sectors

Regions	1st shock period				2nd shock period	
	Economic crisis period (2009-2015) βres		Post economic crisis period (2016-2019) βrec		Pandemic crisis period (2019-2020) βres	
	Employment					
	Total	in Tourism	Total	in Tourism	Total	in Tourism
East Macedonia & Thrace	0.31	14.34	1.08	0.96	-4.66	-1.28
Attica	-0.15	-8.31	0.32	1.44	3.24	0.89
West Greece	-0.04	14.27	1.48	0.77	1.99	-0.59
West Macedonia	-0.04	-6.43	1.51	0.55	1.04	3.00
Ionian Islands	0.03	-3.98	0.78	0.93	-6.29	-1.45
Epirus	-0.03	-2.16	0.53	4.32	-2.90	-0.71
Central Macedonia	0.08	4.67	0.89	-0.35	0.34	0.41
Crete	-0.08	4.56	2.88	1.18	-8.34	-1.37
South Aegean	0.61	3.46	0.33	1.89	-11.69	-1.63
Peloponnisos	0.16	1.80	1.44	1.78	2.30	1.05
Central Greece	0.22	-3.95	1.72	1.02	-2.01	0.69
Thessaly	-0.07	3.97	2.11	-0.97	0.49	0.47
North Aegean	0.53	7.29	1.26	1.46	-1.95	0.53

Table 1. Resistance (βres) and Recovery Index (βrec) (Source: Hellenic Statistical Authority (2021). Regional Indicators: Employment by NUTS-2 Regions for the years 2009, 2015, 2016, 2019, 2020. Data last updated on May 2021. INSETE (2021). Regional Indicators: Employment in Tourism by NUTS-2 Regions for the years 2009, 2015, 2016, 2019, 2020. Data last updated on May 2021. Computed by the authors)

such as manufacture and not tourism (Psycharis et al., 2014). In the case of the pandemic, as already explained, Recovery Index cannot be calculated. Nevertheless, Resistance Index has negative values in all island regions and regions whose dominant sector is tourism. Figures 7 and 8 plot the relationship, across the 13 Greek regions, between resistance index (for the recession period) and the recovery index (for the post-recession period). Furthermore, by splitting the relationship into quadrants we can see which regions have been both the most resistant to the recession and have experienced the fastest post-recession employment growth. Regarding total resilience, Central Greece, Peloponnisos, North Aegean, East Macedonia & Thrace, and South Aegean appear to be the most resilient regions.
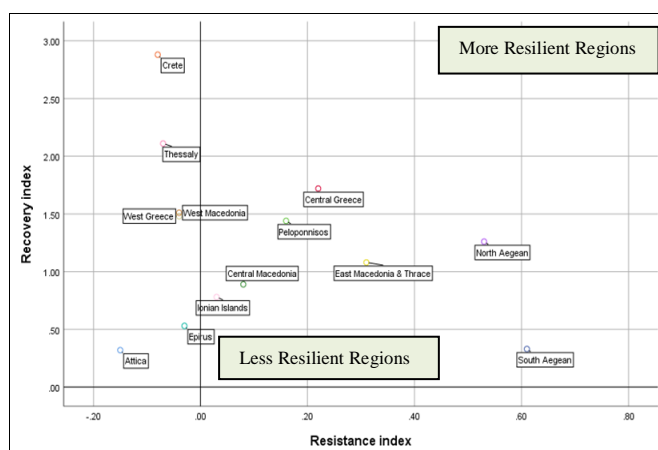

Figure 7. Resistance and Recovery Index for Total Employment during and after the economic crisis period (Source: Hellenic Statistical Authority (2021). Regional Indicators: Employment by NUTS-2 Regions for the years 2009, 2015, 2016, 2019. Data last updated on May 2021. Computed by the authors)
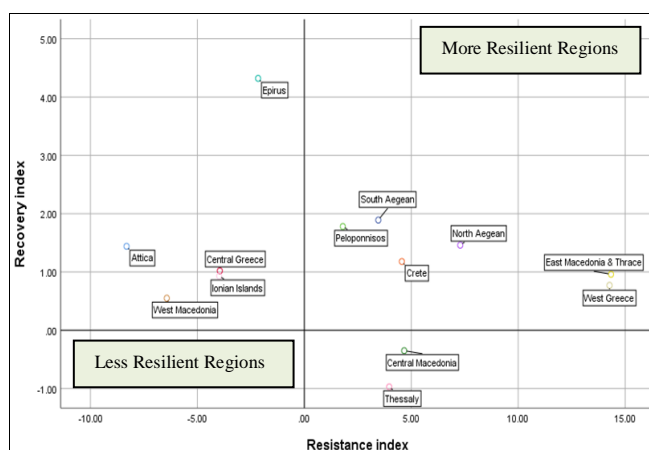

Figure 8. Resistance and Recovery Index for Employment in Tourism during and after the economic crisis period (Source: INSETE (2021). Regional Indicators: Employment in Tourism by NUTS-2 Regions for the years 2009, 2015, 2016, 2019. Data last updated on May 2021. Computed by the authors)

Those are rural and island regions which base their economy on agriculture and tourism. What is worth noticing is that Crete is experiencing a small Resistance Index but has a significant Recovery Index which means that although the island was affected by the crisis, it did have an economy that was able to successfully recover from the crisis; possibly due to its sectoral/production structure. It has been argued that certain economic activities suffer relatively more from economic or other shocks, such as manufacturing or the tourism sector (Giannakis and Bruggeman, 2015). This varies depending on the type of shock and it could explain to some extent the spatial differences in resistance. Different types of crises (natural, financial, refugee, pandemics etc.) dictate different suitable responses (Boin and Lodge, 2016) as each type of crisis has unique characteristics and consequences (Lalonde, 2007). Past research has shown how the tourism industry has reacted or how it should react appropriately at any level of activity; from individuals and leaders (Bhaduri, 2019), to businesses (Dahles and Susilowati, 2015), and regions (Kakderi and Tasopoulou, 2017). Regarding the 2nd period of shock, data present only preliminary results since the pandemic is still ongoing. Therefore, Figure 9 presents only the resistance index for the first years of the pandemic. The evidence suggests that at the beginning of the pandemic, the least resilient regions where Attica, West Greece, West Macedonia Central Macedonia, Peloponnisos and Thessaly. Since we have not yet entered the post-pandemic era and several support measures are still in place, there is no concrete evidence to argue which regions have been affected the most. More data is needed in order to have a clearer picture.
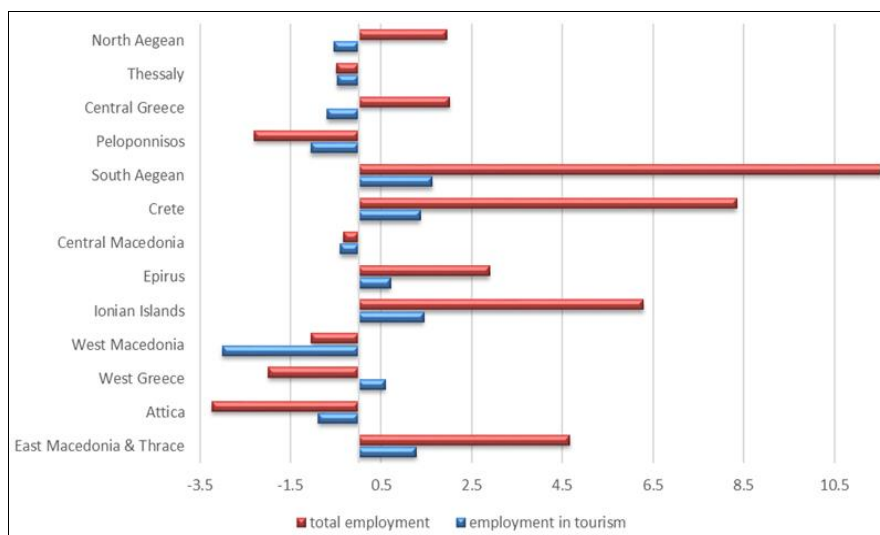
Figure 9. Resistance Index during the pandemic (Source: Hellenic Statistical Authority (2021). Regional Indicators: Employment by NUTS-2 Regions for the years 2019, 2020. Data last updated on May 2021. INSETE (2021). Regional Indicators: Employment in Tourism by NUTS-2 Regions for the years 2019, 2020. Data last updated on May 2021. Computed by the authors)

The various shocks such as the economic crisis and the pandemic, have affected and still affect the performance of the regions and consequently the countries as well. This paper focused on the study of the impact of economic crisis and the pandemic on the resilience and especially the tourism resilience of the Greek regions. The analysis of the data revealed some interesting results. The first finding shows that, whether it was the economic crisis, or the pandemic, regions reacted differently to these shocks and showed a different level of resilience and recovery. This is in accordance with the findings of Cellini and Cuccia (2015) who concluded that providers of tourism have differing abilities to change their orientation and specialization in front of a negative shock, and as a result different Italian regions have shown markedly different degrees of economic resilience. It is also shown that the resistance and the effects of a crisis vary depending on the geography of the region (island or mainland) in a way similar to that proposed by Cellini and Gucia (2015) who conclude that regions in which the sea-side tourism was more relevant have faced deeper adverse shock.

Another finding supports that island regions and regions that have significant contribution to tourism seem to have better resilience than urban regions. Benítez-Aurioles (2020) in his study for the Mediterranean countries such as Greece, Italy, Portugal and Spain also concluded that the competitive advantage or specialization demonstrated by each country define the resilience patterns in tourism. At a more localized level or at a smaller scale such as the case of islands, there appear to be other factors impacting the resilience such as the industry's management deficiencies, inadequate cohesion among stakeholders, and lack of innovation (Bangwayo-Skeete and Skeete, 2020). Finally, although some regions show poor resistance to shocks, they seem to show a better performance in recovery from the shocks. This is probably due to various reasons such as the uneven development of specific sectors of their local economies, their adaptability, or even the intra-sectoral industry mix, as suggested by Mandal and Saravanan (2019) who argued that the composition, the strategic orientation, the coordination, the agility, and the utilization of information technology (Mandal, 2019) of the tourism supply chains (mainly hotels, tour operators and restaurants) affect the tourism resilience. Cirer-Costa (2020) in his study examined the case of Ibiza, and concluded that accumulated physical, human and social capital and the capacity of the local business community to reinvent their product and adapt to new circumstances, resulted in enhanced resilience, allowing for recovery after consecutive crises. The statistical data analyzed (Elstat, 2021; INSETE, 2021) shows that different Greek regions are favored by different target groups or countries of tourists' origins.

These findings are in accordance with Weaver et al (2019) who suggested that not only market diversification but also destination loyalty can affect island destination resilience. This can be further assessed in conjunction with relevant factors such as the origin of the tourists that appears to affect the tourism resilience (Tangvitoontham and Sattayanuwat, 2018). Benítez-Aurioles (2020) in his study shows that when comparing Mediterranean countries such as Greece, Italy, Portugal and Spain, competitive advantage or specialization demonstrated by each country defines the resilience patterns in tourism. The findings in our research show that what arguably happens at country level also extends to the regional level as well. Regions such as Crete or other island regions, that show significant differences in resilience and recovery compared to other regions and the national average, are probably supported by a combination of factors, ranging from productive basis and geography (island) to tourism specialization. In the case of individual Greek islands, approaches similar to the adoption of the Cittàslow philosophy (slow food, slow tourism, aiming on improving the quality of local life) can have a positive effect on tourism sustainability and resilience, as described by Walker and Lee (2019).

CONCLUSION

This paper examined the degree of resilience of the Greek regions by analyzing tourism development and related critical factors such as the employment in the tourism sector. An established methodology was utilized to measure both the resistance as well as the ability for recovery following a crisis. By using the calculation of the Resistance Index and the Recovery Index as main methodological tools, the analysis has led us to the following conclusions:

- Economic crisis revealed the country's vulnerabilities, including vulnerabilities at the regional level.
- There is a measurable difference in resilience between regions.
- Mainland regions including large urban destinations are not necessarily the most resilient ones.

- Regions depending on tourism seem to be more resilient.

Tourism industry appears to have the potential to act as a catalyst factor supporting the recovery of the Greek economy following the latest crisis of the COVID-19 pandemic. Despite the positive outlook, one should not overlook the importance of planning and proactiveness. Even though it has been reasoned that tourism in combination with specific local characteristics can assist a region through extensive and consecutive crises (Cirer-Costa, 2020) a better outcome can arguably be expected when all stakeholders develop contingency plans (Filimonau and De Coteau, 2020). The necessary preparedness ranges from entrepreneur to destination-wide level and includes the whole range of crises and threats, from minor or slow developing to major or acute disasters (Lew, 2014).

The pandemic is still ongoing, and this constitutes a significant limitation of this research as it is necessary to analyze post-crisis data in order to make more meaningful comparisons between different crises. The same is true for the refugee crisis as well, which is far from over for many Greek regions, with significant implications for several of the regions examined herein (Ivanov and Stavrinoudis, 2018). Another limitation is that the research did not focus on the specific tourism orientation of the regions. A more detailed supply-side analysis based on specific tourism activities and employment structures in each region, combined with demand side data such as tourist demographics and behavior could reveal the tourism strategies and patterns that can potentially enhance tourism resilience. Thus, further research that would measure the resilience by using a combination of additional variables supplementing the main factors such as sectoral employment, could capture more accurately regions' recession and recovery dynamics. In addition, analysis by sector would reveal the resilience of each sector and the effect to the resilience of the region as a whole.

REFERENCES

Alebaki, M., & Ioannides, D. (2017). Threats and obstacles to resilience: Insights from Greece's wine tourism. In *Tourism, Resilience, and Sustainability: Adapting to Social, Political and Economic Change*, *132-148,* Routledge. https://doi.org/10.4324/9781315464053

Bangwayo-Skeete, P.F., & Skeete, R.W. (2020). Modelling tourism resilience in small island states: A tale of two countries. *Tourism Geographies*, 1-22. https://doi.org/10.1080/14616688.2020.1750684

Benítez-Aurioles, B. (2020). Tourism Resilience Patterns in Southern Europe. *Tourism Analysis*, 25(4), 409-424.

Bhaduri, R.M. (2019). Leveraging culture and leadership in crisis management. *European Journal of Training and Development*. 43(5/6), 554-569. https://doi.org/10.1108/EJTD-10-2018-0109

Bhati, A., Upadhayaya, A., & Sharma, A. (2016). National disaster management in the ASEAN-5: an analysis of tourism resilience. *Tourism Review*, 71(2), 148-164. https://doi.org/10.1108/TR-12-2015-0062

Bishop, P. (2019). Knowledge diversity and entrepreneurship following an economic crisis: An empirical study of regional resilience in Great Britain. *Entrepreneurship & Regional Development*, 31(5–6), 496–515. https://doi.org/10.1080/08985626.2018.1541595

Boin, A., & Lodge, M. (2016). Designing resilient institutions for transboundary crisis management: A time for public administration. *Public Administration*, 94(2), 289-298. https://doi.org/10.1111/padm.12264

Briguglio, L., Cordina, G., Farrugia, N., & Vella, S. (2009). Economic Vulnerability and Resilience: Concepts and Measurements. *Oxford Development Studies*, 37(3), 229-247. https://doi.org/.1080/13600810903089893

Brown, R., Kalafsky, R., Mawson, S., & Davies, L. (2020). Shocks, uncertainty and regional resilience: The case of Brexit and Scottish SMEs. *Local Economy,* 35(7), 655–675. https://doi.org/10.1177/0269094220979261

Butler, R.W. (1980). The Concept of a Tourist Area Cycle of Evolution. *Implications for Management of Resources Canadian Geographer*. 24(1), 5-12. https://doi.org/10.1111/j.1541-0064.1980.tb00970.x

Calgaro, E., Lloyd, K., & Dominey-Howes, D. (2014). From vulnerability to transformation: A framework for assessing the vulnerability and resilience of tourism destinations. *Journal of Sustainable Tourism*, 22(3), 341-360. https://doi.org/10.1080/09669582.2013.826229

Cellini, R., & Cuccia, T. (2015). The economic resilience of tourism industry in Italy: What the 'great recession' data show. *Tourism Management Perspectives*, 16, 346-356. https://doi.org/10.1016/j.tmp.2015.09.007

Cheer, J.M., & Lew, A.A. (2018). Understanding tourism resilience: Adapting to social, political, and economic change. In *Tourism, Resilience, and Sustainability: Adapting to Social, Political and Economic Change,* 3-17, Routledge. https://doi.org/10.4324/9781315464053

Cirer-Costa, J., C. (2020). Economic and social resilience accounts for the recovery of Ibiza's tourism sector. *Tourism Geographies*, 23(3), 479-500. https://doi.org/10.1080/14616688.2020.1722214

Cochrane, J. (2010). The sphere of tourism resilience. *Tourism Recreation Research*, 35(2), 173-185. https://doi.org/10.1080/02508281.2010.11081632

Dahles, H., & Susilowati, T.P. (2015). Business resilience in times of growth and crisis. *Annals of Tourism Research*, 51, 34-50. https://doi.org/10.1016/j.annals.2015.01.002

Di Pietro, F., Lecca, P., & Salotti, S. (2021). Regional economic resilience in the European Union: a numerical general equilibrium analysis. *Spatial Economic Analysis*, 16(3), 287-312. https://doi.org/10.1080/17421772.2020.1846768

Elstat. (2021). Hellenic Statistical Authority. last accessed on May 2021

Filimonau, V., & De Coteau, D. (2020). Tourism resilience in the context of integrated destination and disaster management (DM2*). International Journal of Tourism Research*, 22(2), 202-222. https://doi.org/10.1002/jtr.2329

Folke, C., Carpenter, S.R., Walker, B., Scheffer, M., Chapin, T., & Rockström, J. (2010). Resilience thinking: integrating resilience, adaptability and transformability. *Ecology and Society,* 15(4), 20. http://www.ecologyandsociety.org/vol15/iss4/art20/

Foster, K.A. (2007). A Case Study Approach to Understanding Regional Resilience, *Working Paper 2007-08*, Institute of Urban and Regional Development, Berkeley.

Giannakis, E., & Bruggeman, A. (2015). Economic crisis and regional resilience: Evidence from Greece. *Journal of Regional Science* 96(3), 451-476. https://doi.org/10.1111/pirs.12206

Giannakis, E., & Bruggeman, A. (2020). Regional disparities in economic resilience in the European Union across the urban–rural divide, *Regional Studies*, 54(9), 1200-1213. https://doi.org/10.1080/00343404.2019.1698720

Espiner, S., Orchiston, C., & Higham, J. (2017). Resilience and sustainability: A complementary relationship? Towards a practical conceptual model for the sustainability–resilience nexus in tourism. *Journal of Sustainable Tourism*, 25(10), 1385-1400. https://doi.org/10.1080/09669582.2017.1281929

Holder, J.S. (1980). Buying time with tourism in the Caribbean. *International Journal of Tourism Management*, 1(2), 76-83. https://doi.org/10.1177/004728758101900423

Holling, C.S. (1973). Resilience and stability of ecological systems., *Annual Review of Ecology and Systematics*, 4, 1–23.

Ivanov, S., & Stavrinoudis, T.A. (2018). Impacts of the refugee crisis on the hotel industry: Evidence from four Greek islands. *Tourism Management*, 67, 214-223. https://doi.org/10.1016/j.tourman.2018.02.004

Kaczmarek, T., Perez, K., Demir, E., & Zaremba, A. (2021). How to survive a pandemic: The corporate resiliency of travel and leisure companies to the COVID-19 outbreak. *Tourism Management*, 84, 104281. https://doi.org/10.1016/j.tourman.2020.104281

Kakderi, C., & Tasopoulou, A. (2017). Regional economic resilience: the role of national and regional policies. *European Planning Studies*, 25(8), 1435-1453. https://doi.org/10.1080/09654313.2017.1322041

Kallioras, D. (2011). *Η Έννοια της Ανθεκτικότητας στην Περιφερειακή Επιστήμη (The concept of regional resilience in Regional science)*. Σειρά Ερευνητικών Εργασιών Πανεπιστημίου Θεσσαλίας. 17(4): 69-86 (in Greek).

Karoulia, S., Gaki, E., & Kostopoulou, S. (2015). Assessing regional tourism resilience: the case of Greece. In *ERSA conference papers* (No. ersa15p1260). European Regional Science Association.

Kim, H., & Marcouiller, D.W. (2015). Considering disaster vulnerability and resiliency: The case of hurricane effects on tourism-based economies. *The Annals of Regional Science*, 54(3), 945-971. https://doi.org/10.1007/s00168-015-0707-8

Lagravinese, R. (2015). Economic crisis and rising gaps North–South: evidence from the Italian regions, Cambridge Journal of Regions, *Economy and Society*, 8, 331–342. https://doi.org/10.1093/cjres/rsv006

Lalonde, C. (2007). Crisis management and organizational development: Towards the conception of a learning model in crisis management. *Organization Development Journal*, 25(1), 17-26.

Lew, A.A. (2014). Scale, change and resilience in community tourism planning. *Tourism Geographies*, 16(1), 14-22. https://doi.org/10.1080/14616688.2013.864325

Mandal, S. (2019). Exploring the influence of IT capabilities on agility and resilience in tourism: Moderating role of technology orientation. *Journal of Hospitality and Tourism Technology*. 10(3), 401-414. https://doi.org/10.1108/JHTT-01-2018-0001

Mandal, S., & Saravanan, D. (2019). Exploring the influence of strategic orientations on tourism supply chain agility and resilience: an empirical investigation. *Tourism Planning & Development*, 16(6), 612-636. https://doi.org/10.1080/21568316.2018.1561506

Mansfeld, Y. (1999). Cycles of War, Terror, and Peace: Determinants and management of crisis and recovery of the Israeli tourism industry. *Journal of Travel Research*, 38(1), 30–36. https://doi.org/10.1177/004728759903800107

Martin, R. (2012). Regional economic resilience, hysteresis and recessionary shocks. *Journal of Economic Geography*, 12(1), 1-32. https://doi.org/10.1093/jeg/lbr019

Martin, R., & Sunley, P. (2007). Complexity Thinking and Evolutionary Economic Geography. *Journal of Economic Geography*, 7(5), 573-601. https://doi.org/10.1093/jeg/lbm019

Martin, R., & Sunley, P. (2015). On the notion of regional economic resilience: conceptualization and explanation. *Journal of Economic Geography*, 15(1), 1–42. https://doi.org/10.1093/jeg/lbu015

Martin, R., & Sunley, P., Gardiner, B., & Tyler, P. (2016). How Regions React to Recessions: Resilience and the Role of Economic Structure. *Regional Studies*, 50(40), 561-585. https://doi.org/10.1080/00343404.2015.1136410

Martin, R. (2018). Shocking aspects of regional development: Towards an economic geography of resilience. In *The New Oxford Handbook of Economic Geography*, 839–864, Oxford University Press. https://doi.org/10.1093/oxfordhb/9780198755609.013.43

Prayag, G. (2018). Symbiotic relationship or not? Understanding resilience and crisis management in tourism. *Tourism Management Perspectives*, 25, 133-135. https://doi.org/10.1016/j.tmp.2017.11.012

Proag, V. (2014). Assessing and measuring resilience. *Procedia Economics and Finance*, 18, 222-229. https://doi.org/10.1016/S2212-5671(14)00934-4

Psycharis, Y., Kallioras, D., & Pantazis, P. (2014). Economic crisis and regional resilience: detecting the 'geographical footprint' of economic crisis in Greece. *Regional Science Policy and Practice* 6(2), 121-141. https://doi.org/10.1111/rsp3.12032.

Radulescu, R., & Meleca, A. (2020). Tourism Resilience and the EU Regional Economy. *RAIS Conference Proceedings*. https://doi.org/10.5281/zenodo.4006137

Sheppard, V.A., & Williams, P.W. (2016). Factors that strengthen tourism resort resilience. *Journal of Hospitality and Tourism Management*, 28, 20-30. https://doi.org/10.1016/j.jhtm.2016.04.006

Tangvitoontham, N., & Sattayanuwat, W. (2018). The responsiveness of International tourists on uncertainty and Instability: The case study of inbound tourists to Thailand Nantarat. GSTF. *Journal on Business Review* (GBR), 5(1), 1–6.

Tyrrell, T.J., & Johnston, R.J. (2008). Tourism sustainability, resiliency and dynamics: Towards a more comprehensive perspective. *Tourism and Hospitality Research*, 8(1), 14-24. https://doi.org/10.1057/thr.2008.8

Walker, T.B., & Lee, T.J. (2019). Contributions to sustainable tourism in small islands: an analysis of the Cittàslow movement. *Tourism Geographies*, 1-21. https://doi.org/10.1080/14616688.2019.1654539

Watson, P., & Deller, S. (2021). Tourism and economic resilience. *Tourism Economics*. https://doi.org/10.1177/1354816621990943 .

Weaver, D., Tang, C., Lawton, L., & Liu, Y. (2019). Cultivating the Chinese market through destination loyalty: enhancing resilience in the Maldives. *Tourism Geographies*, 23(4), 1-21. https://doi.org/10.1080/14616688.2019.1623300

*** INSETE. (2021). Regional statistics. last accessed on May 2021.