Cruise Industry in Greece: Possibilities and Prospects

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ABSTRACT

The cruise industry is considered among the most rapidly growing alternative tourism sector worldwide, exhibiting rising demand trends over the last decades. The origin of cruising in Greece go back to 1930s, at a time when the first Greek cruise firms introduced cruising routes in the Aegean Sea and the greater area of the Mediterranean basin. At present, the Greek cruise tourism can be considered as a significant participant in the broader East Mediterranean market. The objective of this paper is to examine whether there is a correlation, and in what extent, between the cruise passengers’ arrivals, the international airports’ arrivals and the GDP per capita for six Greek regions/regional units. For this purpose, data are collected from a range of official sources, including national accounts derived from the Hellenic Statistical Authority and the Bank of Greece, the Hellenic Ports Association and the Civil Aviation Authority and they are referred to the 2010-2016 period. Studying the statistical relationship between the three variables, we found mixed results among the examined Greek regions for the defined time intervals. Our empirical findings contribute to the existing literature by providing useful conclusions for the cruise industry’s impact on the Greek regions’ GDP growth.

1. Introduction

International tourism is one of the fastest-growing service sectors in the world, especially during periods of economic crisis (McIntoch, Goeldner, & Ritchie, 1995; Tang & Tan, 2017; Isik et al., 2017; Isik et al., 2018; Kasimati, & Ioakeimdis, 2019). In addition, it is both the engine for generating economic growth (Belloumi, 2010; Clancy, 1999) and the leading driver of socio-economic progress (Shahzad et al., 2017). Moreover, the expansion of the tourism industry is considered as the engine of tourism development worldwide (Brida & Risso, 2009; Tang & Tan, 2013; Paramati, Alam & Chen, 2017).

Due to the negative effects of mass tourism, since the early 1980s, interest has shifted to alternative forms of tourism (Javrilouka, 1992). Cruise tourism, part of Maritime Tourism, presents increasing trends in both the demand and the offer of products and is emerging to become one of the fastest-growing segment of the tourism industry (Sun & Gauri, 2014; Sanz Blas & Carvajal-Trujillo, 2014; Dowling & Weeden, 2017; McLaughey, Mao & Dowling, 2018). The cruise industry represents the example of globalization: natural mobility, capital that can be transferred anywhere and at any time, crews coming from different countries on the same ship, favorable regulations and maritime registrations chosen in the best possible way (Brida & Zapata, 2010). This rapid growth of cruise tourism (Brida et al., 2012a, b, 2014) has been due to the incorporation of mega-cruise ships and new ports of call (Douglas & Douglas, 2004; Sanz Blas & Carvajal-Trujillo, 2014). For that reason, a variety of concerns raises regarding the environment, economic benefits, social climate, cultural integrity of cruise destinations, especially in the ports of the regions whose rich cultural heritage has made them strategic destinations for operators of cruises (Perce et al., 2018; Adams, 2017; London & Lohmann, 2014; Klein, 2011; Brida & Zapata, 2010; Hritz & Ceci, 2008; Klein, 2007; Jonsson, 2002; Marsh, 2012; Ritter & Schafer, 1998; Rodrigue & Notteboom, 2013; Rosa-Jimenez et al., 2018; Dragovic et al., 2015).

First of all, a cruise product is a combination that includes the cruise ship as destination (Dowling, 2006; Erkoc, Iakovou & Spaulding, 2005; Karlis & Polemis, 2018) as well as the itinerary, which includes transit ports along the journey (Estevé-Perez & Garcia-Sanchez, 2015; Karlis & Polemis, 2018). It is characteristic that the cruise ship is a ‘mobile resort’ comprising a wide range of pleasant and comfortable activities for travelers of different age, place of residence and socio-economic profile (UNWTO, 2012; Brida & Zapata, 2010; Sun, Feng & Gauri, 2014; Estevé-Perez & Garcia-Sanchez, 2018), which transport passengers from place to place in the form of a floating hotel. The cruise ship is a mobile, secure, social and friendly customer service tool, providing easy access to many of the world’s most popular destinations (Gibson, 2006, 2008; Pizam, 2008; Ferrante, De Cantis & Shoval, 2018).

A cruise ship represents all four faces of the tourism industry: transportation, accommodation (including food and beverages), attractions and tour operators (Brida & Zapata, 2010). The cruising evolves as a hybrid form of tourism and transport. The key players in the cruise industry and their interactions are shown in Figure 1. There are three key players in the cruise circuit: the individuals - cruise buyers, the cruise companies, which design and offer the cruise trips and the destinations, which consist of ports and hinterland (Niavis & Vaggelas, 2016).

Figure 1: The basic players of the cruise industry

Source: Niavis & Vaggelas, 2016

Cruise companies consider the port very important for the cruise ship’s operational stages (Estevé-Perez & Garcia-Sanchez, 2018). Three features the port has to offer: airline connections, transport of many people and must be a unique destination (Rodrigue & Notteboom, 2013). Moreover, the decision of cruise passenger to purchase a cruise trip is subject to motivation and emotional factors such as relaxation, socialization, and exploration (Hung & Petrick, 2011; Niavis & Tsiotas, 2018). For that reason, the route is
Cruise companies estimate that at the homeport a passenger spends three times more than he spends at the transit call. Also, the benefits that a destination receives from cruise ship access through the spending of tourists and crew members may be perceived differently by stakeholders (e.g., companies, travel agencies, hotels, shippers) (Lopes & Dredge, 2018).

Prior to 2000, academic research related to the cruise sector was limited (Wild & Dearing, 2000; Papathanassis & Beckmann, 2011). Papathanassis and Beckmann (2011) note that cruise tourism research is often conducted in a highly controlled environment with critically monitored surveillance and access to research opportunities. In particular, the cruise industry is cooperating to produce research that supports the positive effects of this sector. Although the number of cruise researches has largely increased, it still remains in the areas of administration, sociology, psychology, economics, as reported by Papathanassis and Beckmann (2011). In particular, a significant number of studies have analyzed the positive and negative impacts of the cruise sector on economic, environmental, socio-cultural and political reception sites (e.g., Brida & Zapata, 2010; Dwyer, Douglas & Livaic, 2004; Dwyer & Forsyth, 1998; Egelhaar, Thaper, & Peeters, 2010; Klein, 2009, 2010; Scherrer, Smith & Dowling, 2011; Scarfe, 2011; Stewart & Draper, 2006; McKee & Chase, 2003; Gibson & Bentley, 2006; Wilkinson, 1999; Brida & Risso, 2010; Hall & Brathwaite, 1990; Silvestros Santos & Ramalho, 2008). However, there are very few publications concerning the cruise industry locally for sustainable development (e.g., Hritz & Cecil, 2008), the interaction between cruise liners and their hosts and hosts (e.g., Klein, 2011), evaluating the impact on the financial sector (e.g., employment opportunities, crew and passenger costs of cruise liners and how hosts perceive them), the likelihood of cruise tourism (e.g., Klein, 2011), the willingness of returning cruise liners to visit in the same destination as individual tourists or recommend to the friendly people, which creates the so-called «showcasing effects» (Gabe, Lynch & McConnell, 2006). Recent research focuses on the perceptions and behaviors of residents for the development of cruise tourism in their area (e.g., Del Chiappa & Abbate, 2013; Brida, et al., 2012b, 2012a; Hritz & Cecil, 2008; Marusic, Horak & Tomljenovic, 2008; Diedrich, 2010; Gatewood & Cameron, 2009). Scholars agree that the development of alternative tourism is possible when there is co-operation between all relevant authorities, local authorities, local communities and the government in shaping tourism policy (Vernon et al., 2005). Studies have also focused on areas such as the Caribbean (e.g., Hritz & Cecil, 2008), Canada (e.g., Stewart et al., 2000) and ports of the Mediterranean (e.g., Palma, Meledudo & Del Chiappa, 2013).

Empirical studies have been conducted for Greece to analyze the impact of the cruise industry on the Greek economy. To give some examples, Diakomihalis (2007) analyzed the characteristics of Greek marine tourism (cruise, yacht and coastal marine recreation) and highlighted their positive and negative impacts and their prospects for the Greek economy. Diakomihalis et al. (2009) studied the potential benefits and contributions of the cruise sector to local communities in Greece and concluded that this sector has significant economic impacts on local communities. Lekakou, Pallis & Vaggelas (2009) analyzed and prioritized the criteria by which the Greek cruise companies choose the homeport. Andriotis & Agiomirghakis (2014) presented the port of Heraklion Crete in order to identify factors related to the motivation, satisfaction and likelihood of returning cruise liners to the area. Moira & Mylonopoulos (2010) evaluated services on two cruise ships with different destinations (Aegean and Eastern Mediterranean) and concluded that both the port of departure and the ports approaching the port and the services offered were also important. Diakomihalis & Lagos (2011) analyzed leisure shipping in Greece and assessed its financial contribution to the Greek economy. Lekakou, Stefanoudaki & Vaggelas (2011) conducted on the island of Chios an emerging area for cruises and concluded that cruising is a promising sector for the island’s economy. Stefanoudaki & Lekakou (2012) analyzed the economic impact of the cruise sector on the port of Piraeus. Simantiraki & Skivalou (2013) explored the capacity, existing infrastructure, benefits of the port of Agios Nikolaos, Crete, and proposed measures to improve the cruise sector. Simantiraki, Skivalou & Trihas (2015) investigated the characteristics, experience, activities of a tourist visiting the port of Agios Nikolaos in Crete with cruise ships and compared them with other Mediterranean ports. Troumpetas et al. (2015) analyzed the governance model and pricing policy of the twenty-two ports in general and the factors in cruise pricing in the port of Heraklion Crete in particular, during the period 2008-2014. Taking the aforementioned into account, the purpose of this research is to shed light on the existing institutional and economic framework of the Greek cruise industry and to assess the major economic implications that the cruise industry induces in Greece, taking into account the fact that the country is still

Figure 2: The effect of the cruising on the economy

In addition, the continuing increase in ship size and the average number of passengers per port are pushing pressure on Authorities to extend infrastructure to accommodate larger cruise ship. Infrastructure investment plays a vital role in attracting cruise passengers and spreading the economic benefits of cruise ship approaches to port cities (Dwyer & Forsyth, 1996; Chang et al., 2016; Karls & Polemis, 2018). The economic impact is expected to vary at local, regional and national level (Dwyer & Forsyth, 1998).
through its tenth year of economic recession. This paper examines whether there is a correlation, and in what extent, between firstly, the cruise passengers’ arrivals, secondary, the air arrivals of foreign passengers affect the GDP per capita of the region, and especially on the Mediterranean region. Section 4 presents the methodology used for calculating the impact of cruise activity in Regions / Regional Units of Greece and the empirical results of this research. Finally, the paper concludes by discussing the results and discusses suggestions for further research as well as the potential use for policy formation from the cruise ports of the Regional Unit / Region.

Chart 2: Development of cruise popular destinations, 2018

<table>
<thead>
<tr>
<th>Region</th>
<th>Share of Total Passengers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alaska</td>
<td>4.70%</td>
</tr>
<tr>
<td>Asia apart from China</td>
<td>4.30%</td>
</tr>
<tr>
<td>Australia / New Zealand</td>
<td>4.80%</td>
</tr>
<tr>
<td>Caribbean</td>
<td>34.40%</td>
</tr>
<tr>
<td>China</td>
<td>4.90%</td>
</tr>
<tr>
<td>Europe except from...</td>
<td></td>
</tr>
<tr>
<td>Mediterranean</td>
<td>11.10%</td>
</tr>
<tr>
<td>North America</td>
<td>17.30%</td>
</tr>
<tr>
<td>Other Destinations</td>
<td>16.20%</td>
</tr>
</tbody>
</table>

Source: Cruise Market Watch, www.cruisemarketwatch.com

During the global economic crisis, the cruise industry is an indicative example showing the notable resistance to economic recession (Lekakou, Stefaniadíki & Vaggelas, 2011). The rapid growth of the cruise industry has increased the interest of many countries as they consider it to be the key to tourism development. For the economic impact of the cruise industry, many international metropolises have been affected by the cruise economic element (Sun, Jiao & Tian, 2011; Sun, Feng & Gauri, 2014) and are economically dependent on the sector (Teye & Leclerc, 1998; Sun, Feng & Gauri, 2014). Several destinations are interested in being included in the selected group of ports selected by the cruise companies (Lekakou, Pallis & Vaggelas, 2009). Many ports are aimed at attracting cruise companies, as the economic contribution to the site increases significantly and the result is longer lasting (Lekakou & Stefaniadíki, 2015) and policymakers argue that it is worth spending money to build new terminals and for expanding infrastructure (Brida, Riano & Zapata-Aguirre, 2011). For example, emerging markets, such as Asia, Australia and the New Zealand region, are growing rapidly and they are trying to build and improve port infrastructure to be selected as part of a selected group of ports by large cruise companies (Brida et al., 2012a; b; Sun, Feng & Gauri, 2014). In particular, more than 20 ports have been built to attract cruise ships in Asia and many of the biggest cruise companies have launched cruises to this market (Sun, Feng & Gauri, 2014). Though, in terms of cruise lines, the business is limited by the size and development of existing environmental protection infrastructures and regulations (Pierce et al., 2019).

According to the results of the International Cruise Companies (CLIA) annual study published in 2017, cruising has a significant positive impact on the world economy. The study estimates the total economic impact of the cruise on the global cruise at $133.96 billion, taking into account the indirect and associated costs, offering full-time employment to 1,108,676 million employees and $456 billion in 2017 revenue. For this reason, in the year 2018, thirteen new cruise ships with a capacity of 33,379 passengers were added to the existing cruise ship list. From 2018 to 2020, 37 new cruise ships with a capacity of 99,895 passengers are expected to add 11.7 billion annual revenues to the global industry (Cruise Market Watch, 2018).

Therefore, cruise companies are required to introduce new products (routes) with a larger and more diversified range of ships and duration of journeys, in order to differentiate themselves from competitors and to attract different market segments (Bagis & Dooms, 2014; Navis & Tsietos, 2018). Specifically, companies set up ports that include ports of different sizes, as each type of port provides different types of experiences by highlighting different types of customer attraction among different port access options (Esteve-Perez & Garcia-Sanchez, 2018). In their search for new destinations, companies consider port geopolitics, congestion, modernization of infrastructure, effective port services, institutional stability of cruise destinations and the level of port and tourist hinterland security to provide ‘safe and comfortable’ routes. These factors influence both the continuous development of the cruise destination and the success of a particular itinerary (Esteve-Perez & Garcia-Sanchez, 2018). They note that travelers may present different patterns depending on whether they are in a homeport or a transit port. Although travelers in a transit port give priority to local attractions, travelers to a homeport end to get in touch with locals and gain experiences through local culture. Also important is the interaction between residents and visitors, in which if they were satisfied, then positive impressions of their trip were formed and fulfilled the wishes, expectations and needs created by the travel decision (Chen & Tsai, 2007; Artal-Tur, Villena-Navarro & Alama-Sabater, 2018). If tourists are satisfied then they will visit the destination.
The cruise industry continues to show strong dynamics in Europe and is a key market for the global cruise industry (Simantini, Skikou & Trillas, 2015). The Mediterranean basin has become a particularly attractive destination, both for cruise tourists and for companies operating in the cruise industry (Skagiannis & Rallias, 2012). The Mediterranean market can be subdivided into the east and west, with the Italian peninsula being a natural frontier (Lekakou & Stefanidaki, 2015). Several specific geographic markets can be distinguished in the Eastern Mediterranean, namely: (i) the Aegean, (ii) the Black Sea (iii) Levante (Cyprus – the Holy Land – Egypt) and (iv) Venice – the Adriatic – Ionian Sea (Lekakou & Stefanidaki, 2015).

The main pioneering markets are Germany, the United Kingdom (including Ireland), Italy, Spain and France. The number of passengers in Europe increased from 5.5 million to 6.96 million, representing 26% (CLIA, 2018). The Mediterranean is a self-contained market with most cruises coming and ending in this particular area. Many Mediterranean regions with key ports accepted the new role as “tourist ports” (Rosa-Jimenez et al., 2018; McCarthy, 2003). In the Mediterranean basin, it corresponds to 60% of the capacity cruisers in the Mediterranean basin. In Greece, the origin was Tenerife, and the port of Piraeus occupies 5th place. Important Mediterranean destinations of cruise tourism include: (i) the Aegean, (ii) the Black Sea (iii) Levante (Cyprus – the Holy Land – Egypt) and (iv) Venice – the Adriatic – Ionian Sea (Lekakou & Stefanidaki, 2015).

In the year 2017, the main port of the Mediterranean remains Barcelona, while the port of Piraeus occupies 5th place. Important Mediterranean destinations of cruise tourism are: (i) the Aegean, (ii) the Black Sea (iii) Levante (Cyprus – the Holy Land – Egypt) and (iv) Venice – the Adriatic – Ionian Sea (Lekakou & Stefanidaki, 2015).

According to MedCruise’s annual data (2017), in Table 1 listed the ten ports of MedCruise members. Barcelona, Rome (Civitavecchia) and Tenerife were the only ports to increase passenger movements compared to 2016. Tenerife grew by 9.1% to 7th place. Barcelona increased passenger movements by 1.1% and remained in the first place, while the Balearic Islands increased by 7.8% and consolidated 3rd. It is noteworthy that the Balearic Islands increased passenger movements by 36.93% in the last five years. Similarly, Tenerife has increased passenger movements by 21.43% over the last five years.

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</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>Barcelona</td>
<td>2.712.397</td>
<td>6.330.894</td>
<td>1.057%</td>
<td>2.590.232</td>
<td>4.351%</td>
<td></td>
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<tr>
<td>2</td>
<td>2</td>
<td>Rome (Civitavecchia)</td>
<td>2.204.894</td>
<td>2.399.676</td>
<td>5.7%</td>
<td>2.358.259</td>
<td>13.14%</td>
<td></td>
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</tr>
<tr>
<td>3</td>
<td>3</td>
<td>Barcelona (Cruise)</td>
<td>2.110.640</td>
<td>1.957.429</td>
<td>7.2%</td>
<td>1.541.176</td>
<td>23.69%</td>
<td></td>
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<tr>
<td>4</td>
<td>4</td>
<td>Marseilles</td>
<td>1.470.513</td>
<td>1.597.213</td>
<td>-8.9%</td>
<td>1.188.051</td>
<td>25.14%</td>
<td></td>
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<tr>
<td>5</td>
<td>5</td>
<td>Venice</td>
<td>1.427.812</td>
<td>1.405.660</td>
<td>-1.0%</td>
<td>1.015.823</td>
<td>21.37%</td>
<td></td>
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<tr>
<td>6</td>
<td>7</td>
<td>Piraeus</td>
<td>1.055.259</td>
<td>1.094.135</td>
<td>-3.5%</td>
<td>1.102.381</td>
<td>18.64%</td>
<td></td>
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<tr>
<td>7</td>
<td>10</td>
<td>Tenerife</td>
<td>964.327</td>
<td>896.173</td>
<td>7.0%</td>
<td>794.151</td>
<td>21.43%</td>
<td></td>
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</tr>
<tr>
<td>8</td>
<td>9</td>
<td>Naples</td>
<td>927.498</td>
<td>1.106.155</td>
<td>-20.0%</td>
<td>1.175.018</td>
<td>21.07%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>8</td>
<td>Genova</td>
<td>925.188</td>
<td>1.017.368</td>
<td>-9.0%</td>
<td>1.050.085</td>
<td>11.89%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>7</td>
<td>Civitavecchia</td>
<td>842.864</td>
<td>995.083</td>
<td>-20.0%</td>
<td>995.083</td>
<td>-50.1%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


In the case of the European Union, the main contribution of the global cruise industry is attributed to three factors. Firstly, the majority of orders for cruise ships are placed in European shipyards (Italy, France, Germany). Secondly, a significant number of passengers come from European Union countries, namely Germany, the United Kingdom and Ireland, Spain and Italy. Finally, the abundance of cruise destinations, both in the Mediterranean and secondarily in northern Europe, has helped to develop the cruise industry and to increase the costs incurred by passengers, cruise companies and cruise liners (Organization of Research and Analysis, 2018).

According to the results of the annual International Cruise Companies Association (CLIA) study published in 2017, the direct financial contribution of cruise activities to the European economy amounted to $ 21.34 billion (spending by cruise companies, passengers and crew members). The study estimates the total economic impact of the cruise on the European economic at $ 51.85 billion, taking into account the indirect and incurred costs. On the European continent, 403,621 jobs have been retained.

According to CLIA Europe (2017), 40 cruise companies are based in Europe, operating 157 ships with a capacity of approximately 164,000 beds. Another 75 ships with a capacity of about 95,000 beds are being deployed in Europe by 23 non-European cruise lines. In addition, in the Mediterranean market, the dominant companies are Carnival Corporation & plc (CCL) and Royal Caribbean Ltd. (RCL), which account for 60% of the market, while MSC Cruises account for 20% (Karls & Polemis, 2018; Cusano, Ferrari & Tei, 2017).

### 4. The Greek cruise tourism

At present, the Greek cruise tourism can be considered as a significant participant in the broader East Mediterranean market. Greece as the country with the longest coastline and numerous islands, mild climate, rich cultural and religious background, gastronomy, local tradition and culture, and natural environment make it one of the most important tourist destinations in the world and especially in the Mediterranean basin. In Greece, the origin of cruising goes back to 1930s, at a time when the first Greek cruise firms introduced cruising routes in the Aegean Sea and the greater area of the Mediterranean basin (Diamokhailis, 2009; Diamokhailis et al., 2009). In particular, Greece is the fourth popular destination of the Mediterranean area, but it is in the eighth in revenue from the specific market (Organization of Research and Analysis, 2018). The tourism sector in Greece has undergone significant changes in recent decades. It is worth noting that, up to 1999, the Greek cruise sector was operating under cabotage protection. The aim of the European Law (No 3577/92) was to create a market between the Member States and the equalization of all European flags. Nowadays, the Law No 4439/2016, has been included the Community Directive on the use of liquefied natural gas. For Greece, the ports of Piraeus, Thessaloniki, Igoumenitsa, Heraklion and Patras should be able to supply ships with LNG fuel (Nautemporiki, 2018). It is noted that after 1999, none of the companies-
The research examines the impact of the cruise industry on GDP growth of Regions / Regional Units of Greece. In particular, we examine whether there is a correlation, and in what extent, between firstly, the cruise passengers' arrivals, secondary, the air arrivals of foreign passengers affect the GDP per capita of the Region and/or Regional Unit of Greece in the period 2010 and
2016 by applying comparison of different time intervals of the three variables. The findings are important in identifying the impact of the total of passengers’ arrivals (cruise passengers’ arrivals and the air arrivals of foreign passengers) on GDP growth of Regions / Regional Units of Greece.

Our empirical approach is based on data, collected from a range of official sources: including national accounts derived from the Union of Greek Ports (ELIME, 2019), the Hellenic Statistical Authority (ELSTAT, 2019) and the Bank of Greece (Bank of Greece, 2019) and the Civil Aviation Authority (CAA, 2019). In particular, the Gross Domestic Product (GDP) per capita by Regional Unit and / or Region is annual (in euros and current prices) and we derive it from the Hellenic Statistical Authority for the period 2010-2016, the cruise passengers’ arrivals are annual and we obtained it from the Union of Greek Ports for the period 2010-2018 and the air arrivals of foreign passengers in Greece are annual and we obtained it from the Bank of Greece and the Civil Aviation Authority for the period 2010-2017, respectively.

Based on our empirical findings, we result that in the Region of Attica, the Regional Unit of Kavala, the Regional Unit of Thessprotia, the Regional Unit of Fokida, the Regional Unit of Kefalonia indicates an increase in the total of passengers’ arrivals (cruise passengers and air arrivals of foreign passengers), which does not affect GDP per capita, as it decreases. On the other hand, the Regional Unit of Evros, the total of passengers’ arrivals (arrivals of cruise passengers and air arrivals foreign passengers) decreases, which does not affect GDP per capita, as it increases. Moreover, for some Regional Units (e.g. Regional Unit of Thessaloniki, Regional Unit of Preveza, regional unit of Achaea and Ila, Regional Unit of Messinia, Regional Unit of Laconia, Regional Unit of Argolis, Regional Unit of Crete, Regional Unit of Zakynthos, Regional Unit of Kerkira, Regional Unit of Magnisia, Region of North Aegean Sea, Region of southern Aegean Sea) we have mixed results.

From the above, we take into consideration the Regional Unit of Kerkira and the Regional Unit of Thessaloniki, in which their ports operate as homeports. Moreover, the Regional of Crete, one of the most popular destinations of Greece, has got 5 ports of which the port of Heraklion operates as homeport. The Regional Unit of Argolis, at the same time is famous for the historical centre and the port of Nafplio. The Region of Southern Aegean Sea concludes the island complexes of Cyclades and the Dodecanese. The most famous ports are Mykonos, Santorini, Rhodes, etc. The Region of North Aegean Sea concludes the famous islands, Lesvos, Limnos, Ikaria, Chios and Samos. From the year 2015, the islands, Lesvos, Limnos, and Samos have come to terms with the refugee crisis. The results of the research are listed in the table below (Table 3).

More specifically, from the Regional Unit of Argolis (Port of Nafplio), we result that, the year 2016 compared to the year 2010, the arrivals of cruise passengers decline by 22.80%, which they might affect GDP per capita, decrease by 18.7%. Also, in the period 2014-2016, the cruise passengers increase by 32% and they might affect the increase in GDP per capita by 0.7% (Chart 5).

**Table 3: Empirical Findings**

<table>
<thead>
<tr>
<th>Regions / Regional Units</th>
<th>Periods</th>
<th>GDP per capita</th>
<th>Total of cruise passengers</th>
<th>Total of air arrivals foreign passengers</th>
<th>Total of arrivals</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Region of Crete</td>
<td>2010-2016</td>
<td>-3.6%</td>
<td>15.8%</td>
<td>17.7%</td>
<td>13.2%</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>2014-2016</td>
<td>0.6%</td>
<td>13.3%</td>
<td>15.6%</td>
<td>15.3%</td>
<td>Yes</td>
</tr>
<tr>
<td>Regional Unit of Thessaloniki</td>
<td>2016/2010</td>
<td>-19.9%</td>
<td>18.9%</td>
<td>151%</td>
<td>66%</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>2015/2016</td>
<td>2%</td>
<td>12.6%</td>
<td>14.5%</td>
<td>7.1%</td>
<td>Yes</td>
</tr>
<tr>
<td>Regional Unit of Kerkyra</td>
<td>2010-2016</td>
<td>2.8%</td>
<td>15.1%</td>
<td>9.2%</td>
<td>14.3%</td>
<td>No</td>
</tr>
<tr>
<td>Regional Unit of Argolis</td>
<td>2016/2010</td>
<td>-18.7%</td>
<td>22.80%</td>
<td>12.8%</td>
<td>22.80%</td>
<td>Yes</td>
</tr>
<tr>
<td>Regional of North Aegean</td>
<td>2010/2016</td>
<td>-4.2%</td>
<td>12.4%</td>
<td>1.3%</td>
<td>21%</td>
<td>No</td>
</tr>
<tr>
<td>Regional of Southern</td>
<td>2014/2016</td>
<td>-1.7%</td>
<td>14.4%</td>
<td>1.7%</td>
<td>7.7%</td>
<td>Yes</td>
</tr>
<tr>
<td>Aegean Sea</td>
<td>2016/2010</td>
<td>-19%</td>
<td>11%</td>
<td>14%</td>
<td>36%</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>2014/2016</td>
<td>-1.2%</td>
<td>14.5%</td>
<td>1.7%</td>
<td>5.2%</td>
<td>No</td>
</tr>
</tbody>
</table>

Source: Authors calculations

Also, the Region of North Aegean Sea, in the period 2010-2016, the total of passengers’ arrivals increases by 21% (an increase of 24% in cruise passengers, decrease in air arrivals of foreign passengers by 3%) and does not affect the GDP per capita, as it decreases by 4.2%. On the other hand, in the period 2014-2016, the total of passengers’ arrivals declines by 7.7% (a decrease of 4% in cruise passengers and 3.7% in air arrivals of foreign passengers) and they might affect the decline in GDP per capita by 1.7% (Chart 6).

**Chart 5: GDP per capita and cruise passengers’ arrivals of Regional Unit of Argolis, 2010-2018**

Source: Processing data of Union of Greek ports, www.elime.gr

**Chart 6: GDP per capita, cruise passengers’ arrivals and air arrivals of foreign passengers of Region of North Aegean Sea, 2010-2018**

Source: Processing data of Union of Greek ports, www.elime.gr

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2 www.elime.gr
3 https://www.statistics.gr/el/statistics/-/publication/SEL57/-
4 https://www.bankofgreece.gr/Pages/el/Statistics/externalsector/balance/travelling.aspx
5 http://www.ypa.gr/editions/statistical-data/
Also, the Region of southern Aegean Sea, the year 2016, compared to the year 2010, the total of passengers’ arrivals increases by 38% (11% decrease in cruise passengers, an increase in air arrivals of foreign passengers by 49%), which does not affect the GDP per capita, decline by 18%. Moreover, the period 2014-2016, the total of passengers’ arrivals increases by 5.2% (an increase of 0.5% in cruise passengers and 4.7% of air arrivals of foreign passengers) which does not affect the decline in GDP per capita by 0.2%. Specifically, Cyclades, the year 2016 compared to the year 2010, the total of passengers’ arrivals increases by 143% (17% increase in cruise passengers, increase in air arrivals of foreign passengers by 136%) which does not affect the decline in GDP per capita, decline by 19%. Moreover, the period 2014-2016, the total of passengers’ arrivals increases by 21% (increase 4% in cruise passengers and 17% of air arrivals of foreign passengers) which does not affect the decline in GDP per capita by 0.1%).

## Chart 7: GDP per capita, cruise passengers and air arrivals of foreign passengers of Region of Southern Aegean Sea, 2010-2018

![Chart 7: GDP per capita, cruise passengers and air arrivals of foreign passengers of Region of Southern Aegean Sea, 2010-2018](source: Processing data of Union of Greek ports, www.elime.gr)

### 6. Conclusions and implications

The cruise industry has recorded considerable growth in the last decades. A significant number of ports have been included in cruise itineraries. In particular, the Caribbean owns the first place, while the Mediterranean region remains in second place, even though there is a decrease in passenger volumes. Moreover, the rate of growth of the Asian cruise market has increased and a lot of cruise companies have turned in this market. This has led to an increase in competitive pressures for cruise ports around the world. Especially, the Southeast Mediterranean as a cruise destination has diminished, as a number of external factors such as the Arab Spring, the adoption of tax measures from southern countries, the war in Syria, the political instability in Turkey and the negative publicity accompanies the socio-economic crisis experienced by our national economy has helped the cruise companies to turn into new destinations.

The present research analyzed if there is a correlation between cruise passengers and air arrivals of foreign passengers and affect on GDP per capita between 2010 and 2016 in ports of Greece. Based on the findings of the research there seem to exist impact of cruise tourism on GDP per capita for some Regional Units / Regions of Greece for defined time intervals. Especially, the Region of Crete, the Regional Unit of Kerkira and the Region of North Aegean Sea, for the period 2014-2016, indicates an increase in the total of passengers’ arrivals which affects the GDP per capita, as it increases, whereas for the period 2015-2016, the Regional Unit of Thessaloniki, indicates an increase in the total of passengers’ arrivals (cruise passengers and air arrivals of foreign passengers) which affect the GDP per capita, as it increases, whereas from the comparison of the years 2016/2010, records a decrease in GDP per capita. On the other hand, the Regional Unit of Argolis, for the period 2014-2016, indicates an increase in the cruise passengers, which affect the GDP per capita, as it increases, whereas from the comparison 2016/2010, records a decrease in cruise passengers which affect the GDP per capita, as it declines. The Region of Southern Aegean Sea, for the period 2014-2016, indicates an increase in the total of passengers’ arrivals which does not affect the GDP per capita, as it decreases, whereas for the period 2010-2016, records an increase in the total of passengers’ arrivals, even though there is an 11% decline in cruise passengers, which does not affect the GDP per capita, as it declines. Especially, the Cyclades present an increase in the total of passengers’ arrivals (an increase in cruise passengers and air arrivals of foreign passengers), whereas the GDP per capita declines. On the other hand, the Dodecanese present a decrease in the total of passengers’ arrivals, with a noticeable drop in cruise passengers, which affects the decline in GDP per capita.

As we observe from the results, the Region of Crete, in the period 2014-2016, presents a 0.3% decline in cruise passengers, as the ports of Heraklion, Sitia and S. Nikolaou have been affected by the external factors of the Southeast Aegean. Also, the Regional Unit of Thessaloniki presents a continuous increase in cruise passengers and air arrivals of foreign passengers. Moreover, the Regional Unit of Kerkira presents an increase in cruise passengers, because the cruise companies have turned in the islands of Ionian Sea, which are closer to the ports of Italy in order to avoid the Southeast Mediterranean. Moreover, the Regional Unit of Argolis, as a historical town, relies on tourism and especially the cruise tourism and the increase or the decrease in the passengers’ arrivals directly affects the GDP per capita. Furthermore, the Region of North Aegean Sea, in the period of 2014-2016, presents a noticeable decline in cruise passengers and air arrivals of foreign passengers, which is affected by the refugee crisis. Also, the Dodecanese have been influenced by the events that happen in this area, as the islands present a noticeable decline in cruise passengers. On the other hand, Cyclades present a noticeable increase in cruise passengers and air arrivals of foreign passengers, which does not affect the GDP per capita as it declines. The GDP per capita of the Regions / Regional Units declines. According to research, by the year 2015, there is a reduction in the average spending per passenger’s arrival and this results in a continuous decline in the GDP per capita, respectively.

As we conclude, the ports of Greece compete with ports of the Mediterranean region (e.g. Barcelona, Rome), which operate as homeports. Most ports of Greece operate as transit calls and the cruise passengers stay for five and six hours at the port. This is not enough for tourists, airline connections, safe and comfortable routes, facilitation of cruise ships, connection with historical sites, etc. These results can be useful during the stage of marketing in order to implement strategies for the investment decisions, the improvement of infrastructure (passenger terminals, berth allocation systems, installation of power supply systems, etc.) and to penetrate new tourist markets. The image of a port during the stay of tourists can influence future behavioral intentions. If tourists are satisfied, they will return and they will recommend the destination to others. It is important to enhance the cultural image in order to attract visitors who are interested in historical areas. Moreover, it is necessary to connect the cruise tourism with other alternative forms of tourism (agritourism, adventure tourism, religious tourism, wine tourism, etc.), so that ports of Greece could have a competitive advantage with other ports of Mediterranean countries.

Further research is required to investigate the competitiveness of transit ports of Greece with other ports of the Mediterranean region. In addition, it will be fruitful to undertake further research between the ports of Greece, which operate as homeports.

### References


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