

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, & Ioakeimidis, 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).

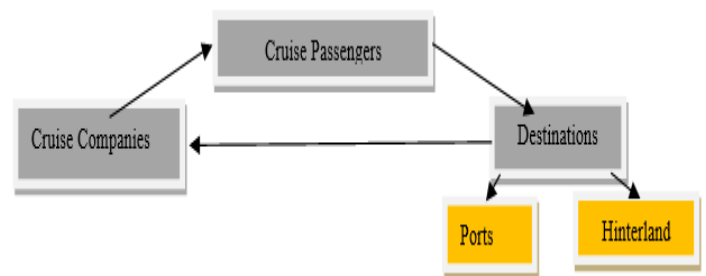
Due to the negative effects of mass tourism, since the early 1980s, interest has shifted to alternative forms of tourism (Järviuoma, 1992). Cruise tourism, part of Maritime Tourism, presents increasing trends in both the demand and the offer of products and is emerging to become one of the fastest-growing segment of the tourism industry (Sun, Feng & Gauri, 2014; Sanz Blas & Carvajal-Trujillo, 2014; Dowling & Weeden, 2017; McCaughey, Mao & Dowling, 2018). The cruise sector 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 & Cecil, 2008; Klein, 2007; Jonhson, 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; Erkok, Iakovou & Spaulding, 2005; Karlis & Polemis, 2018) as well as the itinerary, which includes transit ports along the journey (Esteve-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; Esteve-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 (Esteve-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

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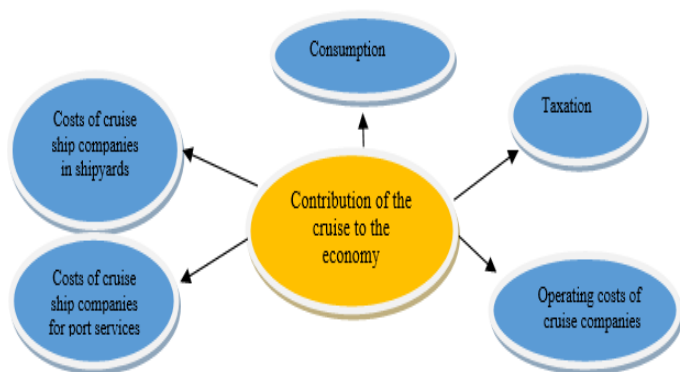
still a central component of consumer cruise selection (Johnson, 2006; Esteve-Perez & Garcia-Sanchez, 2015). Furthermore, choosing a port needs to be attractive, that is, near or in the vicinity of other cruise ports, in order to plan a route. Moreover, in a series of intermediate ports there must be a mix of 'must-see' ports and ports to be discovered, depending on the tourist attractiveness of each port. 'Must-see' ports are world-famous ports that are essential for any route. Discovery ports are not universally known, but they do offer a sense of discovery of an unknown treasure (Rodrigue, Comtois, & Slack, 2013; Esteve-Perez & Garcia-Sanchez, 2018).

According to their use by cruise companies, cruise ports are distinguished in three categories (Lekakou, Pallis & Vaggelas, 2009; Lekakou, Pallis & Vaggelas, 2009a; Lekakou, Pallis & Vaggelas, 2009b; Troumpetas et al., 2015; Pallis et al., 2017). The first one is that of homeports. These ports are the starting, or ending point for a cruise, or even both these points. The second category is the port calls or transit calls, in which cruise ships stay for a specific short time of between 5 and 6 hours (Brida et al., 2012). The third category is the hybrid ports, which are a blend of the previous categories; these ports are homeports for some cruise itineraries but they also act as intermediate ports for other cruise itineraries.

Therefore, the establishment of a port as a homeport is directly related to the provision of integrated services for cruise ships, crew members and passengers, as well as the ability of the port hinterland to ensure passenger accommodation, etc. (Niavis & Vaggelas, 2016). Most ports aim to attract services that provide a large margin and have a high economic impact on local communities (Kefala, 2016). The cruise sector relies on the deep interconnection between sites, contributing to their development at social, cultural and economic level (Dowling, 2006). The economic impact of cruising on a port destination is identified in the consumption activity of three sources, the cruise companies themselves, the cruise passengers and the vessels crews (Lekakou, Stefanidaki & Vaggelas, 2009c; Pallis et al., 2017; Brida & Zappata, 2010). The cruise industry is a major source of income for cruise lines and workers, and multiplier benefits are generated in the visited destinations by increasing or improving profits, tax revenue, employment, foreign exchange earnings and economies of scale, raising living standards, improving infrastructure, maintaining and harnessing urban and rural areas, improving public services, improving the quality of catering services, which also spread to neighboring areas with cruise ships' ports, such as hotels, restaurants, transportation, local attractions (Perce et al., 2018; Dwyer & Forsyth, 1998; Liu & Var, 1986; Akis, Peristianis & Warner, 1996; Tosun, 2002; Brida et al., 2012a,b).

The economic benefits affecting the local, regional and national economy include: a) supplies (consumable, food, clothing, fuels, lubricants, etc.); b) port services (mooring, light dues, etc.), c) local and State tax revenue; d) shipyards (buildings and repairs); e) passenger and crew spending (Dwyer & Forsyth, 1998; Diakomihalis et al., 2009; Castillo-Manzano, Lopez-Valpuesta & Alanis, 2014).

Figure 2: The effect of the cruising on the economy



Source: Lekakou & Pallis (2005)

In addition, the continuing increase in ship size and the average number of passengers per port are putting pressure on Authorities to extend infrastructure to accommodate larger cruise ships. 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; Karlis & Polemis, 2018). The economic impact is expected to vary at local, regional and national level (Dwyer & Forsyth, 1998).

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, shops) (Lopes & Dredge, 2018).

Prior to 2000, academic research related to the cruise sector was limited (Wild & Dearing, 2000; Papathanassis & Beckmann, 2011). Papathanassis & Beckmann (2011) note that cruise tourism research is often conducted in a highly controlled environment where cruise operators maintain 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 & 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 (eg Brida & Zapata, 2010; Dwyer, Douglas & Livaic, 2004; Dwyer & Forsyth, 1998; Eijgelaar, 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 & Braithwaite, 1990; Silvestre, 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 returning cruise liners to visit in the same destination as individual tourists or recommend to the friendly people, which creates the so-called «showcasing effect» (Gabe, Lynch & McConnon, 2006). Recent research focuses on the perceptions and behaviors of residents for the development of cruise tourism in their area (eg 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., 2007), the islands of Italy, Sicily and Sardinia (e.g. Pulina, Meleddu & 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 Greek cruise companies choose the homeport. Andriotis & Agiomirgianakis (2010) 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 as an emerging area for cruises and concluded that cruising is a promising sector for the island's economy. Stefanidaki & 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

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/or regional unit of Greece in the period 2010 and 2016 by applying different time intervals of the three variables. The findings are important in identifying the impact of the cruise industry on GDP growth of Regions / Regional Unit of Greece.

The article is structured as follows. Section 2 analyses the features of the global cruise market and Section 3 focuses on the European cruise market and especially on the Mediterranean region. Section 4 analyses the features of the Greek cruise market and presents the ports of Regional Units of Greece. Section 5 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.

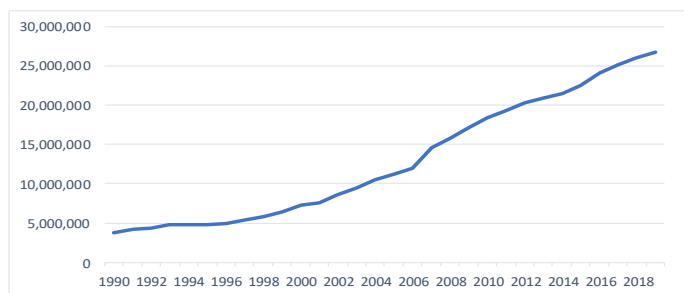
2. The World Cruise Market

Cruise tourism has recorded continuous growth the last twenty years, despite the economic crisis, with the average growth of 7% per annum (FCCA, 2017; Karlis & Polemis, 2018; Vaya et al, 2018; Simantiraki, Skivalou & Trihas, 2015). The global increase in cruise passengers since 1990, when 3.8 million people decided to take a cruise within a year. In 2004, more than 10 million people took a cruise within a year (UNWTO, 2017). CLIA (2018), points out that global demand for cruises has increased by 50% from 17.8 million passengers in 2009, to 26.7 million in 2017 representing an increase of 5.4% annually. 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 & Cecil, 2008; Klein, 2007; Jonhson, 2002; Marsh, 2012; Ritter & Schafer, 1998; Rodrigue & Notteboom, 2013; Rosa-Jimenez et al., 2018; Dragovic et al., 2015).

This market is an oligopoly, after some integrations and acquisitions and 80% is dominated by three companies (Carnival Corporation & plc (CCL), Royal Carribean Ltd. (RCL), Norwegian Cruise Line (NCL) (Lekakou, Pallis & Vaggelas, 2009a; Lekakou, Pallis & Vaggelas, 2009; Lekakou, Stefanidaki & Vaggelas, 2011; Chang, Lee & Park, 2017; Vaggelas & Pallis, 2016; Bjelicic, 2012) and achieve a portfolio of widely recognized cruise brands that serve different lifestyles and budgets, targeting different cultures and demographic groups (Datamonitor, 2012). The structure of the oligopolistic market in the cruise sector has its roots in two factors: the huge fixed costs required for the operation of the cruise and the high entry barrier (Papatheodorou, 2006; Chang, Lee & Park, 2017).

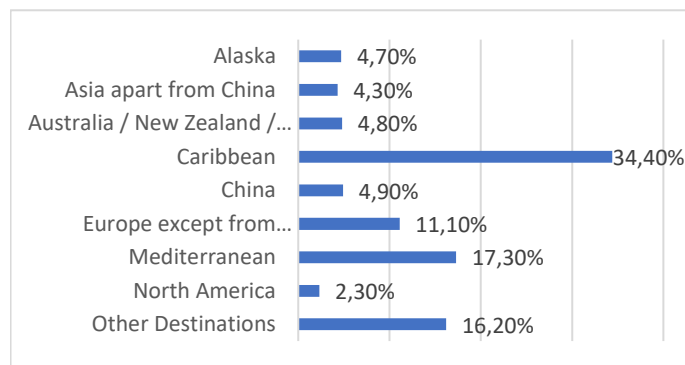
Although the main tourist destination of cruise ships was the Caribbean in the 1970s, which serves the 34% of the total cruise passengers, the following years appeared destinations like Gulf of Mexico, Atlantic, Pacific, Northern Europe, Asia, Australia, New Zealand and especially the Mediterranean region, which is the second most popular destination (17%) (Vaya et al., 2018; Rosa-Jimenez et al., 2018; Mancini, 2014; Sun, Feng & Gauri, 2014). The European cruise industry has been on the rise as demand for cruises has increased by 72% over the last decade (CLIA, 2018). The cruise market in Asia has also grown rapidly in recent years. The annual number of cruise passengers in Asia increased from 0.85 million in 2005 to 1.27 million in 2010 and is expected to reach 2.02 million in 2020 at a growth rate of 4.8% (CLIA, 2011). The Asian market differs from the South American and European market in terms of different stages of development, demographic characteristics and travel choices (Chang et al., 2016).

Chart 1: Arrivals of cruise passengers worldwide



Source: Cruise Market Watch, www.cruisemarketwatch.com

Chart 2: Development of cruise popular destinations, 2018



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, Stefanidaki & 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 & Stefanidaki, 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 (Pesce et al., 2018).

According of 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 \$ 45.6 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 durations of journeys, in order to differentiate themselves from competitors and to attract different market segments (Bagis & Doms, 2014; Niavis & Tsiotas, 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 tend 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

again and they recommend it to friends and relatives (Geng-Quin Chi & Qu, 2008; Yuksel, Yuksel & Bilim, 2010; Kozak & Decrop, 2008; Artal-Tur, Villena-Navarro & Alama-Sabater, 2018).

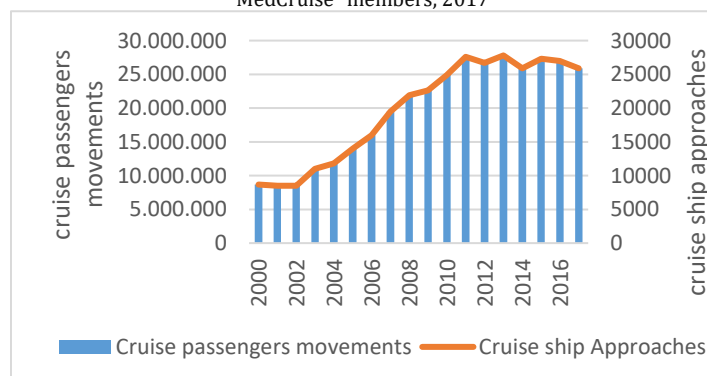
3. The European Market

The cruise industry continues to show strong dynamics in Europe and is a key market for the global cruise industry (Simantiraki, Skivalou & Trihas, 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 & Tzannatos, 2000; 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 developed in Europe with 28 million days of residence (CLIA, 2018). In the year 2017, the main port of the Mediterranean remains Barcelona, while the port of Piraeus occupies 5th place. Important Mediterranean destinations or transit ports are Rome (Civitavecchia), Palma of Mallorca, Venice, Genoa, Savona, Marseille, Tenerife (CLIA, 2018; Vaya et al., 2018). Correspondingly, northern Europe grew by 18.8 million days of stay. Most cruises come and end in the area. The main port is Southampton, while the most important destinations are Stockholm, St. Petersburg, Lisbon (CLIA, 2018). In particular, in the last decade, in the Mediterranean, the number of passengers has risen by 111% (Karlis & Polemis, 2018). However, in the period 2011 – 2016, there was a 16% reduction in cruise ship approaches and 4% on passenger throughput, respectively. This change in trend comes from external factors, such as the Arab Spring, the fiscal measures adopted by southern countries, the war in Syria, the political instability in Turkey and the negative publicity accompanying the socio-economic crisis that Greek economy is experiencing. These events have reduced the attractiveness of the southeastern Mediterranean as a cruise destination (Karlis & Polemis, 2018; Organization of Research and Analysis, 2018).

In the year 2017, the ports of the Union "MedCruise" took place 12,139 cruise ship approaches and 25.9 million passenger movements. Compared to the year 2016, the number of ship approaches decreased by 7.3% and passenger movements by 4.1%, respectively (Chart 3).

Chart 3: Cruise passengers' movements & Cruise ships' approaches of "MedCruise" members, 2017



Source: Processing data "MedCruise Report Statistics 2017"
http://www.medcruise.com/sites/default/files/2018-03/cruise_activities_in_medcruise_ports-statistics_2017_final_0.pdf

According to MedCruise's annual data (2017), in Table 1 listed the top 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.

Table 1: Major MedCruise Port Members (Passengers Movements)

Rank 2017	Rank 2016	Port	Passengers Mov. 2017	Passengers Mov. 2016	2017/2016	Passengers Mov. 2013	2017/2013
1	(1)	Barcelona	2.712.247	2.683.594	1.07%	2.599.232	4.35%
2	(2)	Rome (Civitavecchia)	2.204.336	2.339.676	-5.78%	2.538.259	-13.16%
3	(3)	Balearic Islands	2.110.663	1.957.429	7.83%	1.541.376	36.93%
4	(5)	Marseille	1.487.313	1.597.213	-6.88%	1.188.031	25.19%
5	(4)	Venice	1.427.812	1.605.660	-11.08%	1.815.823	-21.37%
6	(7)	Piraeus	1.055.559	1.094.135	-3.53%	1.302.581	-18.96%
7	(10)	Tenerife	964.337	884.173	9.07%	794.151	21.43%
8	(6)	Naples	927.458	1.306.151	-28.99%	1.175.018	-21.07%
9	(8)	Genova	925.188	1.017.368	-9.06%	1.050.085	-11.89%
10	(9)	Savoy	854.443	910.244	-6.13%	939.038	-9.01%

Source: Processing data "MedCruise Report Statistics 2017"
http://www.medcruise.com/sites/default/files/2018-03/cruise_activities_in_medcruise_ports-statistics_2017_final_0.pdf

In the case of the European Union, the major contribution of the global cruise industry is attributed to three factors. Firstly, the majority of new 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 cruise 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 137 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% (Karlis & 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 (Diakomihalis, 2009; Diakomihalis et al., 2009). In particular, Greece is the fourth popular destination of the Mediterranean area, but is 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-

colossus was interested in using Greek ports as homeports. It proves that institutional interventions were inadequate and did not occur increase in cruise passengers at homeporting in the Greek islands (Kefala, 2016; Vaggelas & Stefanidaki, Pallis et al., 2017). The discouraging picture of Greek ports as homeports is due to the lack of a port which has all the necessary prerequisites (port infrastructure) to attract large cruise ships and cruise itineraries throughout the year (Pallis et al., 2017; Troumpetas et al., 2015; Vaggelas & Stefanaki, 2015).

In the Greek Tourism Confederation study (SETE, October 2018), according to data of Bank of Greece, in 2016, cruise passenger arrivals amounted to 3.4 million with an increase of 28.7%, while according to the data of the year 2017, there was a decrease of 10.3%. Most arrivals take place between May and October. Total cruise tourist spending in 2015 amounted to €504 million, in 2016 to €509 million, while in 2017 it decreased to €476 million, or 6.4%. Also, in 2016 and 2017, average spending per passenger's arrival was €150 and €156 respectively, whereas the year 2015 was €191.

The Union of Greek Ports has collected the arrivals of cruise liners and cruise passengers from its members (Port Authority SA) and Members - Observers (Ports Funds). The data relates to cruise ships and passenger visits to each port separately, as cruise travel is cyclical and ship and passenger visits can relate to arrivals to more than one destination (Union of Greek Ports, 2019).

According to data from the Union of Greek Ports (2018), the Greek port system includes forty-three (43) registered destinations (land and island) throughout our country. In their geographical distribution by region, we find (2) ports in the Region of Eastern Macedonia and Thrace, one (1) in the Region of Central Macedonia, two (2) ports in the Region of Epirus, three (3) in the Region of Thessaly and the Region of Ionian Islands, two (2) in the Region of Western Greece, one (1) in the Region of Central Greece, three (3) in the Region of Attica, five (5) in the Region of the Peloponnese, four (4) in the Region of Northern Aegean, twelve (12) ports in the Region of South Aegean and five (5) in the Region of Crete.

The forty-three (43) cruise ports are separated, based on the total number of cruise passengers they host each year, in primary and secondary ports. The main (M) ports include Greek ports that handle 100,000 visitors per annum (based on 2018). Secondary (S) ports include those that handled less than 100,000 passengers for the year 2018 (Table 2). The ten main Greek ports received a total of 4.539.933 million visitors in 2018, or 94.8% of the country's total cruise visitors and 2.805 cruise ship approaches.

Table 2: Primary and Secondary Cruise Ports of Greece, 2018

Category	Description	Number of ports	Ports
Primary ports	Cruise passenger arrivals > 100.000 per year	10	Piraeus, Santorini, Kerkyra, Mykonos, Katakolo, Herakleio, Rhodes, Kefallonia – Ithaki, Chania (Souda), Patmos
Secondary ports	Cruise passenger arrivals < 100.000 per year	33	Nayplio, Volos, Syros, Milos, Samos, Zakynthos, Agios Nikolaos, Hgoumenitsa, Monemvasia, Githio, Skiathos, Kalamata, Symi, Kos, Itea, Naxos, Pylos, Paros, Skopelos, Kavala, Chios, Patra, Thessaloniki, Sitia, Rethymno, Ios, Alexandroupoli (Samothrakes), Limnos, Mytilini, Kythyra, Layrio, Preveza, Andros

Source: Processing data by Union of Greek Ports (2018), www.elime.gr

According to the available data from the Union of Greek Ports (2018), in total, during the period 2010-2018, the above (43) ports of our country were visited by cruise passengers and cruise ship approaches. Despite the significant figures, the trends of recent years are not particularly encouraging. By comparison, cruise ship arrivals to Greek cruise ports in 2010 and at the end of 2018 are down by around 9.8%. In 2010, cruise ship arrivals to Greek ports totaled 5.3 million, with cruise ship approaches reaching 4,677. In 2018, these sizes declined, as cruise passenger arrivals were 519,417 fewer and cruise ship approaches dropped by 1,267 approaches (Chart 4).

Chart 4: Cruise ship arrivals and cruise passenger arrivals in Greek ports, 2010-2018



Source: Processing data by Union of Greek Ports (2010-2018), www.elime.gr

Specifically, according to Union of Greek Ports data available for the year 2018, 3,410 cruise arrivals (vs. 3,415 in 2017) and 4,788,642 cruise visits (vs 4,625,363 in 2017) were recorded in all cruise destinations. In conclusion, retained the same view as 2017, after the same number of arrivals and a slight increase in passenger visits of around 3.5%. Despite the geopolitical problems that have arisen over the last two years in the Eastern Mediterranean, the Greek cruise remains strong.

Currently, six ports (Piraeus, Thessaloniki, Heraklion, Kerkyra, Lavrio, Rodos) from Greek ports also operate as homeports on cruise market (Union of Greek Ports, 2018). In 2018, these ports received 2,234,703 million cruise passengers, or 46.67% of all passengers. Cruise ship approaches amounts to 1.339 (Table 3).

Table 3: Greek Homeports, 2018

No	Port	Arrivals of cruise passengers	Approaches of cruise ships
1(M)	Heraklion	297.929	187
2(S)	Thessaloniki	1.502	5
3(M)	Kerkira	735.832	413
4(S)	Lavrio	0	0
5(M)	Piraeus	961.632	524
6(M)	Rhodes	237.808	210

Source: Processing data by Union of Greek Ports (2018), www.elime.gr

5. Methodology and Results

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.

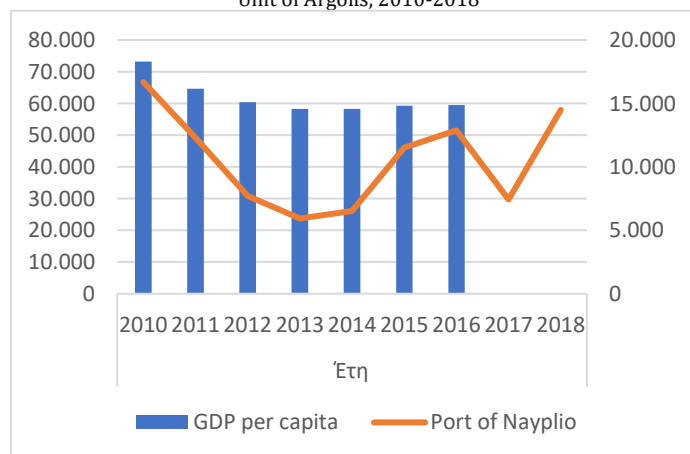
Our empirical approach is based on data, are collected from a range of official sources: including national accounts derived from the Union of Greek Ports (ELIME, 2019¹), the Hellenic Statistical Authority (ELSTAT, 2019¹) and the Bank of Greece (Bank of Greece, 2019¹) and the Civil Aviation Authority (CAA, 2019¹). In particular, the Gross Domestic Product (GDP) per capita by Regional Unit and / or Region is annual (in euro 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 them 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 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 Thesprotia, the Regional Unit of Fokida, the Regional Unit of Kefalonia indicates an increase in the total of passengers' arrivals (arrivals of 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 Achaia and Ilia, Regional Unit of Messinia, Regional Unit of Laconia, Regional Unit of Argolis, Region of Crete, Regional Unit of Zakynthos, Regional Unit of Kerkira, Regional Unit of Magnesia, 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 Region 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 Naflpio. 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, Lesbos, Limnos, Ikaria, Chios and Samos. From the year 2015, the islands, Lesbos, 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 Nayplio), 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).

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

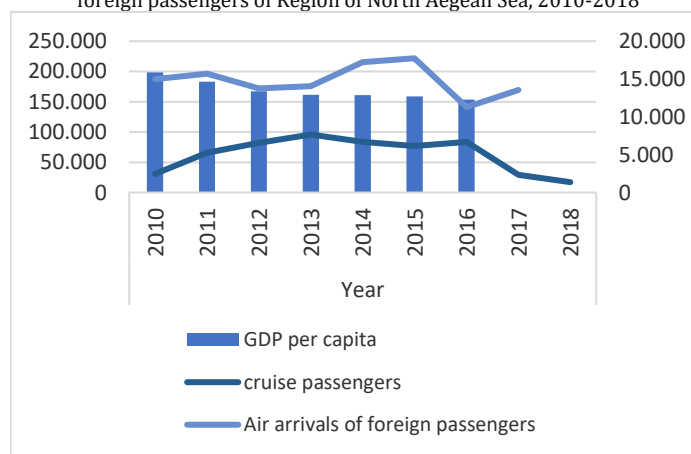
Table 3: Empirical Findings

Regions / Regional Units	Periods	GDP per capita	Total of cruise passengers	Total of air arrivals foreign passengers	Total of arrivals	Effect
Region of Crete	2010-2016	↓ 3.6%	↑ 5.8%	↑ 7.7%	↑ 32%	No
	2014-2016	↑ 0.6%	↓ 0.3%	↑ 5.6%	↑ 5.3%	Yes
Regional Unit of Thessaloniki	2016/2010	↓ 19.9%	↑ 18%	↑ 51%	↑ 69%	No
	2015-2016	↑ 2%	↑ 2.6%	↑ 4.5%	↑ 7.1%	Yes
Regional Unit of Kerkira	2010-2016	↓ 2.8%	↑ 5.1%	↑ 9.22%	↑ 14.3%	No
	2014-2016	↑ 1.7%	↑ 0.7%	↑ 9.5%	↑ 10.2%	Yes
Regional Unit of Argolis	2016/2010	↓ 18.7%	↓ 22.80%		↓ 22.80%	Yes
	2014-2016	↑ 0.7%	↑ 32%		↑ 32%	Yes
Region of North Aegean Sea	2010-2016	↓ 4.2%	↑ 24%	↓ 3%	↑ 21%	No
	2014-2016	↓ 1.7%	↓ 4%	↓ 3.7%	↓ 7.7%	Yes
Region of Southern Aegean Sea	2016/2010	↓ 18%	↓ 11%	↑ 49%	↑ 38%	No
	2014-2016	↓ 0.2%	↑ 0.5%	↑ 4.7%	↑ 5.2%	No

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 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

² www.elime.gr

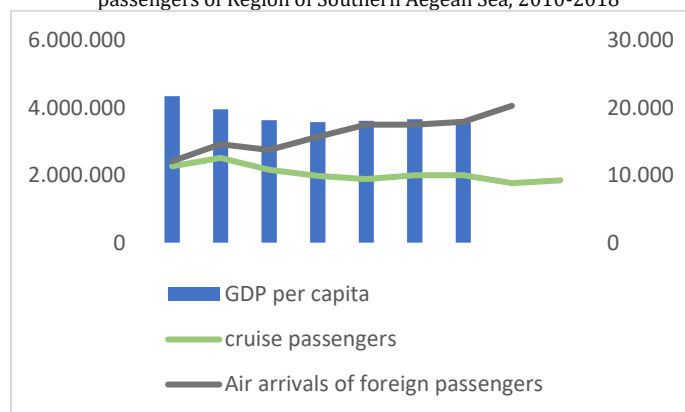
³ https://www.statistics.gr/el/statistics/-/publication/SEL57/-

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% (7% increase in cruise passengers, increase in air arrivals of foreign passengers by 136%) which does not affect the 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%. On the other hand, Dodecanese, the year 2016 compared to the year 2010, the total of passengers' arrivals decreases by 10% (46% decrease in cruise passengers, increase in air arrivals of foreign passengers by 36%) and it might affect the GDP per capita, decline by 17%. Moreover, the period 2014-2016, the arrivals of foreign passengers declines by 6,7% (decrease 9% of cruise passengers and increase 2,3% in air arrivals of foreign passengers) and it might affect the decline in GDP per capita by 0,1% (Chart 7).

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 2010-2016 records an increase in the total of passengers' arrivals, which does not affect the GDP per capita, as it declines. Furthermore, 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. In this case, cruise passengers do not spend money, as they prefer to visit sights. Moreover, most of the ports do not offer services that the cruise companies consider necessary, such as easy access 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.

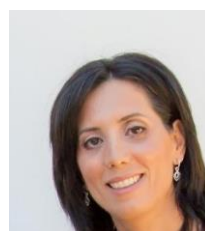
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