

## INFLUENTIAL FACTORS OF PASSENGERS' EXPENDITURES DURING A CRUISE TRIP: THE CASE OF THE GREEK ISLANDS

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### Abstract

Cruise tourism is one of the major components of Greek tourism and tends to be a significant source of income. In recent years, there has been an increase of cruise tourism in Greece. The objective of this study is to provide better understanding of the cruise industry by considering the factors that influence passengers' spending during their cruise trip around the Greek islands. This study relies on a unique sample of 507 cruise passengers who visited Greece by analysing the variables that affect cruise passengers' choice of how they spend their money. Participants were asked to answer various questions about their cruise experience and to provide information about their demographic characteristics. Ordered logit models were used to describe passengers' likelihood to spend more at port cities, on the cruise ship and during their cruise trip in general. The demographic factors show that the probability of spending more during the cruise trip decreases by 19.2% ( $p=0.097$ ) with passengers' age. Additionally, there is a positive correlation between spending during the cruise trip and the choice of cabin and a negative correlation between spending and passengers' reason for visiting Greece and having the cruise experience. We also found that there is a negative correlation when it comes to frequency of travelling and a positive correlation between spending and Excursions made at port cities during the trip.

**JEL Classification:** L83, L91

**Key Words:** Influential Factors, Passenger Expenditures, Cruise Trip, Greek Cruise Market

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## 1. Introduction

The choice of a suitably-shaped ship, which can be used both for residence and entertainment and as a means of transportation is called “cruise tourism” (Hobson, 1993). The cruise industry is a growing sector of international tourism (Peisley, 1992) with cruise ships offering tourists the opportunity to visit major ports and discover different cultures and countries. Transport, tourism, entertainment and the trip itself are the main aspects of cruise tourism (Wild and Dearing, 2000).

According to Rodrigue and Notteboom (2012), the cruise line industry has become one of the fastest growing segments of travel industry and it has already developed into a mass market through the usage of large vessels, as compared to the cruise industry of the 1960s. This kind of industry has become a symbol of globalization in terms of market coverage, practices and mobility of assets (Wood, 2000; Weaver, 2005; Chin, 2008).

Cruise tourism is strongly related to the sector of transportation, tourism and travel and it is truly beneficial for social and economic development (Papadopoulou and Sambracos, 2014). This explains the fact that cruise ships not only constitute a means of transport from the home port to the destination port, but also offer a tourism product per se, as well (Orams, 1999). Tourism is the fastest growing industry and, hence, marketing becomes imperative in the tourism sector (Pantouvakis and Patsiouras, 2016). Today, cruise ships constitute a destination for passengers, while ports and surrounding areas become of secondary importance (Dowling, 2006). The main goal for cruise companies is to satisfy every single passenger: the level of satisfaction depends on travellers’ expectations and their fulfilment, travellers’ emotions and having a sense of equal benefits - otherwise, passengers who are not satisfied may not choose the same cruise company again.

The main cruise line destinations are Florida, the Caribbean, the west shore of Mexico, the USA (particularly Alaska), Canada and the Panama Canal, the Mediterranean (divided into the Eastern and the Western regions), Pacific islands, the Baltic Sea, the shores of Norway, western Africa and the islands of the Atlantic, such as the Canary Islands (Rodriguez and Notteboom, 2012). Thus, the main traffic is concentrated in the Caribbean and the Mediterranean Sea, followed by Scandinavia and the Baltic Sea.

Our research contributes to the aforementioned vein of literature and provides evidence on the factors that influence passengers’ expenditures during a cruise trip, namely the case of Greek islands. The purpose of this study is to provide better understanding of the cruise industry by considering the factors that influence passengers’ spending during their cruise trip with the help of econometric models.

Passengers’ expenditures presented in this paper focus on the factors that influence cruise passengers’ spending during their cruise trip around Greek islands. The paper focuses on an interview-based questionnaire of 507 cruise passengers who travelled

from the port of Piraeus and experienced a cruise around Greek islands. This primary research was conducted from September to November on cruise ships, which operated in the Aegean Sea visiting Greek islands.

This paper proceeds as follows: Section 2 presents the Literature Review, Section 3 focuses on the Greek cruise market, Section 4 presents the methodology, the data gathering method and the model used. Section 5 presents the results of the paper, while Section 6 the discussion and Section 7 the conclusions.

## 2. Literature Review

Many papers have focused on the economic contribution and significance of cruise tourism (Dwyer and Forsyth, 1998; Johnson, 2002; Brida and Zapata, 2010a, 2010b; BREA, 2012) or tourism in general (Ardahaey, 2011). Other papers discuss passengers' expenditures (Gabe *et al.*, 2003; Petrick, 2005; Henthorne, 2010; Brida *et al.*, 2010c, 2010d; Larsen *et al.*, 2013). There are also papers about cruise destinations (Raguž *et al.*, 2012) and some others investigating the competitiveness of the cruise market (Ellis and Kriwoken, 2006).

Customers' experience and their satisfaction have been measured as well (Brida *et al.*, 2010a) along with customer loyalties (Brida *et al.*, 2010d), and motivations (Hung and Petrick, 2011). Papathanassis and Beckmann (2011) support that cruise research lacks a unifying theme and a coherent theoretical framework. Dowling and Cowan (2002) talk about the image of the cruise industry and Klein (2008) is concerned with safety and risk issues.

Hall and Braithwaite (1990) presented an analysis of the Caribbean, which compared the leakage from stopover visitors with cruise visitors. Cruise passengers' economic behaviour is investigated by various authors (Lois *et al.*, 2001; Petrick and Sirakaya, 2004; Duman and Mattila, 2005; Gabe *et al.*, 2006; Polydoropoulou and Litinas, 2007). Andriotis and Agiomirgianakis (2010) explored the behaviour patterns of cruise ship passengers, including motivation, satisfaction and likelihood of return to the port. Leste and Weeden (2004) discussed the importance of collaboration and planning for the development of the cruise industry, focusing on the contradiction between maximising opportunities and sustainable development management.

Cruise tourism offers several benefits to social and economic development. This kind of tourism can benefit national economies of different countries involved in cruise tourism through a positive effect on foreign exchange earnings, taxes, employment, and externalities. Many papers have reported on the economic impact of the entire cruise industry. Some of them exemplify the economic impact on the economies of Central America and, particularly, on the case of Puerto Rico (Seidl *et al.*, 2006).

The research of Larsen *et al.* (2013) proves that cruise passengers' expenditures are lower than those of other tourists. There are also comparatively fewer high spenders and more low spenders among cruise tourists than among other tourists. What

is also remarkable is that both groups of tourists tended to overestimate their total expenditures, with cruise tourists overestimating more than other tourists.

The cruise industry's contribution to the national economy depends on the level of expenditure realised by producers and consumers of the cruise product (Wilkinson, 1999). The economic impact of cruise tourism spreads to the entire economy via an income multiplier effect (Sinclair and Stabler, 1997). In order to identify the flows of economic impact, what should be taken into consideration is whether the port is a homeport or a stopover port (Vina and Ford, 1998).

### 3. The Greek Cruise Market

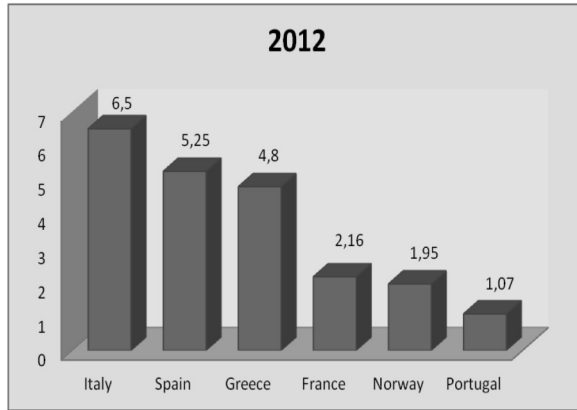
Greece ranks high among the most popular cruise destinations in the Mediterranean, due to the country's geophysical characteristics and its extensive island network (427 islands). The majority of cruise programmes that include Greece as a destination visit multiple Greek ports-islands. The Greek cruise market is part of the Mediterranean cruise market and, specifically, of Eastern Mediterranean, comprising four local cruise markets, the Aegean Sea, the Black Sea, the Levant (Cyprus, the Holy Land, Egypt) and Venice – the Adriatic – the Ionian Sea (Diakomihalis, 2006). Cruises in Greece are offered on large, modern ships, starting from the port of Piraeus or foreign ports, running tours approaching national ports or other neighbouring countries.

Greece as an integral part of the Mediterranean is one of the most attractive tourist destinations worldwide. The Greek market has high potential in the cruise industry and in combination with the impact generated within the cruise industry, a series of policies should be implemented to help it become competitive in the international environment and improve its final product.

Greece held third place among the six most attractive cruise destination countries for the year 2012 with 4.8 million passengers (Graph 1). First place was held by the leading cruising market country, namely Italy with 6.5 million passengers and second place by Spain with 5.25 million passengers in 2012. France, Norway and Portugal followed with 2.16, 1.95, 1.07 million passengers, respectively.

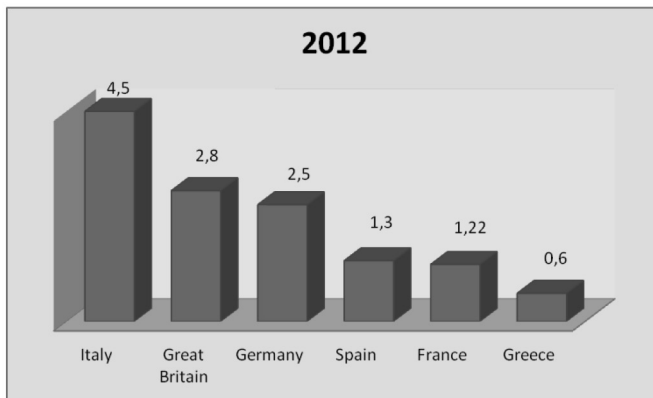
Even though Greece ranks third in Europe in terms of number of passengers visiting the country, it holds last place in revenues received from the cruise industry (Graph 2). Greece appears last with €0.6 billion revenues in 2012, while neighbouring Italy earned €4.5 billion, the United Kingdom €2.8 billion, Germany €2.5 billion, Spain €1.3 billion and France €1.22 billion.

**Graph 1.** Cruise Destinations in Europe, 2012 (in million passengers)



*Source:* G.P. Wild International Ltd., 2012

**Graph 2.** Revenues from the cruise industry, 2012 (in billion €)



*Source:* G.P. Wild International Ltd., 2012

#### 4. Methodology

This section presents the research methodology and data used and describes the model implemented.

##### *Data*

We conducted an interview-based survey taking a sample of 507 cruise passengers who started their journey from the port of Piraeus in Greece for a holiday around Greek islands. We relied on the Convenience Sampling Technique, i.e. participants were selected on the basis of their proximity and availability to the researcher. Our questionnaire included a wide range of socio-economic characteristics of participants. During their return trip to the final port (port of Piraeus), passengers were asked to answer various questions regarding their personal characteristics and other factors related to their travel facilities. More specifically, demographic variables were grouped as follows: *Gender* takes the value of 1 for male and 2 for female; *Age* comprises four intervals and takes the value of 1 for 18-25, 2 for 26-45, 3 for 46-65 and 4 for >66. *Marital Status* is a categorical variable and takes the value of 1 for singles, 2 for married, 3 for divorcees and 4 for widows/ers. *Nationality* takes the value of 1 for Europeans, 2 for Americans, 3 for Asians, 4 for Australians and 5 for South Africans. *Income* level is grouped in six classes and takes the value of 1 for <€10,000, 2 for €10,001-20,000, 3 for €20,001-30,000, 4 for €30,001-40,000, 5 for €40,001-50,000 and 6 for >50,001.

In addition, passengers were asked to indicate the amount of money they were willing to spend on ports visited or during their stay on the cruise ship, according to their personal choice of accommodation facilities. In particular, *Port Spending* and *Cruise Spending* comprise 5 intervals, respectively, and take the value of 1 for those who spent up to €50, 2 for €51-100, 3 for €101-150, 4 for €151-200 and 5 for those who spent over €201 at ports and on the cruise ship. *Cabin* reflects whether passengers have booked a standard inside cabin (1), a premium inside cabin (2), a standard outside cabin (3), a premium outside cabin (4), a deluxe cabin (5) or a suite (6); *Frequency* reflects whether passengers have already been on a cruise before (1), have come to Greece only for the cruise (2), have come to Greece once (3), have been on a cruise trip around Greek islands once (4) or none of the above (5); *Excursions* indicates whether someone used the buses the cruise company offered to visit various ports (0) or not (1).

Finally, we constructed the variable *Total Spending*, simply by summing both *Cruise* and *Port Spending*. Therefore, *Total Spending* comprises 8 intervals and takes the value of 1 for those who spent up to €100, 2 for €101-150, 3 for €151-200, 4 for €201-250, 5 for €251-300, 6 for €301-350, 7 for €351-400 and 8 for those who spent over €401 during their cruise trip and it is the sum of *Port Spending* and *Cruise Spending* variables.

At this point, we would like to clarify that cabin class and age intervals were recommended as variables by the biggest Greek cruise company which helped us with the present study.

### *Model*

The likelihood of passengers' spending more on a cruise trip can be described by an ordered logit model defined as follows:

$$\Pr(Y = c|X_i) = F(X_i\beta),$$

where endogenous variable  $Y$  is spending (*Port Spending*, *Cruise Spending* and *Total Spending*) ( $c$ );  $F$  is the standard logistic cumulative distribution function and  $X_i$  is a set of covariates defined as:

$$X_i\beta = \beta_0 + \beta_1 \text{Gender}_i + \beta_2 \text{Age}_i + \beta_3 \text{Marital Status}_i + \beta_4 \text{Nationality}_i + \beta_5 \text{Income}_i + \beta_6 \text{Cabin}_i + \beta_7 \text{Frequency}_i + \beta_8 \text{Reason}_i + \beta_9 \text{Excursions}_i$$

where the first five variables comprise demographic factors: *Gender* is a variable that takes the values of 1 and 2, if the participant is male and female, respectively; *Age* is the age of participants clustered as follows: class 1 (18-25), class 2 (26-45), class 3 (46-65), class 4 ( $\geq 66$  years old); *Marital Status* reflects whether a participant is single (1), married (2), divorced (3), or widow (4); *Nationality* indicates whether someone is from Europe (1), America (2), Asia (3), Australia (4) or South Africa (5); *Income* is the annual personal income of passengers classified into 6 classes, as follows: class 1 ( $\leq \text{€}10,000$ ), class 2 ( $\text{€}10,001-20,000$ ), class 3 ( $\text{€}20,001-30,000$ ), class 4 ( $30,001-40,000$ ), class 5 ( $40,001-50,000$ ) and class 6 ( $\geq \text{€}50,001$ ); *Cabin* indicates whether passengers have booked a standard inside cabin (1), a premium inside cabin (2), a standard outside cabin (3), a premium outside cabin (4), a deluxe cabin (5) or a suite (6); *Frequency* reflects whether passengers have already been on a cruise before (1), have come to Greece only for the cruise (2), have come to Greece once (3), have been on a cruise trip around Greek islands once (4) or none of the above (5); *Reason* takes the value of 1 for passengers who decided to visit Greece to meet new destinations, 2 for those who came to Greece to visit destinations of historic significance, 3 for tourists who came because they had a good feedback from friends/relatives, 4 for passengers who came to learn about the Greek civilization, 5 for those who came for gaining new experiences and 6 for those who came in order to visit their families; *Excursions* indicates whether someone used the buses the cruise company offered to see the various ports (0) or not (1).

## 5. Results

Before presenting our model estimates, here are some descriptive statistics in Table 1.

**Table 1.** Descriptive statistics of all variables

Variable	Obs.	Percentage	Cumulative percentage
<i>Total Spending</i>			
≤€100	90	17.75%	17.75%
€101-150	61	12.03%	29.78%
€151-200	69	13.61%	43.39%
€201-250	69	13.61%	57.00%
€251-300	50	9.86%	66.86%
€301-350	20	3.94%	70.80%
€351-400	70	13.80%	84.60%
≥€401	78	15.40%	100.00%
<i>Port Spending</i>			
≤€50	179	25.31%	25.31%
€51-100	130	25.64%	60.95%
€101-150	59	11.64%	72.59%
€151-200	74	14.60%	87.19%
≥€201	65	12.81%	100.00%
<i>Cruise Spending</i>			
≤€50	146	28.80%	28.80%
€51-100	116	22.88%	51.68%
€101-150	85	16.77%	68.45%
€151-200	71	14.00%	82.45%
≥€201	89	17.55%	100.00%
<i>Gender</i>			
Male	226	44.58%	44.58%
Female	281	55.42%	100.00%
<i>Age</i>			
18-25 years old	5	0.99%	0.99%
26-45 years old	70	13.81%	14.80%
46-65 years old	272	53.65%	68.45%
≥ 66 years old	160	31.55%	100.00%
<i>Marital Status</i>			
Single	57	11.24%	11.24%
Married	374	73.77%	85.01%
Divorcee	34	6.71%	91.72%
Widow	42	8.28%	100.00%
<i>Nationality</i>			
Europe	200	39.45%	39.45%
America	251	49.51%	88.96%
Asia	10	1.97%	90.93%
Australia	41	8.09%	99.02%
South Africa	5	0.98%	100.00%



*Income*

≤ 10,000	34	6.71%	6.7%
€10,001-20,000	63	12.43%	19.14%
€20,001-30,000	107	21.10%	40.24%
€30,001-40,000	175	34.52%	74.76%
€40,001-50,000	53	10.45%	85.21%
≥ €50,001	75	14.79%	100.00%

*Cabin*

Standard inside	131	25.84%	25.84%
Premium inside	15	2.96 %	28.80%
Standard outside	228	44.97%	27.77%
Premium outside	75	14.79%	88.56%
Deluxe	29	5.72%	94.28%
Suite	29	5.72%	100.00%

*Frequency*

On a cruise before	246	48.52%	48.52%
Came to Greece only for the cruise	67	13.21%	61.73%
Already visited Greece once	44	8.68%	70.41%
Already been on a cruise in Greece before	11	2.17%	72.58%
None of the above	139	27.42%	100.00%

*Reason*

Meet new destinations and people	4	0.79%	0.79%
Visit destinations with historic significance	81	15.98%	16.77%
Friends/Relatives have already come	277	54.64%	71.41%
Greek culture/Greek way of living	37	7.3%	78.71%
Gain new experiences	66	13.02%	91.73%
Visit my family	42	8.27%	100.00%

*Excursions*

No	156	30.77%	30.77%
Yes	351	66.23%	100.00%

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As Table 1 shows, more than half of the participants (55.42%) are women, while the majority of respondents (53.65%) are between the ages of 46 and 65. More than 70% of participants are married and the majority come from America (49.51%), while many (39.45%) are Europeans. Finally, the majority have an annual income between €30,001 and €40,000 (34.52%). Moreover, many of them (17.75%) spend up to a total of €100 during their cruise trip, while 15.4% of the passengers spent over €401 on the same trip. 25.64% of participants spent between €51-100 at the ports they visited during their trip and 28.8% of them spent up to €50 on the cruise ship. 44.97% of the tourists stayed in a standard outside cabin (with sea view), 48.52% of cruise passengers had already been on a cruise before, 54.64% of them had friends/relatives who had already visited Greece before and, finally, 66.23% replied that they had the excursions to the Greek islands on the bus the cruise company offered.

Correlation among all variables is presented in Table 2.

**Table 2.** Correlations among all variables

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) Total Spending	1.00											
(2) Port Spending	0.72*	1.00										
(3) Cruise Spending	0.81*	0.30*	1.00									
(4) Gender	-0.05	0.02	-0.09*	1.00								
(5) Age	-0.01	-0.04	0.04	-0.03	1.00							
(6) Marital Status	0.02	0.06	-0.01	0.21*	0.32*	1.00						
(7) Nationality	-0.01	0.03	0.01	0.05	0.01	-0.01	1.00					
(8) Income	0.09*	0.07	0.07	-0.12*	0.05	-0.01	0.23*	1.00				
(9) Cabin	0.11*	0.06	0.11*	0.04	0.06	-0.03	0.4*	0.21*	1.00			
(10) Frequency	-0.08*	-0.03	-0.08	0.06	-0.22*	-0.05	-0.10*	-0.15*	-0.08	1.00		
(11) Reason	-0.08	0.01	-0.11*	0.01	0.01	0.01	-0.15*	-0.11*	-0.05	0.05	1.00	
(12) Excursions	0.12*	0.01	0.15*	-0.01	0.07	-0.03	0.16*	0.18*	0.09*	-0.03	-0.17*	1.00

Note: (\*) stands for 5% level of significance.

As table 2 shows, there is not a strong correlation across all variables, since the Pearson correlation coefficient is low (under 0.3 in most cases). A stronger correlation, however, is demonstrated among the three first variables (*Total Spending*, *Port Spending* and *Cruise Spending*). The strongest correlation is to be expected since the *Total Spending* variable is the sum of the other two. In addition, those three variables are only used as dependent variables in our model specifications. Therefore, no collinearity issue arises in this case.

Odds ratios for all specifications are presented in Table 3. Odds ratios can be read as follows: if the odd ratio,  $a$ , is bigger than 1 ( $a > 1$ ), then the probability of

a passenger spending more money during the cruise trip increases by  $(a-1)*100\%$ , whereas the probability decreases by  $(1-a)*100\%$ , if the odds ratio is under 1 ( $a < 1$ ).

Columns (1a)-(1c) represent the model specification where the dependent variable is the amount of money spent at ports visited (*Port Spending*). Columns (2a)-(2c) represent the model specification where the dependent variable is the amount of money spent on the cruise ship (*Cruise Spending*). Finally, columns (3a)-(3c) represent the model specification where the dependent variable is the total amount of money spent during the cruise trip (*Total Spending*). More specifically, columns (1a), (2a), and (3a) present estimates of the model where only the demographic factors are included. Next, columns (1b), (2b) and (3b) present estimates of the model where the other factors (*Cabin*, *Frequency*, *Reason* and *Excursions*) are included. Finally, columns (1c), (2c), and (3c) present the full-fledged sets where all independent variables are included.

**Table 3.** Logit estimates (odds ratios) of different specifications (maximum level of Spending is the dependent variable)

	Port Spending (PS)			Cruise Spending (CS)			Total Spending (TS)		
	(1a)	(1b)	(1c)	(2a)	(2b)	(2c)	(3a)	(3b)	(3c)
<i>Gender</i>	1.056 (0.175)		1.070 (0.178)	<b>0.760*</b> (0.125)		<b>0.757*</b> (0.126)	0.837 (0.136)		0.854 (0.141)
<i>Age</i>	<b>0.749**</b> (0.094)		<b>0.728**</b> (0.095)	1.100 (0.132)		1.012 (0.125)	0.899 (0.109)		<b>0.808*</b> (0.103)
<i>Marital Status</i>	<b>1.310**</b> (0.153)		<b>1.332**</b> (0.157)	.959 (0.111)		0.998 (0.117)	1.135 (0.131)		1.193 (0.141)
<i>Nationality</i>	1.006 (0.104)		0.985 (0.104)	.977 (0.103)		0.896 (0.100)	0.963 (0.091)		0.894 (0.088)
<i>Income</i>	1.092 (0.064)		1.069 (0.066)	1.095 (0.062)		1.027 (0.062)	<b>1.124**</b> (0.062)		1.048 (0.061)
<i>Cabin</i>		<b>1.105*</b> (.062)	<b>1.106*</b> (0.063)		<b>1.131**</b> (0.069)	<b>1.127*</b> (0.071)		<b>1.139**</b> (0.064)	<b>1.142**</b> (0.066)
<i>Frequency</i>		0.983 (0.043)	0.966 (.047)		0.937 (0.043)	0.941 (0.045)		<b>0.925***</b> (0.041)	<b>0.911*</b> (0.044)
<i>Reason</i>		1.026 (0.067)	1.035 (0.068)		<b>0.865**</b> (0.062)	<b>0.855**</b> (0.064)		0.900 (0.061)	<b>0.895*</b> (0.061)
<i>Excursions</i>		1.002 (0.169)	1.033 (0.180)		<b>1.623***</b> (0.270)	<b>1.654***</b> (0.284)		<b>1.483**</b> (0.245)	<b>1.541***</b> (0.263)
Observations	507	507	507	507	507	507	507	507	507
Wald Test	10.01	3.48	14.61	7.25	22.54	27.14	8.34	18.03	25.84
Pseudo-R2	0.0067	0.0022	0.0091	0.0045	0.0145	0.0176	0.0038	0.0104	0.0139

Note: Heteroscedasticity robust standard errors in parenthesis.

\*\*\*, \*\*, \* indicate significance at 1, 5, and 10%, respectively.

As Table 3 shows, of the demographic factors presented in column (1a), only *Age* and *Marital Status* have a statistically significant effect on passengers' willingness to spend more at ports. More specifically, when it comes to the age effect, there is a negative correlation between *Port Spending* and ageing. As age group rises, the likelihood of maximum spending at ports during their cruise trip decreases by 25.1%  $[(1-0.749)*100\%]$ . When passengers' marital status changes, it is more likely they will spend more, because there is a positive correlation between *Marital Status* and *Port Spending*. Among other factors (*Cabin*, *Frequency*, *Reason* and *Excursions*) presented in column (1b), only *Cabin* has a statistically significant effect on *Port Spending* and this relationship is positive, which means that when passengers select a better cabin to stay in, the likelihood of spending more at ports increases by 10.5%  $[(1.105-1)*100\%]$ . When including all independent variables (column 1c), it is found that *Age*, *Marital status* and *Cabin* are the three factors with a statistically significant effect on passengers' willingness to spend more at the ports they visit during their cruise trip. More specifically, as the age group rises, the likelihood of spending more at ports during their cruise trip decreases by 27.2%. As passengers' marital status changes, it is more likely they will spend more, because there is a positive correlation between *Marital Status* and *Port Spending*. Finally, when passengers select a better cabin to stay in, the likelihood of spending more at ports increases by 10.6%, because there is a positive correlation between the dependent variable and *Cabin*.

In columns (2a)-(2c), where the dependent variable is the amount of money spent on the cruise ship, and focusing on the last column (2c), where all independent variables are included, *Gender*, *Cabin*, *Reason* and *Excursions* are seen to have a statistically significant effect on passengers' willingness to spend more on the cruise ship.

Following this concept, and if one takes into consideration the total amount of money spent both on the cruise ship and at ports visited, which captures the passengers' willingness to spend during the cruise trip (3c), *Age*, *Cabin*, *Frequency*, *Reason* and *Excursions* are found to have a statistically significant effect on our most important dependent variable, i.e., *Total Spending* (as diagnostics at the bottom of Table 3 indicates). More specifically, when it comes to the age effect, there is a negative correlation between *Total Spending* and *Age*, which means that, as age groups rise, the likelihood of spending more during a cruise trip decreases by 19.2%. There is a positive correlation between *Cruise Spending* and *Cabin*, which means that when passengers select a better cabin to stay in, the likelihood of spending more during their cruise ship increases by 14.2%. As we can see, there is a negative relationship between the dependent variable and *Frequency*, which means that the likelihood of passengers who have already visited Greece once spending more during their cruise trip increases by only 8.9%. Between *Total Spending* and *Reason* there is a negative correlation, which means that the likelihood of passengers who decide to visit Greece

to get to know new destinations spending more increases by only 10.5%. Finally, in regard to *Excursions*, passengers who decide to go on excursions at ports are found to be more likely to spend more during their cruise trip by 54.1%.

Overall, independent variables do not alter in sign and remain statistically significant in more than one specification. With respect to the overall performance of our specifications, correlations between *Port Spending*, *Cruise Spending* and *Total Spending* and those predicted range from 74% to 92% (at 5% level of significance), indicating that the appropriateness of our specifications is satisfactory. Finally, Wald Test tests whether all coefficients in the specification are significantly different than zero (with  $\text{prob} > \chi^2$  being lower than 0.05 in all full-fledged sets) and other diagnostics (bottom of Table 3) further confirm the appropriateness of our specifications.

## 6. Discussion

Understanding what shapes spending in Greece is particularly important for economic policy and decision-makers and the Greek cruise tourism market, since it provides critical information for developing this specific market, which is becoming one of the most important sources of income for Greek economy. According to the statistics of Cruise Lines International Association (CLIA, 2014), there was a decline of 41.8% in the Greek cruise market from 2011 to 2013. As CLIA reports, this decline was, to a large extent, a direct result of the country's dire public sector finances and the sweeping austerity measures introduced as part of the EU bailout package. Accordingly, Piraeus Port Authority S.A. (2016) corroborates CLIA's statistics with its own report that during the same period there was a decline of 34.1% in the Greek cruise market.

According to Larsen *et al.* (2013), cruise passengers' expenditures are lower than the expenditures of other tourists. This is aligned with research findings by Brida *et al.* (2012) which state that this occurs due to the limited time available for each island (8 hours or less). Our research confirms that the majority of cruise passengers tend to spend less at ports visited (Table 1). Our analysis supports the conclusion reached by Brida *et al.* (2012) that cruise passengers' contributions to local economies are somehow insignificant. Our findings further support Klein (2008) who indicates that the limited land time allowed to passengers does indeed curtail their opportunities to spend money at the destination visited. What is also worth mentioning is that Lye (2011) and Olsen (2012) have claimed that, typically, about 20–40% of passengers do not even disembark while the ship docks.

Cruise ships tend to stay at ports for a relatively short period, forcing their passengers to spend most of their time on board and, thus, spend more on the cruise ship (Larsen *et al.*, 2013); this is why Vogel (2011) underlines that cruise lines depend on increasing on-board revenues in order to maintain profitable operations. In our

case, though, we found that the majority of passengers did not spend so much money on board. This can be explained since our sample was experiencing a cruise trip on medium-sized cruise ships rather than on luxury ships where one can easily spend much more. Moreover, our research took place during a severe economic crisis period in Greece, which hardly makes for extensive money spending. At this point, we should add that passengers were on board mainly during the night, when the cruise ship was sailing so the possibility of spending was not particularly high.

Moreover, we found that, with rising age groups, it is less likely for passengers to spend much money at ports visited. This is to be expected, if one takes into consideration that the elderly are more likely to participate in a cruise trip earlier on in their lives; therefore, we can assume that they have a higher spending capacity when slightly younger. As Lin *et al.* (2015) indicate, total tourism expenditures tend to decrease among the elderly of older ages.

With respect to other factors, passengers who prefer to stay in a better cabin (more expensive) tend to spend more both at ports and on the cruise ship. On the other hand, *Gender* and *Reason* have a negative correlation to *Cruise Spending*, which means that men tend to spend more than women and the same is true about passengers who decide to experience a cruise trip so as to get to know new destinations. According to Wegrzynowski (2007), those of higher age who are male with greater job stability and in full employment prevail in the tourism sector and tend to spend more.

## 7. Conclusions

Cruise tourism is an important sector of the industry in general and tends to be one of the most significant sources of income for Greece. This paper was conducted during a severe economic crisis period in Greece and this is why we did not find high volumes of passengers' expenditures during a cruise trip around Greek islands.

To conclude, strong correlation appears between the first dependent variable, namely Port Spending, and the independent variables *Gender*, *Marital Status* and *Cabin*. There is also significant correlation between the second dependent variable, namely *Cruise Spending*, and *Gender*, *Cabin*, *Reason* and *Excursions*. The three latter, along with *Age* and *Frequency*, are significant for the most important dependent variable, namely *Total Spending*. Therefore, more research should be conducted to explore how these factors can influence passengers' expenditures in other parts of Greece in order for policy makers to better exploit cruise tourism, e.g. in the Ionian Sea, where cruise tourism is increasing.

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