MARITIME CRUISES: forecast demand for the Brazilian and international market for the next 5 years, from 2016 on

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ABSTRACT

Contrary to the international trend, marine tourism in Brazil has been decreasing since 2011. This paper examines the Brazilian and international cruise ship market forecast for the five-year period from 2016 to 2020. To achieve this goal, exploratory and descriptive research was conducted in order to analyze the supply and demand data from 2006 to 2015. Statistical techniques and regression functions were used to calculate the forecast. The results indicate that if the trend until 2010 were maintained, the forecast demand in Brazil would be similar to the growth in the international market.

Keywords: Cruises. Demand forecast of cruise travelers. Statistical regression.

INTRODUCTION

The world is constantly changing and evolving; the ageing population, the growth of global migration, globalization, and technological advances bring new business opportunities, forcing companies to adapt to a new reality.

The improvement in quality of life and the medical advances have increased life expectancy and, at the same time, have widened the potential market for leisure trips (Tomelin, Ruschmann, & Argenta, 2013). It is forecast that by 2020, people aged between 50 and 75 will be more active, healthier and better off than previous generations. The emergence of new groups of consumers looking for a better quality of life will lead to a shift in customer profile (Amadeus, 2009).

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These new demand profiles can affect companies' decisions and marketing strategies, ultimately influencing consumer market trends. Tourism companies need to look ahead and plan their activities according to these new trends, adopting a holistic approach and a comprehensive vision of the future (Gonçalves, Cruz, Pinto, Pintassilgo, & Guerreiro, 2011; Gretzel, 2013).

In this context, it is necessary to go back to the past and examine the market behavior for a given period of time, to be able to predict the future (Barbosa & Milone, 2004). The analyses showed that the cruise demand in Brazil grew exponentially by over 2000 percent between 2000-2001 and 2009-2010 (Clia Abremar Brasil, 2010, p. 7). However, in the ensuing years the percentage of cruise travelers decreased (Clia Abremar Brasil, 2011). The annual growth rate of over 30 percent continued until the 2009-2010 season, but from 2010-2011 it fell to 10 percent, compared to the previous season. In the period 2011-2012, the growth was 1.57 percent compared to 2010-2011; and in 2012-2013 the percentage of cruise travelers dropped by 9 percent compared to 2011-2012. It seems that the once-calm waters are becoming turbulent (Clia Abremar Brasil, 2016a).

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While in Brazil the number of cruise passengers has been decreasing (Clia Abremar Brasil, 2016b), Europe, North America and global markets have maintained a growing demand (Clia, 2016). According to CLIA (2016), demand for cruises increased by 68 percent worldwide in the ten-year period from 2005 to 2014. This growth has led to an increase in the supply of cruise ships on the Brazilian coast, which went from six ships in the 2004-2005 season to twenty ships in 2010-2011 (Clia Abremar Brasil, 2016b). However, according to Clia Abremar Brasil (2016b), this number have been dropping continuously: to seventeen ships in 2011-2012; fifteen in 2012-2013; eleven in 2013-2014; and ten in 2014-2015 and 2015-2016. Confirming the downward trend, pointed out by Ramoa (2014) and Ramoa & Flores (2015a) the estimate for the 2016-2017 season is seven ships (Clia Abremar Brasil, 2016c). These figures raise some questions about the future of the cruise ship market in Brazil.

In this context, the general objective of this research is to verify the general outlook for the Brazilian and international cruise ship market over the five-year period from 2016 to 2010. The research methodology included statistical regression analysis based on indirect documentation techniques, documentary research, and a literature review of those markets. The authors consider that this study is relevant not only for knowing the past demand in the major cruise ship markets, but also for forecasting the future demand of these markets.

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LITERATURE REVIEW

Tourism and the cruise ship industry

Ship cruises have particular features that make them unique in terms of tourist experience. For an affordable price, and without the need to pack and unpack at every port of call, it is possible to visit a variety of places in a single trip and in a short period of time. Cruise ships offer on-board leisure, gastronomy and entertainment options, resembling a mobile resort carrying passengers from one place to another in search of sun and heat. Thus, the weather is a determinant factor in the development of the destination (Dowling, 2006).

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In the concept of marine tourism, the basic definition of a cruise is a vacation trip aboard a ship. According to Mancini (2010), the cruise tourist's main objectives are to satisfy a desire to relax, get away from it all, have a new experience, learn, be pampered, and have fun. In an attempt to fulfil dreams, cruising is a status-directed consumption that promises immediate wish-fulfilling gratifications (Vogel & Oschmann, 2012).

Cruise ship tourism became a new leisure option when transatlantic ocean liners, after losing their business to airline jets, were transformed into cruise ships. A new market was created (WTO, 2010).

Travel on a ship is not just another trip for the tourist, it is an alternative vacation that will give them the opportunity to enjoy a range of leisure and entertainment options at sea, to the detriment of traditional onshore tourist destinations (Mendes & Silva, 2012).

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Supply and demand in marine tourism

The growth of marine tourism depends on the elements that interact with it. The World Tourism Organization (UNWTO) states that tourism activity is based on four elements: demand, which is formed by "the set of consumers of goods and tourist services"; supply, which is "the set of products, services and organizations involved actively in the tourist experience"; geographical space, where "supply and demand meet", and market operators, which are "enterprises and organizations whose main function is to facilitate the interrelation between supply and demand" (Sancho-Perez, 2001).

According to Dencker (2003), understanding supply and demand is critical to tourism planning and market analysis. In tourism, like in any other activity, supply does not grow without demand, and vice versa. Supply must motivate the purchase; motivation is the individual's inner drive that transforms needs into actions, when supply meets demand (Schiffman & Kanuk, 2000).

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Companies must adapt supply to demand through their marketing strategies, focusing on consumers' needs and purchasing motivations. Tourists are increasingly well informed and are looking more and more for services that could improve their quality of life (Almeida, Miranda, & Elias-Almeida, 2012).

In tourism, according to Page (2005), demand has been defined in many different ways. As claimed by Mathieson & Wall (1992) demand in the tourism industry is the amount of people who travel, or wish to travel, and who use tourist facilities and services at places away from their places of work or residence.

In their travels, tourists look for benefits that meet their needs and give them satisfaction. According to Kotler (2011), companies should engage consumers by interpreting their needs and adding value to the product through differentiated offers, adapting the offer to different market segments.

However, it should be noticed that selling tourism products takes more than just marketing strategies. The demand for services is influenced by the company's characteristics and its market, such as the size of that market and the actions of its competitors, in addition to the strategy adopted and local market conditions regarding the infrastructure and economic development (Rubalcaba & Merino, 2005).

Kotler & Armstrong (2007) argue that the present level of competitiveness requires more than common sense or experience to define business strategies. Companies need planning and a marketing-oriented approach to business; and should try to "learn about and understand their customers' needs, wants and demands".

When originating in a different culture, supply must take into account the local culture. In the global economy many companies turn to alternative business markets, as occurs in the Brazilian cruise market, whose offer is based on multinational companies.

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In accordance with Powers & Loyka (2010) adaptation of the product adaptation to the local market is a factor that should be considered in the company's marketing strategy. In this context, Ramoa (2014) and Ramoa & Flores (2015b) note that the shipping companies embarking passengers in Brazil make available three- and four-star international standard cruise ships, according to Berlitz Guide rating system (Ward, 2013). Therefore, this is not the reason behind the downward trend in cruise demand.

RESEARCH METHODOLOGY

The exploratory descriptive method, quantitative design and statistical regression functions were used to project future trends and meet the objective of this research, i.e. to verify the forecast for the Brazilian and international cruise ship market for the five-year period, from 2016 to 2020.

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Trend analysis through regression functions project the past into the future from historical patterns. The resulting data enable the prediction of demand trends for the coming years, and can serve as a guide for investment decisions (Barbosa & Milone, 2004).

The population and sample were defined based on cruise demand data, i.e. the number of passengers boarding in the Brazilian and international market from 2004 to 2013. For the Brazilian data, the boarding numbers considered were only those from the cruise season that corresponds to the Brazilian summer. For the data on the international market, year-round data was used.

To carry out the calculations, projections and subsequent determination of graphs or scatter diagrams and regression equations in Excel software was used.

Regression determines the nature of the relationship between the independent variable (years) and the dependent variable (number of boardings), i.e. the mathematical equation

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that best explains the trend shown by the existing data. The resulting equations enabled future events (number of boardings) to be predicted (Barbosa & Milone, 2004).

Fit quality and trend lines were evaluated through the standard error (Syx) of the coefficient of determination (R²), which determines the reliability of the data, and enabled the degree of association between variables, and therefore the validity of the results of the estimated relationship, to be determined (Sancho-Perez, 2006).

The standard error of the estimate (Syx) is a measure of the variability around the regression line, i.e. how the trend line distances itself from the cloud of points, which is the data demand X years (Levine, Berenson, & Stephan, 2000, pp. 525-529).

To determine the demand trend in the cruise market, the object of this research, the following regression equations were calculated and analyzed: polynomial, exponential, logarithmic, linear, and power, in order to choose the equation that presents the best coefficient of determination (R2).

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RESULTS

Trend analysis for the Brazilian and International cruise markets

A future trend cannot ascertain the behavior of a market, or its saturation, i.e. the point at which a market can no longer generate new demand (Thiry-Cherques, 2009). However, the trend analysis is a good tool to make predictions. Through this analysis it is possible, based on historical patterns, to project the past into the future (Barbosa & Milone, 2004).

To calculate the projection of the trend from historical data, scatter diagrams were drawn, with their trend curves and equations, achieved through statistical regression analysis. These were used to extrapolate data and forecast of future demand (Levine, Berenson, & Stephan, 2000).

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Research on the behavior of tourism variables shows that cause-effect relationships between variables are reflected in the equations, therefore the regression equations were determined. According to Sancho-Perez (2006, p. 142), these are used to "predict future behavior", i.e. to calculate the trend from the scatter diagrams or graphs.

Statistical regression was used to analyze the data, looking for trend behavior of the variables involved, so as to create the mathematic equation that best explains that behavior. Through this equation, it is possible to extrapolate the data and make forecasts (Barbosa & Milone, 2004).

This method of data analysis assumes that the system behavior remains unaltered, following a trend. Any change in the system that modifies the variables involved, and that is not considered in the regression model, entails changes in the trend (Barbosa & Milone, 2004). If the R^2 of the relationship trend is very good, i.e. around 1, and regression curves appropriate for scattered data, then a thorough analysis by the researcher is necessary, to verify the context of the situation calculated and the reality encountered.

According to (Hair, Black, Babin, Anderson, & Latham, 2007, p. 159), the researcher's knowledge about the context of the research is one of the most important criteria in the regression analysis. "Without that knowledge, the results of the regression may have high predictive precision without any theoretical relevance". The researcher must, therefore, examine all the possibilities, and only after a "thorough examination" will he be able to accept the outcome of the analysis.

Therefore, in order to evaluate the behavior of the Brazilian cruise market, analyses were conducted based on data scatter diagrams to obtain the best trend curve for the Brazilian cruise market.

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Calculation of statistical regression and future forecast demand - Brazilian cruise market

The first step of a regression analysis is the construction of the scatter diagram. The general pattern of the variables presented in the graphics is what defines the shape and intensity of the relationship between the variables (Barbosa & Milone, 2004). Therefore, to find the trend of the Brazilian cruise market, it is first necessary to draw a scatter diagram of the data on cruise travelers' demand (Figure 1).

Figure 1- Brazil: Cruise travelers' demand – 2004-2005 to 2015-2016
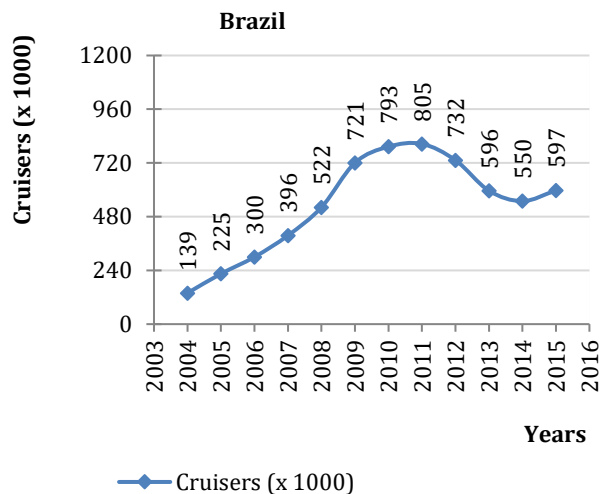
Source: The author's own work, adapted from CLIA ABREMAR BRASIL (2011; 2015; 2016b)

In the diagram above, the numbers above the regression line indicate the number of cruise travelers boarding from 2004 to 2015. It is possible to visually identify a strong growth in demand until the 2010-2011 season, stabilizing in 2011-2012 and peaking at 805,189 cruise travelers; then a period of decline started, with 732,163 passengers boarding in 2012-2013 reaching 597,011 in 2015-2016, confirming the downward trend presented by Ramoa (2014) and Ramoa & Flores (2015a).

In Figure 1, if the whole series is analyzed simultaneously, looking for a trend, a downward concave curve can be observed, showing the decline in demand, suggesting that it is a polynomial curve.

In some cases, to find a curve that best fits the data, Milone (2004) considers it appropriate to seek alternatives in curves with higher-degree equations. In this analysis, curves with the best R^2 were searched, and second and third order polynomial equations were obtained, as shown in Figure 2 below.

Figure 2 - Brazil: statistical regression analysis. Polynomial trend lines of cruise travelers' demand
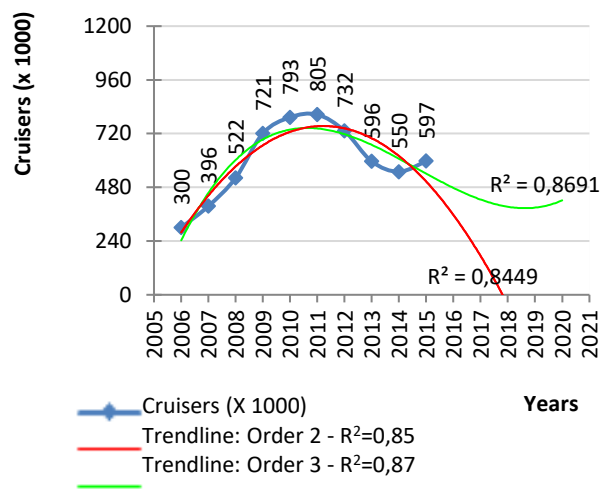
Source: Own work adapted from CLIA ABREMAR BRASIL (2015; 2016b)

Other types of regression lines, such as exponential and linear, were analyzed, but despite displaying a growth trend, they do not have a satisfactory correlation coefficient R^2, being close to 0.3, or 30 percent, indicating that approximately 70 percent of the data is not explained by the lines. Thus, there is no reliability for forecasting purposes.

In relation to the second degree equation, despite presenting a satisfactory R^2 of 0.85, lower than the third degree equation R^2, it presents a less pronounced downward trend and fits the data better. However, it should be noted that the drop in demand in the last four years of the historical series was responsible for reversing the trend down and leading to an estimated decline of the same speed as the initial growth of the sector. When performing a more critical analysis, it should be noted that a period of four seasons is too short to determine a long-term trend, and also the first eight seasons were showing steady growth
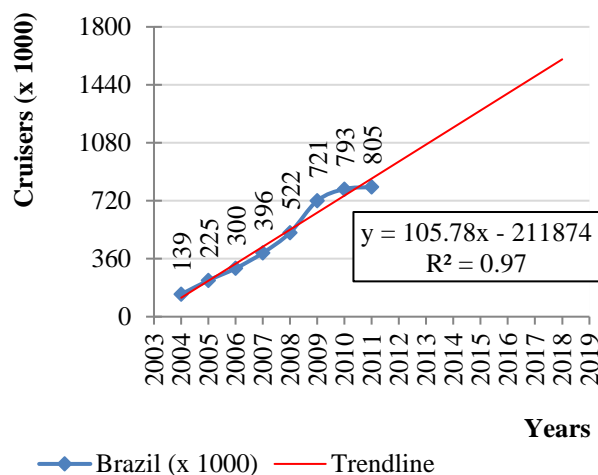
(CLIA ABREMAR BRASIL, 2015; 2016b). To calculate the demand trend with greater accuracy, a longer historical series, thus, the result of this analysis regarding future perspectives is misleading.

At this point, a question arises: what would the trend be like if there were no drop in demand in the last seasons? A simulation will then be presented with a new calculation, considering the series of data until the 2011-2012 season, and excluding the subsequent period.

The result of this analysis will make it possible to compare the calculated data with the actual data presented in 2012-2013 to 2015-2016 seasons, allowing visualisation of the decline in the number of cruise travelers in that period. This simulation will also estimate the number of cruise travelers until the 2018-2019 season, had the growth trend continued.

Thus, the following scatter diagram (Figure 3) was made showing the trendline, its R^2 and the mathematical equation based on the period of growth in demand between 2004-2005 and 2011-2012:

Figure 3 - Brazil: statistical regression analysis. Linear trend line of cruise travelers' demand

Source: The author's work, adapted from CLIA ABREMAR BRASIL (2015; 2016b)

The trend line displayed in the scatter diagram (Figure 3) projects a positive outlook for the future. This is a linear line type, whose correlation coefficient R² is 0.97, indicating that 97 percent of the data have correlation between variables. Consequently, the results of the estimated relationship are validated.

The standard error of estimate (Syx), obtained from the linear equation, was 40,488 cruise travelers. Thus, from the equation of the line, new demand projections were calculated for the 2012-2013 to 2018-2019 seasons: (table 1).

Table 1 - Brazil: estimated number of cruise ships (without the period of decreasing demand)

SEASON	BRAZIL ESTIMATED DEMAND	BRAZIL REAL DEMAND
2018/2019	1,598,402	-
2017/2018	1,492,618	-
2016/2017	1,386,834	-
2015/2016	1,281,050	597.011
2014/2015	1,175,266	549.619
2013/2014	1,069,482	596.000
2012/2013	963,698	732.163

Source: The author's own work, adapted from CLIA ABREMAR BRASIL (2015; 2016b)

Comparing the actual data with the data obtained in the forecast, the new proposal shows an estimated demand of 963,698 cruise travelers, against the actual demand of 732,163, obtained in the 2012-2013 season. In the last season, 2015-2016, this difference is even greater, obtaining an estimated result of 1,281,050 cruise travelers, 114 percent above the estimated demand of 597,011 passengers (Clia Abremar, 2016b). Clia Abremar (2016c), projects the trend for season 2016/2017 season of 381,694 cruisers, which is 263% less than the projection made in this study of 1,386,834 cruise passengers. In the case the demand has continued to grow since 2012.

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The outcome demonstrates that if the factors that affect the sea cruise market had remained stable, not considering any variables that could influence the drop in demand, such as the decrease in cruise ship supply (Clia Abremar Brasil, 2015), the strategies adopted by the line cruise operators (Ramoa, 2014; Ramoa & Flores, 2015b), or any other socioeconomic factor, the expected result for the demand in the seasons after 2011-2012 would have been growth instead of decline that took place.

This projected perspective of a growing cruise ship market is acceptable, especially considering that in percentage figures, the Brazilian economy had been performing quite well, showing positive results over the past 20 years, until 2013, with the exception of the year 2009, when the GDP declined by 0.3 percent, although the service sector in Brazil obtained positive results between 2004 and 2013, the period analyzed in this research (Bacen, 2016; Ibge, 2012, 2013).

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Other data that may reflect the behavior of the market concerns the level of satisfaction of the cruise traveler. The CLIA ABREMAR BRASIL found in its study "Maritime Cruises: Study on Profile and Economic Impacts in Brazil", conducted during the 2014-2015 season (Clia Abremar Brasil, 2015) that 84.6 percent of respondents answered "Yes," when asked about their desire to repeat the cruise ship experience, although there was a reduction in relation to the studies conducted in 2006 (Clia Abremar Brasil, 2006) and 2010 (Clia Abremar Brasil, 2011), in which 94.8 and 89.6 percent, respectively, responded affirmatively to the same question.

As it is not possible to pinpoint the reasons for the decline in demand for cruises in Brazil, since the economic factors that have influenced it were not identified. An evaluation of the international market is therefore needed, to determine whether this is a particular feature of the Brazilian market, or whether it is a global trend.

To this end, based on historical data from the last 10 years, from 2006 on, the demand behavior in the top-ranked international cruise markets was analyzed.

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Statistical regression calculation and forecast demand for the international cruise market

The world economy has recently undergone two crises that have affected the international cruise market. The first, of an economic nature, began in 2008 in the United States and has spread throughout the world. The second, known as "Arab Spring", was of a political nature and started in North Africa, at the beginning of 2011, caused by the uprisings in Egypt and Tunisia and by the Libyan civil war (Joffe, 2011).

It provoked a crisis in the euro region, affecting the behavior of the European market, due to the cancellation of the stopovers in Tunisian and Egyptian ports, key destinations for this market. The events in North Africa also hindered potential cruise travelers from taking a cruise due to the military movement in the region during the crisis. Another occurrence that affected the European market was the Costa Concordia cruise ship accident, which occurred in January 2012. All these events have somehow affected marine tourism, some countries more than others (CLIA-EUROPE, 2012a, 2013a).

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The regression graphics of the main countries of the world cruise ranking are presented below (Figure 4). To draw the trend lines in these countries the best coefficients of determination R^2, the critical analysis of the line, of its equation and its direction were taken into account.

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Figure 4 – International market. Cruise demand trend line. United States, United Kingdom, Germany and Italy
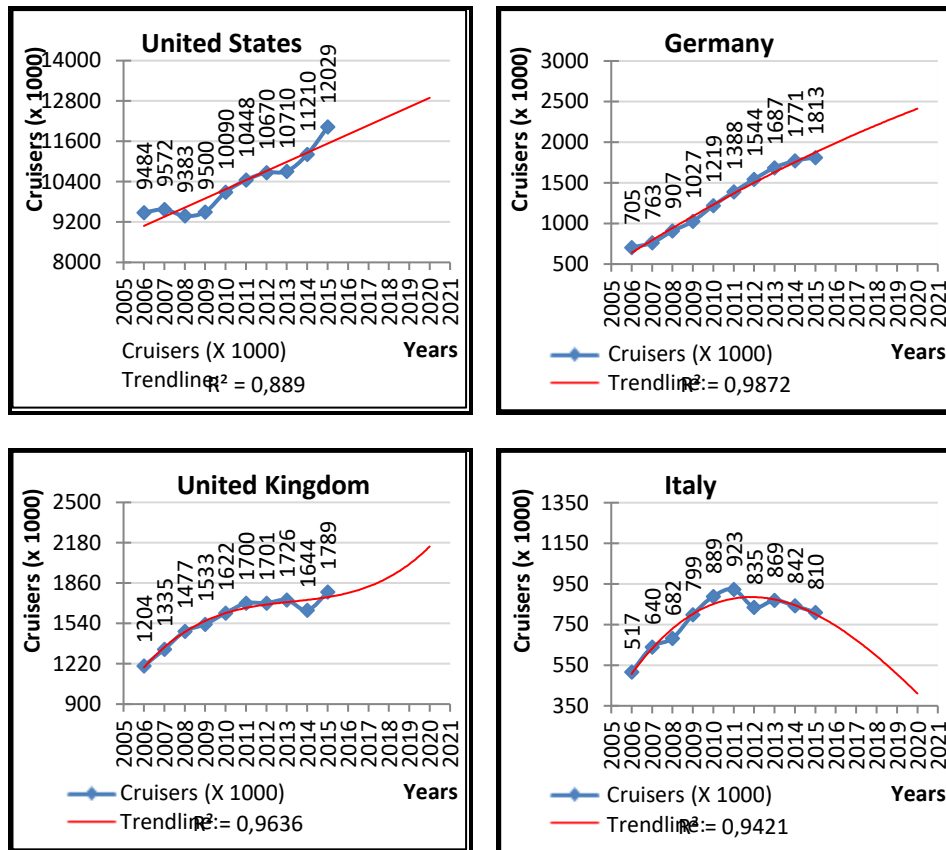
Source: Own work adapted from CLIA (2009; 2010; 2011; 2013a; 2013b; 2014; 2016); Cruise Market Watch (2015); CLIA Europe (2012b; 2013c; 2015a; 2015b)

Ao se analisar os diagramas e respectivas projeções da Based on an analysis of the diagrams and their projections (Figure 4) it appears that these countries, with the exception of Italy, showed no change in growth trend, despite having experienced moments of decline in demand, as it is the case of the United States in 2008 and Italy in 2012, countries which have experienced crises that affected their market behavior more promptly and more deeply (CLIA Europe, 2013a).

The demand in the United States was quite affected by the economic crisis of 2008, recovering from it only in 2010 (CLIA Europe, 2013b). The American crisis and the European crisis of the beginning of 2012 affected the behavior of the European market differently.

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Cruise demand in each country reflected the crisis, altering their growth rates in a particular way (CLIA Europe, 2013a).

Growth rates in cruise demand in Germany were unaltered. The United Kingdom maintained stable growth rates in 2011, 2012 and 2013. Conversely, Italy was affected by the Costa Concordia accident, which negatively influenced its cruise demand. For CLIA Europe, the Italian cruise market would only return to normal after 2014 (CLIA Europe, 2013a), however, that has not happened yet. The regression graphics below show Australia, Canada, Brazil and Spain, the fifth to eight-ranked countries respectively (Figure 5).

Figure 5 – International market. Cruisers demand trend. Australia, Canada, Brazil and Spain
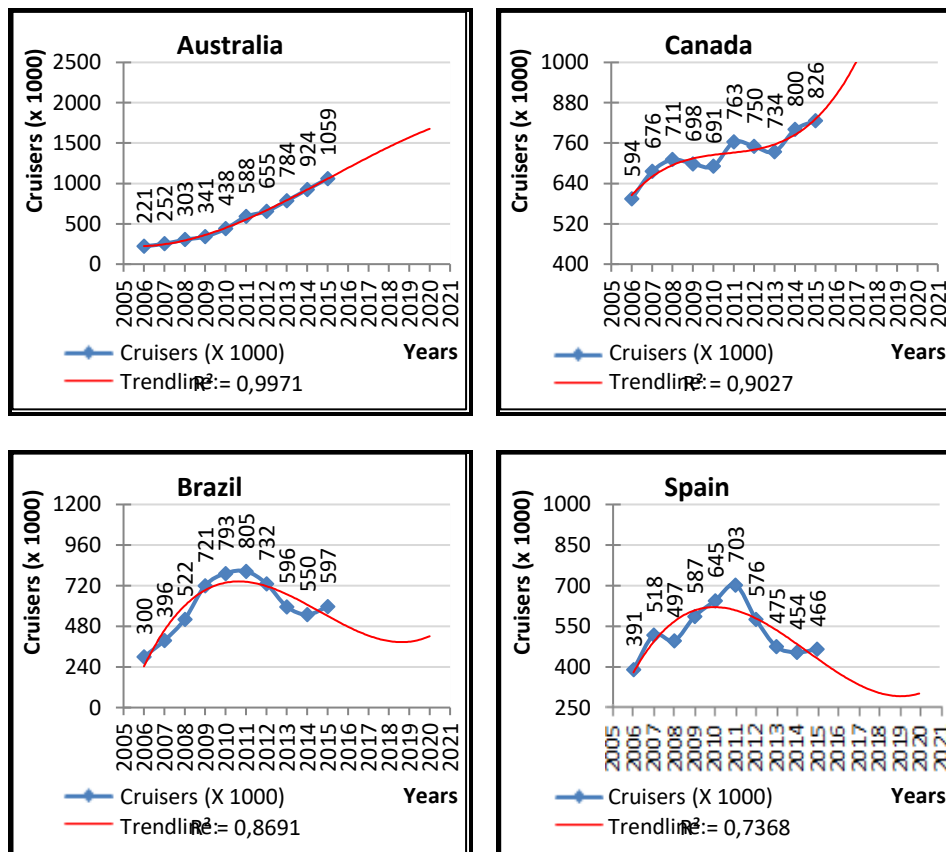
Source: Adapted from CLIA (2009; 2010; 2011; 2013a; 2016); CLIA ABREMAR BRASIL (2015; 2016b); CLIA Australia (2015); CLIA Europe (CLIA Europe, 2012b; 2013c; 2015a; 2015b; 2015c); (Cruise Market Watch, 2015)

Contrary to what happened to the United States, at the end of 2008, and then in Europe, which suffered from the international economic crisis, countries such as Australia and Brazil were immune to this crisis (CLIA-Europe, 2013b).

Australia presents a historical series with continuous growth and no negative factor influencing demand behaviour. With respect to Brazil, which was not affected by the internal or external crises mentioned above, the annual demand since the 2012-2013 season has been declining.

Canada, for its part, in addition to the international economic crisis of 2008, had a particular factor that affected demand behavior: competition between the Canadian and American ports. Cruise travelers to Alaska began to embark in Seattle, United States, instead of Vancouver, the largest port in Canada, accounting for 33 percent of the passenger traffic in the country. That change resulted in a decline of 32 percent in the number of boardings in this Canadian port from 2007 to 2012, falling from 494,864 to 375,255 passengers (CLIA-& North West Canada, 2013a).

With passengers embarking in Seattle, the port of Victoria, Canada, became the primary port of call for cruises bound for Alaska. With these changes in demand behavior, the CLIA-NORTH WEST & CANADA stated that although there has been an upward trend in the number of passengers in recent years, the demand has fluctuated year on year as a result of two factors; the rerouting cruise lines, and the impacts of the economic crisis in the country (CLIA-& North West Canada, 2013b).

While Canada presents a demand growth trend, after it reached 800,000 cruisers in 2014 (CLIA, 2016) and 826,000 in 2015 (Cruise Market Watch, 2015), in Brazil the scenario was different. The peak of 20 cruise ships, which occurred sooner than Canada's, in 2010-2011, was followed by a decline. In the 2011-2012 season, 17 ships were operating, in 2012-2013 they were 15, in 2013-2014 that number dropped to 11 and in the 2014-2015 and 2015/2016 seasons it fell to 10. As a result, the supply of berths in 2013-2014 dropped by 15 percent

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compared to 2012-2013, which had 762,000 berths available (Clia Abremar Brasil, 2011; 2016d).

The behavior of the Brazilian cruise market raises several questions, namely the reasons that led to such a quick reduction in demand and supply after thriving periods. Several factors were put forward to explain this performance, but according to Ramoa (2014) the decline in passenger numbers in Brazil was due to the strategic decision of cruise companies to reduce the supply of ships on the Brazilian coast, opting instead for more attractive markets, especially given the infrastructure issues and high operational costs in Brazil, as warned by CLIA ABREMAR BRASIL (2010; 2015) and confirmed by Ramoa (2014).

According CLIA EUROPE (2013a) the Spanish economy was more affected by the 2008 and 2012 crises than most countries in Europe, although since then, the cruise market has already shown recovery signs, returning to growth and with higher rates than the rest of the country's tourist sector.

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In conclusion, political and economic crises, as well as natural disasters and other market variables, can influence the behavior of a market for a certain period of time, or permanently, depending on the situation. That is what has occurred in several countries, which have undergone some kind of crisis but have nevertheless returned to growth, showing that when there is a limitation in supply or in demand - whether of an economic, political, social or structural nature - and this limitation is eliminated, the market tends to bounce back.

Nonetheless, it is important that tourism destinations are ready to respond to potential crises, which may affect their development. Also, with the support of the public authorities, a strategic plan should be drawn up considering the possible occurrence of extreme situations. After all, despite the negative effects of crises, a good crisis management can reverse the situation and bring new opportunities (Muñiz & Brea, 2010; Rodríguez-Toubes & Brea, 2012).

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FINAL CONSIDERATIONS

When comparing the Brazilian cruise demand data with the international market, examining the growth curves and also noting a growth trend in most of the analyzed markets in the next few years, it could be said that the Brazilian cruise market outlook for the coming years is one of continued decline in demand, unless some action is taken to reverse this trend.

It is notable that unlike the markets of North America and Europe, which have a larger historical series and a more consolidated market, the amount of data available for the Brazilian market is still not enough to obtain more accurate results. However, regardless the amount of data or more accurate estimates, the continued demand fall in Brazil since the 2012-2013 season, with a 26 percent drop in the number of passengers until 2015-2016, is enough, per se, to draw attention to the sector.

Therefore, comparing Brazil with the curves of countries with similar demand, in particular Australia and Canada, the figures are alarming, and further research on cruise demand is needed to further understanding of consumers' decision-making processes. It is also essential to assess the variables on the supply side, regarding the strategic decisions made by companies such as the number of cruise ships available or the lengths of seasons.

This research presents a worrying forecast for the Brazilian cruise market in the coming years. Despite having experienced a thriving period and having reached a prominent position in the international ranking of cruise tourism, Brazil is now facing a downward trend that could become a permanent reality.

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