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RevPAR determinants of Portuguese hotels: The global and the local factors

Abstract

The research about the determinants of firms' performance has been a crucial question for managers, researchers and stockholders. The main objective of this exploratory paper is to study the economic drivers of revenue per available room (RevPAR) in the Portuguese hotels. This study examines the local and global factors driving RevPAR in different hotel segments, calculating how much of the overall changes in RevPAR are explained by national factors and how much by broader factors. Using seemingly unrelated regression analysis and considering monthly data from 2011 to 2015, the results indicate that local variables are more important than the global ones, with that difference more striking for the 4 star hotels. In aggregate terms, local factors account for 55% of the changes in Portuguese hotels RevPAR. The US consumer sentiment index is never significant and the EU and Portugal consumer confidence indexes do not seem to be important drivers of RevPAR for the different categories of hotels. The results show that the hotel sector performance is closely related to cyclical factors, especially to tourism growth. Although in recent years Portugal has enjoyed a strong surge in the number of tourists, in part motivated by external factors, the results demonstrate the high vulnerability of the sector to those volatile and out of our influence variables, highlighting the danger of some reversion in the medium term.

Key words: hotels; tourism growth; Seemingly Unrelated Regression (SUR) analysis; RevPAR; hospitality management; Portugal

Introduction

The research about the determinants of firms' performance has been a crucial question for managers, researchers and stockholders (Schmalensee, 1985; Rumelt, 1991; Opler & Titman, 1994; Hawawini, Subramanian & Verdin, 2003). Particularly in the tourism and hospitality sectors, research about the firms performance tends to focus on a national perspective (Gursoy & Swanger, 2007; Reichel & Haber, 2005) or on a particular hotel group perspective (Ham, Kim & Jeong, 2005; Madan, 2007).

This research studies the economic drivers of revenue per available room (RevPAR) in the Portuguese hotels (namely, those of five, four and less than four stars category). It examines the national and global factors driving RevPAR in different hotel segments, calculating how much of the overall changes in RevPAR are explained by national factors and how much by broader factors. This association between business, economic conditions and corporate performance of hotel firms is a topic less studied, particularly in the case of European countries.

RevPAR is used by the hotel industry as a key determinant of a hotel performance, being measured as the relation between the revenue from accommodation (revenue from overnight stays spent by guests

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in all tourist accommodation establishments, net of discounts, sales tax and meals) and the number of available rooms, in the reference period. It uses RevPAR given this indicator's ability to synthesize, both, price and occupancy, providing insight into how well a hotel is utilizing its room inventory. It should be noticed, however, that the commonly used average measures of average daily hotel rate (ADR), RevPAR, and occupancy may be insufficient to observe the "typical" hotel performance. Overall, lodging data mask huge variability that exists by market and segment. In addition, performance patterns vary substantially within markets and segments (Damonte, Romp, Bahl & Domke, 1997; Enz, Canina & Walsh, 2001).

One reason for comparing the effects of local factors on RevPAR with the impact of global factors is that the global drivers should have broader consequences on profitability for hotel operators who manage an international portfolio of hotels. Also, given the weight of the non-residents stays on the total overnight stays, the financial situation of hotels surely is heavily dependent of the broader economic situation. On the other hand, by assessing local RevPAR factors, international hotels can reduce country risk by expanding their hotel portfolios across countries not subject to the same type of local risk.

Therefore, the next section presents an introduction to this issue and a literature review. The third section presents the data, the hypothesis to be tested and the methodology to be used. The fourth section presents the empirical results, with the final section presenting a discussion about the results and some concluding remarks.

Literature review

Hospitality sector professionals are concerned about the specific effects of economic factors – particularly income – on hotel room demand and profitability. For instance, operators need to understand how sensitive their hotel profitability is to economic factors to maximize the effectiveness of their revenue-management strategies. As stated by Sainaghi (2011, p. 298), the theme of hotel performance has had numerous implications in the hotel sector (Okumus, 2002). The majority of these studies use independent variables related to internal functions, processes and activities (Ingram, 1996; Phillips, 1996; Sigala, 2004; Barros, 2004; Hu & Cai, 2004; Kim & Kim, 2005; Øgaard, Marnburg & Larsen, 2008). The indicators used are mainly financial ratios, occupancy, prices, RevPAR, sales growth, and customer satisfaction.

To measure hotels' corporate performance interactions with macro or business conditions, the majority of previous studies used stock returns (Heiman, 1988; Chen, Kim & Kim, 2005; Chen, 2007b, 2010, 2015; Singal, 2012). Nevertheless, there is the danger that the irrational movements of the market make that stock prices do not reflect true financial performance. Also, the majority of hotels is not quoted or belongs to worldwide hotel chains, whose stock price does not reflect the idiosyncrasies of each individual hotel.

Concerning RevPAR, there is an ongoing debate about the appropriateness of that measure (Brown & Dev, 1999; Douglas, 2000; Slattery, 2002). RevPAR focuses attention on results and is, to a large extent, a product-oriented measure in a customer-oriented industry. There is, arguably, an industry wide obsession with RevPAR despite recognition by practitioners and academics of its well-established weaknesses. Brown and Dev (1999) question whether hotel productivity measures can effectively reflect hotels changing emphasis from a room-only orientation to a full-service orientation. In addition, they ask whether a customer-orientated approach should take over from the current product-orientated one. Slattery (2002) presents three arguments why RevPAR needs reform. He claims that reporting on

RevPAR is unreliable, room supply and demand measures are flawed and the variability or lack of links to cash undermines its effectiveness. Slattery (2002) argues that measures such as RevPAC (revenue per available customer), TrevPAR (total revenue per available room) and GOPPAR (gross operating profit per available room) are increasingly being employed (Younes & Kett, 2004; Banker, Potter & Srinivasan, 2005). However, RevPAR remains the key measure adopted in a range of research studies (Ismail, Dalbor & Mills, 2002; Sainaghi, 2011), and it is also adopted in the present study due to the availability of data.

In spite of the interest of the hospitality industry in models that estimate the impact of various factors on the demand for hotel room nights, there are relatively few papers about that topic. Some earlier examples, employing a macro approach to study the cyclical behavior of the US hospitality industry, are Coopers and Lybrand (1995), Wheaton and Rossoff (1998) or Choi, Olsen, Kwansa and Tse (1999). More recently, Chen et al. (2005), Canina and Carvell (2005), Liu, Moulton and Quan (2013) are some examples, which are described below. The interactions between business conditions and financial performance of tourism firms may be linked to some macroeconomic factors. For instance, Chen et al. (2005) illustrate that macroeconomic forces such as monetary policy and unemployment rate significantly impact financial performance of Taiwanese hotels. Chen (2007a) finds that Chinese hotel stock returns are significantly associated with growth rates of industrial production, growth rates of imports, changes in discount rate, and changes in yield spread. Canina and Carvell (2005) find that consumer confidence has an impact on the price elasticity for hotel properties. Also, Knowles and Egan (2001) find that consumer confidence is a key factor affecting the international hotel industry. Chen (2007b) while examining interactions between business conditions and financial performance of tourism firms in China and Taiwan finds a long-run equilibrium relationship between these two variables. The author also finds that gross domestic production plays a more critical role than industrial production in forecasting variance of financial performance of tourism firms. Also, Chen (2010, 2011) demonstrates that tourism growth positively influences the performance of Taiwanese hotels.

In one of the few applications to a European context, Sainaghi (2010) identifies RevPAR determinants of individual firms located in Milan, Italy through a sample of 72 individual firms, operating in the 3 to 5 star range, with data collected from financial statements and questionnaires. The empirical findings identify four main significant determinants linked to the "what" positioning – number of rooms, number of employees, number of years since the last refurbishment, market orientation – and confirm the relevance of location ("where"), and specially of centrality within the destination.

More recently, Liu et al. (2013), examined the economic drivers of RevPAR for eight major Asian cities, calculating how much of the overall changes in RevPAR are explained by local factors and how much by broader factors. They used a dataset of monthly ADRs and occupancy rates to compute monthly RevPAR. Then, year-over-year changes in RevPAR are related with year-over-year changes in a set of independent variables of local and global nature: monthly data on the consumer price index, number of international tourists, trade balance, exchange rate, consumer confidence indexes, interest rates and stock exchange and real estate development indexes. Additionally, dummy variables are also included in order to account for four major events. Performing a seemingly unrelated regression (SUR), the authors find that global variables are more important than local factors in explaining the variation in Asian hotel RevPARs over time and across cities.

Chen (2015) studies the effects of changes in consumer confidence in Taiwan on hotel stock performance, including hotel sales growth and hotel stock returns to finds that consumer confidence can significantly benefit hotel stock returns by stimulating hotel sales growth. Singal (2012) also finds for the US hospitality industry a significant influence of changes in consumer confidence on sales growth

and stock returns. However, apart from Asia and the US, applied research to other regions or countries is very sparse.

This paper makes the following contribution to the tourism and hospitality literature: it offers a comparative examination on the different impact of internal and external economic and industry factors on hotel performance, measured by RevPAR, where changes in the economy can be viewed as the economic factor (proxied by the economic sentiment indexes), whereas the expansion of the market for foreign tourism (proxied by the number of foreign stays), can be used as the industry specific factor. This is the first analysis of this type made for the Portuguese hotel industry. In 2015, according to WTTC (2015), the contribution of the travel and tourism sector for the Portuguese GDP is around 16%, so that understanding the main drivers of its performance becomes a crucial question.

Data, hypothesis and methodology

Data

Following closely the methodology of Liu et al. (2013), this research used a dataset provided by the Portuguese national statistics office (*Instituto Nacional de Estatística*), comprising monthly data on several hotel indicators, for the period from February 2011 to May 2015. This period comprises the "great recession", namely the period exactly before the implementation of the Portuguese economic adjustment program, ending in May 2015, a period characterized by a much friendlier economic environment.

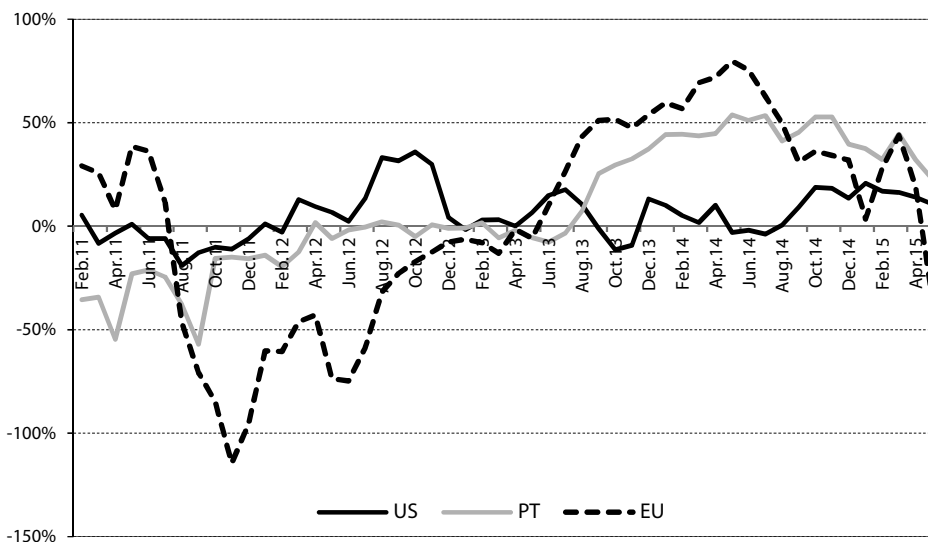
One challenge of analyzing RevPAR over long periods of time is that RevPAR tends to be cyclical and highly seasonal (e.g., August vs. January). To control for the seasonal variation, monthly year-over-year percentage changes was analyzed to focus on the underlying economic drivers of RevPAR for the different hotels. Thus, the analysis of year-over-year changes in RevPAR as well as year-over-year changes in the independent variables was conducted. The variables were: the number of non-residents and residents overnight stays (time spent by an individual between midday and midday of the following day) and the consumer confidence indexes in Portugal, the EU and the US.

This section explains the motivation for choosing each variable and the expected effect on RevPAR, guided by a combination of economic theory, previous empirical work and the need for proxies that are available on a monthly basis. The number of non-residents and residents overnight stays should have a positive impact on RevPAR, as it directly affect the demand for hotel rooms and are proxies for, respectively, internal or external industry determinants. These variables reflect the fact that the expansion of tourism is expected to promote the corporate performance of hotel firms. Economic growth, in general, should also have a positive impact on RevPAR through the increase in the demand for hotel rooms. Nevertheless, there are no monthly data on output, so the consumer confidence index in Portugal as a proxy for internal factors affecting the demand for hotel rooms was used. For external factors, the EU and the US consumer confidence indexes, respectively, as proxies for the European and global economic income were used. In stressing the relevance of the consumer confidence indexes, it is important to note that in August 2015 the total number of hotel overnight stays in Portugal was 7.2 million, of which 64% were foreign travelers. More than 80% of foreign travelers come from the European Union, and the rest from the United States.

Since economists have proposed that changes in wealth may have an impact on consumer spending, the consumer confidence index as a proxy for current expectations of future income was used. As expectations of future income levels increase and, likewise, consumer confidence, it is expected that the room demand will increase with the increase in RevPAR. The coefficient for consumer confidence

is expected to be positive and significant, because rising consumer confidence would have the effect of increasing consumers' willingness to travel and increase hotel demand and it should be noted that this effect is quite different from the income effect in that this phenomenon is the result of consumers' expectations about future economic conditions rather than of current conditions. The consumer confidence indexes reflect the consumers' future expectations for income, so it is expected that greater confidence will increase the demand for hotel rooms, thus having a positive impact on RevPAR. Canina and Carvell (2005) found that a 1% increase (or decrease) in the level of the consumer confidence index will increase (or decrease) the number of rooms demanded by 0.03%.

Figure 1
Consumer confidence/sentiment indexes - year-on-year changes (February 2011 – May 2015)



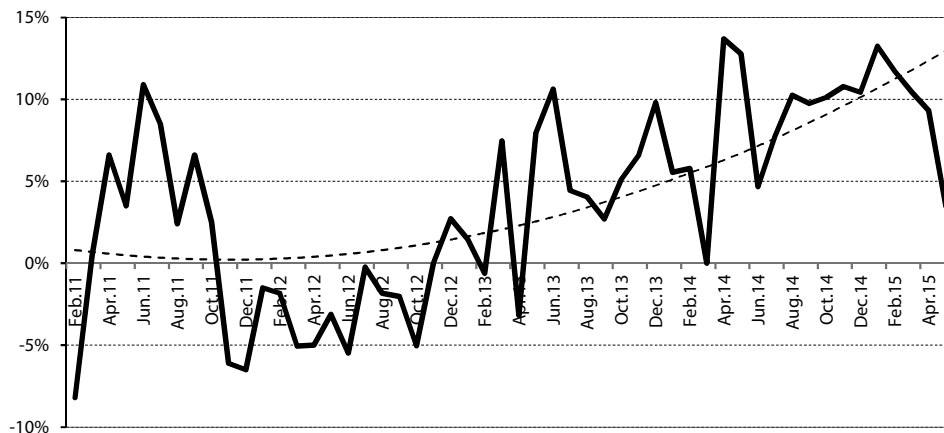
Source: INE (Instituto Nacional de Estadística) and University of Michigan.

The unemployment rate could be used as a proxy for output, with the hypothesis of an inverse co-movement between those variables. Nevertheless, as very similar results are usually obtained, a decision was made to use the consumer or economic sentiment indexes. Contrary to Liu et al. (2013), dummy variables were not included since there were no significant national events in the considered period that could have an impact on hotel demand. Also, inflation was not included in the explanatory variables, given the current situation of near zero inflation.

A tests of significant differences between different hotel segments was also done. Arguably, the lower quality hotel segments might be more sensitive to changes in the economy than other price segments. Nevertheless, an income effect suggests that a sluggish economy would reduce overall demand and RevPAR; on the other hand, the trading-down (up) effect suggests that consumers may choose hotels in progressively lower price segments as the economy deteriorates. So, the pure income effect and the trading-down (up) effect are expected to be stronger in the low end segments than in high-end segments. Canina and Carvell (2007) found such differences, with upscale price segments more sensitive to the consumer confidence index albeit less sensitive to the income variables.

Figure 2 presents the RevPAR evolution for Portuguese hotels from February 2011 to May 2015 (including a trend line) showing that, after a strong decline in 2011, global RevPAR began its recovery in the second semester of 2012.

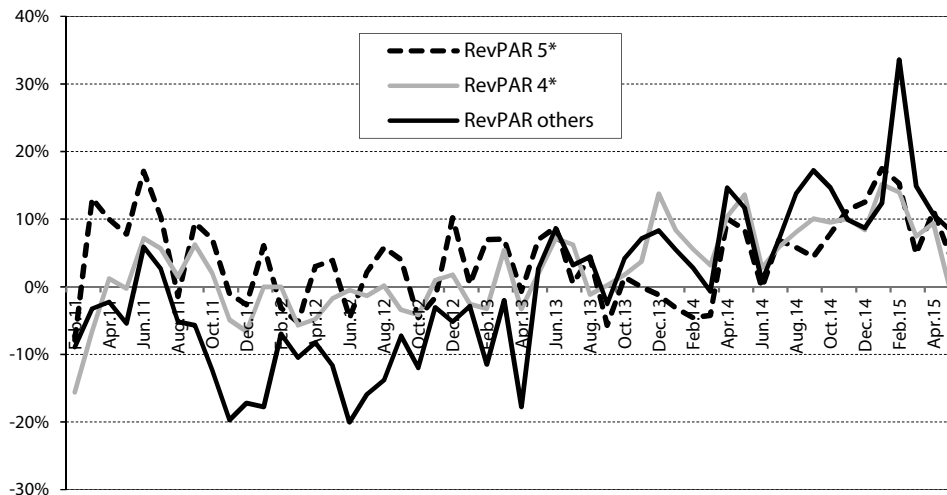
Figure 2
RevPAR for Portuguese hotels (February 2011 – May 2015)



Source: INE (Instituto Nacional de Estatística).

Figure 3 presents the co-movement of RevPAR for different hotel segments that is, differentiating between five star, four star and other hotels. The data show clearly a diverging behavior for the low segment hotels during the crisis years. Apparently, the more resilient five and four star hotels did not experience negative growth rates for such a long period, while the less than four star hotels accomplished a stronger rebound in recent months.

Figure 3
RevPAR for Portuguese hotels (February 2011 – May 2015)



Source: INE (Instituto Nacional de Estatística).

Hypothesis to be tested

Based on the literature review, five hypotheses were tested:

H1: RevPAR is positively related to the Portuguese consumer confidence index (PT CI).

H2: RevPAR is positively related to the EU consumer confidence index (EU CI).

H3: RevPAR is positively related to the US consumer sentiment index (US CS).

H4: RevPAR is positively related to the number of overnight stays by residents (RES).

H5: RevPAR is positively related to the number of overnight stays by non-residents (NRES).

In testing these hypothesis different hotel segments (5 stars, 4 stars and less than 4 stars) were also taken into account, since possibly there are significant differences concerning RevPAR sensitivity to the explanatory variables. Before the estimation descriptive statistics are presented.

Table 1
Correlation matrix between variables

	US CS	EU CI	PT CI	RES	NRES	RevPAR 5	RevPAR 4	RevPAR others
US CS	1	0.10	0.30	0.05	-0.02	0.04	0.14	0.18
EU CI		1	0.65	0.63	0.38	0.15	0.48	0.72
PT CI			1	0.52	-0.09	0.04	0.60	0.63
RES				1	0.51	0.43	0.68	0.80
NRES					1	0.48	0.37	0.41
RevPAR 5						1	0.52	0.47
RevPAR 4							1	0.78
RevPAR others								1

Table 1 presents the correlation coefficients between variables. There is a rather strong correlation between the number of stays and RevPAR, in particular, there is a clear association between stays by residents and non-residents with, respectively, downscale and upscale hotels. Also, the number of stays by residents is correlated with the national and European consumer confidence indexes whereas the number of stays by non-residents is only strongly correlated with the European index.

Methodology

In order to fulfill the research objective Seemingly Unrelated Regression (SUR) analysis was used. SUR is a generalized linear regression model that consists of several regression equations. Each regression equation has its own dependent variable and potentially different sets of explanatory variables. Here, each hotel category has its own regression equation with the dependent variable equal to the year-on-year change in RevPAR for that category. The explanatory variables for each hotel category are the year-on-year change in the US consumer sentiment index, the EU and Portugal consumer confidence indexes and the number of resident and non-resident guests. Since each equation is a valid linear regression on its own, it can be estimated separately equation-by-equation using standard ordinary least squares (OLS). But since the error terms are assumed to be correlated across the equations, it is more appropriate to estimate the models simultaneously as a system of equations. Essentially, the SUR method amounts to feasible generalized least squares with a specific form of the variance-covariance matrix. In summary, SUR is a set of equations that may be related not because they interact, but because their error terms are related. Nevertheless, we will compare the results obtained with SUR to the results obtained by using OLS.

Results

The results are displayed in Tables 2 and 3. Table 2 presents a simple OLS regression of RevPAR on the different explanatory variables.

Table 2
OLS regression - RevPAR

	Coef.	Sig.
C	-0.001	
US CS	-0.045	
EU CI	-0.003	
PT CI	0.075	***
RES	0.026	***
NRES	0.460	***
R ²	0.76	
R ² adj.	0.73	
F (5, 46)	28.276	***
Durbin Watson	1.404	

* p<0.10; ** p<0.05 and *** p<0.01

The Portuguese consumer confidence index significantly influences RevPAR, having the expected sign, and overnight stays by residents and non-residents are also significant variables. Consumer confidence indexes from the US or the EU seem to be non-relevant to explain the changes in RevPAR.

Table 3 presents the detailed results of all regressions including coefficient estimates for all explanatory variables and their p-values from seemingly unrelated regressions (SUR) and ordinary least squares (OLS). Adding lags to the explanatory variables of the regression equation does not change any of our conclusions, but it does risk introducing multicollinearity because the lagged and contemporaneous variables are highly correlated, so they were excluded from the analysis.

Table 3
Regression models - RevPAR 5*, RevPAR 4* and RevPAR others

RevPAR 5*	Coef.	Sig.	RevPAR 4*	Coef.	Sig.	RevPAR others	Coef.	Sig.
C	0.001		C	-0.014		C	-0.028	
US CS	0.023		US CS	-0.018		US CS	0.072	
EU CI	-0.033		EU CI	-0.037	**	EU CI	0.059	**
PT CI	0.006		PT CI	0.137	***	PT CI	0.067	
RES	0.250	**	RES	0.216	**	RES	0.592	***
NRES	0.438	**	NRES	0.418	***	NRES	0.152	
R ²	0.31		R ²	0.61		R ²	0.74	
R ² adj.	0.24		R ² adj.	0.57		R ² adj.	0.72	
Breusch-Pagan	32.488	***						

* p<0.10; ** p<0.05 and *** p<0.01

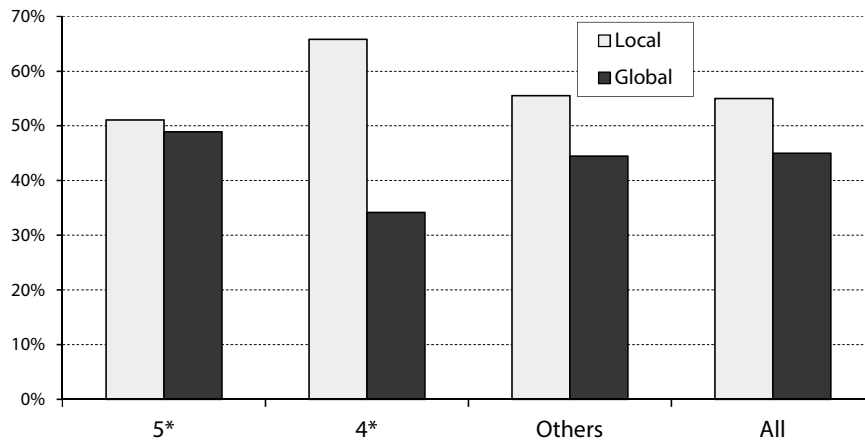
The bottom of the output provides a Breusch-Pagan test of whether the residuals from the two equations are independent. In this case, the p-values imply that the null hypothesis of no correlation between residuals is rejected, being the residuals not independent. So, not rejecting the null hypothesis implies that SUR is better than least squares (OLS) estimation.

The explanatory power of all the factors combined range from an adjusted R-squared of 24 percent for 5 star hotels to 72 percent for the less than 4 star hotels. The US consumer sentiment index is never significant and the EU and Portugal consumer confidence indexes do not seem to be rather important drivers of RevPAR for the different categories of Portuguese hotels. Albeit having always the right sign, the Portuguese consumer confidence index is only significant for the 4 star hotels. In that case,

the estimate is that a 1% increase in the year-over-year consumer confidence index results in a 13.7% year-over-year increase in revPAR for 4 star hotels. Also, albeit the changes in overnight stays by residents are always significant, RevPAR of less than 4 star hotels seems to be more sensitive, a result that could be explained by a substitution effect, where national tourist chose a downscale segment in times of economic difficulties (the "trading-down" effect cited by Canina & Carvell, 2005). On the other hand, non-residents stays explain better the changes on the 5 and 4 star hotels. So, confronting these results with the prior hypotheses, hypotheses 4 and 5 are accepted, since RevPAR across all hotel segments seems to be positively related to the number of overnight stays by residents and non-residents, and reject hypothesis 3, because the US consumer sentiment index is never significant. Regarding hypothesis 1 and 2, according to the results, it is not rejected for the 4 star and for the less than 4 star hotels. It is also interesting to note that downscale price segments are more sensitive to the consumer confidence indexes.

This analysis is completed by determining how much of the explanatory power arises from global factors (proxied by non-resident stays and foreign confidence indexes) and how much it is due to local factors (resident stays and Portuguese consumer confidence index). Figure 4 presents that decomposition.

Figure 4
**Explanatory power of local and global factors on RevPAR for Portuguese hotels
 (Percentage of variance explained)**



The relative weights for global and local variables are computed by comparing the R-square of the SUR regressions for each hotel segment using local factors only versus the SUR regressions using only global factors. Graph 4 shows that local variables are more important than the global ones, being that difference more striking for the 4 star hotels. In aggregate terms, local factors account for 55% of the changes in Portuguese hotels RevPAR.

Discussion and conclusions

As stated by Liu et al. (2013, p. 14), hotels RevPAR arises from a combination of idiosyncratic factors, domestic (country-specific) factors, and global factors. The idea explored in this paper, and the findings on which factors matter most and how they affect RevPAR, have several practical implications for hotel investors, operators and executives, having to choose how to allocate resources in different hotel categories.

The results of this exploratory paper allow us to conclude that local factors are an important driver of hotels' RevPAR, in particular for the downscale segment. On one hand, the analysis did not find a close association between external levels of consumer confidence/sentiment and RevPAR, a result that contrasts with Liu et al. (2013) and Chen (2015). One reason for that result could be the fact that those indicators proxy expectations of the future economic situation do not impact on current RevPAR but only in future values since tourists schedule their vacations with some advance. Another reason for the different results obtained could be the intrinsic differences between travelers to a mega Asian city such as Hong-Kong and guests to Portuguese hotels. On the other hand, tourism growth promotes hotel performance measured by RevPAR, a result that corroborates previous findings by Chen (2010, 2011) and Liu et al. (2013).

The results highlight also the sensitivity of hotel industry to cyclical factors. Since hotel firms tend to have higher fixed costs, they are very sensitive to business conditions because in times of economic downturns hotel firms cannot reduce costs as output falls. Hence, hotel profits will be very volatile, a situation that requires maintaining high levels of revenue to survive in times of lower sales. Nevertheless, a large proportion of the hotel performance, measured by RevPAR, is still unexplained by the model, being affected by other factors, such as external factors (e.g., competition by other markets, international marketing campaigns, exchange rates, etc.) or internal factors (public policies, cost controls and productivity, etc.). Whether those or other factors can explain the Portuguese hotels RevPAR deserves further attention.

In terms of limitations, this study is limited by data availability on a monthly basis. Also, possibly, there are biases in the collection of RevPAR data, since that information is provided to the national statistics office by a sample of hotels. Maybe other indicators of hotel performance could yield different results, what could be a direction for future research. Finally, a caution should be exercised when using industry averages for forecasting and making decisions. In the Portuguese case, national averages are surely biased on some key markets or regions, for instance the Algarve and Lisbon regions, distorting lodging-demand averages. As stated by Enz et al. (2001), reliance on the average can lead managers to overstate RevPAR and understate occupancy objectives.

In summary, the results show that the hotel sector performance is closely related to the state of the economy and especially to tourism growth. Albeit in recent years Portugal has enjoyed a strong surge in the number of tourists, in part motivated by external factors (e.g., instability in northern Africa or the economic growth experienced by some emergent economies), the results demonstrate the high vulnerability of the sector to those volatile variables outside the influence of tourism industry, highlighting the danger of some reversion in the medium term.

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