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# **The impact of financial, macroeconomic and non-economic factors on the hospitality industry in Spain and the UK**

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**ABSTRACT**

Hospitality, as the major sector within the tourism industry, has been widely studied around the world. However, there has not been as much research done on the factors influencing on hotel stock performance in Europe. This master's thesis is investigating the relationship between financial, macroeconomic and non-economic factors and the stock returns of the hospitality industry in Spain and the UK to provide a practical guideline for investors in the hospitality market. Within this study, two financial variables, four macroeconomic variables and seven non-economic variables are selected as the explanatory variables whereas the two countries' hotel stock returns are chosen as the dependent variables, summarized by a hotel price index. The regression results show us that the unemployment rate is a significantly negative factor influencing the hotel stock returns while the hotel stock returns in both Spain and the UK are significantly affected by all the selected non-economic factors. The results are consistent with the empirical study of [Chen et al. \(2005\)](#) which investigated the macroeconomic and non-macroeconomic forces on the stock returns of the Taiwanese hospitality industry. In a further step, the non-economic factors have stronger effects than the financial and macroeconomic factors in both countries whereas the stock performance of the hospitality industry in Spain is more sensitive than it in the UK to the financial, macroeconomic and non-economic factors.

## 1. INTRODUCTION

Tourism has been one of the most prominent contributors to the economic development of the world (Ongan & Gozgor, 2018). In 2016, there were 1235 million international tourist arrivals, and tourism contributed \$1.4 trillion to the world's exports, 10% of the entire world's GDP and 10% of total employment in Europe. Tourism has been playing a vital role in boosting the economy (UNWTO, 2017). As shown in the UNWTO<sup>1</sup> statistics, in 2016, Europe had the leading position in the tourism market which dominated 49.9% and 36.7% of entire world market share of international tourist arrivals and international tourism receipts. Spain and the UK as two traditional tourism countries were ranked by UNWTO in the top ten destinations around the world both with international tourist arrivals and international tourism receipts in 2016 (UNWTO, 2017). The annual report of WTTC<sup>2</sup> in 2017 indicated that, Spain and the UK benefited from travel and tourism by USD177.2bn and USD283.2bn which were the 14.2% and 10.8% of overall GDP in these two countries in 2016 respectively. Additionally, tourism and travel provided 14.5% and 11.9% of total employment in Spain and the UK (WTTC, 2017).

Although tourism has been viewed as an engine for economic growth and development (Crouch & Ritchie, 1999), the sensitive character of tourism can not be ignored. Tourism is one of the most sensitive industries, and there are various factors which can influence this industry (Baud-Bovy, 1982). Edgell (1990) and McIntosh et al. (1995) have asserted that the tourism industry has the all-embracing nature and that the connections between the tourism industry and other industries are extensive. This nature causes the tourism industry to be affected by the subtle changes in the external environment. For instance, political crises and terrorism have adverse effects on the development of local tourism (Sönmez, 1998; Sönmez & Graefe, 1998; Sönmez et al., 1999). Natural disasters also have been seen as a death blow on the tourism industry (Faulkner, 2001). On top of those two factors, the adverse impacts of economic uncertainty on tourism have been widely argued in the 21<sup>st</sup> century (Papatheodorou et al., 2010; Ritchie et al., 2010; Song & Lin, 2010). Those influential factors make the tourism industry very volatile in specific periods or regions. The changes to the external environment play an important role in tourism demand not only in the tourist source regions but also in the tourist host regions. In this sense, the risk of the operations of tourism enterprises is heightened. This volatility of the tourism industry is tremendously embodied in the stock market. Hospitality, as the major sector of the tourism industry mainly due to its ubiquity which generates approximately one-third of overall tourist expenditure. Additionally, it is also an element determining the tourist experience (Sharpley, 2000). Under this circumstance, the hospitality industry is under the influence of the external environment. It will be investigating which determinants affect the stock performance of the hospitality industry. This study is relevant to investors who are interested in hospitality related assets.

This master's thesis uses the regression analysis to provide a general explanation about the relationship between stock returns and potentially influential factors in the investment decision of shareholders and investors in the hospitality market of Spain and the UK. Furthermore, the author will

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<sup>1</sup> UNWTO: World Tourism Organization

<sup>2</sup> WTTC: World Travel and Tourism Council

compare the extent of those impacts between those two countries to determine which country was affected more by those factors. Meanwhile, the macroeconomic variables can be predicted to a certain extent, the investors can forecast how their investment will perform in the short term given certain economic conditions. On the other hand, the non-economic factors considered in this work are mostly not predictable, and in some cases, can enormously influence the stock returns. Therefore, it is essential for the investors to know what the consequences of the unexpected events on the stock performance are. This study may help to guide the investors to act accordingly.

Chen et al. (2005), Chen (2007) and Chiang & Kee (2009) showed that macroeconomic and non-macroeconomic forces have striking impacts on the hotel stock returns in Taiwan, China and Singapore respectively. However, up to my knowledge, such comprehensive analyses about the effects of macroeconomic and non-economic variables on the stock performance of the hospitality industry are limited to the Asia market, whereas similar studies in Europe, especially in Spain and the UK, are lacking. Moreover, Chen et al. (2005) highlighted the need for such studies in different countries. This project is addressing this issue. Hence, this master's thesis closely follows the work of Chen et al. (2005) and extends their research for the hospitality markets of Spain and the UK.

The rest of this master's thesis is organized as follows. The second chapter is the literature review supporting this project, the current situation of this field of research and contributions of this project will also be analysed. The third chapter will describe the methodology including the data, variables and model used for analysing this project. In the fourth chapter, the results will be described and interpreted. The last chapter will be a discussion about the key findings of the whole project. Finally, the contribution and limitation of this project will be discussed, and the author will point to the possible future research lines.

## **2. LITERATURE REVIEW**

In general, the influential forces on the stock performance can be defined as either economic or non-economic. With regard to these two factors, the economic ones have been heavily studied in last decades. Tons of previous researches investigated the influence of economic factors on the stock returns (Firth, 1979; Chen et al., 1986; Fama & French, 1988; Wasserfallen, 1989; Flannery & Protopapadakis, 2002; Boyd et al., 2005). On the other hand, the non-economic factors were also investigated by many researchers as the influential factors on the stock returns (Beaulieu et al., 2005; Leblang & Mukherjee, 2005; Edmans et al., 2007; Białkowski et al., 2008; Kaplanski & Levy, 2010; Chesney et al., 2011). However, the researches specifically focusing on the stock returns of the hospitality industry are few. Within those few studies, the most relevant articles to this research are reviewed as below.

Barrows and Naka (1994) is one of the first papers that study the dependence of stock returns of the hospitality industry in the USA on the macroeconomic variables. They found that the money supply and domestic consumption had positive effects on the stock returns whereas the stock returns were

negatively influenced by the expected inflation rate. Also, the vector autoregressive model was adopted by [Wong and Song \(2006\)](#) for researching the predictability of hotel stock returns in the USA using macroeconomic variables. Their results showed that consumer price index, industrial production and money supply had only weak effects on the forecast error variance. In contrast, the bonds variable was manifested as a strong determinant of the forecast error variance of hotel stock returns in the USA. Following the research of [Wong and Song \(2006\)](#), [Chen et al. \(2012\)](#) researched the effects of macroeconomic factors on the stock returns of Japanese hospitality industry using vector autoregressive model. As a result, the changes in discount rate, changes of the unemployment rate and the percentage change in oil price were the significant influential variables on the hotel stock returns in Japan.

On the other hand, the reaction of the stock returns of the Taiwanese hospitality industry to the SARS disease was investigated by [Chen et al. \(2007\)](#). The empirical results revealed that during the outbreak period, seven local hotel stocks plummeted dramatically. Furthermore, strikingly negative cumulative mean abnormal returns were detected which confirm that the stock returns of the Taiwanese hospitality industry were significantly affected by that disease. Moreover, [Zopiatis et al. \(2018\)](#) employed the econometric methodology for investigating the effects of 150 non-macroeconomic incidents of terrorism, natural catastrophes, and war conflicts since the 21<sup>st</sup> century on the five tourism and hotel stock indices around the world. As proposed in their empirical results, terrorism events and natural catastrophes significantly influenced the tourism and hotel stock indices. The authors also mentioned that the outbreaking time of sharp shrinking of the tourism indices was different between those two types of incidents. Additionally, after two to three days of dramatic decline, the stock indices of tourism and hotel recovered. [Cirer-Costa \(2017\)](#) pointed out the impacts of Brexit on the tourism stock returns. Within this research, he demonstrated that the stock returns of the tourism firms listed on the London and Frankfurt stock exchanges declined dramatically due to this political issue. Notably, the stock returns of Spanish and French hotel chains were also negatively influenced.

The series of literature above separately reviewed the impacts of either macroeconomic or non-macroeconomic factors on the stock returns of hospitality industry. Nevertheless, the comprehensive studies about the effects of both macroeconomic and non-macroeconomic on market returns of the hospitality industry are scant. The study of [Chen et al. \(2005\)](#) researched not only the effects of macroeconomic factors but also the influence of non-macroeconomic forces on the hotel stock returns in Taiwan by using regression analysis. Their empirical findings indicated that all selected non-macroeconomic forces and two macroeconomic factors, money supply and the unemployment rate, had the significant impacts on the hotel stock returns in Taiwan. Following that study, [Chen \(2007\)](#) applied the similar methodology to analyse the influence of macroeconomic and non-macroeconomic factors on Chinese hotel stock returns. Another representative study conducted by [Chiang and Kee \(2009\)](#) investigated the effects of those two types of factors on the hotel stock returns in Singapore. The results of multi-linear regression analysis showed that the exchange rate and a few events have

significant influence on Singapore hotel stock returns. This master's project combines the views of those previous authors and adds the financial variables into the influential factors to detect their impacts on the hotel stock returns in Spain and the UK to fill the gaps of those two countries.

### 3. METHODOLOGY

#### 3.1 Data and Variables

Within this study, two Spanish hotel stocks are selected which are the only two hotel chains listed on the Madrid stock exchange. In the UK, there are several hotel chains listed on the London stock exchange. However, only five companies are with more than fifteen years of historical data. This project chooses these five hotel stocks to set up the hotel stock returns of the UK. The two hotel stocks of Spain are Melia Hotels International SA and NH Hotel Group SA meanwhile the five stocks of the UK are InterContinental Hotels Group PLC, Millennium & Copthorne Hotels PLC, Peel Hotels PLC, Whitbread PLC and JD Wetherspoon PLC.

From [Table 1](#) we can find the detailed information about those selected hotels which play an important role in supporting this study. Firstly, we can see that all those companies have major business in the hospitality industry. Second, the number of hotels of each company can facilitate us to know the size of their hotel business. Third, the market capitalization indicates the capital scale of each enterprise and those figures are considered in calculating the stock price indices of Spain and the UK. The information about the beginning of stock data tells us the starting date of the available historical stock price of each company. Consequently, we can make sure that each company has a sufficiently large sample size.

For calculating the hotel returns of each country, firstly, the approach proposed by [Chen et al. \(2005\)](#) is adopted here calculating the hotel price index with monthly hotel stock prices from 31<sup>st</sup> March 2003 to 31<sup>st</sup> December 2017 of those selected hotel chains according to the value-weighted principle. The hospitality price index at time  $t$  is given as below:

$$HPI_{t(country)} = \sum_{i=1}^n P_{it} W_i$$

Where,  $n$  is the number of hotel stocks for that country;  $P_{it}$  are monthly stock prices at time  $t$  for hotel  $i$ ;  $W_i$  are weights of those hotel stocks calculated based on the market capitalization of hotel chains on the 30<sup>th</sup> April 2018. What is noteworthy is that the shortage of available hotel stocks which have sufficient historical data in Spain and the UK can be a limitation affecting the representativeness of the hotel price indices. This weakness was also mentioned by [Chen et al. \(2005\)](#) in their study on Taiwan hospitality stock market.

Table 1

Information of selected hotels for Spain and the UK

Company	Headquarter	Major businesses	Number of hotels	Beginning of stock data	Market capitalization
NH Hotel Group S.A.	Madrid, Spain	Hotels and resorts	400	3 <sup>rd</sup> January 2000	€2290 million
Melia Hotels International SA.	Palma de Mallorca, Spain	Hotels and resorts	374	3 <sup>rd</sup> January 2000	€2800 million
InterContinental Hotels Group PLC.	Denham, Buckinghamshire, the UK	Hotels and resorts	5348	31 <sup>st</sup> March 2003	£8730 million
Millennium & Copthorne Hotels PLC.	London, the UK	Hotels	137	25 <sup>th</sup> April 1996	£1830 million
Peel Hotels PLC.	London, the UK	Hotels	9	19 <sup>th</sup> March 1998	£12.61million
Whitbread PLC.	Houghton Regis, the UK	Hotels, coffee shops, restaurants	760	1 <sup>st</sup> July 1988	£7810 million
J D Wetherspoon PLC.	Watford, Hertfordshire, the UK	Pubs and hotels	50	29 <sup>th</sup> October 1992	£1200 million

*Note:* all sources are from Thomson Reuters Eikon Database on the 30<sup>th</sup> April 2018.

In this project, the hotel stock returns of Spain and the UK each includes 176 observations. The hotel stock returns ( $HR$ ) at time  $t$  of Spain and the UK as the dependent variable in later regression models are calculated with natural log with their hotel price indices ( $HPI_{t(country)}$ ) as below:

$$HR_{t(country)} = (\ln HPI_{t(country)} - \ln HPI_{t-1(country)}) * 100$$

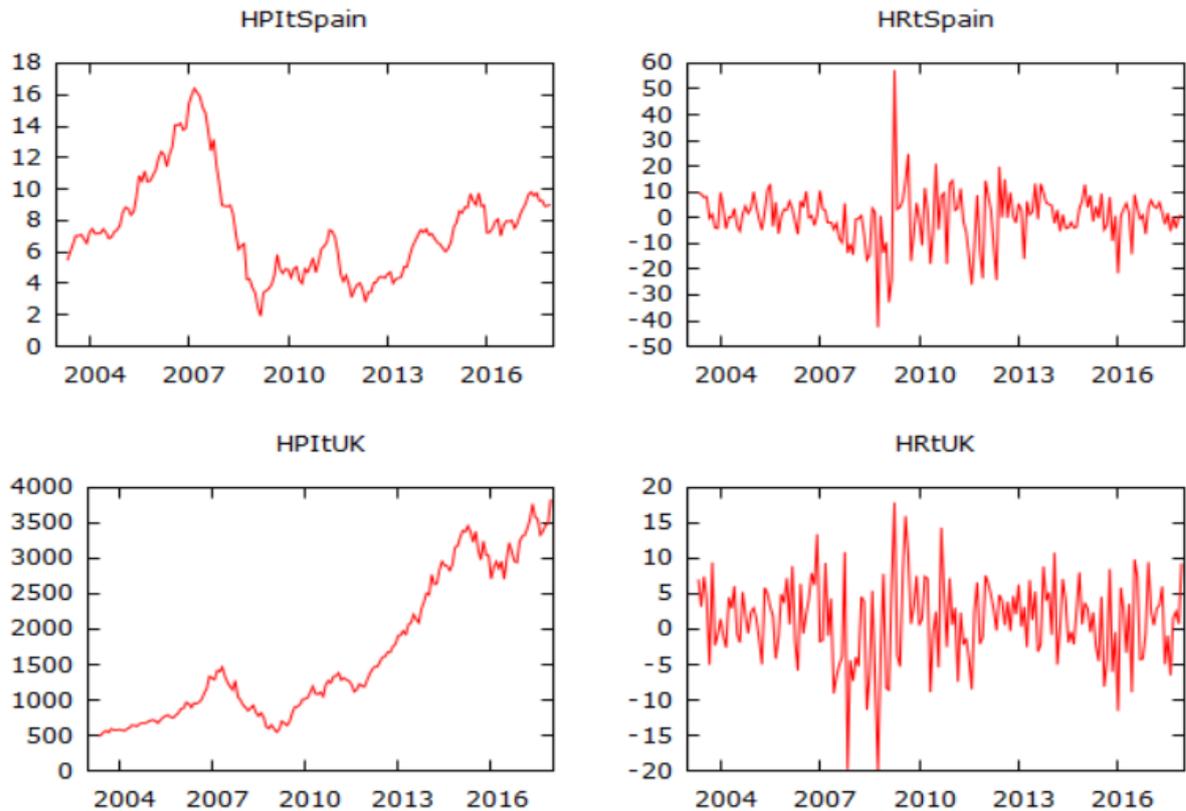


Figure 1. Time series plots of hotel price indices and hotel stock returns of Spain and the UK from May 2003 to December 2017.

The time trend of the hotel price indices and hotel stock returns graphs of Spain and the UK in [Figure 1](#) show that the hotel price indices of Spain and the UK experienced a growth starting from May 2003 and up to early 2007. However, after this period there was a dramatic drop which lasted for around two years. After this period of recession, the hotel price indices of Spain and the UK exhibited a growing trend. The hotel price index of the UK experienced a steady growth, whereas the Spanish hotel price index experienced the fluctuations. Finally, from the time series plots of hotel stock returns of the two countries, there are fluctuations between 2007 and 2012. When comparing it to the hotel stock returns of the UK, the volatility of Spanish hotel stock returns was much larger.

As for the explanatory variables for each country, three types of variables are taken into consideration; the financial, macroeconomic and non-macroeconomic. After researching the studies from [Chen et al. \(2005\)](#), [Chen \(2007\)](#) and [Chiang & Kee \(2009\)](#), in this project, the financial variables include the lagged hotel stock returns ( $HR_{t-1}$ ) and lagged returns of stock market index ( $R_{t-1}$ ) of IBEX35 in Spain and FTSE100 in the UK. Moreover, macroeconomic variables are chosen with four monthly variables from each country including changes of average monthly currency exchange rate with the unit of national currency per US dollar ( $\Delta EXR$ ), changes of short-term interest rate ( $\Delta SIR$ ), changes of the unemployment rate ( $\Delta UNEP$ ) and the growth rate of international tourist arrivals ( $\Delta TA$ ). All the stock data were collected from Thomson Reuters Eikon Database meanwhile the other macroeconomic data

were gathered from OECD<sup>3</sup>, Eurostat<sup>4</sup> and the UK Office for National Statistics with 176 monthly observations in each from March 2003 to December 2017.

With respect to the details about those financial and macroeconomic variables, firstly the lagged hotel stock returns ( $HR_{t-1}$ ) and the lagged returns of the stock market index ( $R_{t-1}$ ) are hotel stock returns and stock index returns with one-month lag. Using lagged returns has a very simple explanation: today might be similar to yesterday, therefore, if in the previous period the returns were negative they might be negative today as well, and the same goes for positive returns. In practice, very little financial returns exhibit this behaviour, but we can still investigate it nonetheless. Moreover, the amount of international tourist arrivals was defined as a key indicator to measure the development of the tourism industry in a country (Kim & Chen, 2006). The growth of international tourist arrivals also benefits the hotel business. In this sense, the growth of international tourist arrivals might have positive effect on the performance of hotel stocks. Furthermore, changes of average monthly currency exchange rate can influence the international tourist expenditure in the destination country. For example, when US dollar appreciates, the tourists from the USA are likely spend more money in Spain. In contrast, if the Euro appreciates, the American tourists will spend less in Spain due to their limited budgets. Therefore, accommodation costs as a major tourist expenditure of will shrink. Consequently, the financial performance of the hotel enterprises will be negatively affected by the ascent of currency exchange rates. This impact can probably be reflected on the stock returns. Following the studies of Chen (2007) and Chiang & Kee (2009), the growth rate of international tourist arrivals ( $\Delta TA_{t(country)}$ ) and the changes of average monthly currency exchange rate ( $\Delta EXR_{t(country)}$ ) are calculated with the natural log of the difference:

$$\Delta TA_{t(country)} = (\ln TA_{t(country)} - \ln TA_{t-1(country)}) * 100$$

$$\Delta EXR_{t(country)} = (\ln EXR_{t(country)} - \ln EXR_{t-1(country)}) * 100$$

The interest rate has been viewed as a vital determinant of the stock market from an investment perspective. The investors have less incentive to make a stock investment when the interest rate is at a high level due to the better option of investment on long-term bonds (Chen et al., 2005). Hence, the increase of short-term interest rates may negatively influence the hotel stock return. In addition, the unemployment rate can reflect the economic condition of a country to a large extent, thereby affecting the confidence of investors. High unemployment rates add to the uncertainty of the economy of a country which can increase the risk on the stock market. In this case, the increase of the unemployment rate might negatively influence the hotel stock returns. In line with the study of Chen et al. (2005) and Chiang & Kee (2009), the changes of the unemployment rate ( $\Delta UNEP_{t(country)}$ ) and the changes of short-term interest rate ( $\Delta SIR_{t(country)}$ ) are calculated with the difference of previous value as below:

<sup>3</sup> OECD: Organisation for Economic Co-operation and Development

<sup>4</sup> Eurostat: Statistical office of the European Union

$$\Delta SIR_{t(\text{country})} = SIR_{t(\text{country})} - SIR_{t-1(\text{country})}$$

$$\Delta UNEP_{t(\text{country})} = UNEP_{t(\text{country})} - UNEP_{t-1(\text{country})}$$

Concerning the non-economic variables, seven important events with significant influences are considered in this project. These are the announcement of London Olympics in July 2005, financial crisis event (November 2007 in the UK, February 2009 in Spain), global stock market collapse in October 2008, London G20 summit in April 2009, eruption of Iceland's volcano in May 2010, Paris terror attack in November 2015 and Brexit referendum in June 2016. The events cover the last fifteen years from mega-sport, economic, political, nature disaster and terrorism aspects. In later regression models, these non-economic variables are treated as dummy variables with the values of 1 in the months of the events whereas in all the other months the values are 0.

### 3.2 Model

After defining the dependent and explanatory variables, the regression model is built up. Following the study from [Chen et al. \(2005\)](#), the author employed the regression model as the major tool to detect whether a causality between the hotel stock returns and these financial variables, macroeconomic variables and non-economic variables exists. The first regression model is constructed to test the causality between hotel stock returns with financial and macroeconomic factors in Spain and the UK as below:

$$HR_{t(\text{country})} = \beta_0 + \beta_1 HR_{t-1(\text{country})} + \beta_2 R_{t-1(\text{country})} + \beta_3 \Delta EXR_{t(\text{country})} + \beta_4 \Delta SIR_{t(\text{country})} + \beta_5 \Delta UNEP_{t(\text{country})} + \beta_6 \Delta TA_{t(\text{country})} + \varepsilon_t$$

The next step was to carry out the OLS (Ordinary Least Square) procedure which is the best linear unbiased estimator ([Henderson, 1975](#)) for calculating the estimates in our regression model. The results of the OLS will help us to find out the significant financial and macroeconomic variables in those two countries. In our second regression model, the selected non-economic variables will be added to the significant financial and macroeconomic variables from the previous model. Thus, the second regression model is:

$$HR_{t(\text{country})} = \alpha_0 + \sum_{i=1}^m \alpha_i V_{it(\text{country})} + \sum_{j=1}^7 \lambda_j NV_{jt(\text{country})} + v_t$$

Where  $m$  is the number of significant financial and macroeconomic variables;  $V$  represents all those significant financial and macroeconomic variables whereas those selected non-economic variables are included as  $NV$ ;  $v$  is a random disturbance term. The OLS regression is employed again here, and the results will tell us which financial, macroeconomic and non-economic variables are significant in our model which means that these variables affected the hotel stock returns in Spain and the UK. In addition, the impact from each variable or all variables on the hotel stock returns in Spain and the UK can also be detected within the results of OLS regression.

#### 4. RESULTS

Before analysing the causality, we still need to do several tests on the financial and macroeconomic variables. Firstly, we should test the stationarity of all those variables because all those variables are composed of time series data which might be non-stationary. Thus, the ADF (Augmented Dickey-Fuller) test is conducted, and the results (not presented here) indicate that they are stationary. Moreover, all those variables should not exhibit the seasonal pattern and autoregressive behaviour which can lead to biased results. To check whether they have the seasonality and autoregressive behaviour, this study uses the correlogram in Gretl to see the graphs of the time series distribution of the data. After checking, the seasonal patterns exist within the variable of the growth rate of international tourist arrivals ( $\Delta TA$ ) in Spain and the UK. Also, the autoregressive behaviour is found in variables of changes of short-term interest rate ( $\Delta SIR$ ), changes of average monthly currency exchange rate ( $\Delta EXR$ ) and changes of the unemployment rate ( $\Delta UNEP$ ) both from Spain and the UK. In this scenario, we need to use the autoregressive-moving average (ARMA) model to decompose the seasonal patterns and autoregressive behaviour from the defined variables. After the decomposition process, we should be sure that no linear relationship exists among those variables. For reaching that point, we need to test the multicollinearity by means of checking the correlation among those variables. In this project, the whole empirical analysis process is done using Gretl which is a popular econometric software.

Table 2 presents the correlations between all independent variables with the dependent variable and the correlations among all independent variables from Spain. The correlation matrix shows that in Spain, the hotel stock returns ( $HR_{t(Spain)}$ ) positively correlate with lagged hotel stock returns ( $HR_{t-1(Spain)}$ ), lagged returns of the stock market index ( $R_{t-1(Spain)}$ ), changes of short-term interest rate ( $\Delta SIR_{t(Spain)}$ ) and the growth rate of international tourist arrivals ( $\Delta TA_{t(Spain)}$ ). On the other hand, changes of average monthly currency exchange rate ( $\Delta EXR_{t(Spain)}$ ) and changes of the unemployment rate ( $\Delta UNEP_{t(Spain)}$ ) negatively correlate with the hotel stock returns ( $HR_{t(Spain)}$ ). Furthermore, we can find that lagged returns of the stock market index ( $R_{t-1(Spain)}$ ), changes of average monthly currency exchange rate ( $\Delta EXR_{t(Spain)}$ ) and changes of unemployment rate ( $\Delta UNEP_{t(Spain)}$ ) are the top three independent variables correlating with the hotel stock returns ( $HR_{t(Spain)}$ ) in which more than 20% of the variation can be explained by each of those three independent variables. In comparison, the lagged hotel stock returns ( $HR_{t-1(Spain)}$ ), changes of short-term interest rate ( $\Delta SIR_{t(Spain)}$ ) and the growth rate of international tourist arrivals ( $\Delta TA_{t(Spain)}$ ) have small correlations with the hotel stock returns ( $HR_{t(Spain)}$ ). Moreover, we can clearly see that the extremely high correlation coefficient larger than 0.7 exists between two independent variables which are lagged hotel stock returns ( $HR_{t-1(Spain)}$ ) and lagged returns of the stock market index ( $R_{t-1(Spain)}$ ). This phenomenon reveals that there is multicollinearity among the independent variables. To remove the multicollinearity, we need to exclude one of those two variables. Due to the higher correlation between lagged returns of the stock market index ( $R_{t-1(Spain)}$ ) and hotel stock returns ( $HR_{t(Spain)}$ ), the lagged hotel stock returns ( $HR_{t-1(Spain)}$ ) should be excluded in the regression model.

Table 2

## Correlation Matrix of Spain

$HR_{t(Spain)}$	$HR_{t-1(Spain)}$	$R_{t-1(Spain)}$	$\Delta EXR_{t(Spain)}$	$\Delta SIR_{t(Spain)}$	$\Delta UNEP_{t(Spain)}$	$\Delta TA_{t(Spain)}$
1	0.071	0.2123	-0.2082	0.0261	-0.2782	0.1487
	1	0.7079	-0.1552	0.2251	-0.0271	0.0471
		1	-0.1841	0.1486	0.0303	0.0826
			1	-0.0219	0.1454	-0.0672
				1	-0.1662	0.0998
					1	-0.2181
						1

Note: Correlation coefficients, using the observations from May 2003 to December 2017.

Table 3

## Correlation Matrix of the UK

$HR_{t(UK)}$	$HR_{t-1(UK)}$	$R_{t-1(UK)}$	$\Delta EXR_{t(UK)}$	$\Delta SIR_{t(UK)}$	$\Delta UNEP_{t(UK)}$	$\Delta TA_{t(UK)}$
1	0.0499	0.0757	-0.0892	-0.1332	-0.1526	0.1272
	1	0.6976	-0.2534	0.2534	-0.0468	0.0688
		1	-0.2631	0.1212	-0.0739	0.1074
			1	-0.2664	0.0348	-0.1116
				1	-0.0872	0.0572
					1	-0.0748
						1

Note: Correlation coefficients, using the observations from May 2003 to December 2017.

**Table 3** demonstrates the correlation matrix of the UK. Firstly, from the coefficients of correlation matrix we can see that the lagged hotel stock returns ( $HR_{t-1(UK)}$ ), lagged returns of the stock market index ( $R_{t-1(UK)}$ ) and the growth rate of international tourist arrivals ( $\Delta TA_{t(UK)}$ ) have positive correlation with hotel stock returns ( $HR_{t(UK)}$ ), whereas hotel stock returns ( $HR_{t(UK)}$ ) negatively correlates with changes of average monthly currency exchange rate ( $\Delta EXR_{t(UK)}$ ), changes of short-term interest rate ( $\Delta SIR_{t(UK)}$ ) and changes of the unemployment rate ( $\Delta UNEP_{t(UK)}$ ). Second, three independent variables which are changes of short-term interest rate ( $\Delta SIR_{t(UK)}$ ), changes of the unemployment rate ( $\Delta UNEP_{t(UK)}$ ) and the growth rate of international tourist arrivals ( $\Delta TA_{t(UK)}$ ) show relatively high correlations with hotel stock returns ( $HR_{t(UK)}$ ). However, the rest three independent variables can only explain less than 10% variation of hotel stock returns ( $HR_{t(UK)}$ ). Third, same as the correlation matrix of Spain, the lagged hotel stock returns ( $HR_{t-1(UK)}$ ) and lagged returns of the stock market index ( $R_{t-1(UK)}$ ) have an enormously high correlation which almost reaches 0.7. Through respectively checking the correlation of lagged hotel stock returns ( $HR_{t-1(UK)}$ ) and lagged returns of the stock market index ( $R_{t-1(UK)}$ ) with hotel stock returns ( $HR_{t(UK)}$ ), lagged hotel stock returns ( $HR_{t-1(UK)}$ ) should be excluded in our regression model for eliminating the multicollinearity in the case of the UK.

**Table 4** shows the descriptive statistics of all those variables which will be included in the regression models. In this table, we can find out specific financial and macroeconomic information of Spain and the UK from last fifteen years. Referring to the financial variables, the hotel stock returns ( $HR_t$ ) and lagged returns of the stock market index ( $R_{t-1}$ ) are all positive on average in both two countries which is a good signal for the potential stock market investors. Due to the higher mean values and smaller standard deviation values of the stock market variables in the UK, we can infer that the stock returns of the hospitality industry in the UK were not only higher but also less risky than it in Spain. Regarding the macroeconomic variables, the mean values of changes of average monthly currency exchange rate ( $\Delta EXR_t$ ) in Spain and the UK indicate that on average, the US dollar depreciated against Euro whereas it appreciated against British pounds. The mean values of the changes of short-term interest rate ( $\Delta SIR_t$ ) in Spain and the UK are both negative which manifest that on average, both countries decreased their interest from last fifteen years. From the mean values of changes of the unemployment rate ( $\Delta UNEP_t$ ) in Spain and the UK, we can realize that in general, Spain suffered the increase of the unemployment rate on average in the last period whereas the unemployment rate decreased on average in the UK. The mean values of the growth rate of international tourist arrivals ( $\Delta TA_t$ ) of Spain and the UK are both positive which implies that the tourism industry of each country has been well developed.

Table 4  
Descriptive Statistics

	Variable	Mean	Median	S.D.	Min	Max
Spain	$HR_{t(Spain)}$	0.34	1.09	10.5	-42.6	57.3
	$R_{t-1(Spain)}$	0.315	0.849	5.47	-18.7	15.4
	$\Delta EXR_{t(Spain)}$	-0.0353	0.102	2.24	-6.64	6.57
	$\Delta SIR_{t(Spain)}$	-0.00467	0.00212	0.106	-0.942	0.319
	$\Delta UNEP_{t(Spain)}$	0.00253	0.000423	0.125	-0.357	0.465
	$\Delta TA_{t(Spain)}$	0.0112	-0.198	5.59	-37.3	24.1
UK	$HR_{t(UK)}$	1.21	1.69	5.88	-20	17.9
	$R_{t-1(UK)}$	0.402	0.802	3.66	-14	8.3
	$\Delta EXR_{t(UK)}$	0.0627	-0.0852	2.17	-5.18	7.87
	$\Delta SIR_{t(UK)}$	-0.00901	0	0.181	-1.91	0.351
	$\Delta UNEP_{t(UK)}$	-0.00188	0	0.0938	-0.265	0.3
	$\Delta TA_{t(UK)}$	0.311	0.173	7.36	-19.8	28.1

Note: Using the observations from May 2005 to December 2017 (T = 176).

Next, the first regression model is conducted with the OLS estimation for Spain and the UK. In this multiple regression model, hotel stock returns ( $HR_t$ ) as dependent variable is regressed on the independent variables of lagged returns of the stock market index ( $R_{t-1}$ ), changes of average monthly currency exchange rate ( $\Delta EXR_t$ ), changes of short-term interest rate ( $\Delta SIR_t$ ), changes of the unemployment rate ( $\Delta UNEP_t$ ) and the growth rate of international tourist arrivals ( $\Delta TA_t$ ).

Regarding the results of Spain in Table 5, the positive coefficients of lagged returns of the stock market index and the growth rate of international tourist arrivals indicate that the stock returns of the Spanish hospitality industry were positively affected by those two variables. This result is consistent with the positive correlation between hotel stock returns of Spain with lagged returns of the stock market index and the growth rate of international tourist arrivals. Moreover, changes of the average monthly currency exchange rate, changes of short-term interest rate and changes of the unemployment rate have negative coefficients which imply that they had negative influence on hotel stock returns of Spain. The results validate the previous hypotheses on those independent variables. However, the p-values of those independent variables reveal that only lagged returns of the stock market index, and changes of the unemployment rate had statistically significant impacts on the stock returns of Spanish hospitality industry at the significance levels of 5% and 10%.

Table 5

Results of the first regression model of Spain and the UK

	Variable	Coefficient	Std. Error	t-ratio	p-value
Spain	const <i>(Spain)</i>	0.226268	0.645961	0.3503	0.7266
	$R_{t-1}(\text{Spain})$	0.380505	0.167508	2.272	0.0244
	$\Delta EXR_{t(\text{Spain})}$	-0.611325	0.37927	-1.612	0.1089
	$\Delta SIR_{t(\text{Spain})}$	-5.61302	6.77895	-0.8280	0.4088
	$\Delta UNEP_{t(\text{Spain})}$	-21.6935	7.88895	-2.750	0.0066
	$\Delta TA_{t(\text{Spain})}$	0.13654	0.144869	0.9425	0.3473
UK	const <i>(UK)</i>	1.09787	0.456671	2.404	0.0173
	$R_{t-1}(\text{UK})$	0.0747684	0.143437	0.5213	0.6029
	$\Delta EXR_{t(\text{UK})}$	-0.295914	0.222753	-1.328	0.1858
	$\Delta SIR_{t(\text{UK})}$	-6.09920	3.01394	-2.024	0.0446
	$\Delta UNEP_{t(\text{UK})}$	-9.63153	4.83477	-1.992	0.048
	$\Delta TA_{t(\text{UK})}$	0.0873331	0.055773	1.566	0.1192

Note: The OLS estimations use observations from May 2003 to December 2017 (T = 176). Robust standard errors are used for correcting the heteroskedasticity and autocorrelation of residual. The values of adjusted R-squared are 0.125617 in Spain and 0.048425 in the UK.

Referring to the results of the UK, the situation is almost same as in Spain. Lagged returns of the stock market index and the growth rate of international tourist arrivals have the positive coefficients which indicate that hotel stock returns of the UK were positively affected by those two variables. Besides, the negative coefficients of changes of the average monthly currency exchange rate, changes of short-term interest rate and changes of the unemployment rate also manifest their negative effects on hotel stock returns of the UK. Nevertheless, unlike in Spain, the p-values of the regressors in the UK demonstrate that changes of short-term interest rate and changes of the unemployment rate were statistically significant variables influencing the hotel stock returns of the UK at the confidence level of 90% and 95%.

As for the second regression model, those statistically significant variables in the first regression model will be picked out to work with the selected non-economic variables together as the regressors. In this case, lagged returns of the stock market index ( $R_{t-1}(\text{Spain})$ ) and changes of the unemployment rate ( $\Delta UNEP_{t(\text{Spain})}$ ) are going to join in the regression model with other non-economic variables for estimating the hotel stock returns of Spain, while in the UK, changes of short-term interest rate ( $\Delta SIR$

$t_{(UK)}$ ) and changes of the unemployment rate ( $\Delta UNEP_{t_{(UK)}}$ ) will participate in the regression model with those special events for estimating the hotel stock returns of the UK.

Table 6

Results of the second regression model of Spain and the UK

	Variable	Coefficient	Std. Error	t-ratio	p-value
	Const	53.3215	5.79233	9.206	<0.0001
	$R_{t-1(Spain)}$	0.294697	0.128012	2.302	0.0226
	$\Delta UNEP_{t(Spain)}$	-13.7864	5.99106	-2.301	0.0226
	Announcement of London Olympics	11.3942	0.575056	19.81	<0.0001
	Global stock market collapse	-34.8502	2.83066	-12.31	<0.0001
Spain	Financial crisis event in Spain	-31.8846	1.67114	-19.08	<0.0001
	London G20 summit	51.0329	2.13806	23.87	<0.0001
	Eruption of Iceland's volcano	-18.7148	1.17348	-15.95	<0.0001
	Paris terror attack	-13.0896	0.866871	-15.10	<0.0001
	Brexit referendum	-16.6272	1.0207	-16.29	<0.0001
	Const	50.8481	3.90906	13.01	<0.0001
	$\Delta SIR_{t(UK)}$	-1.95665	2.69287	-0.7266	0.4685
	$\Delta UNEP_{t(UK)}$	-10.3850	4.74608	-2.188	0.0301
	Announcement of London Olympics	1.73522	0.671951	2.582	0.0107
	Global stock market collapse	-19.4670	1.10228	-17.66	<0.0001
UK	Financial crisis event in the UK	-21.1071	0.884699	-23.86	<0.0001
	London G20 summit	17.417	1.09507	15.9	<0.0001
	Eruption of Iceland's volcano	-11.0627	0.451851	-24.48	<0.0001
	Paris terror attack	-6.52575	0.688959	-9.472	<0.0001
	Brexit referendum	-10.384	0.402629	-25.79	<0.0001

Note: The OLS estimations use observations from May 2003 to December 2017 (T = 176). Robust standard errors are used for correcting the heteroskedasticity and autocorrelation of residual. The values of adjusted R-squared are 0.374181 in Spain and 0.227161 in the UK. The p-values of Durbin-Watson test for autocorrelation (at lag 1) are 0.578425 in Spain and 0.378417 in the UK. The p-values of test for normality of the residuals are 0.0149494 in Spain and 0.911519 in the UK.

The multiple regression results in [Table 6](#) indicate that in Spain, all the independent variables are significant at the significance level of 5% and 10%. Moreover, only lagged returns of stock market index, the announcement of London Olympics and London G20 summit positively affected the hotel stock returns of Spain. However, the rest independent variables had negative impacts on the hotel stock returns of Spain. Besides, the adjusted R-squared of the OLS estimation in Spain indicates that 37.42% of the variation of the hotel stock returns of Spain can be explained by those financial, macroeconomic and non-economic variables. About the results of the UK, we can see that the changes of short-term interest rate in the second regression model are no more statistically significant. In this scenario, the OLS estimation should be executed again without that variable for the UK.

Table 7

Results of the modified regression model of the UK

Variable	Coefficient	Std. Error	t-ratio	p-value
const	51.4784	3.84502	13.39	<0.0001
$\Delta UNEP_{t(UK)}$	-10.0610	4.70916	-2.136	0.0341
Announcement of London Olympics	2.02823	0.47645	4.257	<0.0001
Global stock market collapse	-20.0291	0.883851	-22.66	<0.0001
Financial Crisis Event in the UK	-21.6996	0.381772	-56.84	<0.0001
London G20 summit	17.7982	0.866665	20.54	<0.0001
Eruption of Iceland's volcano	-11.1399	0.441259	-25.25	<0.0001
Paris terror attack	-6.57736	0.678572	-9.693	<0.0001
Brexit referendum	-10.3841	0.39748	-26.12	<0.0001

*Note:* The OLS estimations use observations from May 2003 to December 2017 (T = 176). Robust standard errors are used for correcting the heteroskedasticity and autocorrelation of residual. The value of adjusted R-squared is 0.228179. The p-value of Durbin-Watson test for autocorrelation (at lag 1) is 0.368813. The p-value of test for normality of the residuals is 0.93962.

After omitting the non-significant explanatory variable, the p-values of the independent variables in [Table 7](#) indicate that all those independent variables are statistically significant at the confidence level of 90% and 95% in this OLS estimation. The adjusted R-squared tells us that 22.82% of the variation of hotel stock returns of the UK can be explained by those eight explanatory variables.

It should be emphasized that the p-value of Durbin-Watson in Spain reveals that there is no presence of autocorrelation in the residuals at the significance levels of 1%, 5% and 10%. The p-value of test for normality of residuals in Spain indicates that at the significance level of 1% the residuals are normally

distributed in the second regression model. Same as in Spain, the p-values of Durbin-Watson test and test for normality of residuals in the UK imply that there is no autocorrelation in residuals and the residuals are normally distributed in the modified regression model. From those diagnostic tests we can realize that the heteroscedasticity is still there, but our errors are HAC robust. Modelling heteroscedasticity is out of the scope of this project, and it deserves for future research.

Regarding the effects of the financial conditions, the lagged returns of the stock market index statistically affected the hotel stock returns in Spain. Nonetheless, its effect is very weak based on the OLS results. Hence, we can not think of it as a certain influential factor on the hotel stock returns in general because of the drawbacks of the limited sample size used in this project. This point of view is proved in the case of the UK that the lagged stock market index is not statistically significant.

About the macroeconomic forces, the changes of the unemployment rate are confirmed with apparent influence on the hotel stock returns in Spain and the UK. The same finding was provided by [Chen et al. \(2005\)](#), [Chen et al. \(2012\)](#) in Taiwan and Japan. Their empirical findings showed that the changes of the unemployment rate caused the drop of the stock returns of the hospitality industry in Taiwan and Japan for approximately 12 and 9 percentage points respectively which are similar to the results of Spain and the UK in this project. Therefore, changes of the unemployment rate can be viewed as a reliable factor which can negatively affect hotel stock returns. The increase in the unemployment rate is the symptom of the economic downturn in a country ([Chen et al., 2005](#)) which can cause the drawbacks of the hotel stock returns.

The special events can be sorted into two categories in a broad sense within this project; expected events and unexpected. In a narrow sense, the two categories of events can be classified into the events of mega-sport, financial crisis, political, natural disaster and terrorism. Referring to the expected events, the announcement of London Olympics and London G20 summit had statistically positive effects on the hotel returns of Spain and the UK. As researched by [Fourie and Santana-Gallego \(2011\)](#), the host country of mega-sport event can attract vast number of tourists which can boost the local hospitality industry. Due to the huge influence of Olympics around the world, the Spanish hospitality industry also benefited from it automatically. Moreover, the London G20 summit was an important political meeting focused on rescuing the global economy during the great recession period. The leaders of G20 countries achieved an agreement to provide a financial aid of \$1.1 trillion ([Chaudhury, 2016](#)) which significantly stimulated the confidence of the stock investors in the short term. However, the unexpected events including global stock market collapse, financial crisis event, eruption of Iceland's volcano, Paris terror attack and Brexit referendum statistically influenced the hotel returns of Spain and the UK in a negative way. The negative influences of global stock market collapse and financial crisis event on hotel returns are understandable because both events were due to the global financial crisis. During the financial crisis, the hospitality industry suffered a great blow. [Chen et al. \(2005\)](#) showed the significantly negative impacts of Asian financial crisis on the stock returns of the Taiwanese hospitality industry which can support the point of view on global financial crisis here. Besides, the eruption of Iceland's volcano damaged the hospitality industry in a certain

degree because loads of the reservations on guest rooms and meeting rooms within hotels were cancelled due to the blocked air transportation. Although the trapped guests have prolonged their stays within the hotels, the overall performance of hotels in the UK and Spain were negatively influenced due to this natural disaster (Jamieson, 2010). Additionally, Paris terror attack in November 2015 was a recent terrorism event in Europe with extremely baneful influence which has aroused the worldwide worries on travel safety issues. Consequently, the hotel stock returns of Spain and the UK were negatively influenced due to the panic sentiment of travel enthusiasts. This opinion can be also facilitated by the study of Chen et al. (2005) for the negative effects of the 911 terror attack on Taiwan hotel stock returns. Finally, the result of the Brexit referendum clearly showed that the UK will not be the member of European Union. This situation is expected to aggravate the operational costs of the hospitality enterprises due to the disappearance of the advantages from European Union membership. As British tourists are the major source in the Spanish tourism market, Brexit directly affects the tourism demand in Spain due to the complicated procedures of border inspection. Accordingly, the hotel stock returns in Spain and the UK were adversely influenced. The adverse impact of Brexit on hotel stock returns was also identified by Cirer-Costa (2017).

## **5. CONCLUSION**

In this study, the sensitive nature of the hospitality industry to the financial, macroeconomic and non-economic forces is investigated by using the stock market data. Two financial variables, four macroeconomic variables and seven non-economic variables are proposed within this project as the explanatory variables to investigate the causality between them and the hotel stock returns in Spain and the UK. The empirical results reveal that only part of the explanatory variables have statistically significant effects on the stock returns of the hospitality industry in Spain and the UK while all the selected non-economic variables have statistically significant impacts on those two countries.

In a further step, it is worthwhile to make a comparison between those two European countries to know which country's hotel stock returns were more affected by a specific factor. Since the estimated standard deviations of each independent variable in Spain and the UK are shown in Table 6 and Table 7, we can compare the significant estimators from two countries by conducting a t-test. From results of t-test (not presented here) we can confirm that hotel stock returns in the UK suffered statistically less negative impacts of the changes of the unemployment rate, global stock market collapse, eruption of Iceland's volcano, Paris terror attack and Brexit referendum whereas the announcement of London Olympics and London G20 summit had statistically larger positive influence on the stock returns of Spanish hospitality industry. Thus, we can infer that the stock performance of hospitality industry was more sensitive in Spain than in the UK to the financial, macroeconomic and non-economic factors. Moreover, the special events had a larger influence than the financial and macroeconomic factors on the stock returns of hospitality industry in Spain and the UK. This result is in line with the empirical finding of the Chiang & Kee (2009) who mentioned that the stock returns of hospitality industry in Singapore were more sensitive to the non-macroeconomic factors than the macroeconomic factors.

This project extends the study of [Chen et al. \(2005\)](#) to provide comprehensive research on the impacts of the financial, macroeconomic and non-economic variables on the hotel stock returns in Spain and the UK. The contributions of this study are prominent. Firstly, the sensitive nature of hospitality industry is verified by using the stock market data. Second, empirical results of the previous studies are confirmed within this project by applying the same approach as before in the hospitality industry in Spain and the UK. Third, through this paper, the stock investors of the hospitality market in Spain and the UK can gain a clear view on what factors affect the hotel stock returns and to what extent, which can support their investment decision in the future. Finally, the scarce literature of the related research field can be enriched by this study. Indeed, the limitations of this project deserve to be noted. The limited sample size and the existing heteroscedasticity of regression residuals might have a certain influence on the results. Therefore, in the future research, one could consider a model that is accurate for conditional heteroscedasticity. In addition, it is recommended to carry out similar studies in the other European countries with large sample size.

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