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Macro Explanatory Factors of Turkish Tourism Companies' Stock Returns

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Abstract

This study examines whether the stock prices of Turkish tourism companies respond to growth in 8 macro-economic variables namely, consumer price index, imports, exchange rate, consumer confidence index, oil price, money supply, foreign tourist arrivals, and monthly stock market return. By applying the Granger causality procedure, we find that growth in consumer confidence index and imports could Granger cause tourism companies' stock returns among eight macro factors in Turkey from 2005 to 2013 period. After considering the structural break that occurred in 2007, the pre-break results indicate that consumer confidence index, exchange rate, and foreign tourist arrivals could Granger cause tourism stock returns. However, the results in the post- structural break period reveal that only growth in oil prices and imports are significant.

Keywords: Borsa Istanbul, Macro-economic variables, Tourism Index return, Turkey, Granger causality

1. Introduction

A considerable amount of studies (Chen et al. 1986; Fama and French, 1989; Booth and Booth, 1997; Fifield et al. 2002; Mishra and Singh, 2012) has examined the relationship between stock returns and macroeconomic variables. Moreover, a growing body of recent research shows that stock returns are also associated with economically-neutral events such as soccer (Edmans et al. 2007; Demir and Danis, 2011; Berument and Ceylan, 2012; Demir and Rigoni, 2015), air pollution (Levy and Yagil, 2011; Demir and Ersan, 2015), weather (Saunders, 1993; Hirshleifer and Shumway, 2003), lunar phases (Yuan et al. 2006), and seasonal affective disorder (SAD) (Kamstra et al. 2003). However, number of studies examining the link between macro-economic variables and stock returns of companies in tourism and hospitality industry is relatively limited while the literature on this topic has started to developed especially in the last decade.

In one of the early studies of the literature, Barrows and Naka (1994) investigate the impact of 5 macro-economic variables namely industrial production, money supply, domestic consumption, expected inflation rate and term structure of the interest rate on US hospitality firms from 1965 to 1991. Results indicate that hospitality stock returns had a negative relationship with the expected inflation rate, but a positive relationship with growth rates of money supply and domestic consumption. Following Barrows and Naka (1994), Chen et al. (2005) find that only money supply and unemployment rate significantly explain change in returns of hotel stock returns listed in the Taiwan Stock Exchange. However, non-macroeconomic forces such as presidential elections, the 921 earthquake, the 2003 Iraqi war, the outbreak of SARS, sports mega-events, the Asian financial crisis, and the 911 terrorist attacks also significantly affect the hotel stock returns. Wong and Song (2006) examine the relationship between monthly hospitality stock indices (restaurant, casino, and lodging) and a set of macroeconomic variables in the USA using the VAR modeling approach. It is found that hospitality stock indices follow an autoregressive process and in terms of macro-economic variables, 10-year bond yield explains a substantial part of the variation in hospitality stock indices. Chen and Kim (2006) argue that literature mostly uses the ordinary least-square (OLS) regression technique, which could fail to capture the long-term effect of economic variables on hospitality stock returns. Therefore, they apply the cointegration and error-correction model to examine the long-term relationship between hospitality stock prices and economic factors in Taiwan. It is found that an increase in industrial production or money supply at the current period leads to positive hotel stock returns at the next period. Chen (2007a) explore the performance of Taiwanese hotel stocks

under two various monetary policy environments, namely expansive and restrictive, and the impact of different monetary stringency on the relationship between hotel stock returns and macro variables in Taiwan. It is found that only growth rates of money supply and growths in unemployment rates affect the hotel returns however the effect of money supply on hotel returns disappears during restrictive monetary periods. Chen (2007b) explores the link between macro and non-macro explanatory factors and Chinese hotel stock returns. In addition to traditional macro variables, growth rate of total foreign tourist arrivals is also included in the analysis. Among macro-economic variables, only industrial production, imports, and discount rates significantly affect the hotel stock returns. Among nine non-macro factors, only the Iraqi war and the 2002 Japan/Korea World Cup impact the hotel returns positively while returns react negatively to SARS outbreak, the 9/11 terrorist attacks in the US, the Asian financial crisis, (8/1997), the 2000 Sydney Olympics, announcement of the 2008 Beijing Olympics, the takeover of Hong Kong, and the takeover of Macao. Chen et al. (2010) examine the effects of growths in monetary policy on the stock performance of hospitality firms (airlines, hotels, restaurants, and tourism firms) in Hong Kong. Among those firms, only hotel and tourism stock prices are significantly influenced by the monetary policy growths while other macro-economic factors do not have any significant effect on stock returns. However, stock returns of all firms are negatively affected from the SARS outbreak and the 9/11 terrorist attacks while the takeover of Hong Kong has a positive impact on Hong Kong's hospitality stock returns. Chen (2011) explores how a variety of hotel performance measures respond to international tourism development and crisis events in Taiwan. The growth of total inbound tourist arrivals has a more direct influence on hotel sales and profitability than it does on hotel stock prices. Chen (2012) analyzes the reaction of U.S. hospitality stock prices to announcements of Federal Open Market Committee decisions concerning the federal funds target rate by separating the unanticipated growths from anticipated growths. Except for restaurant index, the responses of airline, gambling, hotel and travel and leisure stock indices to the surprise component of federal funds target rate are highly significant while the responses to the expected component are statistically insignificant. Chen et al. (2012) examine whether 8 macro-economic factors (growths in discount rate, growth rates of money supply, growths in unemployment rate, growth rates of consumer price index, industrial production, percentage growth in yen-dollar exchange rate, the percentage growth in oil price, and growth rates of total trade) could explain hotel stock returns in Japan using the Granger causality procedure based on the VAR model. Among those factors, only growths in discount rate, growths in unemployment rate, and percentage growth in oil price significantly Granger cause hotel stock returns in Japan. In addition to traditional macroeconomic variables, Singal (2012) also consider the role of consumer sentiment on stock returns of hospitality industry firms. It is found that there are no strong or

consistent contemporaneous correlations between hospitality industry stock returns and growths in macroeconomic variables for USA. However, when consumer sentiment and stock market return are added into the model, it is documented that growths in consumer sentiment are strongly and positively associated with hospitality industry stock returns. Moreover, stock market return has a positive effect while industrial production negatively affects hospitality industry stock returns. More recently, Al-Najjar (2014) show board size is negatively and board independence is positively correlated with the stock prices of tourism companies in five Middle-Eastern countries. With respect to the economic factors, the growth in GDP (the growth in CPI) has a positive (negative) effect on stock performance while tourism growth is not significantly related to stock returns.

While the impact of a variety of macro-economic variables on hospitality stock prices is analyzed, the focus of those studies has been mostly China, Taiwan, and USA. In this paper, we contribute the literature by extending the scope to a developing market, namely Turkey. In terms of number of tourist, Turkey was ranked as 20th in 2000 reaching to the 7th position in 2009. International tourist arrivals up 4% reach a record 1.2 billion in 2015 in the world. This result was affected by exchange rates, oil prices and natural and manmade crises in many parts of the world. And safety and security issues have been the main concern in the development of tourism which should be considered by governments to promote tourism (UNWTO, 2016). While Turkey had been in the center of regional and local crises, it was the 6th most popular destination in 2014 with 37.8 million of visitors. Turkey aims to attract 63 million tourists with an 86 billion dollar tourism income in 2023, the 100th anniversary of the foundation of the republic. And recently, after shooting down of a Russian fighter bomber by Turkish F-16 jets on November, Turkey experienced a 92 percent decline in Russian visitors in May compared to a year earlier. And due to security issues, the number of foreign arrivals to Turkey slumped by 34.7 percent which is the steepest decline since the 1990s. However, Russia lifts the ban on tourism to Turkey implying a possible increase of Russian tourists visiting Turkey.

By applying the Granger causality procedure, we examine whether Borsa Istanbul Tourism Index return respond to growth in 8 macro-economic variables namely, consumer price index, imports, exchange rate, consumer confidence index, oil price, money supply, foreign tourist arrivals, and monthly stock market return. We find that growth in consumer confidence index and imports could Granger cause tourism companies' stock returns among eight macro factors in Turkey from 2005 to 2013 period. After considering the structural break that occurred in 2007, the pre-break results indicate that consumer confidence index, exchange rate, and foreign tourist arrivals could Granger cause tourism stock returns.

However, the results in the post- structural break period reveal that only growth in oil prices and imports are significant. This paper contributes the literature by showing that like previous studies (examining China, Taiwan, and USA) macroeconomic variables fail to explain the tourism sector returns also in Turkey. Certain shocks such as SARS outbreak, Asian financial crisis, wars, and uncertainty affect tourism sector performance more than traditional macro-economic variables.

The remainder of this paper is organized as follows: Section 2 presents the hypothesis development. Section 3 states the data and methodology. Section 4 presents and discusses the results. The last section concludes the paper.

2. Hypotheses Development

In this paper, we examine the effect of 8 macro-economic variables namely consumer price index (CPI), imports (IM), exchange rate (EXCH), consumer confidence index (CFI), oil prices (OILP), money supply (MS), foreign tourist arrivals (TA), and stock market return (SMR) on Borsa Istanbul Tourism Index (TR) from 2005 to 2013 period.

We use M2 to measure the money supply in line with Chen and Kim (2006). The expansionary monetary policy, that is an increase in money supply, will affect the stock prices through various channels. For example, expansionary monetary policy will boost the economy and increase the consumption. Meanwhile, interest in stock market will increase. And the production and investment of companies will rise (Chen et al. 2012). Barrows and Naka (1994) and Chen et al. (2005) show that money supply is positively related with hotel stock returns.

H₁: An increase in money supply (ΔMS) has a significant and positive effect on tourism index return.

Chen (2007b) and Chen (2011) use total foreign arrivals as a proxy for tourism expansion. If a country is experiencing a tourism expansion, the tourism companies are like to have increasing occupancy rates and customers, sales which will be reflected in their financial performances. Based on this, we use the growth in foreign tourist arrivals to measure the expansion in tourism industry.

H₂: An increase in foreign tourist arrivals (ΔTA) has a significant and positive effect on tourism index return.

Oil is an important factor not only in tourism industry but also in a variety of industries as it is being used as a crucial component of the production and transportation. A rise in oil prices will directly increase the cost of production. Due to the oil-intensive character of the tourism industry, it can be argued that higher oil prices might have a reverse effect on the companies operating in this industry (Chatziantoniou et al. 2013). And this effect will be observed on their earnings and stock prices.

H₃: An increase in oil prices ($\Delta OILP$) has a significant and negative effect on tourism index return.

Consumer confidence index is an important measure to monitor the development in consumer expectations. If consumers have positive expectations about future, they will be more willing to spend. Singal (2012) shows that hospitality spending is associated with consumer sentiment which means that as consumer sentiment rises, the hospitality spending of people will also rise. Moreover, consumer sentiment is positively related with the hospitality stock returns (Singal, 2012). Therefore, we assume that the consumer confidence index will be positively related with the tourism index returns.

H₄: An increase in consumer confidence index (ΔCFI) has a significant and positive effect on tourism index return.

According to Chen (2003), growth rates of imports could be a good proxy for consumption growth rates. The increasing consumption might also boost imports especially for countries where imports account a large proportion of GDP like Turkey. And the increase in imports implies that domestic private consumption grows while driving stock prices down. Chen (2007b) uses imports as an alternative to consumption and proposes a negative correlation between imports and stock prices.

H₅: An increase in imports (ΔIM) has a significant and negative effect on tourism index return.

Acikalin et al. (2008) shows that stock market return is negatively associated with exchange rate in Turkey. Moreover, Chen et al. (2010) also find a negative relation between exchange rate and stock prices of restaurants. However, Chen et al. (2012) argue that stock returns would be positively linked to exchange rate as Japanese companies are export-oriented. For the case of Turkey, we assume a negative association between exchange rate and tourism index. An appreciation of dollar against Turkish lira will shift their interest from stock market to foreign exchange market. Moreover, the value of the wealth of people will diminish and the mood of people will be negatively affected.

H6: An increase in exchange rate ($\Delta EXCH$) has a significant and negative effect on tourism index return.

The relationship between stock returns and inflation has remained as an important topic in the fields of finance and economics. According to the classic Fisher model, stock returns should provide a natural hedge against inflation. While there is much evidence (Adams et al. 2004; Alagidede and Panagiotidis, 2012) on the negative relationship between inflation and stock returns, a limited number of studies provide (Asprem, 1989) opposite findings. Barrows and Naka (1994) show that hospitality stock returns had a negative relationship with inflation rate. We expect that growth in CPI will have a negative effect on tourism index returns.

H7: An increase in consumer price index (ΔCPI) has a significant and negative effect on tourism index return.

Tourism index return should be affected from the trend in the overall stock market. Stock returns of firms or sectoral indices are associated with the overall stock market movement. When Singal (2012) adds the stock market return into the model while examining the impact of macro-economic variables on hospitality stock returns, a sharp increase in the explanatory power of the independent variables is observed. Tourism index return should be affected from the trend in the overall stock market.

H8: An increase in stock market return (SMR) has a significant and positive effect on tourism index return.

3. Data and Methodology

This paper explores the effect of 8 macro-economic variables on Borsa Istanbul Tourism Index¹ (TR) from 2005 to 2013 period.² This time period is chosen due to the limitation on the monthly data availability. The tourism sector equity index includes the stock price movements of the tourism sector firms listed in Borsa Istanbul of Turkey. The monthly data for Borsa Istanbul Tourism Index is collected from Borsa Istanbul while monthly macroeconomic data is collected from The Central Bank of the Republic of Turkey and Turkish Statistics Institute.

We calculate the monthly return of Borsa Istanbul Tourism Index as

¹ The index includes 6 firms namely AVTUR (AVRASYA PETROL VE TUR.), MAALT (MARMARİS ALTINYUNUS), MARTI (MARTI OTEL), NTTUR (NET TURİZM), TEKTU (TEK-ART İNŞAAT), and UTPYA (UTOPYA TURİZM).

² Although the literature uses some other variables such as unemployment we can't include more variables due to multicollinearity problem and to avoid loss of degree of freedom.

$$TRI = \ln(TR_t - TR_{t-1}) \quad (1)$$

where TRI represents Tourism Index Return. ΔCPI , ΔIM , $\Delta EXCH$, $\Delta OILP$, ΔMS , ΔTA , SMR stand for growth in consumer price index, growth in imports, growth in exchange rate, growth in oil prices, growth in money supply, growth in tourist arrivals, and stock market return, respectively. Those variables are also calculated as the difference in natural log while ΔCFI (growth in consumer confidence index) is the growth in consumer confidence index.

The summary statistics of main variables is presented in Table 1. It is seen that the monthly tourism index returns ranged from 35% to -32% (Column 2), while the monthly market return ranged from 21% to -27% (Column 9) revealing the fact that companies in tourism industry maintained higher risks compared to rest of the list companies. Among all variables, the growth rate of tourist expansion was the most volatile in terms of its standard deviation (Column 8). This is expected as the tourist numbers rise significantly in summer period and decreases sharply during winter.

[TABLE 1]

Table 2 shows correlations among and we noted that correlations between exchange rate and monthly market return is relatively high (-0.62). However, multicollinearity presents a potential statistical problem when the correlation coefficient exceeds 0.80 (Gujarati, 2004). Moreover, we calculate the Variance Inflation Factor (VIF) for each regressor. For all variables, the VIF is less than 2 showing that multicollinearity problem doesn't exit.

[TABLE 2]

We also apply four univariate unit root tests, including Augmented Dickey–Fuller (Dickey and Fuller, 1979), PP (Phillips and Perron, 1988), KPSS (Kwiatkowski et al. 1992) and the structural breaks models by Zivot and Andrews (1992), and all (not reported here, but available upon request) indicated that all variables are all stationary. Interestingly, a structural break is detected for all variables.

In our study we employ Granger causality test in VAR environment to test the hypotheses developed in the previous section. The system is presented as follows (Chen et al. 2012):

$$TRI = \alpha_1 + \sum_{j=1}^2 \beta_{1j} \Delta CFI_{t-j} + \sum_{j=1}^2 \beta_{2j} \Delta EXCH_{t-j} + \sum_{j=1}^2 \beta_{3j} \Delta MS_{t-j} + \sum_{j=1}^2 \beta_{4j} \Delta OILP_{t-j} + \sum_{j=1}^2 \beta_{5j} \Delta TAT_{t-j} + \sum_{j=1}^2 \beta_{6j} SMR_{t-j} + \sum_{j=1}^2 \beta_{7j} \Delta IM_{t-j} + \sum_{j=1}^2 \beta_{8j} \Delta CPI_{t-j} + \varepsilon_1 \quad (2)$$

The null hypothesis is that the growths in 8 macro-economic variables do not granger causes monthly tourism index return. This hypothesis for consumer confidence index can be tested if the following null hypothesis is accepted:

$$\beta_{11} = \beta_{12} = 0$$

Therefore the alternative hypothesis that consumer confidence granger causes monthly tourism index return is supported when:

$$\beta_{11} = \beta_{12} = 0 \text{ is rejected and } \sum_{j=1}^2 \beta_{1j} > 0. \quad (3)$$

4. Findings

Before we perform Granger causality test, we run the Bai and Perron (2003) multiple breaks test. It shows that there is a structural break at June, 2007. In the structural break test, the model consists of a constant regressor, allowing for serial correlation that differs across regimes through the use of HAC covariance estimation. Maximum of 5 breaks was allowed in the model, and we employ a trimming percentage of 15%. The results indicated that the one break date occurred at June, 2007. In May 2007 Turkey experienced a presidential election and the Turkish general election of 2007 was held on July 22, 2007. AK Party won 47% of the votes with a 12-point increase compared to 2002. With this victory, AK Party was able to form a government on its own with a coalition. This finding is in line with Balli et al (2013) as they also introduce a dummy for year 2007 for the second selection of the governing party in Turkey. Turkey's economy was negatively affected from the crisis in 2009 and had recovered quickly. 2008-2009 financial crisis didn't lead to a structural break for Turkey. The political situation in June 2007 had a strong and influential effect on the history of Turkey.

All hypotheses are tested using Wald test and the results of Granger causality test are presented in Table 3. Panel A in Table 3 reports the result of the one-way causality from macro variables to monthly tourism index return for the whole sample period from 2005-2013. The Wald test statistics implies that only ΔCFI and ΔIM could Granger cause tourism companies' stock returns among eight macro factors in Turkey. The sums of lagged

coefficients of ΔCFI and ΔIM are 0.4422 and -0.368, respectively. These findings support H_4 and H_5 .

After considering the structural break that occurred in 2007, the pre-break results in Panel B indicated that ΔCFI , $\Delta EXCH$, and ΔTA could Granger cause tourism stock returns, and these findings support H_4 and, H_6 , and H_2 (Panel B of Table 3). The sums of lagged coefficients of ΔCFI , $\Delta EXCH$, and ΔTA are 1.853, -3.21, and 0.276, respectively. In comparison, test results of the one-way causality from macro variables to tourism stock returns in the post- structural break period reveals that $\Delta OILP$ and ΔIM are significant. The increase in domestic private consumption could drive imports up, and we observe a negative association between imports and tourism stock return, which is consistent with Chen (2007b). Although we find a positive effect of oil price on tourism return for the sum of the first two lagged coefficients, we do observe that higher oil prices could drive up operational cost in the tourism industries and hence results in lower profitability and stock return in the longer term, and this will occur between lag 3 to lag 8 (See figure 1). Figure 1 indicates that returns on tourist companies increases as oil prices goes up at the first 3 months immediately after the OPEC announcements. The negative effect is observed after 3 months and continues for 5 months till the eight month.

We also estimate full sample model with time dummy variable and there is no significant changes in the results (see Panel D in Table 3). However the use of time dummy only allows shift in linear time trend, while the subsample estimation strategy allow heterogeneity (i.e. mean, variance, third moment) of two periods.

The break date was chosen by the statistical test without pre-judgement from economic events. We do not make comment on the first period as the observations are only 30 and we may have small sample problem. However, the influence of oil price becomes important in the second period, and this may due to geopolitical events such as the conflict between Israel and Lebanon, and the spread of Tunisian revolution reached Syria on March 15, 2011. The above events may impose uncertainty on oil supply and the financial market maybe more sensitive to oil price change, especially in Turkey.

Regarding Turkish consumer confidence index, it reaches the lowest in 2008-2009 due to domestic stagnation and global financial crisis, the index starts to fall from 2010 till recently. This may be the reason why consumer confidence index loss its significance on the stock market in the second period as consumers' confidence deteriorates in face of political uncertainty within the country and around the neighborhood.

The impulse-response functions shown in Appendix 1 represent the responses of the tourism stock return to one-unit shock (one standard deviation) by other variables. Response of tourism stock returns to change of CPI is negative around the 1.5 month, implying that higher inflation lead to declines in tourism stock returns, and this finding is consistent with the existing literature (Barrows and Naka, 1994). We also see a positive response of tourism stock return returns to money growth in line with the literature as an increase in money supply may indicate lower interest rates, and therefore leading to an increase in tourism stock returns (as the cost of doing business is lower).

[TABLE 3]

We therefore can conclude that consumer confidence, exchange rate, tourist arrival numbers, oil price shock, and imports have impacts on the tourism stock return. In the pre-break period, consumer sentiment played a role in tourism stock return, as personal consumption expenditures on hospitality industry is associated with consumer confidence about the future economy. Regarding to foreign currency rate, it suggests the negative relationship to tourism stock return, as appreciation of dollar against Turkish lira shifts investor's interest from stock market to foreign exchange market. Moreover, the value of the wealth of people will diminish and the mood of people will be negatively affected. Total foreign tourists arrivals implies hotels and tourism related industries are likely to have increasing occupancy rates, customers and sales which will be reflected in their financial performances.

The impulse–response functions shown in Figures 1 represent the responses of the tourism index return and to a one-unit shock (one standard deviation) by the significant macro variables found in Table 3. Panel A of Figure 1 plots the response function for the whole sample period, the response of TRI to growth of imports is negative around the third month, implying that higher imports growth lead to declines in tourism index return. The response of

TRI to the growth of consumer confidence index is positive around the second month, implying that higher consumer confidence growth lead to increases in tourism stock returns. In the post-structural break period, we found the same pattern for the impact of imports growth on TRI. Moreover, the response of TRI to the growth of oil price is positive around the second month, implying that higher oil price growth lead to increases in tourism stock returns at the initial stage of oil price shock, and the relationship becomes negative thereafter.

[FIGURE 1]

Panel A of Table 4 shows the proportion of forecast-error variance of tourism stock returns explained by two macro factors for the whole sample period, including growth of consumer confidence and growth of imports. Results indicated growth in consumer confidence is the most important factor in forecasting variance of tourism stock returns. After three periods, growth in consumer confidence explained more than 4.16% of the forecast variance of tourism stock returns, and imports growth can explain 3.35% of the forecast variance of tourism stock returns. Panel B of Table 4 shows the proportion of forecast-error variance of tourism stock returns explained by two macro factors for the post-growth period, including growth of oil price and growth of imports. Oil price growth could explain 6.13% of the forecast variance of tourism stock returns, while the imports growth can explain 3.13% of the forecast variance of tourism stock returns. Appendix 2 shows variance decomposition of forecast-error variance of tourism stock returns explained by variables other than tourism index returns. And we can conclude that imports change and change in consumer confidence index played a more important role in forecasting variance of tourism index returns

The findings shows that change in oil prices and imports affect the stock prices of tourism companies in Turkey in post-structural break period. Oil prices do affect the companies negatively with a delay of 2 months. Increase in imports means the growth of domestic private consumption and hence drive stock prices down. Therefore, the investors of tourism companies should follow the changes in those 2 variables. Moreover, the findings of the paper provide supportive evidence on the limitations of macroeconomic variables to explain tourism sector returns also in Turkey. However, shocks such as SARS outbreak, Asian financial crisis, wars, terrorist attacks and uncertainty (Demir and Ersan, 2016) affect tourism sector performance more than traditional macro-economic variables.

[TABLE 4]

5. Conclusion

While the impact of a variety of macro-economic variables on hospitality stock prices is analyzed, the focus of those studies has been mostly China, Taiwan, and USA. In this paper, we contribute the literature by extending the scope to a developing market, namely Turkey. In terms of number of tourist, Turkey was ranked as 20th in 2000 reaching to the 7th position in 2009. Despite the regional and local crises, Turkey was the 6th most popular destination in 2014 with 37.8 million of visitors.

By applying the Granger causality procedure, we examine whether Borsa Istanbul Tourism Index return respond to growth in 8 macro-economic variables namely, consumer price index, imports, exchange rate, consumer confidence index, oil price, money supply, foreign tourist arrivals, and monthly stock market return. We find that growth in consumer confidence index and imports could Granger cause tourism companies' stock returns among eight macro factors in Turkey from 2005 to 2013 period. After considering the structural break that occurred in 2007, the pre-break results indicate that consumer confidence index, exchange rate, and foreign tourist arrivals could Granger cause tourism stock returns. However, the result in the post- structural break period reveals that only growth in oil prices and imports are significant. As this paper also shows the limitations of macroeconomic variables to explain tourism sector returns, future studies should focus more on shocks and uncertainty variables.

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Tables and Figures

Table 1: Summary statistics of hotel stock returns and macro variables

	TRI	Δ CPI	Δ CFI	Δ EXCH	Δ MS	Δ OILP	Δ TA	SMR	Δ IM
Mean	0.00	0.01	0.00	0.00	0.02	0.01	0.01	0.01	0.01
Median	0.00	0.01	0.00	0.00	0.01	0.02	-0.01	0.02	0.01
Maximum	0.35	0.03	0.30	0.19	0.49	0.31	0.59	0.21	0.24
Minimum	-0.32	-0.01	-0.22	-0.09	-0.03	-0.31	-0.69	-0.27	-0.36
Std. Dev.	0.11	0.01	0.08	0.04	0.05	0.09	0.31	0.09	0.11
Skewness	0.09	0.40	0.28	1.46	8.58	-0.84	-0.35	-0.50	-0.54
Kurtosis	4.20	3.40	4.98	8.58	83.59	6.37	2.47	3.68	3.97
Jarque-Bera	6.54	3.57	18.76	177.11	30266.96	63.12	3.45	6.44	9.41
Probability	0.04	0.17	0.00	0.00	0.00	0.00	0.18	0.04	0.01

Note: TRI = monthly return on tourism stock index; Δ CPI = growth in consumer price index; Δ IM= growth in imports; Δ EXCH = growth in exchange rate; Δ CFI= growth in consumer confidence index; Δ OILP= growth in oil price; Δ MS= growth in money supply; Δ TA = growth in foreign tourist arrivals; SMR= stock market return

Table 2. Correlation coefficient matrix

	TRI	Δ CPI	Δ CFI	Δ EXCH	Δ MS	Δ OILP	Δ TA	SMR	Δ IM
TRI	1.00								
Δ CPI	-0.03	1.00							
Δ CFI	0.19	-0.26	1.00						
Δ EXCH	-0.38	0.07	-0.30	1.00					
Δ MS	-0.06	-0.05	-0.08	0.16	1.00				
Δ OILP	0.06	0.03	0.01	-0.17	-0.06	1.00			
Δ TA	0.07	-0.24	0.04	-0.04	-0.03	0.28	1.00		
SMR	0.65	-0.15	0.27	-0.62	-0.08	0.11	0.06	1.00	
Δ IM	0.20	-0.13	0.07	-0.07	0.24	0.24	0.30	0.12	1.00

Note: TRI = monthly return on tourism stock index; Δ CPI = growth in consumer price index; Δ IM= growth in imports; Δ EXCH = growth in exchange rate; Δ CFI= growth in consumer confidence index; Δ OILP= growth in oil price; Δ MS= growth in money supply; Δ TA = growth in foreign tourist arrivals; SMR= monthly stock market return

TABLE 3. Results of Granger Causality Tests: Borsa Istanbul Tourism Index Return

	Panel A (2005M02-2013M12)		Panel B (2005M02-2007M06)		Panel C (2007M07 - 2013M12)		Panel D (2005M02-2013M12) with time dummy June 2007	
Causality	Wald test statistic	Result (Sum of lagged coefficients)	Wald test statistic	Result (Sum of lagged coefficients)	Wald test statistic	Result (Sum of lagged coefficients)	Wald test statistic	Result (Sum of lagged coefficients)
Δ CPI can Granger cause TRI	2.346	Δ CPI \nrightarrow TRI	0.329	Δ CPI \nrightarrow TRI	0.611	Δ CPI \nrightarrow TRI	1.626	INF \nrightarrow TRI
Δ CFI can Granger cause TRI	5.099*	ΔCFI \Rightarrow TRI (0.4422)	4.078*	ΔCFI \Rightarrow TRI (1.853)	1.008	Δ CFI \nrightarrow TRI	5.325*	ΔCFI \Rightarrow TRI (0.487)
Δ EXCH can Granger cause TRI	0.377	Δ EXCH \nrightarrow TRI	4.961*	ΔEXCH \Rightarrow TRI (-3.21)	3.090	Δ EXCH \nrightarrow TRI	0.571	Δ EXCH \nrightarrow TRI
Δ MS can Granger cause TRI	3.129	Δ MS \nrightarrow TRI	1.254	Δ MS \nrightarrow TRI	1.509	Δ MS \nrightarrow TRI	3.476	Δ MS \nrightarrow TRI
Δ OILP can Granger cause TRI	2.854	Δ OILP \nrightarrow TRI	3.083	Δ OILP \nrightarrow TRI	4.932*	ΔOILP \Rightarrow TRI (0.411)	2.718	Δ OILP \nrightarrow TRI
Δ TA can Granger cause TRI	0.821	Δ TA \nrightarrow TRI	5.745**	ΔTA \Rightarrow TRI (0.276)	1.375	Δ TA \nrightarrow TRI	0.549	Δ TA \nrightarrow TRI
SMR can Granger cause TRI	1.842	SMR \nrightarrow TRI	3.036	SMRI \nrightarrow TRI	0.030	SMR \nrightarrow TRI	1.137	BRI \nrightarrow TRI
Δ IM can Granger cause TRI	7.235***	ΔIM \Rightarrow TRI (-0.368)	2.325	Δ IM \nrightarrow TRI	6.91***	ΔIM \Rightarrow TRI (-0.357)	7.260***	ΔIM \Rightarrow TRI (-0.374)

Note: TRI = monthly return on tourism stock index; Δ CPI = growth in consumer price index; Δ IM= growth in imports; Δ EXCH = growth in exchange rate; Δ CFI= growth in consumer confidence index; Δ OILP= growth in oil price; Δ MS= growth in money supply; Δ TA = growth in foreign tourist arrivals; SMR= monthly stock market return

TABLE 4. Variance Decompositions: Tourism Index Return

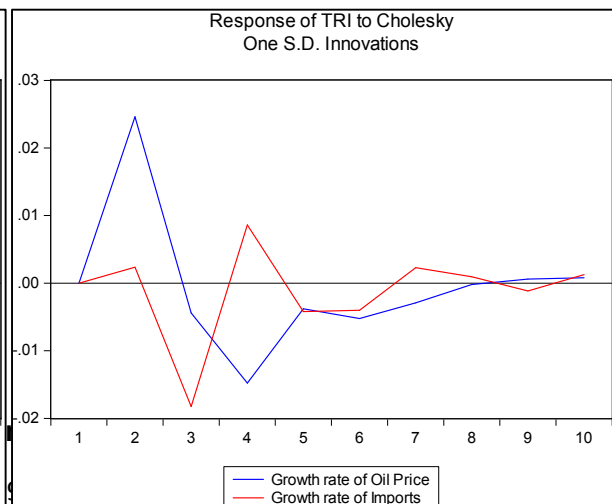
Panel A: (2005M02-2013M12)		
Period	Percentage of the forecast-error variance of hotel stock returns explained by growth in consumer confidence	Percentage of the forecast-error variance of hotel stock returns explained by growth in imports
1	0.000	0.000
2	4.456	0.052
3	4.257	2.610
4	4.187	3.164
5	4.171	3.212
6	4.164	3.261
7	4.162	3.338
8	4.162	3.336
9	4.161	3.341
10	4.161	3.348

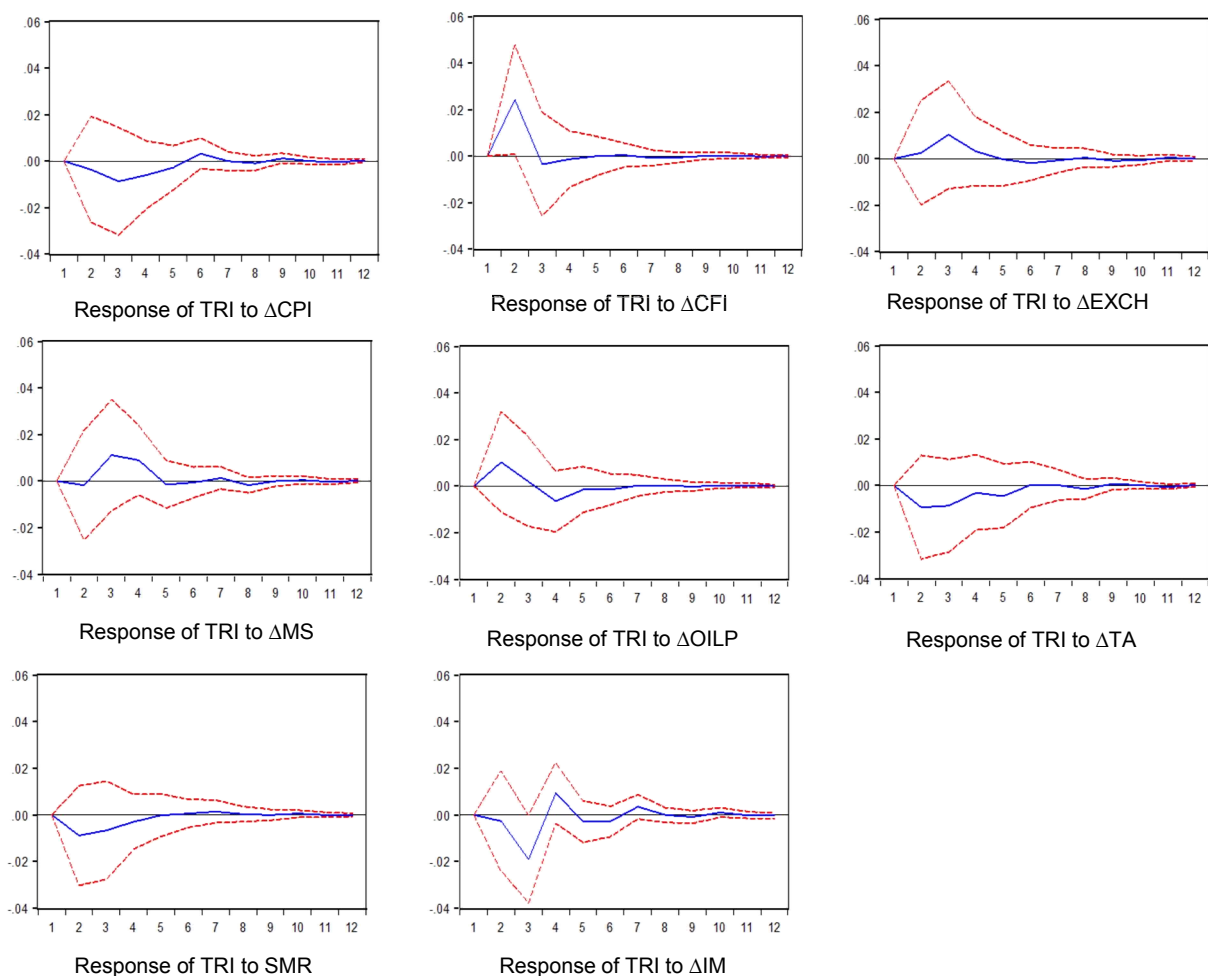
Panel B: (2007M07 - 2013M12)		
Period	Percentage of the forecast-error variance of hotel stock returns explained by growth in oil price	Percentage of the forecast-error variance of hotel stock returns explained by growth in imports
1	0.000	0.000
2	4.820	0.045
3	4.590	2.489
4	5.997	2.936
5	6.003	3.014
6	6.103	3.081
7	6.138	3.106
8	6.129	3.107
9	6.128	3.114
10	6.129	3.124

Panel A: (2005M02-2013M12)



Panel B: (2007M07 - 2013M12)





**Appendix 1. Impulse-response functions (all variables): Tourism stock return
(Response to Cholesky one S.D. Innovations ± 2 S.E.)**

**Appendix 2. Variance Decompositions: Tourism stock return
(2005M02-2013M12)**

Period	INF	Δ CFI	Δ EXCH	Δ MS	Δ OILP	Δ TA	BRI	Δ IM
1	0	0	0	0	0	0	0	0
2	0.09745	4.455567	0.049924	0.023513	0.795518	0.65869	0.597319	0.052303
3	0.621083	4.256974	0.79142	0.896671	0.768618	1.147291	0.86661	2.610123
4	0.857264	4.186802	0.844986	1.431086	1.050612	1.190874	0.913015	3.163551
5	0.907809	4.171092	0.842116	1.44011	1.061318	1.327366	0.909651	3.211853
6	0.983253	4.163601	0.862624	1.439633	1.072942	1.325017	0.909961	3.260933
7	0.981999	4.161973	0.864357	1.450852	1.071915	1.323575	0.922364	3.338113
8	0.986084	4.1619	0.865292	1.472644	1.071589	1.338685	0.922175	3.336154
9	0.996414	4.161019	0.869686	1.472253	1.07161	1.341872	0.921962	3.341336
10	0.996271	4.160714	0.872669	1.473229	1.071741	1.341706	0.923777	3.347819