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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 eight 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 the consumer confidence index and imports could Granger cause tourism companies' stock returns among eight macro factors in Turkey during the 2005 to 2013 period. After considering the structural break that occurred in 2007, the pre-break results indicate that the 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 growths in oil prices and imports are significant.

KEYWORDS

Borsa Istanbul; macro-economic variables; tourism index return; Turkey; Granger causality

Introduction

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

In one of the early studies of the literature, Barrows and Naka (1994) investigate the impact of five macro-economic variables namely industrial production, money supply (MS), 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 MS and domestic consumption. Following Barrows and Naka (1994), Chen, Kim, and Kim (2005) find that only MS and unemployment rate significantly explain change in returns of hotel stock returns listed in the Taiwan Stock Exchange. However, non-macro-economic forces such as presidential elections, the 921 earthquake, the 2003 Iraqi war, the outbreak of Severe acute respiratory syndrome (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 macro-economic 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, a 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

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 MS at the current period leads to positive hotel stock returns in the next period. Chen (2007a) explores the performance of Taiwanese hotel stocks under two various monetary policy environments, namely expansive and restrictive, and the impact of different monetary stringencies on the relationship between hotel stock returns and macro variables in Taiwan. It is found that only growth rates of MS and growths in unemployment rates affect the hotel returns; however the effect of MS 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, the growth rate of total foreign tourist arrivals (TAs) 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 impacted the hotel returns positively while returns reacted negatively to the SARS outbreak, the 911 terrorist attacks in the USA, 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, Liao, and Huang (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 by the SARS outbreak and the 9/11 terrorist attacks while the takeover of Hong Kong had 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 TAs has a more direct influence on hotel sales and profitability than it does on hotel stock prices. Chen (2012) analyzes the reaction of US 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 the 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, Agrusa, Krumwiede, and Lu (2012) examine whether eight macro-economic factors (growths in the discount rate, growth rates of the MS, growths in the unemployment rate, growth rates of the consumer price index (CPI), industrial production, percentage growth in the yen-dollar exchange rate (EXCH), the percentage growth in oil price (OILP), 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 OILP significantly Granger cause hotel stock returns in Japan. In addition to traditional macro-economic variables, Singal (2012) also considers 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 macro-economic variables for the USA. However, when consumer sentiment and stock market return (SMR) are added into the model, it is documented that growths in consumer sentiment are strongly and positively associated with the hospitality industry stock returns. Moreover, SMR has a positive effect while industrial production negatively affects hospitality industry stock returns. More recently, Al-Najjar (2014) shows 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 gross domestic product (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 the USA. In this paper, we contribute to the literature by extending the scope to a developing market, namely Turkey. In terms of number of tourists, Turkey was ranked as 20th in 2000 reaching the 7th position in 2009. International TAs up by 4% reached a record 1.2 billion in 2015 in the world. This result was affected by EXCHs, OILPs, 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 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 the shooting down of a Russian fighter bomber by Turkish F-16 jets in November, Turkey experienced a 92% 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% 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 the Borsa Istanbul Tourism Index return responds to growth in eight macro-economic variables namely, CPI, imports, EXCH, consumer confidence index (CFI), OILP, MS, foreign TAs, and monthly SMR. We find that growth in consumer CFI and imports could Granger cause tourism companies' stock returns among eight macro factors in Turkey during the 2005 to 2013 period. After considering the structural break that occurred in 2007, the pre-break results indicate that consumer CFI, EXCH, and foreign TAs could Granger cause tourism stock returns. However, the results in the post-structural break period reveal that only growths in OILPs and imports are significant. This paper contributes to the literature by showing that like previous studies (examining China, Taiwan, and the USA) macro-economic variables fail to explain the tourism sector returns also in Turkey. Certain shocks such as the SARS outbreak, the 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: the second section presents the hypothesis development. The third section states the data and methodology. The fourth section presents and discusses the results. The last section concludes the paper.

Hypotheses development

In this paper, we examine the effect of eight macro-economic variables namely CPI, imports (IM), EXCH, consumer CFI, OILPs, MS, foreign TAs, and SMR on

the Borsa Istanbul Tourism Index (TR) during the 2005 to 2013 period.

We use M2 to measure the MS in line with Chen and Kim (2006). The expansionary monetary policy, that is an increase in MS, will affect the stock prices through various channels. For example, expansionary monetary policy will boost the economy and increase the consumption. Meanwhile, interest in the 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 MS 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, customers, and sales, which will be reflected in their financial performances. Based on this, we use the growth in foreign TAs 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 the tourism industry but also in a variety of industries as it is being used as a crucial component of production and transportation. A rise in OILPs will directly increase the cost of production. Due to the oil-intensive character of the tourism industry, it can be argued that higher OILPs might have a reverse effect on the companies operating in this industry (Chatziantoniou, Filis, Eeckels, & Apostolakis, 2013). And this effect will be observed in their earnings and stock prices.

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

Consumer CFI is an important measure to monitor the development in consumer expectations. If consumers have positive expectations about the 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 CFI 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 for 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, Aktas, and Unal (2008) show that SMR is negatively associated with EXCH in Turkey. Moreover, Chen et al. (2010) also found a negative relation between EXCH and stock prices of restaurants. However, Chen et al. (2012) argue that stock returns would be positively linked to EXCH as Japanese companies are export-oriented. For the case of Turkey, we assume a negative association between EXCH and tourism index. An appreciation of the dollar against the Turkish lira will shift their interest from the stock market to the 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 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, McQueen, & Wood, 2004; Alagidede & Panagiotidis, 2012) on the negative relationship between inflation and stock returns, a limited number of studies provide (Asprey, 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 SMR 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.

Data and methodology

This paper explores the effect of eight macro-economic variables on the Borsa Istanbul Tourism Index¹ (TRI) during the 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 are collected from Borsa Istanbul while monthly macro-economic data are collected from The Central Bank of the Republic of Turkey and Turkish Statistics Institute.

We calculate the monthly return of the Borsa Istanbul Tourism Index as

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

where TRI represents Tourism Index Return. ΔCPI , ΔIM , $\Delta EXCH$, $\Delta OILP$, ΔMS , ΔTA , SMR stand for growth in CPI, growth in imports, growth in EXCH, growth in OILPs, growth in MS, growth in TAs, and SMR, respectively. Those variables are also calculated as the difference in natural log while ΔCFI (growth in consumer CFI) is the growth in consumer CFI.

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 the tourism industry faced higher risks compared to the rest of the listed 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 the summer period and decreases sharply during winter.

Table 2 shows correlations among and we noted that correlations between EXCH and monthly market return is relatively high (-0.62). However, multicollinearity presents a potential statistical problem when the correlation coefficient exceeds 0.80 (Gujarati,

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

	TRI	ΔCPI	ΔCFI	ΔEXCH	ΔMS	ΔOILP	ΔTA	SMR	ΔIM
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

Notes: TRI = monthly return on tourism stock index; ΔCPI = growth in consumer price index; ΔIM = growth in imports; ΔEXCH = growth in exchange rate; ΔCFI = growth in consumer confidence index; ΔOILP = growth in oil price; ΔMS = growth in money supply; ΔTA = growth in foreign tourist arrivals; SMR = stock market return.

2004). Moreover, we calculate the variance inflation factor (VIF) for each regressor. For all variables, the VIF is less than 2, showing that the multicollinearity problem does not exit.

We also apply four univariate unit root tests, including Augmented Dickey–Fuller (Dickey & Fuller, 1979), PP (Phillips & Perron, 1988), KPSS (Kwiatkowski, Phillips, Schmidt, & Shin, 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 stationary. Interestingly, a structural break is detected for all variables.

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

$$\begin{aligned}
 \text{TRI} = & \alpha_1 + \sum_{j=1}^2 \beta_{1j} \Delta \text{CFI}_{t-j} + \sum_{j=1}^2 \beta_{2j} \Delta \text{EXCH}_{t-j} \\
 & + \sum_{j=1}^2 \beta_{3j} \Delta \text{MS}_{t-j} + \sum_{j=1}^2 \beta_{4j} \Delta \text{OILP}_{t-j} \\
 & + \sum_{j=1}^2 \beta_{5j} \Delta \text{TA}_{t-j} + \sum_{j=1}^2 \beta_{6j} \text{SMR}_{t-j} \\
 & + \sum_{j=1}^2 \beta_{7j} \Delta \text{IM}_{t-j} + \sum_{j=1}^2 \beta_{8j} \Delta \text{CPI}_{t-j} + \varepsilon_1. \quad (2)
 \end{aligned}$$

The null hypothesis is that the growths in eight macro-economic variables do not Granger cause monthly tourism index return. This hypothesis for consumer CFI 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:

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

Findings

Before we perform the Granger causality test, we run the Bai and Perron (2003) multiple breaks test. It shows that there is a structural break in June 2007. In the structural break test, the model consists of a constant regressor, allowing for a serial correlation that differs across regimes through the use of the heteroskedasticity and autocorrelation consistent covariance estimation. A maximum of five breaks were allowed in the model, and we employ a trimming percentage of 15%. The results indicated that the one break date occurred in June 2007. In May 2007, Turkey experienced a presidential election and the Turkish general election of 2007 was held on 22 July 2007. The AK Party won 47% of the votes with a 12-point increase compared to 2002. With this victory, the AK Party was able to form a government on its own with a coalition. This finding is in line with Balli, Balli, and Cebeci (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. The 2008–2009 financial crisis did not 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 the 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

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

Notes: 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.

from 2005 to 2013. The Wald test statistics implies that only Δ CFI and Δ IM could Granger cause tourism companies' stock returns among eight macro factors in Turkey. The sums of lagged coefficients of Δ CFI and Δ IM 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 Δ CFI, Δ EXCH, and Δ TA could Granger cause tourism stock returns, and these findings support H_4 , H_6 , and H_2 (Panel B of Table 3). The sums of lagged coefficients of Δ CFI, Δ EXCH, and Δ TA 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 reveal that Δ OILP and Δ IM 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 OILP on tourism return for the sum of the first two lagged coefficients, we do observe that higher OILPs could drive up operational cost in the tourism industries and hence result in lower profitability and stock return in the longer term, and this will occur between lag 3 and lag 8 (see Figure 1). Figure 1 indicates that returns on tourist companies increases as OILPs goes up at the first three months immediately after the Organization of the Petroleum Exporting Countries announcements. The negative effect is observed after three months and continues for five months till the eighth month.

We also estimate a full sample model with a time dummy variable and there is no significant change in the results (see Panel D in Table 3). However, the use of a time dummy only allows shift in the linear time trend, while the subsample estimation strategy allows 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 comment on the first period as the observations are only 30 and we may have a small sample problem. However, the influence of OILP becomes important in the second period, and this may be due to geopolitical events such as the conflict between Israel and Lebanon, and the spread of the Tunisian revolution that reached Syria on 15 March 2011. The above events may impose uncertainty on oil supply and the financial market may be more sensitive to OILP change, especially in Turkey. Regarding the Turkish consumer CFI, it reached the lowest in 2008–2009; due to domestic stagnation and the global financial crisis, the index started to fall from 2010 till recently. This may be the reason why consumer CFI lost its significance in the stock market in the second period as consumers' confidence deteriorated in the 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. The response of tourism stock returns to the change in CPI is negative and it takes 6 months to die out completely, implying that higher inflation leads to declines in tourism stock returns, and this finding is consistent with the existing literature (Barrows & Naka, 1994). We also see a positive response of tourism stock returns to money growth in line with the literature as an increase in MS may indicate lower interest rates, and therefore leading to an increase in tourism stock returns (as the cost of doing business is lower).

We therefore can conclude that consumer confidence, EXCH, TA numbers, OILP shock, and imports have impacts on the tourism stock return. In the pre-break period, consumer sentiment played a role in

Table 3. Results of Granger causality tests: Borsa Istanbul Tourism index return.

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

Notes: TRI = monthly return on tourism stock index; ΔCPI = growth in consumer price index; ΔIM = growth in imports; ΔEXCH = growth in exchange rate; ΔCFI = growth in consumer confidence index; ΔOILP = growth in oil price; ΔMS = growth in money supply; ΔTA = growth in foreign tourist arrivals; SMR = monthly stock market return.

*significant at 10%.

**significant at 5%.

***significant at 1%.

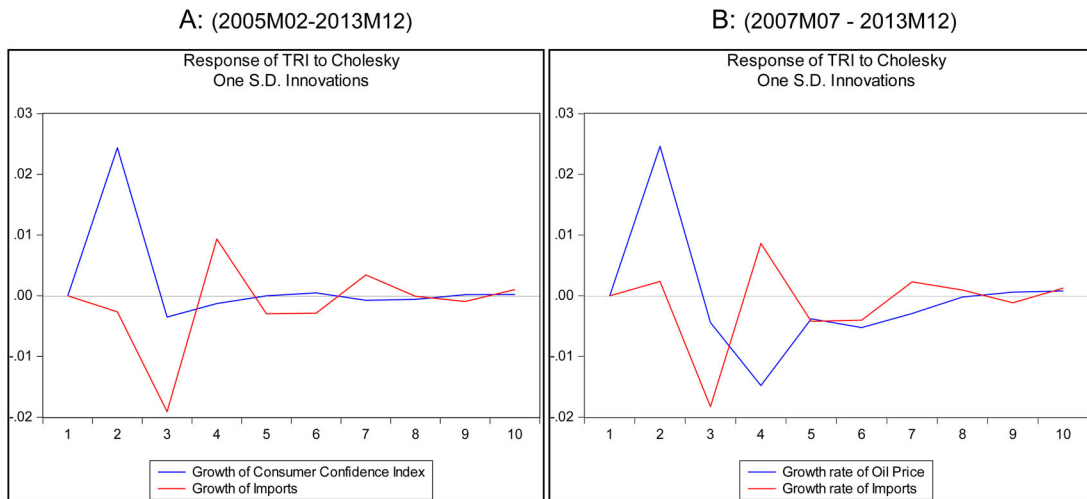


Figure 1. Impulse-response functions: tourism stock return.

tourism stock return, as personal consumption expenditures on hospitality industry is associated with consumer confidence about the future economy. Regarding the foreign currency rate, a negative relationship to tourism stock return is indicated, as appreciation of the dollar against the Turkish lira shifts investors' interest from the stock market to the foreign exchange market. Moreover, the value of the wealth of people will diminish and the mood of people will be negatively affected. Total foreign tourist arrivals imply 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 Figure 1 represent the responses of the tourism index return 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 leads to declines in tourism index return. The response of TRI to the growth of consumer CFI is positive around the second month, implying that higher consumer confidence growth leads 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 OILP is positive around the second month, implying that higher OILP growth leads to increases in tourism stock returns at the initial stage of OILP shock, and the relationship becomes negative thereafter.

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 OILP and growth of imports. OILP 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 CFI played a more important role in forecasting variance of tourism index returns.

The findings show that changes in OILPs and imports affect the stock prices of tourism companies in Turkey in the post-structural break period. OILPs do affect the companies negatively with a delay of two months. Increase in imports means the growth of domestic private consumption and hence it drives stock prices down. Therefore, tourism companies

Table 4. Variance decompositions: tourism index return.

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
Panel A: (2005M02–2013M12)		
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)		
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

and also their investors should follow the changes in those two variables. Moreover, the findings of the paper provide supportive evidence for the limitations of macro-economic variables to explain tourism sector returns also in Turkey. However, shocks such as the SARS outbreak, the Asian financial crisis, wars, terrorist attacks, and uncertainty (Demir & Ersan, in [press-b](#)) affect tourism sector performance more than traditional macro-economic variables.

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 the USA. In this paper, we contribute to the literature by extending the scope to a developing market, namely Turkey. In terms of number of tourists, Turkey was ranked as 20th in 2000 reaching the 7th position in 2009. Despite the regional and local crises, Turkey was the 6th most popular destination in 2014 with 37.8 million visitors.

By applying the Granger causality procedure, we examine whether the Borsa Istanbul Tourism Index return responds to growth in eight macro-economic variables namely, CPI, imports, EXCH, consumer CFI, OILP, MS, foreign TAs, and monthly SMR. We find

that growth in the consumer CFI and imports could Granger cause tourism companies' stock returns among eight macro factors in Turkey during the 2005 to 2013 period. After considering the structural break that occurred in 2007, the pre-break results indicate that consumer CFI, EXCH, and foreign TAs could Granger cause tourism stock returns. However, the result in the post-structural break period reveals that only growth in OILPs and imports are significant. As this paper also shows the limitations of macro-economic variables to explain tourism sector returns, future studies should focus more on shocks and uncertainty variables. Also, alternative performance measures such as return on assets or return on equity can be used in addition to stock return.

Notes

1. The index includes six firms namely, AVTUR (AVRASYA PETROL VE TUR.), MAALT (MARMARIS 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 cannot include more variables due to multicollinearity problem and to avoid loss of degree of freedom.

Disclosure statement

No potential conflict of interest was reported by the authors.

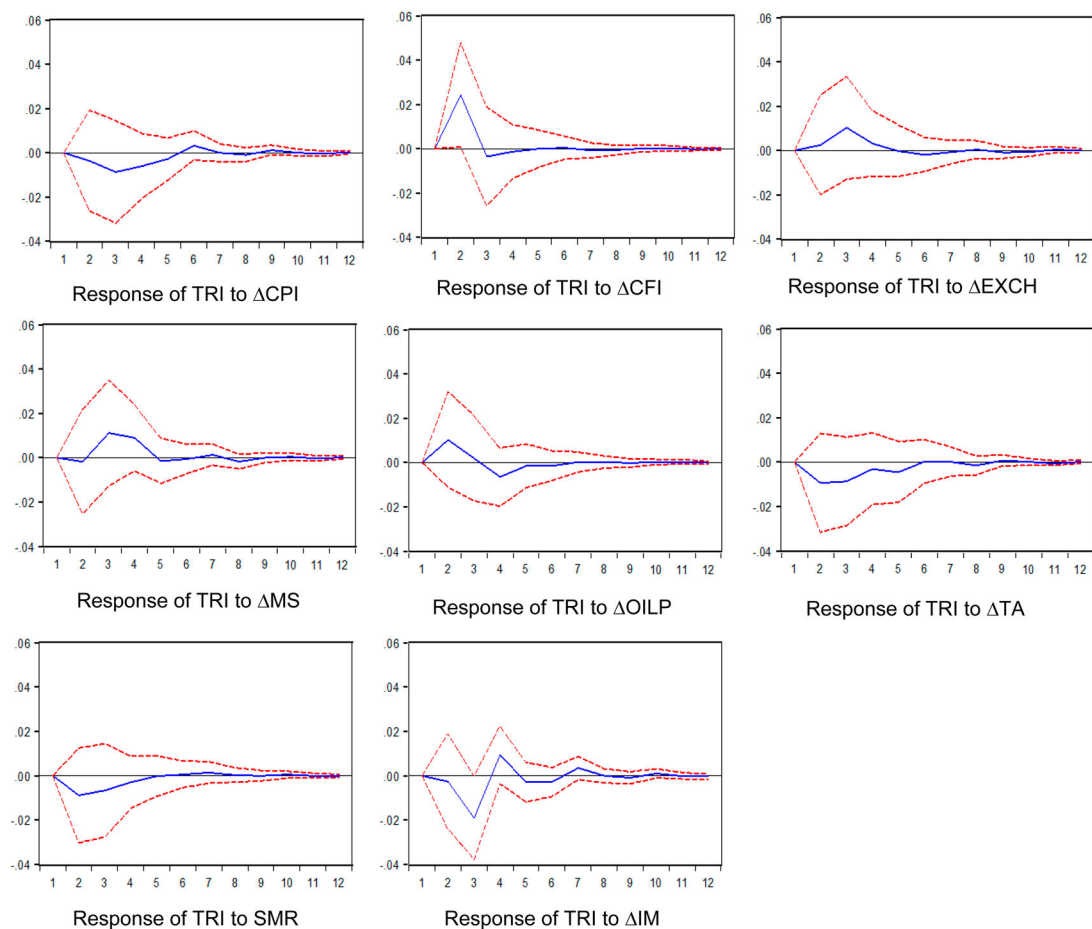
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Appendix 1.

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	ΔCFI	ΔEXCH	ΔMS	ΔOILP	ΔTA	BRI	ΔIM
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