Reel Effective Exchange Rate Volatilities Impact On Tourism Sector In Turkey: An Empirical Analysis Of 2003-2014

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Abstract

There have been positive changes in the macro indicators of the economy in Turkey over the last decade. The foreign trade volume increased remarkably whereas serious progress has also been observed in many sectors. The volatility in the Turkish currency was relatively reduced in the aftermath to the regulations in the finance sector. Tourism is one of the sectors in Turkey that is open to international markets and attracts foreign currency. The contribution and added value of the tourism sector to the national economy has been growing in recent years. The stability in the domestic currency also positively affected tourism sector. To this end, the revenues in this sector have also increased. This study analyses the dynamics of the macro performance in Turkish economy over the last decade and empirically reviews the developments in tourism sector as well as the reflections in the monetary policies and the real effective exchange rate (REER) volatility. Additionally, empirically tests the relationship between the tourism sector revenues and the REER in the period between 2002 and 2014.

1. Introduction

Turkish economy has been experiencing a process of structural transformation in order to become more competitive in the global markets and increase domestic welfare in recent years. While agricultural and relevant sectors constituted the backbone of the economy up to 1970s, textile sector has become more important in the aftermath of the 1980s. Automotive sector became the locomotive in the exports in 2000s. On the other side for the service industry, Tourism is a leading sector in terms of its contribution to the foreign trade volume.

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According to the world tourism organization, tourism sector gains importance thanks to its contribution to the development (Akan & İşik, 2009). The spending by the foreign tourists revives the economy and makes huge contributions to the domestic sub-sectors in different ways. When people become wealthier and the price differences between the nations in a rapidly globalized are reduced, the tourism revenues increase (Khan & Lin, 2001). Generating financial resources the developing nations need in their economic development is less costly than the exports (Sinclair, 1998). The sector has been positively affected by the recent developments in Turkish economy; currency policy is one of the most important factors in foreign trade. REER may affect many sectors in countries adopting an open economy. For this reason, the central banks take measures to ensure that volatility remains minimum in the currencies. The central banks in developing countries have to take proper measures vis-à-vis the volatility problem because the destruction to be caused by instability in currency rates to the economy is huge. One of the most important data used in a number of accounts focusing on exports and imports in economics literature is REER. Recent theoretical models take tourism as an export item. Rapid development in tourism leads to direct increase in household and public incomes whereas it also has an indirect impact upon improvement the balance of payments (Polat & Günay, 2012). Additionally tourism is one of the sectors in Turkey that is open to international markets and attracts foreign currency. The contribution and added value of the tourism sector to the national economy has been growing in recent years. Attention to the tourism policies goes back to the 1980s. The bill on incentives for tourism introduced in 1982 contributed to the development of the sector and the tourism actors involved in tourism activities. For instance, since the introduction of this law in 1982, number of visitors to Turkey has increased by 22 times wherea the tourism revenues have grown by 62 times. In these figures, the incentives and supports supplied to the tourism enterprises played a determinative role. The first part of this study answers the question as to why REER is important in terms of the foreign trade transactions and offers a theoretical framework on REER. The following part seeks to empirically analyze the relationship between REER and the income, expenditure and number of foreign tourists in the tourism sector.

2. Literature Review And Hypotheses

2.1 Real Effective Exchange Rate and International Trade Theory

Currency rate generally refers to the nominal currency rate between two national currencies. Nominal currencies have to be adjusted in accordance with the external and domestic inflation rates. To ensure stability between currency rates, some measures are taken in consideration of the domestic and external inflation rates; these measures vary depending on the regime preferred in a given country. The relationship between the domestic goods and services and the prices of these goods and services in external markets is called REER (Copeland, 2005; Seyidoğlu, 2009).

Dornbusch (1997) holds that REER refers to an important indicator used in the measurement of the competitive power of a national economy in form of the prices of the goods relative to the prices of the same goods in domestic markets. In other words, when the same currencies of both countries are expressed in form of relative prices, this could be seen as the measurement of the international competitiveness (Özkan, 2003). Due to the impact of the decisions of the makers of the economic policies upon production, consumption and expenditures in the local economy, REER is determinative in the current balances (Braur, 2003). Because the sectors are classified as sectors open and not open to foreign trade in REER measurements, the relative prices of the goods subjected and not subjected to foreign trade are considered in theoretical accounts (Edwards, 1988). The changes in the currency rates lead to changes in the prices of the goods and services subject to international trade. At the same time, the increase and decrease in REER provides insights on the balance sheet of the national foreign trade. In general, decline in the REER refers to negative developments in the trade balance (Seyidoğlu, 2009). The increase in the REER refers to the increase of competitiveness in the goods produced under c.p. assumption in the global markets; and a decline refers to the decline in the competitiveness in these goods. These theoretical approaches explain the situations where goods and service transfer is performed from one country to another. In tourism sector, the spending by the foreign tourists in local markets is taken into account. Goods and services are sold in domestic market; for this reason, it
should be noted that they are subjected to the competition standards of the local markets. Webster, Fletcher, Hardwick and Morakabati (2007) empirically analyse the tourism sector by reliance on international trade theory. The research examines the application of quantitative techniques to further understanding of international trade theory with respect to tourism flows. The analyses are based on the construction of Balassa and Grubel–Lloyd Indices, as well as the construction of dynamic indices. The results of the analyses suggest that international trade theory has much to offer the study of international tourism flows. Many countries seem to specialize as both exporters and importers of tourism services. The analyses also explore the theoretical assertion that intra-industry trade is likely to be of importance in understanding international tourism flows.

Tourism constitutes nearly 40 pct of the entire services in the world; it also makes huge contributions to the economic development and growth as an invisible export item (Polat & Günay, 2012). Tourism contributes to international trade from two perspectives. First, business travelers conclude deals in their trips by which they make contributions to the growth of domestic and local market economies through their spending. Secondly, tourists and visitors who travel to a country for vacation make contributions to the economy. But tourism is not a source of revenue for developing nations alone. Tourism also contributes a great deal to many developed nations including the US and the UK which pay a great deal of attention to tourism policies (Khan & Lin, 2001). The developing nations enjoy advantage in tourism services because of low labor cost. The countries with high level of income in tourism sector generally have open economies because it is possible to achieve high level of foreign trade in such economies. The elevation in foreign trade transactions contributes to tourism by increasing mobility among nations.

3. Methodology and Data Collection

3.1 Research Goal

This study analyzes the dynamics of the macro performance in Turkish economy over the last decade and empirically reviews the developments in tourism sector income, expense and foreign tourist number as well as the reflections in the monetary policies and the REER volatility.

3.2 Data Collection

The statistical data used was collected mainly through internet sources: the Turkish governments’ official statistical webpage TurkStat (Basic indicators such as tourism income, tourism expense and foreigner visitor of Turkey, by sections in tourism industry, tourism and service sectors), Republic of Turkey Ministry of Tourism (Total tourism data and statistics,); The Central Bank of Turkey (Reel effective exchange rate).

3.3 Exchange Rate’s Impact on Tourism Industry in Turkey

Analysis of the relations between the exchange rate and foreign trade volume, in this case including tourism sector revenues, is important for designing policies to ensure foreign trade balance (Arize, Osang, & Slottje, 2000). De Grauwe (1988) notes that the trade volume between the industrialized countries is negatively affected by the fluctuations in exchange rates and because of this, the growth rate in foreign trade volume. Arize (1988) argues that most of the studies analyzing the relationship between the exchange rate volatility and foreign trade refer to a negative relationship in statistical terms. There are many external factors affecting the developments in foreign trade volume in developing countries; however, as observed in Russian and Asian crises, the share and role of recession and crises is greater (Blejer & Skreb, 1999). For this reason, the exchange rate policies pursued in recession and crises are closely followed by the foreign trade sectors. Tourism revenues are major sources of income for developing nations. While it is listed in the export field, tourism sector is distinct from all other export sectors in practice. Tourism is a composite product (service) that enters into international trade flows as an invisible export item. Above all, the outcome of the tourism sector is sold in local markets. The spending by alien visitors in a given country is not affected by the trade barriers and other measures to prevent inflow of foreign capital. The spending by these visitors make positive contribution to a number of sectors in the country. Furthermore, it is often argued that
tourism sector generates more pecuniary as well as non-pecuniary benefits and costs than other export industries (Khan & Lin, 2001).

Export-oriented industrial sectors contributing to foreign trade volume are affected by REER volatility. There are only a small number of studies analyzing the relationship between the tourism sector revenues and REER. Empirical studies on tourism sector are mostly focused on tourism revenues, economic growth or development policies. Most of the studies involving the developing nations as well do the same. Balaguer & Cantavella-Jorda (2002), in an empirical study analyzing the relationship between tourism revenues and economic growth during the period between 1975 and 1997 in Spain, conclude that there is an empirical relationship from tourism to economic growth by reliance on the Error Correction Model (ECM). In a study on Korea, Oh (2005) holds the view that tourism revenues positively contribute to economic growth. Akan, Arslan and Işık (2008), by reliance on Granger causality test, detect a relationship between tourism revenues and economic growth in Turkey. By using a wider time interval, Akan and Işık (2009) conclude that there is a one-direction relationship between economic growth and spending by foreign tourists during the period between 1970 and 2007 in a Johansen co-integration test. ECM causality test is used in the study to support the hypothesis that spending by visitors promotes economic growth. It is also concluded that employment by tourism supports economic growth. Analyses focusing on tourism sector in the literature of economics refer to the relationship between the variables of tourism revenues and economic growth. There are only a small number of studies on the impact of the tourism revenues and spending by foreign visitors (Işık, 2010). In their study, Bhagwati and Srinivason (1979) conclude that the direct spending by tourists culminate in additional spending and increases in revenues.

There are also empirical studies reviewing Turkey’s performance in terms of tourism revenues, expenditures and number of foreign visitors. Işık (2010) analyzes the impact of the tourist spending during the period between 1970 and 2008 upon Turkish tourism to test whether or not the variables in detecting the direction are stable. Additionally, the same study also seeks to determine relations and direction of the stable series by reliance on co-integration analysis. The study further finds that spending by foreign visitors has short term impact upon tourism revenues and a mutual relationship in the long run between the tourism revenues and spending by foreign visitors. Unlike previous studies on Turkey in the literature, Polat and Günay (2012) analyze the impact of the export and tourism revenues upon economic growth in Turkey by reliance on the co-integration method and causality test on the export figures, tourism revenues and GNP variables for the period between 1969 and 2009. The Johansen co-integration test shows that there is significant and positive relationship in the long term between exports and tourism revenues and economic growth. The ECM-based Granger (1988) causality test detects one-direction causality from export and tourism revenues to the GNP and stresses that the hypothesis on the tourism and export-based economic growth is applicable in the long term in Turkey.

3.4 The Model

The first step in the time series data used frequently in econometric models is testing the stability of the data. If the average and variance of the time series does not show any sign of change and if the common variance between these two phases depends on the distance between the two periods rather than the period under review, this time series is stable (Gujarati, 1999). Compared to the non-stable time series, fake regression problem is encountered. If there is no stability, it cannot be said there is relationship between results out of the regression analyses and the data under review.

Regression analysis is run to identify relationship between two or more variables and make estimations and predictions on the matter by reliance on this relationship. It is possible to observe many casual relations in the nature. In order to explain the linkage between two variables (simple regression) or more variables (multiple regressions) in this analysis method, a mathematical model is used; this model is called as regression model (Şahinler & Görgülü, 2006).

The simple regression model is as follows:

\[ Y = \alpha + \beta X + \varepsilon \]  

(1)
In this model, Y is dependent variable which is assumed to have a certain level of error; X is independent variable that is assumed to be error-free. α is fixed and is the value of Y when X=0; β is regression coefficient that represents the amount of change in Y when X changes by 1 unit. ε is error term that is assumed to display normal distribution whose average is zero and variance is σ². This assumption is needed for the significance controls of the coefficients.

3.5. ADF Unit Root Test

Newbold and Granger (1974) show that there will be a problem of fake regression in case of working with non-stable times series. No problem is observed in the results with the series where stable series are used; however, using non-stable series may lead to results that could pose some difficulties in terms of reliability. The series is considered stable if time series has variance and auto-variance, and fixed average features over the time. Wei (1990) may be consulted for different types of stability and a broader definition of stability.

In this section, stability analyses are made in respect to single-variable time series of the REER series and the tourism sector revenues which are regarded as a leading foreign trade items. According to the co-integration theory, in order to refer to long term relationship between economic series, they should be stable at the same level (Karagöz & Doğan, 2005). For this reason, in the regression analyses performed with time series, before analyzing the relationship between the variable, the features of the variables in the analyses in terms of time series should be investigated.

The most frequently used methods in testing the stability features of the series in practice are the tests by Dickey and Fuller (1979), expanded Dickey and Fuller (ADF) (1981) (Altıntaş, 2009). The ADF unit root test is used in determining whether the series are stable in this study.

In this test, also known as Augmented DF testi (ADF) in the literature, it is possible to test the model in a higher autoregressive process by addition of dependent variables as observed below:

\[ \Delta Y_t = \gamma Y_{t-1} + \sum_{i=2}^{p} \beta_i \Delta Y_{t-i+1} + \epsilon_t \]  

\[ \Delta Y_t = c + \gamma Y_{t-1} + \sum_{i=2}^{p} \beta_i \Delta Y_{t-i+1} + \epsilon_t \]  

\[ \Delta Y_t = c + \gamma Y_{t-1} + \delta_t + \sum_{i=2}^{p} \beta_i \Delta Y_{t-i+1} + \epsilon_t \]  

\[ Y_t \] represents dependent variable, c fixed term, \( \delta_t \) trend in trend model. As seen in the models, the lag length of the dependent variable are added to the model. It differs from the DF test in this respect.

Equation (1) represents trend-less and fixed term-less model,
Equation (2) the model with fixed term and
Equation (3) both trend and trendless model.

For this test; \( H_0 \)=Unit root available; series not stable, \( H_1 \)=No unit root; series stable.

3.6. ADF Unit Root Test Results
Unit Root Tests are conducted to verify the stationary properties (absence of trend and long-run mean reversion) of the time series data so as to avoid spurious regressions. A series is said to be integrated of order \(d\), denoted by \(I(d)\), if it has to be differenced \(d\) times before it becomes stationary. If a series, by itself, is stationary in levels without having to be first differenced, then it is said to be \(I(0)\). We use standard Dickey-Fuller (DF), Augmented Dickey-Fuller (ADF), Phillips-Perron (PP) tests, and MacKinnon (MacKinnon, 1991) critical values for that purpose. Second, for appropriate lag lengths, we use the VAR process in conjunction with the Akaike Information Criterion. Third, the Co-integration tests are applied to detect the presence of any long-term relationship between the variables (Khan & Lin, 2001).

The ADF unit root test results are shown in the following table where REER refers to real effective currency rate, TUINCOME to tourism income, TUEXPEN to tourism expenses, NUMFOTUR to number of foreign tourists as variables.

Table 1. ADF Unit Root Test Results for variables

|                | REER         | TUINCOME     | TUEXPEN      | NUMFOTUR     |
|----------------|--------------|--------------|--------------|--------------|
| Level          | Intercept+Trend | Intercept+Trend | Intercept+Trend | Intercept+Trend |
|                | -2.812840 (0)  | -3.503381 (4)  | -2.566349 (1)  | -3.206825 (4)** |
| First Difference| [-3.518090]   | [-3.529758]   | [-3.520787]   | [-3.529758]*  |
|                | -5.963469 (5)  | -3.684659    | -13.96654 (0) | -3.605778 (5) |
|                | [-3.536601]    | [-3.529758]   | [-3.520787]   | [-3.536601]*  |

*ADF refers to the %5 significance level for unit root test.
**lag length criteria

At the ADF test, the high degree auto-correlation process models are used. In the DF test, first degree auto-correlation process is taken. To make sure that the error term shows the characteristic of white noise, there should be higher level auto-correlation process models. For this, ADF test is used (Sever & Demir, 2007).

Table 2. Determining lag length

| Lag | LogL   | LR   | FPE   | AIC   | SC    | HQ    |
|-----|--------|------|-------|-------|-------|-------|
| 0   | -1998.655 | NA   | 3.14e+37 | 97.69048 | 97.85766 | 97.75136 |
| 1   | -1956.039 | 74.83822 | 8.61e+36 | 96.39213 | 97.22802 | 96.69651 |
| 2   | -1918.615 | 58.41740 | 3.10e+36 | 95.34707 | 96.85167 | 95.89496 |
| 3   | -1886.369 | 44.04306* | 1.49e+36* | 94.55459* | 96.72790* | 95.34599* |

* indicates lag order selected by the criterion
LR: sequential modified LR test statistic (each test at 5% level)
FPE: Final prediction error
AIC: Akaike information criterion
SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion
3.7 Johansen Co-integration Analysis

In case the linear combinations of non-stable series at the non-trend levels become stable in the long term, co-integration linkage emerges. In case there is co-integration linkage between series, alternative co-integration analyses such as Engle & Granger (1987), Johansen (1988), Johansen-Jesulius (1990), Paseran & Shin (1999) may be run. The Engle-Granger (1987) approach is able to find single co-integration vector in the series whose first difference is stable (Engle & Granger, 1987).

In the Johansen (1988) and Johansen-Jesulius (1990) co-integration approach, all variables included in the model are identified as inherent; as a result, a VAR model where more than one co-integration vectors are existent. In the Paseran (2001) test, regardless of whether the variables are static at the different levels, more than one co-integration vectors may be found (Pesaran, Shin, & Smith, 2001). Because the series used in the analysis is I(1), multivariable co-integration analysis developed by Johansen-Jesulius (1990) is used to detect co-integration linkage between the variables (Johansen & Juselius, 1990). To find the number of co-integration vectors, two likelihood ratios (LR), trace statistics ($\lambda_{\text{trace}}$, trace statistic) and maximum Eigen statistic ($\lambda_{\text{max}}$, maximum Eigen statistic), are used (Pazarhoğlu & Güloğlu, 2007).

These tests are used in the prediction of number of co-integrated vectors. To this end;

$$\lambda_{\text{trace}}(r) = -T \sum_{i=r+1}^{n} \ln(1-\lambda_i)$$  \hspace{1cm} (5)

$$\lambda_{\text{max}}(r, r+1) = -T \ln(1-\lambda_{r+1})$$  \hspace{1cm} (6)

$\lambda$ is the value of characteristic roots whereas T is the number of observations. At 6, the zero hypothesis for trace statistic ($\lambda_{\text{trace}}$) is “There are r co-integrated vectors at most.” Zero hypothesis for maximum eigen statistic at 7 ($\lambda_{\text{max}}$) is “There are at r+1 co-integrated vectors at most” (Güloğlu, 2007). Johansen (1990) and Johansen-Jesulius (1990) assume that in both tests, there is optimal delay length for Var (vector autoregressive) process.

Table 3. Johansen Co-integration Test Results

| Variables     | Eigenvalue | Trace Statistics | Max-Eigen Statistics | Critical value | Co-integration Hypothesis | Result |
|---------------|------------|------------------|----------------------|----------------|--------------------------|--------|
|               |            |                  |                      |                | Ho           | Ha     | Trace | Max  |
| REER          | 0.525617   | 43.13271         | 29.82961             | 55.24578       | 30.81507     | r=0    | r≥1   | ACCEPTED | ACCEPTED |
Trace test indicates no co-integration at the 0.05 level
Max-eigenvalue test indicates no co-integration at the 0.05 level

4. Conclusion

Developing nations need financial capital to fund their development. Tourism seems to be a good option to increase the amount of foreign currency needed to deal with this problem. For this reason, it appears that developing nations are focused on policies to increase number of foreign aliens in their countries.

Tourism sector has advantages by which it makes positive contributions to national economy when compared to the manufacturing industry. Rapid development and improvement in tourism leads to direct contribution to the household incomes and public incomes whereas it has indirect effect upon the balance of payments. Tourism sector is considered as a reliable foreign trade item which hurts less the natural resources of the country in the realization of the export-oriented industrialization.

Many accounts in literature of economics analyze the relationship between the economic growth and spending by foreign tourists. This study empirically tests tourism expenditures, tourism revenues and number of foreign tourists in the country by reliance on the REER. According to the results of the study, no long term relationship is detected between REER and tourism revenues and no granger causality relationship is found. Despite that REER volatility is a fairly important variable for sectors sensitive to foreign trade; it is a variable that can be considered in terms of the tourism revenues. This is the case because tourism revenues are made in domestic markets, competition conditions take place in the conditions of the local markets and decisions of the tourists are determined by different factors rather than economic circumstances in the country. Tourism revenues make huge contributions to the economic growth of Turkey. Amount of tourism revenues during the period between 2003 and 2014 has increased to $10 billion. It is of course not possible to explain this increase by one factor alone. The economic performance over the last decade contributed to the increase in the tourism revenues by increasing amount of investments.

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