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Time-varying linkages between tourism receipts and economic growth in a small open economy

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ABSTRACT

The causal link between tourism receipts and GDP has recently become the major focus of some recent studies in tourism economics. Results obtained in these studies about the causal link appear to be sensitive with respect to the countries analyzed, sample period and methodology employed. Considering the sensitivity of the causal link, we use the rolling window and time-varying coefficients estimation methods to analyze the Granger causality based on Vector Error Correction Model (VECM). When applied to Turkey for the 1963–2006 periods, this methodology enables us to overcome differences in the outcome of the tests performed in other studies for tourism receipts and GDP. The findings of this paper are as follows: results from the full sample within the VECM model indicate that there is no Granger causality between the series, while the findings from the time-varying coefficients model based on the state-space model and rolling window technique show that GDP has no predictive power for tourism receipts; however, tourism receipts have a positive–predictive content for GDP following early 1980s.

1. Introduction

There is no doubt that the export-based development strategy is of great importance and the main source of economic growth and development. A brief look at the world economy, especially the post-1960s, shows the preference of export and export-based growth over import based growth. The causality relationship between export and economic growth have for a long time been the focus of many researchers (Balassa, 1988; Ghatak et al., 1997). While the evidence obtained in these studies differ, the general consensus is that there is a positive cause and effect relationship between export and economic growth; that is, the more the exports, the higher the economic growth (Shan and Sun, 1998).

Also known as the smoke-stack industry, tourism and its economic impacts have for a long time been the focus of many researchers in both areas. Taking the relation between export and economic growth into account, it will not be inaccurate to hold that the premise that tourism will lead to economic growth stems from this relationship (Vanegas and Croes, 2003). Tourism, chiefly a labour-intensive sector, is in the section of international services under current accounts of the balance of payments. For this reason, tourism receipts can be said to have an export effect since the nature of tourism receipts are of foreign exchange nature. In other words, tourism is regarded as an intangible export item (Theobald, 2001).

The demand for goods and services in the country visited is commensurate with the increase in the number of tourist arrivals. If the country visited has the resources to meet the increasing demand as a result of the number of tourists visiting the country, the spending of the tourists will remain in the country visited. Foreign exchange surpluses created by tourism activities will have a positive contribution to the balance of payments, which is why it is widely acknowledged that tourism in the long run might create economic growth, as is the case in the hypothesis of export-focus growth (Balaguer and Jorda, 2002; Croes, 2006). The growth in the tourism sector has a positive impact on the current account, creates employment and induces an increase in GDP, thus having a desired effect on the economy concerned (Brohman, 1996).

The related literature hosts some research into the issue with different conclusions. For example it was argued that a negative impact on growth and loss in economic welfare is very likely to ensue under a monopolistic administration of tourism operations (Hazari and Ng, 1993). Another study was carried out by Hazari and Ng (1993) in order to investigate the relation among tourism, capital accumulation, consumption per person and terms of trade. The evidence obtained suggests that tourism has a positive impact on the long-term growth of countries (Hazari and Sgro, 1995). In another study, Modeste (1995) holds that tourism contributes to the economic growth and the growth in tourism sector brings forth shrinkage in the

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agriculture sector. Balaguer and Jorda (2002) in their paper investigate the direction of relationship between tourism and economic growth, using error correction model and found that the causality goes from tourism to growth in the long run. Moreover, Dritsakis (2004) for Greece and Durbarry (2004) for Mauritius find bidirectional causality between tourism development and economic growth using error correction model. Kim et al. (2006), using Granger causality test, find out that in Taiwan for the period of 1971–2003 the causality between tourism development and economic growth is bidirectional. On the other hand, using Granger causality test, Oh (2005), unlike the previous researchers mentioned in this paper, find a relation from only economic growth to tourism development for Korea. Lee and Chang (2008) investigate the casual relation between tourism development and economic growth for OECD and non-OECD countries (including those in Asia, Latin America and Sub-Sahara Africa) for the 1990–2002 period. Evidence obtained in their study indicates that there is unidirectional causality relationship from tourism development to economic growth in OECD countries and bidirectional relationship in non-OECD countries, but only a weak relationship in Asia.

As for Turkey, while Gunduz and Hatemi-J (2005) find a unidirectional causality from tourism to economic growth using leveraged bootstrap causality tests for the period 1963–2002, Ongan and Demiroz (2005) suggest bidirectional causality between international tourism and economic growth in Turkey for the period of 1980Q1–2004Q2 and using the Granger causality tests. In a similar manner, Bahar (2006) obtains in his study that tourism has a positive effect on economic growth, and the cointegration test has proved that there is a bidirectional relationship between tourism and economic growth. On the other hand, unlike the previous researchers, Katircioglu (2009) investigates the tourism-led-growth (TLG) hypothesis in the case of Turkey by employing the bounds test and Johansen approach for cointegration using annual data from 1960 to 2006 and rejects the tourism-led growth hypothesis for the Turkish economy on the grounds that no cointegration was found and error correction mechanisms plus causality tests cannot be run for further steps in the long term.

Thoma (1994) and Swanson (1998) examine the sensitivity of results from causality test using recursive and rolling window techniques to analyse Granger causality between the time series. Their findings indicate that changes over the sample period might yield some substantial influences over the causal relationships considered and for this reason, taking this into account; the links between tourism receipts and economic growth might follow the same patterns of sensitivity as put by Thoma (1994) and Swanson (1998). Since it might be quite likely that causality relationships over the sample period (in this case of tourism receipts and economic growth) changed over time, the rolling window techniques were implemented in order to motivate the time-varying causality patterns. Building on the evidence from the rolling window estimation, the study uses time-varying coefficient (TVC) model to estimate the varying links between the tourism receipts and GDP. The TVC estimation confronts the unknown functional form problem, specification errors, and spurious relationships (Hall et al., 2009, 2010).

The main motivation of this type of method used in this paper is that non-constancy of causality might create some problems in econometric terms in the application of standard Granger causality tests as well as the concerns for economic theory and policy analysis. Time dependency of causality patterns could be put down to many reasons such as the changes in monetary policy and large shocks to the economy. In order to rise above these problems, we use Vector Error Correction Model (VECM) with time-varying parameters. We also determine the sign impact between the series over the sample period. What is new in this paper is that it could be the first to examine the relationship between tourism receipts and economic growth (real GDP) using autoregressive (VECM) models with time-varying parameters in tourism literature. This paper analyses the time-varying linkage between the real tourism receipts and real GDP series using the annual data from 1963 to 2006 for Turkey. The findings obtained indicate the following results: results from the full sample within the VECM model show that there is no Granger causality between the series. On the other hand, the findings obtained from the state-space and rolling window techniques show that GDP has no predictive power for tourism receipts, while tourism receipts have a positive–predictive content for GDP following the early 1980s.

The paper is organized as follows: Section 2 explains the methodology employed and Section 3 provides empirical results and the last section presents the conclusion.

2. Methodology

In Granger causality tests, it is assumed that there is (non) existence of one "causal" relationship for the whole sample. Nonetheless, there might be time-varying causal relationship in which causality might not be applicable in the whole sample; that is to say, a variable might not Granger cause in some periods and might Granger cause in other periods. When the causal relationship between two variables is not stable and the non-causality is not rejected, what has been rejected is not clear. When there are policy shifts and modifications, time series might be said to have no stable single regime. To investigate whether the causal relationships between tourism receipts and GDP is stable over the sample period, we consider *F*-tests for Granger non-causality computed from rolling subsamples of a fixed size (Thoma, 1994; Swanson, 1998; Psaradakis et al., 2005). Consider a bivariate Vector Error Correction Model (VECM) between tourism receipts (TR_t) and GDP (G_t)

$$\begin{bmatrix}\Delta TR_t\\ \Delta G_t\end{bmatrix} = \begin{bmatrix}\phi_{10}\\ \phi_{20}\end{bmatrix} + \begin{bmatrix}\gamma_1\\ \gamma_2\end{bmatrix} ECT_{t-1} + \sum_{j=1}^{p} \begin{bmatrix}\phi_{11}^{(j)} \phi_{12}^{(j)}\\ \phi_{21}^{(j)} \phi_{22}^{(j)}\end{bmatrix} \begin{bmatrix}\Delta TR_{t-j}\\ \Delta G_{t-j}\end{bmatrix} + \begin{bmatrix}\varepsilon_{1t}\\ \varepsilon_{2t}\end{bmatrix} \quad (1)$$

where ECT_{t-1} is a lagged term derived from the long-run co-integrating relations between tourism receipts and GDP series, ε_{1t} and ε_{2t} are uncorrelated disturbance terms with zero mean and finite variance. We estimate the VECM in Eq. (1) for a time span of 15 years rolling through $t=\tau-14$, $\tau+1$,...,τ, $\tau=15$,...,T and calculate the *p*-values of the null hypothesis that tourism receipts does not Granger cause GDP ($\phi_{21}^{(1)}=\phi_{21}^{(2)}=\cdots=\phi_{21}^{(p)}=0$) and that GDP does not Granger cause tourism receipts ($\phi_{21}^{(1)}=\phi_{21}^{(2)}=\cdots=\phi_{21}^{(p)}=0$). More specifically, the *p*-values of *F*-statistics testing the lack of Granger causality from tourism receipts to GDP or *vice-versa* are computed from the VECM models defined in Eq. (1) fitted to rolling windows of 15 observations (15 years of data). We also compute the magnitude of the effect of tourism receipts on GDP $\left(\sum_{j=1}^{p} \hat{\phi}_{21}^{(j)}\right)$ and the effect of GDP on tourism receipts $\left(\sum_{j=1}^{p} \hat{\phi}_{12}^{(j)}\right)$ rolling through the whole sample with a fixed size of 15 years. The estimates $\hat{\phi}_{21}^{(j)}$ and $\hat{\phi}_{12}^{(j)}$ are the least squares estimates from the VECM in (1). In order to estimate the order of the VECM in (1), we fit a VECM model to the whole sample period and determine the optimal order using the Akaike information criterion. The lag length is fixed at the full sample estimate for all rolling VECM estimates.

Although the rolling VECM estimates may indicate time-varying relationship between tourism receipt and GDP series, the parameter estimates may not be reliable due to the small sample size. Rolling estimation is also not an optimal method to estimate time-varying parameters. In order estimate the time variation optimally we use a VECM with time-varying coefficients. This approach allows us to overcome the shortcomings of rolling window estimation. Instead of splitting the sample into several subsamples, the time-varying coefficients capture the change in the dynamic relationship and enables