Does Tourism Stimulate Economic Growth: Case of Jordan

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Abstract

The purpose of this research is to investigate the causal relation between tourism and economic growth in Jordan using quarterly data over the period 2003Q1-2011Q4. The methodology used in this study follows Toda and Yamamoto (1995) procedure in order to test the Granger causality between economic growth and tourism. The empirical results reveal that there is a bi-directional relationship between economic growth and tourism in Jordan. Thus, these findings lend support to the feedback hypothesis that economic growth and tourism reinforce each other in Jordan.

Keywords: Tourism Growth, Economic growth; MENA; Jordan; Cointegration; Causality.

1. Introduction

Reviewing the literature shows that the relationship between tourism and economic growth has been widely investigated using both time series and panel data. However, the empirical literature shows that the direction of causality between tourism and economic growth is still debatable. For example, empirical studies such as, among others, Lee and Chang (2008), Chen and Chiou-Wei 2009, and Tugcu 2014 reported mixed results with respect to the direction of causality between tourism and economic growth. That is, the findings of empirical studies on the direction of the causal relation between tourism and economic growth vary and can take one of the following forms. First, unidirectional causal relation from tourism to economic growth (see
for example, among others, Balague and Cantavella-Jorda (2002), Gunduz and Hatemi-J (2005), Chen and Chiou-Wei (2009), Lean and Tang (2010), Kreishan (2011), Jalil, et al (2013), Tang and Abosedra (2014), and Tang and Tan (2015). Second, unidirectional causality from economic growth to tourism (see for example, Oh (2005), and Tang (2011)). Third, bi-directional causality between economic growth and tourism (see for example, Dristakis (2004), and Kim, et al (2006)). And fourth, the neutrality hypothesis which means that no such causal relation between economic growth and tourism exists as found in Katircioglu 2009.

Jordan, as classified according to income level by the World Bank, is among the upper-middle-income economies in the world. In addition, it is classified by the World Bank as resource-poor, labor-abundant (RPLA) country. According to the data published by the Jordan Ministry of Tourism and Antiquities, the growth rates of tourism receipts fluctuates over the period 2003-2014 where it increases by a maximum of 40.73 percent in 2007 and decreases by 23.28 percent in 2013. In addition, a recent report by the Central Bank of Jordan, states that “travel receipts decreased in February 2015 compared to February 2014 by 16.0 percent (Central Bank, Jordan, 2015, p. 35).” Tourism can contribute the economic development in Jordan through increasing income, employment, and foreign exchange. Thus it is important to understand whether there is a relationship between tourism expansion and economic growth. Therefore, this research will focus on examining the causal relationship between tourism and economic growth in Jordan in order to provide the policymakers in the country with a planning tool that can help them in formulating their policies to promote economic growth, and whether or not the growth (conservation) in tourism can promote (retard) economic growth in Jordan.

This study will investigate the direction of the causal relationship between tourism and economic growth for Jordan as one of the Middle Eastern & North African Countries (MENA)
using quarterly data of real GDP and tourism receipts over the period 2003Q1-2011Q4 using a newly developed procedure of Granger non-causality by Toda and Yamamoto (1995). In light of recent budgetary problems, our investigation should help identify structural adjustments and proper reforms to cope more efficiently with the current challenges facing the country.

The rest of the paper is organized as follows. Section 2 presents data and the empirical methodology used in the study. Section 3 discusses the empirical results while section 4 concludes the study.

2. Data and Methodology

The paper will use quarterly data for the period 2003Q1-2011Q4 and the variables of this study are real gross domestic product (RGDP) growth rates and tourism receipts (TOUR RECEIP.). Data on these variables are extracted from the International Financial Statistics and Jordan Ministry of Tourism and Antiquities several issues (online).

Granger non-Causality Test: The Toda-Yamamoto Approach

The methodology used in this study builds on the Toda and Yamamoto (1995) procedure in order to test the Granger non-causality between economic growth and tourism. As an advantage of this method, Toda and Yamamoto (1995) stated that “Our method is applicable whether the VAR’s may be stationery (around a deterministic trend), integrated of arbitrary order, or cointegrated of an arbitrary order. Consequently, one can test linear or nonlinear restrictions on the coefficients by estimating a levels VAR and applying the Wald criterion, paying little attention to the integration and cointegration properties of the time series data in hand (Toda and Yamamoto (1995), p.227)”. This procedure involves two steps. First, determine the lag length (k)
of the VAR model and augment that with the maximum order of integration (dmax) of the
variables used in the model. We used both Akaike Information Criterion (AIC) and Schwarz
criterion (SC) to determine the optimal lag structure (k) of the VAR model. We also used the
Augmented Dickey-Fuller (ADF) test to determine the order of integration (dmax) of the
variables used in the model. Second, test for Granger causality by using the modified Wald
(MWALD) test in order to test the coefficients of the first k coefficients of the VAR (k+dmax).
This test, according to this procedure of causality developed by Toda and Yamamoto (1995), has
an asymptotic Chi-square distribution when a VAR (k+dmax) is estimated (given that dmax is
the maximum order of integration that is suspected to occur in the system). Zapata and Rambaldi
(1997) argued that the MWALD test requires no priori knowledge of cointegration or no
cointegration of the system and it can be applied regardless of the order of integration (i.e., I(0),
I(1), or I(2)) of the series as long as k>=1=d. The Toda Yamamoto approach was used by, among
others, Wolde-Rufael (2005, 2006, 2009), Lee (2005), Payne (2010), Bowden and Payne (2009),
and Ziramba (2009).

Here, let $Y_t$ be the RGDP growth and $TOUR_t$ be the log (TOUR RECEIP). Rambaldi and
Doran (1996) have explained that the MWALD test used for testing Granger non-causality can
be more efficient when using a Seemingly Unrelated Regression (SUR) method. Thus based on
Toda and Yamamoto (1995) procedure, the Granger non-causality between economic growth and
tourism can be tested using the following VAR system given in equations (1-2):

$$Y_t = \alpha_1 + \sum_{i=1}^{k+d_{max}} \alpha_2 Y_{t-i} + \sum_{i=1}^{k+d_{max}} \alpha_3 TOUR_{t-i} + \epsilon_{1t} \ldots \ldots \ldots \ldots (1)$$
For example, when using Toda and Yamamoto (1995) approach to test the Granger non-causality from $TOUR$ to $Y$, we need to test the $H_0: \alpha_{3i} = 0$ for all $i \leq k$ in equation 1 and causality from $TOUR$ to $Y$ can be established through rejecting the null hypothesis stated above. A similar procedure can be used to test the causality from $Y$ to $TOUR$, i.e., to test $H_0: \beta_{2i} = 0$ for all $i \leq k$ in equation 2 and causality from $Y$ to $TOUR$ can be established if $\beta_{2i} \neq 0$ for all $i \leq k$.

3. **Empirical results**

Following Toda and Yamamoto (1995) method, before testing for the non-causality between economic growth and tourism, we need to establish the lag length ($k$) of the VAR model and the order of integration ($d_{\text{max}}$) of the variables used in the model. We used Akaike Information Criterion (AIC) to establish the lag length ($k$) of the VAR model. According to the AIC, the optimal lag length ($k$) for the VAR was established at 5, i.e. $k=5$. For the order of integration ($d_{\text{max}}$) of the variables used, the ADF test was used. The ADF results given in Table 1 show that all the variables are integrated of order of one (i.e., $I(1)$).
Table 1

ADF Unit Root Test
(The null hypothesis: Y and TOUR have a unit root)

<table>
<thead>
<tr>
<th>Country/Period</th>
<th>Variables</th>
<th>Level</th>
<th>First Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jordan (2003Q1-2011Q4)</td>
<td>Y&lt;sup&gt;a&lt;/sup&gt;</td>
<td>-2.079 (0)&lt;sup&gt;b&lt;/sup&gt;</td>
<td>-4.233***&lt;sup&gt;c&lt;/sup&gt; (3)</td>
</tr>
<tr>
<td></td>
<td>TOUR&lt;sup&gt;a&lt;/sup&gt;</td>
<td>-2.318 (4)&lt;sup&gt;b&lt;/sup&gt;</td>
<td>-2.166**&lt;sup&gt;c&lt;/sup&gt; (3)</td>
</tr>
</tbody>
</table>

Notes: <sup>a</sup> Y and TOUR as defined above. <sup>b</sup> Optimal lags according to Schwarz Information Criterion (SIC) are given in parenthesis. <sup>c</sup> ***, **, and * indicate significance levels of the 1%, 5%, and 10%, respectively.

Table 2 reports Chi-square statistics and the p-values for the purpose of testing the Granger-no-causality using Toda-Yamamoto method. The results show that the null hypothesis of Granger-no-causality from economic growth to tourism and from tourism to economic growth can be rejected lending support to a bi-directional Granger causality between economic growth and tourism. In other words, the results support the feedback hypothesis.

Table 2

<table>
<thead>
<tr>
<th>Ho:</th>
<th>Lag Length&lt;sup&gt;b&lt;/sup&gt; /Var order</th>
<th>MWald Statistics (d.o.f.)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOUR =&gt; Y&lt;sup&gt;a&lt;/sup&gt;</td>
<td>5/6</td>
<td>10.99623 (5)</td>
<td>0.0515*&lt;sup&gt;c&lt;/sup&gt;</td>
</tr>
<tr>
<td>Y =&gt; TOUR&lt;sup&gt;a&lt;/sup&gt;</td>
<td>5/6</td>
<td>9.39579 (5)</td>
<td>0.0943*&lt;sup&gt;c&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

Notes: <sup>a</sup> Y and TOUR as defined above. <sup>b</sup> Optimal lags are determined according to Akaiki Information Criterion (AIC). Degrees of freedom (d.o.f.) are given in parentheses. <sup>c</sup> ***, **, and * indicate rejection of the null hypothesis at significance levels of the 1%, 5%, and 10%, respectively.
4. **Conclusion**

Using quarterly data over the period 2003Q1-2011Q4, this study empirically examines the causal relationship between tourism and economic growth in Jordan using the Granger-no-causality method developed by Toda and Yamamoto (1995). The empirical results for Jordan support the bi-directional causal relation between tourism and economic growth which are consistent with those of Dritsakis (2004), and Kim, et al (2006) who has found evidence of a bi-directional causality running between economic growth and tourism in the case of countries studied. This suggests that the results give support to the feedback hypothesis that tourism and economic growth reinforce each other. This means that both tourism and economic growth reinforce each other. Thus in the case of results that support tourism-led growth hypothesis, the government should allocate more resources to tourism industry, therefore, using measures to develop the tourism sector in Jordan and increasing tourism demand and supply may be appropriate measure. This can support the development of the infrastructure in the tourism industry and promote tourism in Jordan through more advertisement, decreasing visa restrictions, and give discounts for tourist groups. In the case of results that support economic growth-driven tourism hypothesis, the government should allocate more resources to industries that can promote growth so the economy experience expansion.

**References**


World Bank, 2015. World Development Indictors (Online).
