Foreign direct investment and tourism in SIDS: evidence from panel causality tests

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Abstract

This study applies panel causality methods to investigate the relationship between foreign direct investment (FDI) and tourism in Small Island Developing States (SIDS). The results of the homogenous and instantaneous causality tests suggest that there is a bi-directional causal relationship between the variables. However, this causality is not homogenous for the group of countries. Indeed, heterogeneous causality procedures indicate that there exists a bi-directional causal relationship for only a small set of countries. For the most part, the causal relationship runs from FDI to tourism, implying that FDI provides much needed capacity for SIDS and therefore allows these countries to expand their tourism product.

Keywords: Tourism, FDI, Panel causality tests
JEL: F21, C33

Introduction

This paper discusses the causal relationship between foreign direct investment (FDI) and tourism in Small Island Developing States (SIDS). Following Armstrong et al. (1998), SIDS are characterized by a relatively small domestic market, limited domestic resources, narrowness of domestic output, considerable openness to trade and high transport and communication costs. Craigwell (2007) notes that the tourist industry is the key engine of growth in SIDS, representing a significant source of foreign exchange earnings and employment, both directly in tourism and indirectly in the ancillary sectors (primarily the distributive, agricultural and transportation sectors) supporting the tourism industry. Foreign exchange earnings from tourism in SIDS are approximately three times that of exports of goods. The industry also earns foreign exchange for the country through FDI inflows (to build hotels, casinos and other attractions) of, on average, 5 percent of GDP per year, reaching as high as 31 percent in some SIDS. Read (2007) also argues that FDI

flows to SIDS offer a potentially important mean of stimulating growth by providing an additional source of investment capital.

Despite the importance of these two factors to SIDS economic development very few empirical studies have been undertaken on the nature of their linkage. Except for Tang, Selvanathan and Selvanathan (2007)'s article on China, the research that have been done have been descriptive with no econometric analysis (see for example, Sandford and Dong, 2000; Tisdell and Wen, 1991) and have utilized standard regressions where one of the variables is assumed to be exogenous (see Dunning and McQueen, 1981; Contractor and Kundu; 1995; Kundu and Contractor, 1999). This paper extends the existing literature in two ways: (1) a set of SIDS where FDI and tourism are pertinent to their economic development is employed instead of a single country, and (2) homogenous and heterogeneous panel Granger causality techniques are utilized rather than time series Granger causality analysis. Testing for causality in a panel data framework is preferred to the normal time series approach since it improves the efficiency of the tests and increases the number of observations and degrees of freedom (Hurlin and Venet, 2001).

The next section is a theoretical discussion of the link between FDI and tourism. After this the data, econometric methodology and results are presented. Finally conclusions are given.

Brief Literature Review

From a theoretical perspective, there is no general consensus on the causal relation between FDI and tourism. Tang, Selvanathan and Selvanathan (2007) argue that more tourists would increase the demand for hotels, and, consequently investment would expand. Also, FDI can be positively affected as the large international hotel chains spread their brands to various parts of the world to meet growing tourism demand. Additionally, Sandford and Dong (2000) suggest that international tourism gives potential investors the opportunity to obtain first-hand knowledge of the environment of the country being visited and, as a result, investment possibilities could be identified.

Haley and Haley (1997), on the other hand, note that the causality between FDI and tourism can also run from FDI to tourism. A rise for international business travel is created because FDI is made outside the home country and to reduce the challenges of different cultures, economic and political structures and assure profitability in the process, investors, in making their FDI decisions, must travel to the source country to obtain more detailed and complex information and resources, which are not usually available through government or industry documents. Another argument for the unidirectional link from FDI to tourism is as follows: FDI generates the development of new tourist attractions and venues, which, in turn, can lead to an increase in tourists. It is also possible for export-oriented FDI to expand trade, which can create a growing awareness of goods and services that business and holiday travelers are interested in.

There are only a few studies that attempt to estimate the empirical relationship between FDI and tourism. Sandford and Dong (2000) examine the influence of tourism on new FDI in the United States of America (US). Using tobit analysis the authors find a positive and significant relationship between tourism and FDI. They, however, assumed that there exists one-way causality running from tourism to FDI and, therefore, did not investigate the possible role that FDI flows can have on stimulating the tourism industry in a particular region or country.

Tang, Selvanathan and Selvanathan (2007) use the Granger causality test under a vector auto-regression framework, explicitly modeling the possible bi-directional relationship between tourism and FDI flows. Using quarterly time series observations on inward FDI to China and international tourist arrivals the authors investigate the causal relation between FDI and tourism in China. The empirical results suggest that there is one-way causality running from FDI to tourism. This observation implies that FDI plays a critical role in expanding the tourist industry in China and the authors, therefore, recommend that policymakers consider offering incentives to investors to develop the poorer regions of China. Given that the tourism industry is not as mature in China as it is in SIDS, the results from this study have limited applicability to SIDS.

Willem and Nair (2006), on the other hand, employ panel regression analysis to investigate whether Caribbean countries can use services trade negotiations to increase the amount of FDI flows directed towards tourism. The authors regress real FDI flows on

the number of tourist arrivals (as a measure of market size), domestic regulations and General Agreement on Trade in Services (GATS) commitments. They report a positive association between FDI flows and the number of GATS commitments but could not find a significant relation between tourist arrivals and FDI flows. The authors' findings could have been influenced by the small sample size (9 Caribbean countries) and short time span (1997-2003).

Methodology, Data and Empirical Results

Traditional panel data causality analysis is conducted using the approach put forward by Holt-Eakin, Newey and Rosen (1988):

$$y_{it} = \alpha_i + \sum_{k=1}^{p} \gamma_k y_{it-k} + \sum_{k=0}^{p} \beta_{ik} x_{it-k} + \varepsilon_{it} \quad (1)$$

where each country is denoted by $i = 1, 2, \ldots, N$, time period $t = 1, 2, \ldots, T$, α are the country-specific slope coefficients, γ and β are the regression coefficients on lagged values of y and contemporaneous as well as lagged values of x and ε is an error term assumed to be independently and identically distributed with a zero mean and variance σ_ε^2.

Testing for causality in a panel data framework is preferred to the normal time series approach since it improves the efficiency of the tests and increases the number of observations and degrees of freedom (Hurlin and Venet, 2001). This specification, however, ignores the heterogeneity that may exist between cross-section units. The authors therefore employ the Hurlin and Venet (2001) procedure that uses both cross-sectional and time series information to investigate the causal relationship between two variables. The first step in the process consists of testing for homogenous and instantaneous non-causality (*HINC*). If the null hypothesis is not accepted, then there is evidence of Granger causality.

If the null hypothesis of homogeneous and instantaneous non-causality is rejected, Hurlin and Venet (2001) note that two configurations could appear: homogenous

causality (HC), where all of the β_{ik} coefficients are identical for all lag k and are non-null, or heterogeneous non-causality ($HENC$), where some of the β_{ik} coefficients are different for each country. To empirically test the HC one can impose the homogeneity assumption for each lag k of the coefficients on x_{it-k}. The $HENC$ test, on the other hand, looks at whether the null hypothesis for each country $i = 1,2\ldots N$ can be rejected. This test allows one to identify the country for which there is no causal relationship. To check for the robustness of results to model misspecification, the causality test equations are also augmented with other macroeconomic variables that could influence the evolution of FDI and tourism. In a literature survey, Crouch (1994) identified the main determinants of the demand for tourism as income per capita of source countries and the relative price of exported tourist services. As a result, foreign gross domestic product (GDP) and relative prices are included in the test equations as control variables.

The tourism series, direct tourism GDP, are obtained from the databases of the World Tourism Organisation and the World Travel and Tourism Council. The observations on real gross domestic product (GDP) are procured from the United Nations' National Accounts database, which can be accessed at the website http://unstats.un.org/unsd/snaama/Introduction.asp, while the FDI series in millions of US dollars are taken from the World Bank's World Development Indicators CD-Rom (2005). The relative price and relative foreign income variables are calculated relative to the weighted average for all SIDS:

$$x_{it}^{r} = \frac{x_{it}}{(N-1)^{-1}\left(\sum_{i=2}^{N} x_{it}\lambda_i\right)}.$$

where λ_i are the proportions of arrivals to SIDS accounted for by country i in the year 2000. The data used in this paper are annual observations for the period 1980 to 2004 and covers 21 SIDS.[2] All variables, with the exception of relative prices, are expressed in natural logarithms.

[2] Numerous shocks to the tourist industry would have impacted on the tourist industry in most of the countries. These shocks are captured by the inclusion of control variables and lags of the FDI and tourism variables.

Table 1 provides the HIC results with no controls for the influence of other possible exogenous variables. The table provides the test statistics for lags 1 to 3 as well as different estimation approaches. If the test statistics are significant they suggest that the null of no causality can not be accepted. The three estimation approaches used were a pooled model (OLS in levels), the fixed effects (LSDV in levels) model and the differenced model (OLS – Differences). The pooled model assumes that the intercept (α) and slope coefficients (γ and β) do not vary across tourism destinations, while LSDV in levels allows the intercept to vary for each country. The differenced model utilizes the same assumptions as the pooled model but employs the first differences of the variables in the model. In general, the test statistics across the three estimation approaches used and the lag lengths all suggest that the null of no homogenous and instantaneous causality between FDI and tourism, or from tourism to FDI can not be accepted at the 5 percent level of testing. In other words, there is a bi-directional causal relationship between tourism and FDI inflows, with greater tourism activity stimulating FDI flows and FDI flows, in turn, by providing investment in capacity and attractions, boosting tourism.

The findings above were, however, derived without the use of other explanatory variables in the test equation. Table 2 shows that these results are robust to the inclusion of exogenous variables that capture the effects of foreign income and relative prices on tourism demand and FDI inflows. Given that there is evidence of causality between these two variables, the authors then investigate whether the causality is homogenous, or if it is sourced from heterogeneous causal relationships for each country. Table 3 reveals that the null of homogenous causality can not be accepted at normal levels of testing.

To identify the source of this heterogeneity, Equation (1) is re-estimated, but the β_{ik}'s are allowed to differ for each country, and the HENC hypothesis is then evaluated for each country. The F-statistics are provided in Table 4. The results show that there is only a bi-directional relationship between FDI and tourism in 7 out of the 21 countries studied (Aruba, the Bahamas, Barbados, Dominican Republic, Jamaica, Trinidad and Tobago and Papua New Guinea). In these countries, there seems to be a symbiotic relationship between the two variables, with FDI generating greater demand for tourism and tourism stimulating FDI inflows. Table 4 also reveals that there is strong

causal relationship between FDI and tourism for every SIDS under investigation. The result indicates that foreign investors provide the tourism capacity that the country is lacking, by building more hotels (rooms) and tourism attractions, which then stimulates or allows the country to accommodate a larger number of visitors. Jamaica is an excellent example of this symbiotic relationship between tourism and FDI. Jamaica is an island nation (4,244 square miles) situated in the Caribbean Sea and depends primarily on tourism for most of its foreign exchange earnings. Francis (2001) notes that Jamaica's main strategy for its tourist industry has been to encourage investment by large hotel chains that have the ability to bring their own clientele. For example, the construction of a hotel by Spanish chain Riu was accompanied by significant growth in tourist arrivals from the Spanish market.

Conclusion

The study applies panel causality tests to investigate the relationship between foreign direct investment and tourism in SIDS. The results of the homogenous and instantaneous causality tests suggest that there is a bi-directional causal relationship between the variables. However, this causality is not homogenous for the group of countries. Indeed, heterogeneous causality tests suggest that there exists a bi-directional causal relationship for only a small set of countries. From a Caribbean perspective, this bi-directional causality result appears stronger in the more mature destinations like Aruba, the Bahamas, Barbados, Jamaica and the Dominican Republic. For the most part, the causal relationship usually runs from FDI to tourism, suggesting that FDI provides much needed capacity for SIDS and therefore allows the country to expand its tourism product. The evidence presented in this paper suggests that SIDS should actively seek to encourage greater foreign investment in their local industries, since it can provide valuable investment funds that the country might not be able to generate on its own. The lack of a bi-directional causal relationship between the two variables may also indicate that some SIDS may need to do a better job of marketing their tourism product to encourage greater foreign investment or/and several destinations might have excess capacity over the

period. Further research could seek to include other SIDS like Hawaii, Antigua and Cuba whose economies depend heavily on tourism for its survival.

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Table 1 Homogenous and Instantaneous Non-Causality Tests (No Controls)

	Lags	OLS – Levels	LSDV – Levels	OLS – Differences
$FDI \rightarrow LTOUR$	1	0.798	2.151**	1.015
	2	2.041**	4.314**	2.393**
	3	3.561**	6.295**	3.686**
$LTOUR \rightarrow FDI$	1	1.910**	4.519**	0.981
	2	3.465**	8.579**	4.085**
	3	5.508**	13.844**	5.506**

Note: ** indicates significance at the 5 percent level of testing.

Table 2 Homogenous and Instantaneous Non-Causality Tests (With Controls for the Effects of Foreign Income and Relative Prices)

	Lags	OLS – Levels	LSDV – Levels	OLS – Differences
$FDI \rightarrow LTOUR$	1	0.651	1.928**	0.740
	2	1.547**	4.345**	1.631**
	3	2.508**	6.901**	2.503**
$LTOUR \rightarrow FDI$	1	0.951	0.998	0.271
	2	1.885*	2.638**	2.507**
	3	3.261**	6.303**	3.763**

Note: ** indicates significance at the 5 percent level of testing.

Table 3 Homogenous Causality Tests

	Lags	OLS – Levels	LSDV – Levels	OLS – Differences
$FDI \rightarrow LTOUR$	1	7.913**	6.427**	5.025**
	2	5.774**	5.766**	2.893**
	3	5.030**	5.124**	2.547**
$LTOUR \rightarrow FDI$	1	5.923**	6.574**	1.992**
	2	3.747**	5.600**	2.141**
	3	3.293**	3.506**	2.407**

Note: ** and * indicates significance at the 5 and 10 percent level of testing, respectively.

Table 4 Heterogeneous Granger Causality Tests

Country	$FDI \rightarrow LTOUR$	$LTOUR \rightarrow FDI$
Aruba	30.915**	13.085**
The Bahamas	31.715**	7.850**
Barbados	33.059**	3.358**
Dominica	31.226**	0.538
Dominican Republic	33.825**	65.352**
Grenada	32.739**	0.112
Haiti	35.355**	0.599
Jamaica	30.351**	33.648**
St. Kitts and Nevis	36.246**	0.933
St. Lucia	31.727**	0.414
St. Vincent	30.923**	0.517
Trinidad and Tobago	32.808**	57.500**
Guinea-Bissau	35.152**	0.070
Mauritius	31.631**	1.112
Sao Tome and Principe	64.417**	0.250
Seychelles	33.885**	0.609
Fiji	33.179**	2.330
Papua New Guinea	32.569**	4.883**
Solomon Islands	42.007**	0.210
Tonga	38.569**	0.067
Vanuatu	32.968**	0.066

Note: ** indicates significance at the 5 percent level of testing.