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Causality between Foreign Direct Investment and Tourism: Empirical Evidence from India

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Abstract

This paper investigates the causal link between foreign direct investment and tourism in India by employing the Granger causality test under a VAR framework. A one-way causality link is found from foreign direct investment to tourism in India. This evidence once again adds to the need for appropriate policies and plans to further expand and develop tourism given that FDI flow into India is expected to be strong in the coming years, bringing along a demand for tourism as well.

Keywords: FDI, Tourism, Granger Causality

JEL codes: F21; L83; C32

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1. INTRODUCTION

Many countries make changes to their economic policies in order to attract foreign investors and India is no exception. India's liberalization and deregulation policies during the early 1990s have attracted a huge amount of foreign direct investment (FDI) into India in recent years. India has been ranked as the second most favoured FDI destination in the world, just behind China. Policy makers in many countries believe that FDI will lead their country's overall development, including the tourism sector. For a developing nation like India, FDI could play a significant role in its economic development in general and to the tourism sector in particular by improving India's infrastructure such as international airports, highways, hotels and modern technologies which are the keystones to tourism development.

The National Tourism Policy was introduced in the year 2002, with the specific aim of promoting the tourism industry as it was believed that increased tourism would lead to growth and overall development through employment generation and poverty reduction. New emerging areas like rural tourism, heritage tourism, eco-tourism, health tourism, adventure tourism and wildlife tourism have been given priority. Schemes and programmes were introduced during the X Five Year Plan (2002-2007) to improve finances of the state governments through private partnerships and attracting more foreign direct investment. As mentioned in GOI (2005) the IX Plan expenditure was Rs.589 crore and with a 45 percent increase in the X Plan outlay the expenditure on tourism was about Rs.2635 crore (all estimates are in 2001-02 prices). The amount was spent largely on infrastructure development while development of specific locations and training of personnel in the hospitality sector were also given importance. The XI Plan further emphasizes the need for developing the industry through rationalization of taxes, reducing the cost of air travel and local transport, procuring land for building hotels, particularly budget hotels, and development of site specific tourism like

cultural and heritage sites or eco-tourism.[1] Though these plans are drawn by the central government in New Delhi, the tourism sector is the prerogative of the states. Therefore, with the money allocated to the states, the local governments have to provide land and maintain the sites once they are developed. The bright prospect of this industry has led to the setting of a target to attract 10 million international tourists by 2011. The significance of the tourism sector to the Indian economy can be understood by the reiteration of the following statement by the Union Ministry of Tourism from the document of the XI Five Year Plan, 2007/08 – 2011/12 on the run up to the Economic Editor's Conference held in October, 2008: "Tourism is the largest service industry in the country. Its importance lies in being an instrument for economic development and employment generation, particularly in the remote and backward areas".[2]

The importance of the tourism sector in India can also be seen from its contribution (direct and indirect) to the economy, 6.2 percent to GDP and 8.8 percent to employment during 2007. India's tourism earnings increased from US$2.2 billion in 2002 to US$6.6 billion in 2006. This has led to an increase in India's share of total world receipts from 0.6 percent to 0.9 percent during this period. Though a large proportion of the tourists are domestic there has been an increase in foreign tourists as well. About 2.4 million tourists arrived in India in 2002 accounting for 0.34 percent of the world's share of tourist arrivals. This number almost doubled to 4.5 million in 2006 accounting for 0.52 percent of the world's share while the number of foreign tourist arrivals has increased at a rate of 12.4 percent between 2006 and 2007. The number of foreign tourist arrivals during the 10-month period of January to October during 2006

[1] These are summarised from the XI plan document and the Working Group on Tourism for the XI plan accessed from http://planningcommission.nic.in/plans/planrel/fiveyr/11th/11_v3/11v3_ch8.pdf and http://planningcommission.nic.in/aboutus/committee/strgrp11/str11_tourism.pdf respectively.

[2] http://pibmumbai.gov.in/scripts/detail.asp?releaseId=E2008PR970

was 3.5 million and increased to 3.9 million during the same months in 2007. Currently, FDI into the hotel industry is close to US$12 billion and about 40 international hotel chains are operational in India. India's ranking in relation to international arrivals and tourism receipts rose from 51st and 37th, respectively, in 2003 to 42nd and 20th, respectively, in 2007. Domestic tourism visits in India also increased from 309 million in 2003 to 527 million in 2007 (Press Information Bureau, Ministry of Information Broadcasting, 2009).

Tourism is one of India's largest net foreign exchange earners and creator of employment at the village level. Due to the increase in foreign tourist arrivals, the foreign exchange earning has also increased from US$5.0 billion in 2006 to US$6.3 billion in 2007, resulting in a growth of 26 percent[1]. The total amount of FDI to India in 2001 was US$42 billion which increased to US$113 billion in 2004. The amount of FDI inflows into India differs significantly between industries and between states. However, overall, the tourism sector is still one of the most important sectors attracting a significant amount of FDI. According to World Tourism and Travel Corporation (WTTC), India's tourism industry is expected to grow at a rate of 9 percent per annum during the next decade. India is rated among the top five travel destination in the world by the "Lonely planet" magazine and as the most preferred destination on earth by the Association of British Travel Agents (ABTA) magazines. With the expectation of further liberalization policies FDI in the tourism sector is likely to increase from the current US$450 million to US$1.5 billion by 2010 and increase the number of foreign tourist arrivals to 10 million in 2011. The recent inflow of FDI to India has helped to create 1980 new hotels with 109,392 rooms.

[1] Ministry of Tourism (undated), Annual Report, 2007-08 accessed from http://tourism.gov.in/AnnualReport 07-08.pdf in January 2009.

The development of the tourism sector needs investment in many forms and FDI is one such source. This introduces a causal link from FDI (to this sector and hence overall) to tourist arrivals as this attracts greater numbers of visitors due to better amenities. A further indirect link from FDI to tourism is through business tourists. These are entrepreneurs and managers from other countries who, while looking for opportunities to invest in India as well as to promote and sustain business in India visit several tourist destinations. This in turn is likely to boost FDI into this sector as well as other related sectors to improve the quantum and quality of service provided wherever lacking. Consequently there is a reverse causality that links tourism to FDI. Tourism is also one of the few sectors where 100 percent FDI has been permitted by the government of India recently.

A number of empirical studies at individual country level have been published in the last two decades which analyse the link between FDI and the tourism sector (for example, see, Sanford and Dong, 2000; Tisdell and Wen, 1991; Contractor and Kundo, 1995; and Kundo and Contractor, 1999). However, these studies used only a basic regression framework. Our study differs from the existing studies on FDI and tourism in at least two ways:

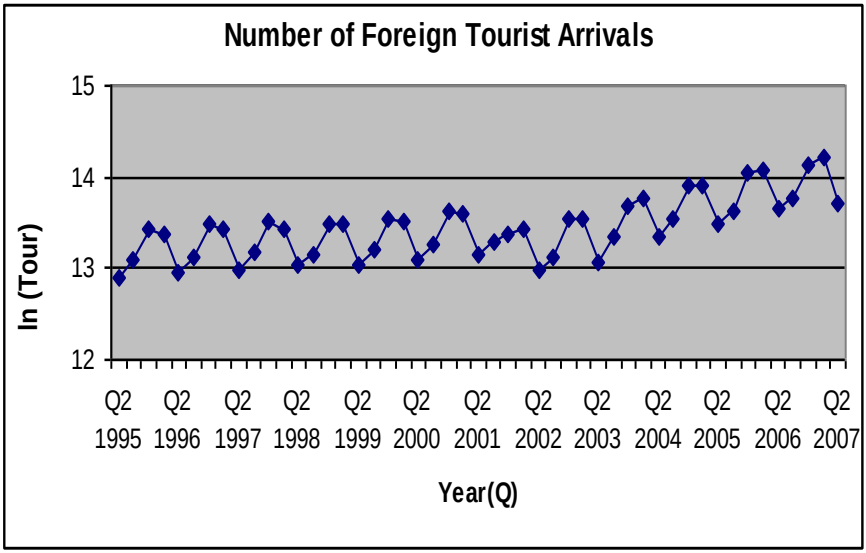
(1) Uses more recent data on FDI and tourism for India; and
(2) Applies more relevant methodologies in time series analysis to investigate the possibility of two-way causality between FDI and tourism in India.

The organisation of the paper is as follows. In Section 2 we present a preliminary time-series data analysis of FDI and tourism data in relation to India. In Section 3, we investigate the direction of causality under a VAR framework. In the last section, we present our conclusion.

2. A PRELIMINARY TIME SERIES DATA ANALYSIS OF TOURISM AND FDI

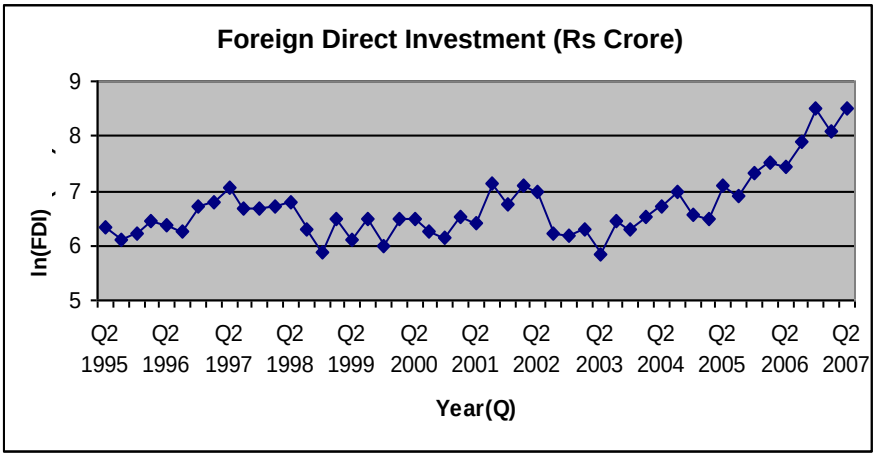
We use quarterly time series data for the period 1995(2) to 2007(2) for the two variables in natural log-form, namely the number of foreign tourist arrivals (TOUR) in India and the amount of foreign direct investment (FDI) into India (in rupees crore). These data are collected from various issues of the Reserve Bank of India Bulletin (published by the Reserve Bank of India) and the web portal, www.indiastats.com. Figures 1 and 2 plot the two original series in natural logarithms. As can be seen, both series were relatively stable until early 2003 and increase rapidly with a clear upward trend.

Figure 1: Original Series of Number of Foreign Tourist Arrivals (TOUR), India, 1955:2-2007:2 (in Natural Logs)



Note: The series are quarterly series and Q2 is the second quarter (April, May, June)

Figure 2: The Original Series of FDI, India, 1995:2-2007:2 (in Natural Logs)



Note: As in Figure 1.

Obviously, there is also a clear seasonal pattern in both the original series, especially easily visible in the number of foreign tourist arrivals (TOUR) series. There are several ways a time series can be deseasonalized. If we assume the seasonal pattern to be purely deterministic in a time series $\{y_t\}$, then we could estimate the model

$$y_t = \alpha_0 + \alpha_1 D_1 + \alpha_2 D_2 + \alpha_3 D_3 + \hat{u}_t$$

where D_1, D_2 and D_3 are quarterly seasonal dummies such that $D_i = 1$ for season i and 0 for other seasons. Then the residuals $\hat{u}_t$ can be viewed as the deseasonalized values of y_t (Enders, 1995, p.229). We follow this approach to obtain the deseasonalized series $\{y_t\}$. Another way of removing the seasonal components is by testing for seasonal unit roots and applying the relevant seasonal filters to the original series (see Engle

et al., 1987). Figures 3 and 4 present the plots for the deseasonalized TOUR and FDI series. As can be seen, there is an upward trend in both series. Therefore, the means of the time series are changing over time indicating that both series in their original form may not be stationary.

Figure 3: Deseasonalized TOUR Series, India, 1995:2-2007:2

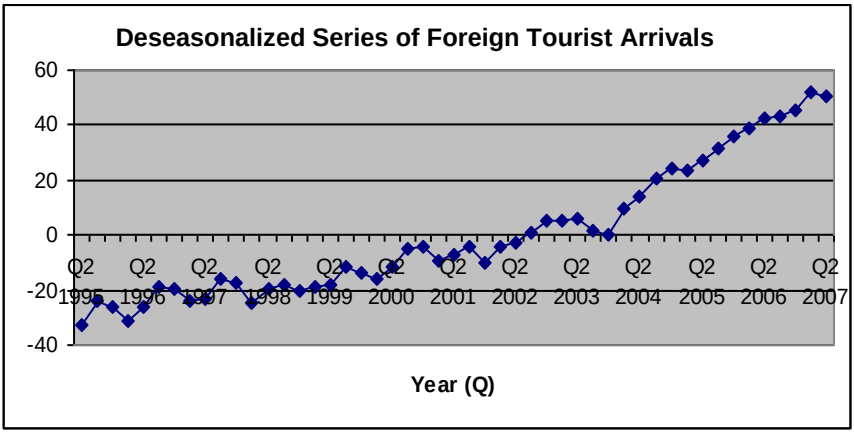
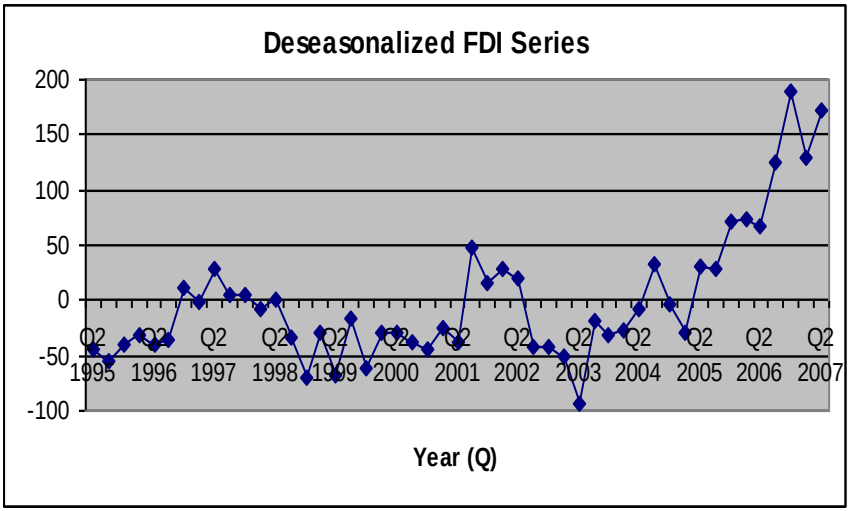


Figure 4: Deseasonalized FDI Series, India, 1995:2-2007:2



We plot the first-differenced series of the deseasonalized TOUR and FDI series in Figures 5 and 6. These two plots suggest no evidence of changing means indicating that the TOUR and FDI series may be integrated of order one, that is, both time series are I(1).

Figure 5: The First Differenced Series of TOUR, India, 1995:2-2007:2

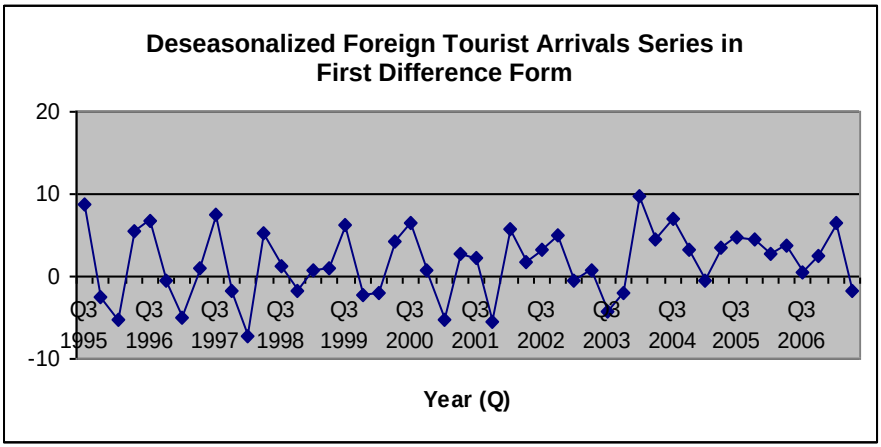
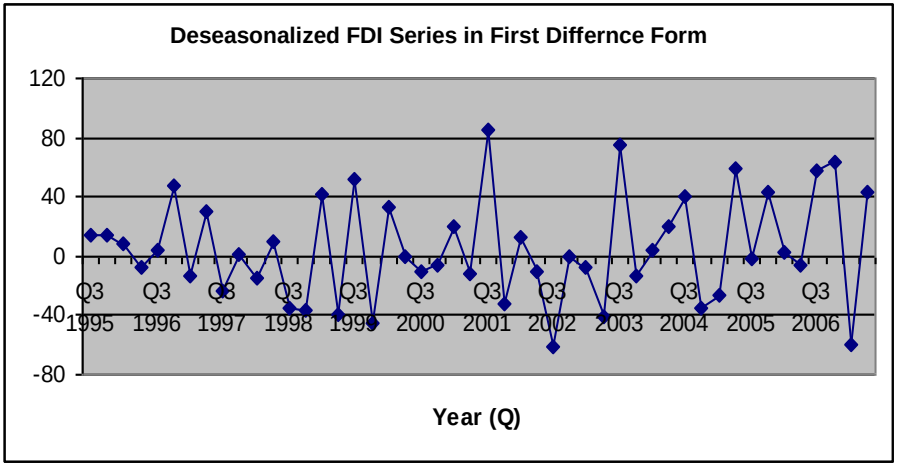


Figure 6: The First Differenced Series of FDI, India, 1995:2-2007:2



To statistically validate that the two series are I(1), we formally test the stationarity of these two series using_the Augmented Dickey-Fuller (ADF) unit-root test in the absence of any structural breaks. We shall also address the issue of testing for unit roots in the presence of a structural break later, in this section.

To perform the ADF test on the deseasonalized series of TOUR and FDI, we estimate the following three regression models (1)-(3) of y_t for the presence of unit roots in a time series $\{y_t\}$:

No constant and no trend model

$$\Delta y_t = \gamma y_{t-1} + \sum_{i=1}^{q} \beta_i \Delta y_{t-i} + \varepsilon_t \quad \ldots(1)$$

Constant and no trend model

$$\Delta y_t = \alpha_0 + \gamma y_{t-1} + \sum_{i=1}^{q} \beta_i \Delta y_{t-i} + \varepsilon_t \quad \ldots(2)$$

Constant and trend model

$$\Delta y_t = \alpha_0 + \alpha_2 t + \gamma y_{t-1} + \sum_{i=1}^{q} \beta_i \Delta y_{t-i} + \varepsilon_t \quad \ldots(3)$$

where $\Delta y_t = y_t - y_{t-1}$ is the first difference of the series y_t, $\Delta y_{t-1} = (y_{t-1} - y_{t-2})$ is the first difference of y_{t-1} etc., and ε_t is a stochastic disturbance term. We apply the ADF test to the TOUR and FDI series separately. The difference among the three regressions is the presence of the deterministic elements α_0 and $\alpha_2 t$. Equation (2) adds a constant term or drift term α_0 to equation (1) and equation (3) includes both a drift and a time trend $\alpha_0 + \alpha_2 t$. The number of lagged terms is chosen to ensure that the errors are uncorrelated. The sample size used in the estimation is 49. We carry out the estimation of the models using the econometric software SHAZAM and test the presence of unit roots using the systematic procedure described in Enders (1995). The results of the Augmented Dickey-Fuller (ADF) test for stationarity of the deseasonalized

series are presented in Table 1. As can be seen, both series in level form are non-stationary.

Table 1: ADF Test Results for a Unit Root on the Level Form of the Original Series

Model	Null hypothesis	Critical value at the 10 percent signify-cance level	Tourism		FDI	
			Data-based value of the test statistic	Results	Data-based value of the test statistic	Results
Constant and trend	$H_0: \gamma = 0$	-3.13	-0.51	Do not reject H_0	-0.91	Do not reject H_0
Constant and trend	$H_0: \alpha_0 = \gamma = 0$	5.34	3.03	Do not reject H_0	1.14	Do not reject H_0
Constant and no trend	$H_0: \gamma = 0$	-2.57	2.09	Do not reject H_0	-0.08	Do not reject H_0
Constant and no trend	$H_0: \alpha_0 = \gamma = 0$	3.78	10.52	Reject H_0	0.84	Do not reject H_0
No constant and no trend	$H_0: \gamma = 0$	-1.62	0.87	Do not reject H_0	-0.21	Do not reject H_0
Conclusion				{TOUR} has a unit root and the series is non-stationary		{FDI} has a unit root and the series is non-stationary

Now we extend the analysis to the situation of structural breaks. From Figures 3 and 4 it appears that some structural changes may have occurred to the two series around 2002 when the National Tourism Policy was introduced in India. When there are structural breaks, the Dickey-Fuller and Phillips-Perron test statistics are biased towards the non-

rejection of a unit root (Enders, 1995). Thus, it is necessary to use the procedure developed by Perron (1989) to test for a unit root in the presence of a structural change. To perform this Perron test we consider the following regression equation (4) for each time series $\{y_t\}$ and test the null hypothesis of a unit root by testing H_o: $\alpha_1 = 1$

The critical values for such hypothesis testing are available in Perron (1989). The model to be estimated for this test is given by

$$y_t = \alpha_0 + \mu_1 DU_t + \mu_2 DT_t + \alpha_1 y_{t-1} + \alpha_2 t + \sum_{i=1}^{k} \beta_i \Delta y_{t-i} + \varepsilon_t \quad \ldots(4)$$

where

$$DU_t = \begin{cases} 1 & if \ \ t \geq \tau + 1 \\ 0 & otherwise \end{cases} \quad DT_t = \begin{cases} t - \tau & if \ t \geq \tau + 1 \\ 0 & otherwise \end{cases}$$

where $\tau = 29$ is the structural break which took place in 2003(1). DU_t is a level dummy variable; DT_t is a slope dummy variable; α_0 of the intercept term; t is a deterministic trend; α_i, μ_i and β_i are the parameters; k is the lag length; and ε_t is the disturbance term.

Table 2: Perron Test for a Unit Root in the Presence of a Structural Change

			Value of the test-statistic						Critical value at	
	T	λ	K=1	K=2	K=3	K=4	K=5	K=6	1 percent	5 percent
FDI	49	0.6	-2.72	-2.29	-2.91	-3.00	-2.93	-3.25	-4.24	–4.88
TOUR	49	0.6	-3.98	-2.85	-3.03	-2.48	-2.98	-2.57	-4.24	–4.88

Notes: T = number of observations, λ= proportion of observations occurring before the structural change and K = lag length.

The value of the test statistics of the Perron (1989) test at various lag lengths of each time series are reported in Table 2. The Perron test results presented in the table indicate that the null hypothesis

of a unit root is not rejected by both the series in the presence of a structural break at all lag lengths. This confirms the previous ADF test results and observations made from Figures 3 and 4 that the series in level form may be non-stationary.

The results so far confirm that both time series have at least one unit root and hence are non-stationary in its original form. We now test the first difference of both series for stationarity by applying the ADF test on the first difference series. The results are reported in Table 3. As can be seen, the results show that both series are stationary in their first difference form. This means both series are I(1).

Table 3: ADF Test Results for a Unit Root on the First Difference of the Original Series

Model	Null hypothesis	Critical value at the 10 percent significance level	Tourism		FDI	
			Data-based value of the test statistic	Results	Data-based value of the test statistic	Results
Constant and trend	H_0: there is a unit root	-3.13	-3.22	Reject H_0	-3.85	Reject H_0
Conclusion				D{TOUR} has no unit roots and the series is stationary		D{FDI} has no unit roots and the series is stationary

Even if the two variables TOUR and FDI individually are I(1), it may be possible that a linear combination of the two variables may be stationary. If we are modelling a linear relationship between TOUR and FDI, even if each of them are individually non-stationary (i.e. I(1)); as long as they are cointegrated, the regression involving the two series may not be spurious. Thus, we now investigate whether the two series

are cointegrated and having a long run equilibrium relationship. We employ the Engle and Granger (1987) procedure, which is based on testing for a unit root in the residual series of the estimated equilibrium relationship by employing the Dickey-Fuller test. Therefore, the null and alternative hypotheses are:

H_0: The residual series has a unit root (or TOUR and FDI are not cointegrated)

H_A: The residual series has no unit root (or TOUR and FDI are cointegrated)

Rejection of the null hypothesis in both cases would mean that the two series TOUR and FDI are cointegrated. The critical values for the unit root test on the residuals of the cointegrating regression are not the same ones used in the ADF test as the test statistics are not invariant to the number of variables included in the regression. The appropriate critical values are given in Davidson and MacKinnon (1993).

The residual unit root test results are presented in Table 4. The results on the table clearly show that both the least squares residual series are non-stationary and hence the series TOUR and FDI are not cointegrated indicating that there is no long-run equilibrium relationship between FDI and the number of foreign tourist arrivals in India.

Table 4: Test for Co-integration of Tour and FDI on the Residuals

Model	Null hypothesis H_0	Critical value at the 10 percent significance level	Data-based value of the test statistic	Results
Tour = α + β FDI + u	H_0: The residuals series has a unit root	-3.04	-2.34	Do not reject H_0
FDI = α + β Tour +u	H_0: residuals series has a unit root	-3.04	-2.08	Do not reject H_0
Tour = α + β FDI + γt + u	H_0: The residuals series has a unit root	-3.50	-3.06	Do not reject H_0
FDI = α + β Tour + γt +u	H_0: residuals series has a unit root	-3.50	-2.52	Do not reject H_0
Conclusion				{Residual series} has a unit root and the two variables TOUR and FDI are not cointegrated

3. TESTING GRANGER CAUSALITY

From the analysis so far, we found that both series TOUR and FDI are I(1) and are not cointegrated. Therefore they have no long term relationship. They may nevertheless be related in the short-run. Their short-run fluctuation can be described by their first-differences, which are stationary. The interactions in the short-run fluctuations may therefore be described by a VAR system in first differences.

We determine the optimal lag length for the VAR system by using the Schwarz (1978) Criterion (SC) and the Akaike (1974) Information Criterion (AIC). We use a VAR system of k lags and estimate it for various lag lengths. We found that the optimal lag lengths for both the FDI and TOUR series to be 3 lags. Therefore the final system to be used is a VAR(3). We estimate the VAR(3) system in the following form with all variables in first-difference form and test various hypotheses.

$$\Delta TOUR_t = \alpha_{01} + \alpha_{11}\Delta TOUR_{t-1} + \alpha_{21}\Delta TOUR_{t-2} + \alpha_{31}\Delta TOUR_{t-3} + \beta_{11}\Delta FDI_{t-1} + \beta_{21}\Delta FDI_{t-2} + \beta_{31}\Delta FDI_{t-3} + u_{1t} \quad (5a)$$

$$\Delta FDI_t = \alpha_{02} + \alpha_{12}\Delta TOUR_{t-1} + \alpha_{22}\Delta TOUR_{t-2} + \alpha_{32}\Delta TOUR_{t-3} + \beta_{12}\Delta FDI_{t-1} + \beta_{22}\Delta FDI_{t-2} + \beta_{32}\Delta FDI_{t-3} + u_{2t} \quad (5b)$$

In equation (5a) the null hypothesis to test 'non-causality' that 'FDI does not cause TOUR' (FDI$\neq>$TOUR) is that:

H_0: $\beta_{11} = \beta_{21} = \beta_{31} = 0$.

Rejection of the null hypothesis means that FDI causes TOUR in the Granger sense.

Similarly in equation (5b) the null hypothesis to test 'non-causality' that 'TOUR does not cause FDI' (H_0: TOUR$\neq>$FDI) is that

H_0: $\alpha_{12} = \alpha_{22} = \alpha_{32} = 0$.

Once again, rejection of the null hypothesis means that TOUR causes FDI in the Granger sense. The rejection of null hypothesis in both the tests implies a bi-directional causality in the Granger sense while the acceptance or either one only indicates a uni-directional causality.

We perform the above estimation in SHAZAM and Table 5 presents the results. As can be seen from row 1 of Table 5, for testing the null hypothesis, H_0: FDI$\neq>$TOUR, the p-value is 0.08, which is less than the level of significance, 0.10. Hence we reject the null hypothesis that 'FDI does not cause TOUR' in favour of the alternative H_A: 'FDI causes TOUR' in the Granger sense at the 10 percent level of significance. Looking at row 2 of the table, for the testing of H_0: TOUR$\neq>$FDI, the p-value for this test is 0.24, which is larger than the level of significance 0.10. Therefore, we do not reject the null hypothesis H_0: 'TOUR does not cause FDI'.

Table 5: Results of Granger Causality Test between Tourism and FDI in India, 1995-2007

	Null hypothesis	p-value of the F-test statistic	Conclusion at the 10 percent significance level
(1)	H_0: FDI $\neq>$ TOUR ($\beta_{11} = \beta_{21} = \beta_{31} = 0$)	0.08	Reject H_0 That is, FDI=>TOUR
(2)	H_0: TOUR $\neq>$ FDI ($\alpha_{12} = \alpha_{22} = \alpha_{32} = 0$)	0.24	Do not reject H_0: That is, TOUR$\neq>$FDI

4. CONCLUSION

In this paper we have investigated the causal relationship between foreign direct investment (FDI) and the number of foreign tourist arrivals (TOUR) in India using the quarterly data for the period 1995:2 to 2007:2. For this investigation we employed various time series econometric techniques such as unit root test, cointegration and causality. The analysis reveals that the two time series TOUR and FDI are both I(1) and are not co-integrated. We then use the VAR system in first-difference of the two variables to investigate the causality between TOUR and FDI. The results show that there is only a one-way causal relationship from FDI to tourism. That is FDI has a causal effect on the number of foreign tourist arrivals in India.

As we pointed out in the introduction, FDI plays a significant role in expanding the tourism sector in India. This shows that appropriate policy to explore tourism resources and plans to develop new tourist venues and facilities may need to be considered in order to meet the increasing demand of tourism in India expected as a result of continued strong foreign direct investment.

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