THE GRANGER CAUSALITY RELATIONSHIP BETWEEN INTERNATIONAL TOURIST ARRIVALS AND FOREIGN DIRECT INVESTMENT: EMPIRICAL EVIDENCE FROM TURKEY

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Abstract

The paper presents a Granger Causality test for investigating a causal relationship between International Tourist Arrivals (ITA) and Foreign Direct Investment (FDI). By using annual data in the period of 1980-2012, the results indicate strongly causality relationship between two variables. In opposite to the findings of Tang (2007), the results of the present study reveal that international tourist arrival is a catalyst for foreign direct investment in the Turkish economy. The present study implicates that the Turkish authorities should promote international tourism since its foreign based investments will be positively influenced from the development of tourism.

Key words: International Tourist Arrivals, Foreign Direct Investment, Economic Growth, Granger causality.

JEL Code: C23, F21, L83, O57

1 Introduction

Tourism has been transformed to the prevailing industry in the world for a decade (Lashkarizadeh, Gashti, & Shahrivar, 2010) Nowadays tourism industry is a great profitable resource for many countries and most governments support tourism industry actively. Foreign direct investment (FDI) plays an increasingly crucial role in the international economy and has a colossal impact on a home economy, and its tourism commerce in particular. Internationalization is a common characteristic linking FDI and tourism, but very few empirical studies have analyzed whether and how they are linked. Except for Tang, Selvanathan, and Selvanathan, (2007)'s article on China, the research that have been done have been descriptive with no econometric analysis 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, (2000)).

Furthermore, the foreign direct investment (FDI) inflow is also seen as having important impact to the growth of tourism industry. The UNCTAD (2007) indicated that FDIs do going up the basic of tourism sector facilities especially in hotels, restaurants and recreational centers, as well as abutment the physical infrastructure and standard services from developed nation (NM) to the tourism industry in developing nations (NSM). Nonetheless, data stated that the inflow of FDIs into the NSM's tourism sector is only 10 percent of the total FDIs globally (UNCTAD, 2007). This indicates that tourism sector is quite behind in related to FDIs inflow as compared to other economic sectors such as services, manufacturing, agriculture and others. However, the tourism part is found to rise fairly rapid that it outperformed the growth of other sectors. Thus, countries that wish to boost their tourism sector must surge their FDIs as to accelerate the said sector's growth as mentioned by UNCTAD (2007). Here, FDI can be the catalyst that speeds up NSMs in developing their tourism industry.

Tourism has become one of the fastest growing sectors also in Turkey in recent years. Limitation on the travelling restrictions abroad and the relatively faster economic development in Turkey have stimulated significantly the outbound tourist demand since the 1980s. Consequently, According to WTO 2011, the outbound tourism demand increased from 515000 people with an expenditure of $12 million in 1970, ten years later in 1980 to 1.65 million people with expenditure of $104 million and in 2005 to 8.02 million people with an expenditure of $ 2.87 billion. International tourist arrivals to Turkey coming and accommodating in the touristic establishments are well above 20 million per year. However, empirical studies on the contribution of international tourism to the economy of Turkey have provided mixed results. That is, some studies (such as Gunduz and Hatemi (2005), Ongan and Demiroz (2005)) support the tourism-led growth hypothesis for Turkey while study of Katircioglu, (2009) reject it. Furthermore, searching an empirical relationship between two highly volatile macroeconomic indicators (FDI and international tourism) in Turkey would be interesting and provide an important implication to policy makers.

Briefly, there are significant motivations for doing this study: First, research on searching the empirical relationship between international tourism and FDI is quite limited in the relevant literature. Research of Tang (2007) finds that FDI is a catalyst for international tourism in the case of China. However, there is a strong need to have more empirical works in the literature; therefore, this paper contributes to this literature by empirically investigating the level relationship and the direction of causality between the net FDI inflows and international tourist arrival in a developing economy, Turkey. Second, almost researchers using tourism-led growth, tourist expenditures or tourism receipts hypothesis to exam impact on FDI. It is rarely that the

numbers of international tourist arrivals are used as key variable. To the best of my knowledge, this is the first paper to examine to impact of international tourist arrivals to foreign direct investment in Turkey for period of 1980-2012. Third, the objective of this paper aims to examine to what extent the Turkish foreign direct investment responded to the evolution of the amount of international tourist arrivals during the period 1980-2012. The paper emphasizes the importance of the foreign direct investment and international tourist arrivals because the recognition of the existence of a causal relationship between international tourist arrivals and economic growth will have important implications for the development of different tourism marketing and policy decisions.

Moreover, my paper use various kinds of optimal lag length from one to eight, all results are remained and keep strongly evidence. Furthermore, one of the most important findings is that the relationship between two variables still holds when I use gross domestic growth to control. The causality relationship between international tourist arrivals and foreign direct is investigated by using Augmented Dickey-Fuller unit-root test, Johansen co-integration approach. In addition, unidirectional causalities between tourism and foreign direct investment are examined via Granger causality tests.

The rest of the paper is organized as followed. Section 2 provides an overview of the various relationships between FDI and ITA literature. Section 3 introduces data, method issues. Section 4 examines the overall empirical findings of the research. Concluding remarks are provided in section 5.

2. LiteratureReview

More note-worthily, their research is found to argue on the affiliation between tourism industry development and FDI in China using quarterly time series data from 1985 to 2003. The result illustrated that there was unidirectional causal correlation from FDI to tourism; and this study explained the rapid growth in tourism for the past decade (Tang et al., 2007).

Study of Katircioglu (2009) empirically investigated causality relationship between international tourism and net FDI inflows growth by using the bounds test in the case of Turkey. Results suggest that these two variables are in a level or relationship only when net FDI inflows are dependent variable in the Autoregressive Lag *Model* (ARDL) model. Furthermore, the results of causality test using VEC models suggest unidirectional causation from international tourism growth to net FDI inflows growth in Turkey (Katircioglu, 2009).

On the other hand, the causality between FDI and tourism can also run from FDI to tourism base on the research of Haley and Haley (1997). A rising 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. 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 (Haley & Haley, 1997).

According to Salleh's study (2011), it found that tourist arrivals influence FDI in Malaysia, Thailand and Hong Kong. A number of tourist arrivals is more significant in influencing FDI and not otherwise for Malaysia and Thailand. However, for Hong Kong, there is bidirectional relationship for both variables. Hence, in order to stimulate sustainable economic growth, tourism development that brings in arrivals must be carried out as it has the potential in generating economy as well attracting investments from overseas.(Salleh et al., 2011)

3. Sample Selection, ResearchMethod

3.1 Sample selection:

Two popular patent databases are currently publicly available. The time series data of three variables applied in this study cover historical statistics period from 1980 to 2012 which conducted by from Immigration Department of Turkey and World Bank updated on April 2014 for International Tourist Arrivals and Foreign Direct Investment. The data length was determined based on the availability of the data values at the time of this research began. Both variables are conducted on annual basis and expressed in their natural logarithms to capture growth effects where FDI variable is at 2000 constant US $ prices.

To make a difference with previous studies such as Gunduz and Hatemi (2005) wich discussed the alternative measurements for international tourism including tourism receipts and international tourist arrivals, we collect yearly international tourist arrivals for measuring tourism volume from World Bank database (2014) and Immigration Department of Turkey (2013).We also used yearly FDI data because FDI is approximated by the ratio of FDI inflows to country at a time t over the Gross Fixed Capital Formation (GFCF) in country at a time t. This proxy is chosen in order to take into account the significance of FDI in the investment activity of a country (Moudatsou & Kyrkilis, 2011).

3.2 ResearchMethod

In order to examine the causality relationship between ITA and FDI empirically, We control for these variables in running Granger causality test to find out impact of tourism to FDI and versa.

Granger causality becomes a powerful tool to investigate the causal effect and functional relation from numerous temporal data which are easy to source today (Luo, Ge, & Feng, 2011).

Hence, we specified the following bi-variate vector error correlation VEC system of order p for the pair of the two variables FDI and ITA. Such a VEC system was recommended as it provides more robust estimates. In this study, the following hypotheses are considered to examine relationship between tourism and trade series in the case of Turkey by using Johansen test and Granger- causality test (Kim, Chen, & Jang, 2006):

$$FDI_t = \mu_1 + \sum_{i=1}^{P} \propto_i FDI_{t-i} + \sum_{j=1}^{q} \beta_j ITA_{t-j} + \varepsilon_{1t} \quad (1)$$

$$ITA_t = \mu_2 + \sum_{k=1}^{p} \propto_j FDI_{t-k} + \sum_{i=1}^{q} \beta_i ITA_{t-i} + \varepsilon_{2t} \quad (2)$$

Where: μ is intercept; t is trend; $\propto$, β are coefficients; p,q is optimal lag length and ε_t is residual.

The null hypothesis of "ITA does not Granger cause FDI (ITA $\neq$ >FDI)" was tested by using a standard Johansen test and Granger causality test of the Joint Hypothesis

$$H_0: \beta_{11} = \beta_{21} = \dots = \beta_{p1} = 0$$

ITA was said to cause FDI in the Granger sense if the above null hypothesis was rejected (that is, at least one of the β_js for i = 1..., p was statistically significant). Similarly, the null hypothesis of 'FDI does not Granger cause ITA (FDI $\neq$ >ITA)' was tested by defining the null hypothesis

$$H_0: \propto_{11} = \propto_{21} = \dots = \propto_{p1} = 0$$

FDI was said to cause ITA in the Granger sense if the null hypothesis was rejected.

For the above hypotheses testing, it was assumed that the time series FDI and ITA involved in Equations (1) and (2) are stationary. If the time series are non-stationary, then we could use the stationary differenced form of the time series. However, if the two time series FDI and ITA are non-stationary (or contain a unit root), it is important to test whether they are co-integrated, as this affects the causality test results such as Engle and Granger, (1987); Toda and Phillips, (1993).

We then formally tested co-integration of FDI and tourism variables by employing 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. A significant note about Granger causality test is that the results depend on the lag length. Thus, we require that the lag length is long enough to reflect the effects of the past values of these time series on their current value. For robust estimation of VECM, optimal lag length is compulsory to capture autoregressive correlation in residuals of the estimated model (Schwert, 1987)..

4. EmpiricalResults

4.1 Unit root test

Therefore, as a starting point, we investigated whether or not the two time series were stationary. Unit root test is to investigate whether the time series data contain unit root or not. Because It is unquestionably important because if time series data are not stationary, the findings may contain what is called a "spurious regression problem" (Granger & Newbold, 1974). To validate these findings statistically, we formally tested the stationary of these two series using the Augmented Dickey–Fuller (ADF) unit-root test.

Tab. 1: AugmentedDickey–Fuller unit root test for co-integration on theresidual series.*

	Level		1ˢᵗ	difference
	t-Statistic	**Prob**	**t-Statistic**	**Prob**
FDI	-3.26	0.09a	-6.77	0.00a***
ITA	-2.44	0.35a	-6.52	0.00b***

*ThispaperusedAugmentedDickey–Fuller test to analysisthestationaryoftimeseries. Once a valueforthe test statisticiscomputeditcanbecompared to therelevantcriticalvalueforthe ADF Test. Ifthe test statistic (p value) islessthanthecriticalvalue, thenthenullhypothesisof ($\rho 0 = 0$) isrejected and no unit rootispresent. Thetimeseries are stationary. If $\rho 0$ is non-significant ($\rho 0 = 0$), timeserieshave unit root. Thereisstillnullhypothesis in the model. With notes *, **, *** show significantat 10%, 5% and 1% respectively; a indicatesboth drift and time trend isincluded in the unit root test; b isonly drift isincluded in the unit root test; c meansneither drift nor trend isincluded in the unit root test.*

The results are presented in Table 1. As It can be seen, the results show that both series are stationary in their first difference form. This means both series are I(1).

Even if the two variables, FDI and ITA, individually are I(1), it may be possible that a linear combination of the two variables may be stationary. If we are modeling a linear relationship between FDI and ITA, even if each of them individually are non-stationary (that is, I(1)), as long as they are co-integrated, the regression involving the two series may not be spurious. Thus, we investigated whether the two series are co-integrated and have a causality relationship. Existence of co-integration between two variables means that there is a effect preventing the two series from drifting away from each other and forcing the series to converge.

4.2 Co-integration test

This paper applied multivariate co-integration approach to examine whether ITA and FDI have interaction. Multivariate co-integration test was employed with five different models. When the series do not have co-integration and no long run equilibrium relation among time series, Vector auto-regression model is applied to measure Granger causality effect. On the contrary, if there is equilibrium interrelation among the time series, Vector Error Correlation model is used to examine Granger causality.

In our paper, with purpose to strongly find out causal relationship between ITA and FDI, We check step by step the impact of ITA to GDP and versa with optimal lag length lag 2 and 4. The results as followed:

Tab. 2: Co-integrationTestsbased on theJohansenApproachbetween FDI and ITA

		Trace test					
Lag	Rank	Model 2			Model 5		
		Tracestatistic	5%CV	Prob.	Tracestatistic	5%CV	Prob.
Lag 2	R= 0	32.1	20.3	0.00	17.9	18.3	0.06*
	R <= 1	10.0	9.13	0.03	3.6	3.9	0.06
Lag 3	R=0	26.6	20.2	0.06	24.9	18.3	0.00
	R <= 1	8.12	9.16	0.08 *	7.4	3.8	0.00

*This table reportsthesummarystatisticofJohansen's co-integration test is to applymeasuredtherelationshipbetween FDI and ITA timeseries. Model 2 meansintercept (no trend) in CE and no intercept in VAR; Model 5 revealsintercept and trend in CE- linear trend in VAR. with**, **, * significantatsignificantlevelof 1%, 5% and 10% (oratconfidencelevelof 99%, 95% and 90%), i.e. representingnullhypothesesat 1%,5% and 10% level.*

The results presented in Table 2 show clearly that both the least square residual series are stationary and, hence, the series FDI and ITA are co-integrated, indicating that there is a relationship between FDI and tourism in Turkey. In this table, R shows the number of co-integrating vectors, column 2 lists the null hypotheses of zero and at least one co-integrating vector, two next columns list the trace statistics and the critical values for trace statistics at 5% significant level for each model from 1 to 5 respectively. With each lag, the best models should be chosen from lag 2 to lag 4 are model 4 and 5 respectively.

4.3Granger causalitytestingprocedureforcausality

We investigate the causality between FDI and tourism ITA using the recently developed procedure by Granger (1988). He points out that if two series are co-integrated, and then there must be Granger-causation in at least one direction. The basic idea is that if changes in X precede changes in Y, then X could be a cause of Y or vice versa. Because co-integration test indicates that the time series are co-integrated, the causality relationship can be controlled out. Hence, checking of the causal relationships as well as directions of the series could be done by Granger causality test. Because all of these variables are integrated of degree one I (1), their first differences are used in the Granger-causality test which requires the use of stationary process.

Tab. 3: Grangercausalityrelationshipbetween ITA and FDI timeseries.

Lag	NullHypothesis	Probability	Conclusion (Hypothesis)
2	ITA ⤞⤝ FDI	0.0142**	Rejected
	FDI ⤞⤝ ITA	0.5636	Accepted
3	ITA ⤞⤝ FDI	0.0001***	Rejected
	FDI ⤞⤝ ITA	0.6070	Accepted

This table illustratesGrangercausality test between ITA and FDI. The test isperformedforthewhole sample period. Foreach ITA measure, wefirst test thenullhypothesisthat ITA does not Granger cause the FDI. We report probability foreach test. Wechooseoptimallaglength 2 and 3, respectively to provestrongcausalrelationresults and denote a rejectionofthenullhypothesisatthe 1%, 5% and 10% level.

The table demonstrated the mutual impacts among the data variables of Turkey. It is obvious that the result of Granger testing may be resumed as followed. There was a positive relationship running from ITA to FDI. There is also a strong evidence to consider that movement of FDI will affect fluctuations of ITA from lag 1 to 7. However, the results are mixed. On the one hand, these four studies such as Dunning and McQueen (1981), Contractor and Kundu (1995), Kundu and Contractor (1999), and Dunning and Kundu (1995) focused their analysis on the international hotel industry only, but did not discuss the relationship between overall FDI and tourism. To my best of my knowledge, I am the first to investigate the causality relation between foreign direct investment and international tourist arrivals for period 1980 to 2012. We are primarily interested in the predictive power of tourism for foreign direct investment but there is also existence of the possibility of causality going on opposite direction with the change in FDI affecting tourism. We examine this issue directly by performing Granger causality tests. As analyzed in the previous section, some variables can affect both ITA and FDI; I control GDP as variable in running Granger Causality tests. We test granger causality relationship among ITA, FDI and GDP to expand our results. It is extremely to prove that International tourist arrivals impact foreign direct investment in Turkey. Besides, a bidirectional causality relationship between international tourist arrivals and economic growth also carry out.

Tab. 4: TheGrangercausalityof ITA, FDI and GDP timeseriesofTurkey.

Lag	NullHypothesis	Probability	Conclusion (Hypothesis)
2	ITA ⤫ FDI	0.0146**	Rejected
	FDI ⤫ ITA	0.6230	Accepted
3	ITA ⤫ FDI	0.0121**	Rejected
	FDI ⤫ ITA	0.8261	Accepted

*This table reportsGrangercausality test between ITA, GDP and FDI. Foreach ITA measure, wefirst test thenullhypothesisthat ITA does not Granger cause FDI. In addition, when FDI iscalculated, wecheckthenullhypothesisthat FDI does not Granger ITA. We report probability foreach test. Wechooseoptimallaglengththat 2 and 3, respectively to provestrongcausalrelationresults and denote a rejectionofthenullhypothesisisatthe 1%, 5% and 10% level. Withnote: *, ** and *** indicatestatisticalsignificanceat 5%, 10% and 1% levels, respectively*

It was clearly shown that there is unidirectional causality running from ITA to FDI. Comparing with previous result in case of Turkey, study of S. Katircioglu, (2011) empirically investigated causal relationship between international tourism and net FDI inflows growth by using the bounds test. This was on the contrary with the past research such as Tang et al., (2007) who found one way causal relationship in direct of FDI to tourism. Meanwhile, short term behavioral analysis found that tourist arrival has significant Granger caused trade flow to many countries.

Study of Salleh (2011) agencies the feedback hypothesis in Hong Kong. Thus, in order to stimulate sustainable economic growth, tourism development that brings in arrivals must be carried out as it has the potential in generating economy as well attracting investments from overseas. (Salleh, Othman, & Sarmidi, 2011)

4. Conclusion

In this paper the causality relationship between International tourist arrivals and foreign direct investment was examined for Turkey using Granger causality analysis taking into account variables in two countries for the period 1980-2012. This paper's results can be concluded that the outcome of Turkey might have optimistic results. Then, I provide three important effects between two variables.

First, it makes an enduring impression on relationship international tourist arrivals and foreign direct investment in Turkey. The pre-sent study implicates that the Turkish authorities should promote international tourism since both its economy and foreign based investments will be positively influenced from the development of this economic growth. Second, these results support that tourism could be considered as an easy, effective and relatively cheap tool to achieve foreign direct investment as a core principle of the economy in Turkey. Overall, future economic policy should focus more on tourism and FDI related, in order to generate more GDP to Turkey. Finally, this issue deserves further attention from researchers for comparison purposes since Tang and Selvanathan, (2007) and the present study gives different conclusions.

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