



Foreign Direct Investment and Economic Growth: An Analysis for Selected Asian Countries

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Abstract

The paper examines the causal relationship between foreign direct investment (FDI) and economic growth for selected Asian economies covering the period from 1981-2008. The study has been done for China, India, Pakistan, Sri Lanka, Indonesia, Malaysia, Philippines, Singapore and Thailand. Using Granger-causality, it has been observed that for the countries like China, India, Pakistan, Sri Lanka, Indonesia, Philippines and Singapore, the direction of causality runs from economic growth to FDI and not the other way round. However, for Malaysia there is no causality between FDI and GDP which confirms Granger-neutrality. Only in case of Thailand, bidirectional causal relationship exists. The varied nature of direction of causality confirms that uniform policy recommendation relating to FDI and growth may not work for these Asian countries.

Keywords: FDI, Growth, Granger-Causality

JEL Classification : F39,040,C32

Introduction

One of the remarkable features of globalization in 1990s was the flow of private capital in the form of Foreign Direct Investment (FDI). FDI is an important source of development financing and contributes to productivity gains by producing new investment, better technology, management expertise and export markets. FDI promotes economic growth by increasing the volume of investment and efficiency. Therefore all the countries try to attract FDI for the package of benefits. The relationship between FDI and economic growth has generated a voluminous empirical literature focusing on developing and industrial nations. The empirical findings as reflected in the survey of de Mello (1997) on two channels through which FDI can stimulate growth can be adoption of new technology and knowledge transfer. This mechanism accelerates spill over effects with the accumulation of human capital (Borensztein et al.1998; Chakrabarti, 2001; Asicdu, 2002; Durham, 2004). As regards developing countries the empirical studies focus on FDI growth relationship.

This paper examines the causal relationship between FDI and economic growth for the Asian Economies -China, India, Pakistan, Sri Lanka, Indonesia, Malaysia, Philippines, Singapore and Thailand. Since Asian Economies share some common features in terms of macroeconomic policy regimes and growth patterns, their treatment as a special group is warranted(Sahoo,2006).Moreover , in recent years, their has been some initiatives by these economies to increase their historical bonding. The selection of the year 1981 as a starting point of analysis is based on economic judgments and convenience. The process of reforms particularly in the case of external trade caught the attention of Asian countries from the early eighties. Moreover, the data is available for all these countries from 1981.

This paper has used the Granger-causality test to examine the relationship between FDI and growth. The direction of causality has important policy implications. If the direction of causality runs from FDI to growth for some countries, the countries should make effort to maximize FDI inflow as this would take care of growth. When the causality is in the opposite direction, the countries would be better advised to take care of other sources of growth rather than FDI. This analysis has been done for each country separately that derives robust conclusions regarding the relationship. The rest of the paper is organized as follows. Section 2 discusses the review of literature .Section 3 deals with macro economic performance of the nations. Section 4 deals with data issues and Section 5 discusses the methodology .Section 6 discusses the results followed by concluding remarks.

Literature Review

A considerable interest has been shown in the history of development economics regarding the role of foreign direct investment to stimulate growth. In an attempt to stimulate larger inflows of foreign capital to developing nations, several measures are adopted. Private foreign investment can serve as a stimulus to domestic investment in the recipient country. Lewis dual sector model postulates that an open economy whose capitalist sector trades with the outside world. It is therefore emphasized that if the country earns foreign exchange, the capitalist sector could overcome the agricultural constraint on its further expansion. To overcome the low-level trap arising out of vicious circle of poverty, big push growth theory was advocated. Thereby the importance of foreign investment took a new dimension to ensure balanced growth.

The importance of the role of knowledge capital in economic growth creates the basis for analyzing the role of FDI which brings new technology and knowledge. Since FDI can attempt to upgrade low income or developing economies in Asia by providing knowledge and complementing domestic investment, the empirical relationship between FDI and growth is taken up in growth accounting framework. Particularly, earlier studies examined that negative association exists between FDI and growth (Singer,1950 ; Griffin,1970). Basically, this study pointed out that FDI was concentrated on low-priced primary exports to developed countries and has a negative impact on growth. However, Rodan (1961) and Chenery and Stout (1966) concluded that FDI has a favourable impact on productivity and growth in developing countries. Further, Barro and Sala-i-Martin (1999) supported that FDI creates positive impact by inducing increasing returns through technology transfers. Thus the endogenous growth literature not only projects the contribution of FDI to growth through capital formation and technology transfers (Borenstein et al, 1995) but also through the level of knowledge and skill acquisition, Mello(1999).

While the above discussion has tried to emphasize that FDI stimulates growth, it also realizes that economic growth can be an important factor to attract FDI flows. Erricson and

Irاندoust (2001) studied the causal relationship between growth and investment using the data collected from four OECD countries (Denmark, Finland, Norway and Sweden). However, no causality was found between growth and FDI for Denmark and Finland for the dynamics and nature of FDI inflows in these countries.

Chakraborty and Basu(2002) examined the direction of causality between FDI and GDP for India between 1974 and 1996 . In his study, he showed that FDI stimulates GDP and not the other way round. Liu, Burrige and Sinclair in 2002 predicted a long term relationship between FDI, trade and economic growth in China. The data was taken for the period 1981-1997 and their study found a bicausal relationship. Chowdhury and Mavrotas (2005) examined the causality between growth and investment for Chile, Malaysia and Thailand for the period, 1969-2000. The empirical results pointed out that GDP affects FDI in case of Chile and not vice-versa, while for Malaysia and Thailand , bicausal relation exists. In this context, Athreye and Kapoor (2001) supported that growth-led FDI is more likely than FDI led growth.

Macro Economic Performance of the Asian Nations

The People's Republic of China (PRC) and Asian countries have made rapid improvement over the decade of 1980s and 1990s through the use of large amounts of Foreign Direct Investment. Similarly private capital, which was long seen with concern and suspicion, is now regarded as source of investment and economic growth in Asia. Like other developing countries, Asian economies focus their investment incentives exclusively on foreign firms. Over the last two decades, market reforms, trade liberalization as well as more intense competition for FDI have led to reduced restrictions on foreign investment and expanded the scope for FDI in most sectors. However, the success of Asian countries has been modest in attracting FDI. These countries, jointly and also individually, receive low FDI compared to People's Republic of China, Singapore and other Asian countries. The policymakers realize that credible efforts for economic reforms in Asia must involve an upgradation of technology, scale of production and linkages to an increasingly integrated globalized production system chiefly through the participation of Multinational Corporations (MNCs). Asian countries have many incentives to offer to potential investors, including high and steady economic growth, single-digit inflation, vast domestic markets, a growing number of skilled personnel, an increasing entrepreneurial class and constantly improving financial systems, including expanding capital markets. On top of these advantages, Asian countries have been designing policies and giving incentives to foreign direct investment in several ways.

It is evident that all the Asian countries, i.e., China, India, Pakistan, Sri Lanka, Malaysia, Indonesia, Philippines, Singapore, India and Thailand have been consistently following economic reform policies emphasizing the market economy and integrating their economies with the rest of the world. Consequently, all the countries focused more with open macroeconomic policies with a focus on export promotion. There has also been an improvement in most of the macro indicators except the fiscal deficit, both on the domestic and external sector front.

Data Issues

The data on nine developing countries in Asia are collected on secondary basis. The annual data on FDI and GDP per capita in US billion dollars are collected from World Development Indicators from 1981 to 2008. The significance of inclusion is evident from the

structure of these economies. The share of FDI flows in these countries reflects their moderate trend during the period.

As regards China, the evolution of FDI policy started in 80s as a result of phenomenal change in macro economic policy. For Sri Lanka, the distinctive phase has been in the post 1977 period and early 80s. In this period, Sri Lanka launched its economic reform which favoured private sector led export oriented development including a greater role of FDI. Pakistan began to actually open up its economy and liberalize its FDI policies towards the end of the 1980s. A new industrial policy package was introduced in 1989 recognizing the role and importance of the private sector, and a number of regulatory measures were taken to improve the business environment in general and attract FDI in particular. To facilitate foreign investment, Pakistan has signed bilateral agreements on the promotion and protection of investment with 46 countries.

Being a resource-poor country, especially in capital resources, India was always receptive to foreign investment. In the 1980s, as a part of the industrial policy resolutions, the attitude towards FDI was liberalized. However, through the new economic policy and the new industrial policy of 1991, a series of policy measures were announced to liberalise the FDI environment in the country. As a result, India today has one of the most attractive FDI policies in the South Asian region. The first and second generation reforms created a conducive environment for foreign investment in India. The FDI policy is also notified by the Reserve Bank of India (RBI) under the Foreign Exchange Management Act (FEMA), 2004.

The four ASEAN countries- Malaysia, Indonesia, Thailand and Philippines have been the destinations of FDI since 1980s. At a time of continuing financial crisis in Asia, the question of the appropriate policies for recovery and for future sustainable development is paramount. One area of particular importance is the treatment of foreign investors. Foreign direct investment (FDI) has played a leading role in many of the economies of the region, particularly in export sectors, and has been a vital source of foreign capital during the crisis. These four countries have all to varying degrees welcomed inward investment for its contribution to exports. As a result, although only a small share of total investment or employment in each economy, FDI has been a key factor driving export-led growth in Southeast Asia. For many years, Malaysia and Thailand were among the most open in the developing world to foreign investment. They were quick to recognize the powerful role that foreign investors could play in fuelling export-led growth, and they were well-placed to attract such investment during the years of regional structural adjustment in the late 1980s.

As regards Singapore, the rapid economic development over the past three decades has necessitated the utilization of external resources, principally foreign capital. Without such resources, industrialization and development on the scale undertaken could simply not have occurred. These external capital resources have taken the form of aid, grants, borrowing, and direct foreign investment (FDI). In effect, the Singaporean government's policies hoped to attract TNCs to establish manufacturing facilities in Singapore not only to provide employment, but also with the hope that sophisticated foreign technology would 'trickle down' to local companies effecting technology transfer.

Methodology Issues

The econometric methodology applied in this paper involves Granger Causality Test. For conducting the test, the following steps are adopted.

Unit Root Test

This involves testing of the order of integration of the individual time series under consideration. These tests are initially performed at levels and then in first difference form. Three different models with varying deterministic components are considered while performing the tests. These are (1) model with an intercept which assumes that there are no linear trends in the data such that the first differenced series has zero mean (2) model with a linear trend which includes a trend stationary variable to take account of unknown exogenous growth and (3) a model which neither includes a trend nor a constant. The most popular ones are Augmented Dickey-Fuller (ADF) test due to Dickey and Fuller (1979, 1981), and the Phillip-Perron (PP) due to Phillips (1987) and Phillips and Perron (1988). Augmented Dickey-Fuller test relies on rejecting a null hypothesis of unit root (the series are non-stationary) in favour of the alternative hypotheses of stationarity. The tests are conducted with and without a deterministic trend (t) for each of the series.

The general form of ADF test is estimated by the following regression:

$$\Delta y_t = \alpha_0 + \alpha_1 y_{t-1} + \sum \alpha \Delta y_t + e_t$$

$$\Delta y_t = \alpha_0 + \alpha_1 y_{t-1} + \sum \alpha \Delta y_t + \mu_1 + e_t$$

Where:

Y is a time series, t is a linear time trend, Δ is the first difference operator, α_0 is a constant, n is the optimum number of lags in the dependent variable and e is the random error term;

and the Phillip-Perron (PP) equation is thus:

$$\Delta y_t = \alpha_0 + \alpha y_{t-1} + e_t .$$

This test is referred as non-parametric test.

Granger-Causality Test

According to Granger (1969), Y is said to “Granger-cause” X if and only if X is better predicted by using the past values of Y than by not doing so with the past values of X being used in either case. In short, if a scalar Y can help to forecast another scalar X, then we say that Y Granger-causes X. If Y causes X and X does not cause Y, it is said that unidirectional causality exists from Y to X. If Y does not cause X and X does not cause Y, then X and Y are statistically independent. If Y causes X and X causes Y, it is said that feedback exists between X and Y. Essentially, Granger’s definition of causality is framed in terms of predictability.

For Granger Causality, the series should be integrated of same order. If d differences have to be made to produce a stationary process, then it can be defined as integrated of order d. Engle and Granger (1987) state that if several variables are all I(d) series, their linear combination may be

cointegrated, that is, their linear combination may be stationary. The definition of the Granger causality is based on the hypothesis that X and Y are stationary or I (0) time series.

The model for every country is estimated using the annual data for the period 1981-2008. All the variables are taken in logarithmic form. The following section discusses the empirical results.

Estimation Results

The estimation results generate a heterogeneous picture regarding the direction of causality between growth and FDI. The central hypothesis of the study focuses on whether growth stimulates FDI or FDI stimulates growth. To conduct the estimation process, Jarque-Bera test is performed for the data on GDP and FDI to satisfy the Normality assumptions relating to third and fourth order moments (Skewness=zero; Kurtosis=three) for each selected Asian country in our study.

According to the Jarque-Bera results reported in Table-1, the F-statistic is insignificant at 5% level confirming that joint null hypothesis is accepted. So for the countries taken under study, the variables follow Normal Distribution.

As far as the unit root tests are concerned, Augmented Dicky Fuller (ADF) and Philips-Perron tests are conducted. The hypotheses of the tests are based on the stationarity of the data either in levels or in first difference form. The unit root tests are performed sequentially. The results of the ADF tests show that GDP and FDI are stationary in their first differences for all the countries. The correlogram also verifies the order of the series on FDI and GDP in terms of ACF and PACF functions. An interesting finding arises in this paper regarding the stationarity of the data in first difference form on GDP and FDI for Malaysia and Thailand. The result deviates from the findings of the study done by Chowdhury and Mavrotas (2005) where the variables covering the period, 1969-2000 have been stationary in levels. In case of India, both the variables are stationary in first difference form which coincides with the conclusion drawn by Athreye and Kapoor (2001). Similar conclusion arises in case of China regarding stationarity which coincides with the results generated by the study on growth and magnitude of FDI (Tseng and Zebregs; 2002).

This paper further stressed on the Philips-Perron test which is conducted to incorporate the structural break in the series. Since the study has been done for the selected Asian economies which have undergone economic reforms in the mid 80s and early 90s, policy changes are inevitable. Thereby any sort of trend in the series is expected. However, for all the countries taken under study, both the series become stationary when taken in first difference form. This confirms null hypothesis of a unit root is rejected as the test statistic is significant at 5% level, reported in Table-1. It is to be noted that the selection of countries in the specific time period covering from 1981-2008 have certain uniform features which make the data set to respond more or less in the similar pattern. This justifies the selection of the data.

Basically, the initial conditions to carry forward causality test are confirmed by the unit root test results for every country such that both the variables of each country are integrated of same order or they all are stationary only in first difference form. Otherwise, the result would have been spurious. Causality strongly depends on the selection of lag structure. Using Akaike's criterion regarding determination of optimum lag structure, it varies country wise as reported in Table-2. This makes the study interesting.

In case of China, the study done by Tseng and Zebregs (2002) has selected lag order to be one and thereby concluded that Granger – neutrality exists. In this case, the conclusion deviates in the lag selection as well as in the direction of causality. Here, Granger causality is uni-

directional from growth to FDI at lag order,two. The results reflect that economic expansion over the years will act as a stimulating factor to attract foreign investment. Thereby, China can reap larger economies of scale. This craves the path for China to emerge as economic superpower. For countries such as Pakistan and Sri Lanka, the lag order varies. The result however projects that for both the countries, one-way causality runs from growth to FDI though for Sri Lanka the lag period is less. Again this result differs from the study made by Sahoo(2006) who concluded that bi-directional causality exist between growth and FDI for these countries under the time span of 1970-2003 with varying lag structure.

The analysis done by Agosin, MR and Ricardo Mayer(2000) on whether FDI influences growth or not based on the three countries -Indonesia, Philippines and Singapore confirm that for Indonesia, the relationship is bi-directional whereas for Philippines and Singapore, Granger neutrality exist. The study recommended that the countries Singapore and Philippines should look for alternative sources of growth other than through foreign investment. However the results of our study diverge from this conclusion. In this case, for all these three countries, the growth potentials stimulate the economy to attract FDI. That is one-way causality runs from growth to FDI. This highlights the importance of foreign investment. Lesser lag period is necessary for Philippines to attract FDI inflows compared to Singapore and Indonesia in our study.

Recent studies on FDI-growth relationship in Indian context have confirmed that economic activity acts as a strong determinant in attracting FDI inflow (Sahoo;2006, Athreye and Kapoor;2002).Our result follows the similar directional relationship but at a different lag order. Sahoo found the causality at lag order, three but we have attempted to derive similar relation at lag order,one. This makes our finding noteworthy. That is India is capable of reaping economies of scope and scale in terms of market size expansion , generating employment opportunities and successful enough in attracting FDI within a shorter lag period. Similar to China, this also paves the path for India to emerge as economic superpower. This is justified by the growth performance of the economy.

An interesting result follows from this study regarding the direction of causality in case of Malaysia and Thailand. For Thailand the direction is bi-causal. This confirms that foreign investment and growth are interdependent. Similar conclusion holds in the study done by Chowdhury and Mavrotas (2005) at a different lag structure from 1969-2000.In this paper, one period lag is optimally selected whereas Mavrotas et al has considered two period lag. Again this reflects that Thailand is a growing economy. Only in case of Malaysia, Granger neutrality exist which differs from the earlier result. This implies that foreign investment cannot be the related to growth in either of the directions. Over the years the Malaysian economy becomes self-sufficient to reap economic benefits.

Further, the paper attempted to carry the test procedure by modifying the data set. The annual data on percentage of GDP growth and percentage of FDI inflows are considered annually for all the selected Asian countries. The direction of causality does not get altered as compared to the data taken in US billion dollars.

Because of the varied nature in the direction of causality among the Asian countries, uniform policy cannot be recommended.

Conclusion

The study reflects that economic growth can stimulate FDI in majority of the countries mentioned above. This is because growth-led FDI is more evident than FDI-led growth. This happens due to increased economic activity which expands market size offering opportunities for

foreign investors and to reap economies of scale in a larger market economy. Using Granger-Causality analysis, Malaysia confirmed Granger neutrality whereas for Thailand bi-directional relationship exists. The countries such as China and India can compete for higher growth potentials. Thus the study comprised of a selected group of Asian countries with similar evolution strategies with focus on the importance of foreign investment in influencing growth and vice-versa.

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Table-1: Stationary Tests & Jarque-Bera Test Results

AUGMENTED DICKY-FULLER		PHILIPS – PERRON TEST		JARQUE-BERA TEST		
TEST						
COUNTRY	VARIABLE	H ₀ : I(0)	H ₀ : I(1)	H ₀ : I(0)	H ₀ : I(1)	H ₀ : μ ₃ =0 & μ ₄ =3
CHINA	GDPC	-1.53	-4.92*	-6.45	-7.65*	0.673(0.53)
	FDI	-2.30	-5.61*	-0.447	-8.18*	6.456(0.456)
PAKISTAN	GDPC	-6.228	-4.47*	-6.05	-4.06*	4.654(0.543)
	FDI	-2.79	-4.031*	-2.006	-2.63*	3.543(0.321)
SRILANKA	GDPC	-1.579	-3.85*	-2.62	-3.94*	5.432(0.453)
	FDI	-0.491	-4.99*	-1.35	-4.98*	5.543(0.321)
MALAYSIA	GDPC	-2.25	-6.57*	-1.29	-6.55*	9.754(0.221)
	FDI	-1.29	-4.66*	-2.27	-4.56*	11.542(0.322)
INDONESIA	GDPC	-2.31	-4.56*	-2.45	-4.62*	7.543(0.231)
	FDI	-1.65	-4.69*	-1.03	-4.48*	9.549(0.438)
PHILIPPINES	GDPC	-2.55	-4.56*	-2.63	-4.50*	11.543(0.327)
	FDI	-2.67	-6.46*	-2.64	-6.75*	10.573(0.111)
SINGAPORE	GDPC	-0.92	-4.55*	-1.76	-4.45*	8.563(0.558)
	FDI	-1.309	-5.44*	-1.02	-6.46*	6.457(0.245)
INDIA	GDPC	-2.48	-4.17*	-2.17	-4.28*	5.432(0.378)
	FDI	-2.65	-4.65*	-2.40	-4.70*	8.563(0.345)
THAILAND	GDPC	-3.28	-5.17*	-0.313	-5.16*	7.453(0.694)
	FDI	-0.17	-4.50*	-0.49	-4.64*	3.876(0.432)

*the values are significant at 5% level; # figures in parentheses are the p-values

Table-2 : Granger-Causality Test Results

COUNTRY	NULL HYPOTHESES	OBSERVATIONS	NUMBER OF LAGS	F-statistic	Prob value	Concluding Remarks
CHINA	GDPC dngc FDI	26	2	6.6860	0.0040	GDPC

	FDI dngc GDPC	26	2	0.1646	0.6846	→FDI
PAKISTAN	GDPC dngc FDI	26	2	8.7900 2	0.0016 8	GDPC →FDI
	FDI dngc GDPC	26	2	0.6713 0	0.5216 7	
SRILANKA	GDPCdngc FDI	27	1	8.9790	0.0002 9	GDPC →FDI
	FDI dngc GDPC	27	1	0.9280 1	0.3448 9	
MALAYSIA	GDPC dngc FDI	26	2	1.3063 6	0.2919 2	Granger Neutral
	FDI dngc GDPC	26	2	0.2174 3	0.6063 7	
INDONESIA	GDPC dngc FDI	26	2	3.1790	0.0464 5	GDP →FDI
	FDI dngc GDPC	26	2	1.1711	0.3456	
PHILIPPINE S	GDPC dngc FDI	27	1	7.7512 1	0.0103	GDPC →FDI
	FDI dngc GDPC	27	1	0.8269 1	0.3226	
SINGAPOR E	GDPC dngc FDI	26	2	5.9703 4	0.0088	GDP C→FDI
	FDI dngc GDPC	26	2	1.2824	0.2982 0	
INDIA	GDPC dngc FDI	27	1	5.506	0.0273 4	GDPC →FDI
	FDI dngc GDPC	27	1	0.0108 9	0.4517	
THAILAND	GDPCdngc FDI	27	1	5.0702 6	0.0337 6	GDPC↔FD I
	FDI dngc GDPC	27	1	4.0564	0.0223 2	

#”dngc” stands for “do not Granger cause”

#the F-statistic values are statistically significant at 5% level.