

Investigating Impact of FDI on GDP Growth rates of India and some ASEAN countries

Sangita Dutta Gupta¹
Dr. Vishal Talwar²



Abstract

Foreign Direct Investment (FDI) has been highlighted as important for the economic development of a country. It brings in much needed capital, technical know-how, and global production networks as well as best practices within the organizational, managerial and marketing domains. FDI thus facilitates the process of economic growth and development for host countries. Some of the largest beneficiaries of inward FDI have been India, China and some of the other ASEAN countries and it is not surprising that there is a growing body of economic research that is focused on understanding the correlation between FDI and economic growth within this region. Theoretical and empirical literatures have identified several channels through which foreign direct investment (FDI) influences economic growth. In this research, we examine the causality between growth and FDI for India and 5 ASEAN countries. Conducting time-series examinations using Augmented Dickey Fuller unit root tests, co-integration tests and the Granger causality tests, we find causality results that have implications on our current understanding of the impact of FDI on growth and vice-versa. Thus, it adds to the growing body of knowledge that is trying to understand economic development in two very prominent growth oriented regions in Asia. Our research also suggests that policy guidelines which emphasise the importance of FDI for growth should be revisited to further focus on the role of growth as an important determinant of FDI. An important learning is the importance of creating a growth oriented environment conducive for attracting FDI inflows. This could revolve around quality of human capital, infrastructure, institutions and governance, tax systems etc. that enhance willingness and confidence amongst the investor community to identify further opportunities in the host countries.

Key words: Foreign Direct Investment, GDP, Causality, India, ASEAN

Introduction

The last 30 years have witnessed a dramatic change in the global economic environment.

¹ Assistant Professor, Globsyn Business School, Kolkata – 700091, West Bengal, India, E-mail: sangitadgpt@gmail.com

² LES Fellow, Dept. of Management, London School of Economics, London, UK

Seen with a great deal of skepticism until the 1970s, inward FDI has been embraced with alacrity especially after the abolition of global capital controls. This has led to an increased openness to inward foreign direct investment attributable to a considerable positive change in investment regimes in many parts of the world (Oxelheim and Ghauri, 2008). Even though a focus on inward FDI is not without its costs (for e.g. the opportunity cost in terms of the value foregone by using the money on incentives rather than on direct measures to improve productivity, efficiency and knowledge creation as highlighted by Oxelheim and Ghauri (2008), most researchers seem to agree that the benefits of inward FDI far exceeds its costs (McDermott, 1989; Bajpai and Sachs, 2000).

The impact of FDI on economic growth can be considered as important irrespective of the economic growth models considered. This particular phenomenon has been researched extensively and in the last two decades, both the theoretical and empirical literature has identified several channels through which FDI influences economic growth (Vadlamannati and Tamazian 2009). According to Vadlamannati and Tamazian (2009), in the short run, FDI provides new capital which allows additional investment in both human and physical capital. According to them, this can be very beneficial for developing countries that face severe liquidity constraints. From a long term perspective, the impact of FDI on developing economies is much higher and goes beyond liquidity constraints, like investments in new or existing production plants, generating employment opportunities and resulting in transfer of hard and soft technologies to the recipient country (Vadlamannati and Tamazian 2009).

Rationale & Context of Study

FDI's correlation with economic growth in host countries has been a topic of considerable research in the last few years (Zhao and Du, 2007). Researchers such as Bende-Nabende and Ford (1998) and Gupta (1983) have claimed a positive relationship between FDI and growth whereas others (for e.g. Alam, 2000) have remained skeptical about this relationship. For some researchers, output growth is considered to be very important for FDI inflows to a host country and this is called 'Market Size Hypothesis' or the 'Growth driven FDI Hypothesis' (Caves 1996; Zhang 2001). On the other hand, others have found bi-directional causality (Shan 2002; Chakraborty and Basu 2002), i.e. FDI and economic growth have a reinforcing causal relationship (Gunaydin and Tatoglu 2005). Thus, such studies reveal that the causal relationship between FDI and economic growth can be circular. Growth can have an impact on the inflow of foreign capital and FDI on the other hand can have an impact on growth. However, Shan (2002) is of the view that even though there may be a two-way causality between FDI and growth, the impact of growth on FDI is more intensive than that of FDI on output growth.

Being an engine for global economic growth for the last 20 odd years, it is but natural that China has been used as a research context for many of the studies investigating the relationship between FDI and growth. China has been steadily increasing its share of inward FDI not only within the manufacturing domain but also within the knowledge intensive production domain (Oxelheim and Ghauri, 2008). According to a report (UNCTAD, 2005), the most popular prospective R&D location for firms is China (61.8%) followed by the United States (41.2%) and India (29.4%). With the opening up of their economy in the late

1970s, China has always formulated and implemented policies favorable to FDI. In 2006, FDI to China was US \$ 72.71 billion, increasing to US \$ 83.52 billion in 2007 and then to US \$ 108.312 billion in 2008. However, in 2009, it fell down to US \$ 90.03 billion. Thus, it is logical that a number of FDI related studies would be focused on the Chinese economic miracle.

The Indian economy opened up around 13 years later (in 1991) and has attracted its fair share of FDI onto its shores. Even though FDI inflow into India was a paltry US \$ 1.6 Billion in 2000, it had increased to a respectable US \$ 41.554 billion by 2008.

However, over the last two decades, another dominant region within the Asian context has been shaping the global landscape, this is the ASEAN countries (Brunei Darussalam, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Vietnam). Even though FDI inflows to these ASEAN countries have fluctuated tremendously (on account of the Asian financial crisis in 1997-1998, the economic slowdown in US and Europe, and the recession in Japan in 2001); however, the FDI inflow trend for ASEAN has been on the upward trajectory for the last several years (Pradhan 2010). Other researchers such as Yew et al. (2010) believe that except for Singapore, the other 4 big ASEAN countries have reached saturation levels as far as FDI growth is concerned, however, this argument is not yet substantiated.

With a major focus of FDI related studies on China, there is less of an emphasis on the ASEAN countries and this is where this study contributes from an overall context perspective, i.e. it looks at 5 ASEAN countries (Malaysia, Singapore, Indonesia, Thailand, and Philippines) as well as India to investigate the causality between FDI and growth. Most studies have not tested the direction of causality between FDI and economic growth or have implicitly assumed a one-way causality of FDI to economic growth (Zhao and Du 2007).

This assumption has been questioned by Kholdy (1995) whereas Zhao and Du (2007) are of the view that neglect of either of the causal relations can lead to biased and inefficient estimations. The purpose of this study is to contribute to this academic debate around causality by examining the relationship between FDI and growth within the context of India and 5 ASEAN countries. ASEAN countries have been able to attract a large amount of FDI over last 20 years. Of the five countries considered here, Singapore has been able to attract maximum amount of FDI over the years.

The FDI inflow has gone up from 1236 million USD in 1980 to 38638 million USD in 2010. Thailand also recorded good FDI inflow. It increased from 189 million USD in 1980 to 5813 million USD in 2010. For Philippines the FDI inflow dipped in 2003-2004 but picked up from 2005 onwards and has reached 1713 million USD in 2010. In case of Malaysia, the FDI inflow has increased from 934 million USD in 1980 to 9103 million USD in 2010. Although the FDI dipped between 1984-1988 and also during late 90s. In case of Indonesia, it has gone up from 180 million USD in 1980 to 13304 million USD in 2010.

Table: 1 – Net FDI inflow to Five ASEAN Countries (in million USD)

Year ► Country ▼	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
MALAYSIA	934	1265	1397	1261	797	695	489	423	719	1668	2611
INDONESIA	180	133	225	292	222	308	258	385	576	682	1092
PHILLIPINNES	114	243	193	247	137	105	157	415	999	568	550
SINGAPORE	1236	1660	1602	1134	1302	1047	1710	2836	3655	2887	5575
THAILAND	189	289	188	356	412	160	262	354	1106	1837	2575
	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
MALAYSIA	4043	5138	5741	4581	5815	7297	6323	2714	3895	3788	554
INDONESIA	1482	1799	2003	2191	4419	6245	4729	-207	-1838	-4495	-2926
PHILLIPINNES	556	776	1238	1591	1459	1520	1249	1752	1247	2240	195
SINGAPORE	4887	2204	4686	8550	11535	9682	13753	7314	16578	16484	15087
THAILAND	2049	2151	1807	1369	2070	2338	3882	7492	6091	3410	5073
	2002	2003	2004	2005	2006	2007	2008	2009	2010		
MALAYSIA	3203	2473	4624	4065	6060	8595	7172	1430	9103		
INDONESIA	233	-507	1896	8336	4914	6928	9318	4877	13304		
PHILLIPINNES	1542	491	688	1854	2921	2916	1544	1963	1713		
SINGAPORE	6402	11941	21026	15460	29348	37033	8588	15279	38638		
THAILAND	3355	5222	5859	8067	9517	11355	8448	4976	5813		

Source: UNCTAD HANDBOOK OF STATISTICS 2010

Methodology

To find out the causal relationship between FDI and Economic growth in India and China for the period 1980-2008, Johansen’s Cointegration and Granger Causality tests are employed (Srinivasan, 2010). However, it is important that the stationarity of each individual time

series data is verified as there is always a possibility of the time series data being non-stationary exhibiting deterministic or stochastic trends. Even if the series is non-stationary, cointegration approach can be applied but all the variables will have to be integrated of same order in that case.

The non-stationary data is made stationary by differencing. The number of differencing gives the order of the order of the integration. The Augmented Dickey Fuller test is applied to find out the stationarity and the order of each series.

Johansen’s Cointegration test is applied to determine the long term relationship if the selected series is integrated of same order. We will apply the Granger causality if they are not cointegrated. One variable GDP is said to Granger cause another variable, FDI, if we are able to explain GDP with the help of lagged values of FDI. If the lagged values of GDP can explain FDI, then FDI is said to granger cause GDP. The performance of the standard Granger causality is tested by estimating the following equations

$$\Delta \ln FDI_t = a_1 + \sum_{k=1}^n \alpha_{1i} \Delta \ln FDI_{t-k} + \sum_{k=1}^n \beta_{2i} \Delta \ln GDP_{t-k} + u_{1t} \dots \dots (1)$$

$$\Delta \ln GDP_t = a_2 + \sum_{k=1}^n \beta_{1i} \Delta \ln GDP_{t-k} + \sum_{k=1}^n \alpha_{2i} \Delta \ln FDI_{t-k} + u_{2t} \dots \dots (2)$$

To find the causality we test the null hypothesis $H_0 : \beta_{2i} = \alpha_{2i} = 0$, Wald F-test is used and if both β_{2i} and α_{2i} are significant then there will be bidirectional causality between FDI and Growth. If β_{2i} is significant then GDP granger causes FDI and FDI granger causes GDP if α_{2i} is statistically significant (Srinivasan, 2010).

The data on GDP and FDI in US Million Dollar was taken from UNCTAD Handbook of Statistics’2010 and from World Bank report.

Empirical Results

Any time series analysis starts with the checking of unit root property of the data series as it is crucial for both cointegration and causality test.. As mentioned earlier the Standard Augmented Dickey Fuller is used to check the stationarity of the time series data on GDP and FDI

Table 1 shows the results of ADF for the GDP and FDI series for selected ASEAN countries. Table 1 shows that the null hypothesis of unit root for the selected variables such as FDI and GDP in case of Malaysia, Thailand and Philippines was not rejected at levels. It was rejected at first difference. Both the series for the above mentioned countries are found to be stationary and integrated at the order of one $I(1)$. For Indonesia and India, however, the null hypothesis of unit root was not rejected at the levels. It was not rejected for first difference also as shown in Table 2. When the series are differentiated twice, both the series are found to be stationary and integrated at the order of two $I(2)$. In case of Singapore, the null hypothesis of unit root was rejected at levels with trend and intercept and both the series are found to be integrated of order zero $I(0)$.

Result of ADF Unit Root Test

Table 1: Results of Augmented Dickey Fuller Test

Countries	Variable	ADF Test Statistics		
		Level		
		Intercept	With Trend & intercept	None
Malaysia	FDI	-2.29	-3.38	-0.268
	GDP	1.53	-0.777	3.194
Singapore	FDI	1.136	-5.990**	2.915
	GDP	-1.144	-7.224**	0.306
Indonesia	FDI	-0.922	-1.627	-0.345
	GDP	3.772	1.552	4.46
Thailand	FDI	-1.45	-4.36	-0.445
	GDP	1.441	-0.399	3.37
Philippines	FDI	-2.62	-4.166	-0.455
	GDP	3.12	0.487	4.63
India	FDI	3.97	2.95	4.39
	GDP	6.64	3.47	1.35

Table 2: Results of Augmented Dickey Fuller Test

Countries	Variable	ADF Test Statistics		
		1 st Difference		
		Intercept	With Trend & intercept	None
Malaysia	FDI	-6.510**	-6.297**	-6.577**
	GDP	-5.35**	-6.177**	-4.145**
Indonesia	FDI	0.158	-0.106	0.416
	GDP	-2.727	-3.97	-2.118
Thailand	FDI	-4.187**	-6.450**	-4.79**
	GDP	-2.99**	-3.281**	-2.305**
Philippines	FDI	-8.04**	-7.89**	-8.11**
	GDP	-3.22**	-4.483**	-1.21
India	FDI	2.33	-2.48	2.73
	GDP	0.82	-0.50	1.52

Table 3: Results of Augmented Dickey Fuller Test

Countries	Variable	ADF Test Statistics		
		2 nd Difference		
		Intercept	With Trend & intercept	None
INDONESIA	FDI	-4.22**	-4.58**	-4.161**
	GDP	-6.05**	-6.139**	-5.97**
INDIA	FDI	-4.07**	-4.57**	-3.90**
	GDP	-9.13**	-9.78**	-8.86**

** -Significant at 5% and 1% level

FDI and GDP for Singapore is integrated of same order $I(0)$. FDI and GDP for Thailand, Philippines and Malaysia are integrated of order 1 that is $I(1)$. The order for Indonesia is $I(2)$. So the Johansen's Cointegration test is performed to find out the long term relationship between FDI and GDP for all five countries. The results for the test are given in Table 4. As seen from the table below, the Johansen's trace statistics for Thailand and India fail to reject the null hypothesis of no cointegrating vector ($r = 0$), implying that FDI and GDP are not cointegrated. But for Malaysia and Singapore at least one cointegrating vector has been found. Two cointegrating vectors have been found for Indonesia and Philippines.

Table 4: Results of Johansen's Cointegration Test

Countries	Vector	Trace Statistics	5% Critical Value for Trace Statistics	Conclusion
Malaysia	$H_0: r = 0$	15.9809**	15.47471	Co-integrated
	$H_1: r \geq 1$	3.08701	3.84166	
Indonesia	$H_0: r = 0$	17.1867**	15.47471	Co-integrated
	$H_1: r \geq 1$	5.22386**	3.84166	
Singapore	$H_0: r = 0$	20.05771**	15.47471	Co-integrated
	$H_1: r \geq 1$	0.774643	3.84166	
Thailand	$H_0: r = 0$	6.899424	15.47471	Not co-integrated
	$H_1: r \geq 1$	0.582266	3.84166	
Philippines	$H_0: r = 0$	17.70355**	15.47471	Co-integrated
	$H_1: r \geq 1$	3.915335**	3.84166	

India	$H_0: r = 0$	9.149	15.494	Not co-integrated
	$H_1: r \geq 1$	1.022	3.814	

** Significant at 5% level

We now test for causality between FDI and Growth for all five countries. The Null hypothesis of „FDI does not Granger Cause GDP“ and „GDP does not Granger Cause FDI“ is rejected at 5% level for Malaysia and Philippines and India implying that there is bidirectional causality between FDI and GDP for both these countries (see Table 5). For Indonesia, the Null Hypothesis of „GDP does not Granger Cause FDI“ is rejected at 5% level while „FDI does not Granger Cause GDP“ is not rejected. So the causality is from GDP to FDI that is GDP growth rate has attracted FDI to Indonesia but FDI has not helped in GDP growth rate. For Singapore and Thailand, the Null hypothesis „GDP does not Granger Cause FDI“ is not rejected but the Null hypothesis of „FDI does not Granger Cause GDP“ is rejected at 5% level. So there is causality from FDI to GDP. That is, FDI has helped GDP grow but GDP growth rate has not attracted more FDI to these countries. So we find bi-directional causality for Malaysia and Philippines and unidirectional causality for Thailand, Singapore and Indonesia.

Table 5: Results of Standard Granger Causality Tests

Country	Null Hypothesis	Lags	F-Statistic	Inference
Malaysia	GDP does not granger cause FDI FDI does not Granger Cause GDP	2	4.96006* 3.97653*	<i>FDI→GDP</i> <i>GDP→FDI</i>
Indonesia	GDP does not granger cause FDI FDI does not Granger Cause GDP	4	4.66132* 0.79736	<i>GDP→FDI</i>
Singapore	GDP does not granger cause FDI FDI does not Granger Cause GDP	4	1.87427 10.7616*	<i>FDI→GDP</i>
Philippines	GDP does not granger cause FDI FDI does not Granger Cause GDP	3	3.95565* 5.66150*	<i>FDI→GDP</i> <i>GDP→FDI</i>
Thailand	GDP does not granger cause FDI FDI does not Granger Cause GDP	4	1.85426 4.88127*	<i>FDI→GDP</i>
India	GDP does not granger cause FDI FDI does not Granger Cause GDP	2	4.03093* 4.46499*	<i>FDI→GDP</i> <i>GDP→FDI</i>

*significant at 5% level

Discussion & Concluding Remarks

The objective of this study was to find the relationship between FDI and GDP for both India and 5 ASEAN countries. The Johansen Cointegration technique followed by the standard Granger Causality test was employed to investigate the causal nexus between FDI and Growth in these countries. Though researchers such as Bende-Nabende and Forde (1998) have observed a positive relationship between FDI and growth, our study is one of the few studies that investigate causality as well as direction in the countries mentioned above. Thus, it adds to the growing body of knowledge that is trying to understand economic development in two very prominent growth oriented economies. The results reveal a long run bidirectional causal link between GDP and FDI as well as unidirectional causal linkages depending on the countries investigated.

Our findings validate Zhao and Du's (2007) contention that not only can FDI influence GDP growth (for Singapore & Thailand) but that GDP growth can also affect FDI inflows (for Indonesia). In revealing a two-way causality (for Malaysia & Philippines), we find further support for researchers such as Shan (2002) as well as Chakraborty and Basu (2002) who also found similar bidirectional causality. However, due to the limited number of countries investigated, caution must be exercised when trying to generalise our findings to other country contexts. Thus, a larger sample of countries would provide more concrete and generalizable findings. However, our findings do have some policy implications regardless of country context due to the discovery of bi-directional causality.

Thus, policy guidelines which emphasise the importance of FDI for growth should be revisited to further focus on the role of growth as an important determinant of FDI. An important learning is the importance of creating a growth oriented environment conducive for attracting FDI inflows. This could revolve around quality of human capital, infrastructure, institutions and governance, tax systems etc. that enhance willingness and confidence amongst the investor community to identify further opportunities in the host countries.

References:

1. Caves, R. (1996): *Multinational Enterprises and Economic Analysis*, 2nd edition (Cambridge: Cambridge University Press).
2. Bajpai, Nirupam and Jeffrey D. Sachs, (2000). "India's Decade of Development", CID Working Paper No. 46, Center for International Development, Harvard University.
3. Bende-Nabende A., and Ford, J.L., (1998). FDI, Policy Adjustments and Endogenous Growth: Multiplier Effects from a Small Dynamic Model for Taiwan, 1959 – 1995, *World Development*, Vol. 26, No. 7, pp. 1315 – 1330.
4. Chakraborty, Chandana and Parantap Basu, "Foreign Direct Investment and Growth in India: A Cointegration Approach," *Applied Economics* 34 (2002):1061–73.
5. Chen, Chung; Chang, Lawrence; Zhang, Yimin (1995), "The Role of Foreign Direct Investment in China's Post-1978 Economic Development", *World*

- Development, Vol.23, No.4, pp 691-703.
6. Eichengreen, Barry and Tong, Hui (2007) “ Is China’s FDI coming at the expense of other countries? “ ,Journal Of Japanese and international Economics, pp153-172
 7. Girma, Sourafel and Gong, Yundan (May 2008) “FDI, Linkages and the Efficiency of State- Owned Enterprises in China”, Journal of Development Studies, Vol.44, No.5, pp 728-749.
 8. Kholdy, S., (1995). Causality between foreign investment and spillover efficiency. Applied Economics, 27.
 9. M.C McDermott, M. C. (1989), Multinationals: Foreign Divestment and Disclosure, McGraw-Hill: London
 10. Oxelheim, Lars and Ghauri, Pervez (2008) “EU-China and the non-transparent race for inward FDI” , Journal Of Asian Economics, Vol-19, pp 358-379
 11. Pradhan, R. (2010) “Interdependence of FDI between India and ASEAN- 5: Evidence from Causality Approach”, International Business Research, Vol. 3, No. 4
 12. Ran, Jimmy; Voon, P. Jan; Li, Guangzhong (2007) “How does FDI affect China? Evidence from industries and Provinces” , Journal of Comparative Economics, Vol. 35 , pp774-799
 13. Rensick, Adam and Li, Quan (2003) “ Reversal of Fortunes: Democratic Institutions and Foreign Direct Investment Inflows to Developing Countries”, International Organization, Vol-57, No.1, pp175-211
 14. Siddhartan, N.S.(2004), “Business Environment, Investment Climate and FDI: Chinese and Indian Experiences”, Economic and Political Weekly, Vol.39, No.6, pp3986-3988
 15. Singh, Kulwinder “Foreign Direct Investment in India: A Critical Analysis of FDI from 1991-2005”, Centre for civil society, New Delhi.
 16. Srinivasan, P., Kalaivan, M. and Ibrahim, P. (2010) “FDI and Economic Growth in the ASEAN Countries. Evidence from Cointegration Approach and Causality Test”; The IUP Journal of Management, Vol. 9, No. 1.
 17. Vadlamannati, K. C. and Tamazian, A. (2009), “Growth effects of FDI in 80 developing economies: the role of policy reforms and institutional constraints”, Journal of Economic Policy Reform, Vol. 12, No. 4, pp. 299-322
 18. Wei, Wenhui (2005), “China and India: Any Difference in their FDI performances? “, Journal of Asian Economics, Vol16, pp 719-736.
 19. Xing, Yuqing (2006), “Why is China so attractive for FDI? The role of exchange rates”, China Economic Review, Vol.-17, pp198-209
 20. Yew, S., Yong, C. and Tan H. (2010) “Impact of Economic Integration on Foreign Direct Investment into ASEANS” Malaysian Journal of Economic Studies, Vol. 47, No. 1
 21. Zheng, Ping (2009), “A comparison of FDI determinants in India and China”, Thunderbird International Business Review, Vol.51, No.3.