

Original Research Article

Interaction between Domestic and Foreign Direct Investment in Thailand

Abstract

This paper has investigated interdependency between Foreign Direct Investment (FDI) and Domestic investment in Thailand for period 1975 - 2013. Following the Irfan-Ullah et al (2004), which comprises FDI, Investment (INV) and Gross Domestic Product (GDP), and estimated through ADF unit root, Cointegration and Granger Causality. The empirical outcome of this study suggests that FDI, INV and GDP have long run association. The Causality findings also indicate that FDI causes INV, while both FDI and INV are causing GDP, which implies that FDI and Domestic Investment mutually promoting each other and hence reject the crowding out Hypothesis in this case of Thailand. Government should make necessary reforms in order to make sufficient inflow of FDI which will also contribute to economic growth.

Keyword Domestic investment, Foreign Direct Investment (FDI), Cointegration and ECM.

I. Introduction:

Developing countries often gave incentives to enhance capital inflow, especially from last two decades less developing countries have made several fiscal and monetary reforms in order to enhance capital inflow. Capital inflow can be in form of Foreign Direct Investment (FDI), Portfolio investment and economic grants and loans. Host countries pay interest and principal upon portfolio and economic grants & loans while FDI does not pay any interests and principal amounts, due to this feature FDI has more attractiveness to host country. The effects of FDI in the host economy are normally believed to be; increase in the employment, augment in the productivity, boost in exports (Falki 2009). Foreign Direct Investment (FDI) can play a significant role in accelerating economic activities in host country growth via simulating domestic investment enhancing human capital formation, generates employment opportunities and diffusion of new technologies to the host country. FDI is the most needed capital fund and provided a supplement to finance current account deficit (Shah and Ahmad, 2003).

FDI may affect domestic investment in numbers of ways we can decompose theories regarding FDI and investment into two sub categories namely micro (industrial organization) theories and macro finance (cost of capital) theories (Razin, 2002). In early literature FDI are mainly discuss in microeconomics framework with imperfect competition in product market which give incentive to foreign investor to expand their market power. Imperfect market situation allows

foreign investors to establish product superiority, and superior marketing, introducing advance technology and gain economies of scale via enlarging production.

FDI is largely discussed in macroeconomic theoretical framework; FDI has positive association with exchange rate depreciation in host country. Depreciation lowers the cost of production and investment in host country and increase the profitability of FDI. Similarly depreciation has also wealth effect and thus rise FDI via raising the relative wealth of foreign firms, this capital is further used to invest abroad (Froot, 1991; and Razin and Sadka 2003). Despite the fact that FDI exert positive impact to speed up economic growth, FDI is found to crowding out domestic investment in some cases. The realistic impact of FDI on domestic investment empirically is still imprecise. In fact, the empirical evidence varies from country to country, region to region (Eregha, 2011). The economy of Thailand a newly industrialized and it successfully achieved to export from the primary product to the manufacture products, however in past it basically agriculture export economy. Thailand is an attractive place for foreign investment and its policies mainly focused on free trade. FDI has opened employment opportunities to Thai youth and import numerous technology advances in product sector. Like many other counties Thailand also gave incentives to acquire FDI and the amount of FDI rose from USD 85626229 to 12649747951.77, from 1975 to 2013. The Thailand Board of Investment offers verity of opportunities to foreign investors in order to insure to more capital inflow to the country. The Business Act is mainly defining the ownership of assets in the country. Various tax incentives have been given to foreign investors including the reduction of 50 percent corporate income tax, exemption is applied to the invest in the selected industries. The present study is trying to analyze the impact of foreign direct investment on local investment, which will provide a valuable policy recommendation to Thai government.

II. Literature Review :

Li et al. (2014) the China's FDI flow to Thailand, they used investors' satisfaction level as dependent variable, while financial resource capabilities, physical capabilities, technical capabilities, organization capabilities, human capabilities and innovation capabilities are used as explanatory variables in their model. Their research outcomes show that Chinese FDI has positive and significant effect on available physical resources which implies that FDI inflow from China has positive implication for local investment in Thailand.

Tanomponkang and Hovey (2014) studied the Foreign Direct Investment (FDI) impact on emerging markets with the case of Thailand. The primary objective of their study is to investigate the impact Australian FDI to Thailand. They used different resources and found that FDI has positive implication for the most of the variables, implying to boost up local market.

Desai, et al. (2005), found that FDI stimulated domestic investment and efficiently contributed to domestic capital stock. It rejected the crowding out effect of foreign direct investment for local investment.

Girma, et al. (2010) investigated the outbound effect of FDI and their result indicated that low level of foreign investment bring more businesses for the firm at home country, which implies that FD inflow increase local investment. Contrary to this a higher level of FDI inflow doesn't has significant implication for the local investment and low level of domestic investment is boosted against the higher level of foreign investment.

Eregha (2011) used panel cointegration analysis for period 1970-2008 for Economic Community of West African States (ECOWAS) found that Foreign Direct Investment (FDI) inflow crowding out the domestic investment in ECOWAS region.

Goedegebuurel(2006) analyzed the outward impact of FDI on domestic investment for Netherlands for period 1996-2000 and stated that FDI outflow is playing supportive role for the desire period and FDI has positive association with domestic investment.

Steven and Lipsey (1988) studied interaction between domestic and foreign investment using US production and finance sector they find little interaction between foreign investment and production sector while finance sector has strong impact on foreign investment.

Ndikumana and Verick (2008) suggested that FDI discourages domestic investment and found the crowding out domestic investment in Sub-Saharan African counties, while it has positive impact on growth.

Agosin and Mayer (2002) concluded that FDI has not always pleasant effect on investment for every economy because in some cases domestic investment crowding out domestic investment. Nevertheless, most of studies have found the evidence of positive association between FDI and domestic investment.

III. Econometric Methodology :

This study uses time series data, which analyzes through the conventional time series. Following the Irfan-Ullah *et al.* (2014) model for the empirical analysis as follows:

FDI = (GDP, INV)

Where

FDI = Foreign Direct Investment inflow

GDP = Gross Domestic Product

INV = Investment, which is gross capital formation

Theoretically, there should be a positive long run relationship between FDI, Investment, GDP, portfolio investment.

The conventional Ordinary Least Square (OLS) technique has several flaws in estimation while using long period time series data including unidirectional estimation, spurious results, therefore we will use more advance appreciate techniques like unit root analysis, cointegration and causality techniques. Since we are using long period time series data, therefore, it is highly desirable to check stationary properties of the relevant variables, Augmented Dickey Fuller (ADF) test has been carried out to determine the order of integration by estimating following regression:

$$\Delta Y_t = \beta_1 + \beta_2 t + \delta Y_{t-1} + \sum_{i=1}^m \alpha_i \Delta Y_{t-1} + \varepsilon_t$$

Suppose if t-values ($t=\tau$) of δY_{t-1} exceeds from critical τ values one can accept the hypothesis that δY_{t-1} is non-stationary. Cointegration analysis will use to find long-run relation between the variables. There are mainly two major approaches used for cointegration analysis namely Engle & Granger (1987) approach and Johansen technique. We are using Johansen and Juselius (1990) Cointegration which is preferred to Engle and Granger (1987) technique for several statistical reasons. Johansen methods is based on the trace and maximum Eigenvalue to test statistics for cointegrating vectors if statistical values exceed than critical values one may reject the hypothesis of no cointegration and vice versa. If series does not cointegrated, Granger Causality test can be used (Angela and Lee, 2011; and Afzal, 2007) Suppose taking bivariate case as:

$$\Delta Y_t = \alpha_0 + \alpha_1 \Delta Y_{t-1} + \dots + \alpha_n \Delta Y_{t-1} + \beta_0 \Delta X_{t-1} + \dots + \beta_m \Delta X_{t-1} + \varepsilon_t$$

$$\Delta Y_t = \lambda_0 + \lambda_1 \Delta X_t + \dots + \lambda_n \Delta X_{t-1} + \gamma_1 \Delta Y_{t-1} + \dots + \gamma_m Y_{t-1} + \varepsilon_t$$

Causality can estimated using equation, by testing Null hypotheses $\beta_i = \gamma = 0$ against the alternative hypotheses $\beta_i \neq 0$, and $\gamma \neq 0$. There may be bidirectional, unidirectional and no causality if β_i and Y_i are statistically significant, β_i and Y_i is statistically significant and both are

insignificant respectively (Afzal, 2007). This study uses time series data from 1975 to 2013 empirical investigation; Data for all variables are collected from World Bank Database.

IV. Empirical Findings :

For our convenience we separately estimate equation 1 and 2. Table 1 and Table 2 show OLS results respectively.

ADF unit root test

Table -1

Variable	at level	at 1 st Difference	Conclusion	Order of Integration
FDI	0.795971 (-1.950117)	-8.324516 (-1.950117)	Non-stationary at level Stationary at level at 1 st Difference	I(1)
INV	1.500277 (-1.949856)	-4.960261 (-1.950117)	Non-stationary at level Stationary at level at 1 st Difference	I(1)
GDP	4.595211 (-1.949856)	-3.098322 (-1.950117)	Non-stationary at level Stationary at level at 1 st Difference	I(1)

*All the values are computed with an Intercept and no trend.

** Parenthesis shows relevant critical values

All the variable are non-stationary at level and became stationary at first difference, which is desirable to carry out Johansen cointegration test. Engle and Granger (1987) suggested that if variables are integrated at order 1, there should be possibility of long run relationship, which is also supported by Johansen and Juselius (1990) Cointegration in table-2.

Table-2

Johansen Cointegration

Sample (adjusted): 1977 2013

Included observations: 37 after adjustments
Trend assumption: No deterministic trend
Series: FDI GDP INV
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.440870	38.25102	24.27596	0.0005
At most 1 *	0.278933	16.74024	12.32090	0.0086
At most 2 *	0.117869	4.640354	4.129906	0.0371

Trace test indicates 3 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.440870	21.51078	17.79730	0.0132
At most 1 *	0.278933	12.09988	11.22480	0.0350
At most 2 *	0.117869	4.640354	4.129906	0.0371

Max-eigenvalue test indicates 3 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Both Maximal and trace Eigenvalue values reject the null hypothesis of No cointegration. The cointegration findings show that three possible vectors in the system both in maximal Eigen value and trace statistics at 5 percent level of significance. This implies that all variables FDI, INV and GDP have long run relationship between each other. Since cointegration only provide information regarding the long run relationship among the variables, it doesn't give information about the mutual interaction of between the variables, therefore we are applying the standard Granger causality test in order to know the mutual relationship between the variables.

Pairwise Granger Causality Tests

Table -3

Pairwise Granger Causality Tests
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
GDP does not Granger Cause FDI	37	8.21227	0.0013
FDI does not Granger Cause GDP		0.47544	0.6259
INV does not Granger Cause FDI	37	7.05599	0.0029

FDI does not Granger Cause INV		0.68943	0.5092
INV does not Granger Cause GDP	37	3.89223	0.0307
GDP does not Granger Cause INV		6.44462	0.0044

The Granger causality result shows that FDI causes INV, which means that FDI is boosting up local investment. Similarly, FDI and INV also cause GDP, which implies that both FDI and local investment generates economic growth (GDP). This analysis rejects the crowd out effect of FDI for the local investment. The data for the all variables are obtained from World Bank database online and all variables are taken on current US dollar.

v. Conclusion:

This study examines interaction between Foreign Direct Investment and Domestic Investment in Thailand for period 1975 to 2013. This study adopts Irfan-Ullah model which has three variables in the system, one is GDP, second is FDI and third is local investment (INV). The empirical findings of this study show that all variables hold a long run relationship between each other. This mean FDI, INV and GDP are affecting each other in long run, however cointegration results only provide information regarding the number of cointegrating vectors, and it does not give efficient information mutual relationship between the variables. Therefore Granger causality test is applied which indicates that FDI causes INV which implies that FDI stimulates local investment in Thailand. Similarly FDI and INV also cause GDP, which shows that both FDI and INV are boosting up economic growth in Thailand. To summarize the results FDI and local investment generates economic growth (GDP) and this analysis rejects the crowd out effect of FDI for the local investment. Which implies that FDI does not crowding out domestic investment and, FDI has positive contribution to domestic investment activities and expand domestic investment via spillover of new technologies and make easier access to international market.

Both FDI and domestic investment can stimulate GDP and other variables like employment and production. To this context Thai government should make both fiscal and Monetary reforms congenial to foreign investors and encourage FDI inflow which in other way will expand domestic investment. Similarly exchange rate uncertainty also discourage FDI, Government should adopt sound exchange rate policies in order to promote FDI inflow.

References:

1. Angela, D and Lee, C.G (2011) Dynamic Interactions between Public Investment, Private Domestic Investment and Foreign Direct Investment: Evidence from Indonesia *International Research Journal of Finance and Economics, Issue 77, pp67-73.*
2. Afzal, M. (2007), Structural Transformation, Openness and Economic Growth in Pakistan: Causality Analyses, *Forman Journal of Economic Studies*, v10.3.
3. Agrawal P.(2000) Economic impact of foreign direct investment in south Asia Indira Gandhi Institute of Development Research, Gen. A.K. Bombay; India.
4. Agosin, M. R And Mayer, R. (2000) Foreign Investment In Developing Countries: Does It Crowd In Domestic Investment, UNCTAD Discussion Paper No- 146.
5. Desai, M.A., Foley, F. and Hines, J.R. (2005), Foreign Direct Investment and the Domestic Capital Stock, *NBER Working Paper No. 11075.*
6. Eregha, P B. (2011), The Dynamic Linkages Between Foreign Direct Investment and Domestic Investment in ECOWAS Countries: A Panel Cointegration Analysis. *A paper Presented at the 2011 Conference of the Centre for the Study of African Economies, Oxford University, Oxford, UK between 20th-22nd March.*
7. Engle F.R. and Granger W.C 1987 “Cointegration and Error Correction: Representation, Estimation and Testing”, *Econometrica*, vol 55, pp. 251-276.
8. Falki, N. (2009) Impact of Foreign Direct Investment on Economic Growth in Pakistan, *International Review of Business Research Papers Vol. 5 No. 5, Pp. 110-120.*
9. Froot, K. A. (1991) Japanese foreign direct investment. In US-Japan economic forum, ed. Martin Feldstein and Yoshi Kosai. Cambridge, Mass.: *National Bureau of Economic Research and Japan Center for Economic Growth.*
10. Girma,S. Patnaik, L. and Shah, A. (2010), The impact of outbound FDI on domestic investment , *National Institute of Public Finance and Policy (NIPFP) Working Papers.*

11. Goedegebuure¹, R.V.(2006) The Effects of Outward Foreign Direct Investment on Domestic Investment, Investment Management and Financial Innovations, Volume 3, Issue 1, pp 09-22.
12. Hecht, Y. Razin, A. and Shinar, N. G (2004), Interactions Between Capital Inflows And Domestic Investment: *Israel And Developing Economies Israel Economic Review Vol. 2, No. 2 (2004), 1– 14.*
13. Irfan-Ullah, Shah, M. and Khan, F.U. (2014) Domestic Investment, Foreign Direct Investment, and Economic Growth Nexus: A Case of Pakistan, *Economic Research International* , Vol - 2014.
14. Johansen, and Juselius (1990) Maximum Likelihood Estimation and Inference on Cointegration with Applications to the Demand for Money. *Oxford Bulletin of Economics and Statistics* 52: 2, 169–210.
15. Li, M. Ruangkanjanases, A. and Chen, C. (2014). China's Foreign Direct Investment in Thailand- Current Status and Future Prospectus, *International Journal of Trade, Economics and Finance*, Vol. 5, No. 4
16. Ndikumana, L. Verick (2008) The Linkages between FDI and Domestic Investment: Unravelling the Developmental Impact of Foreign Investment in Sub-Saharan Africa *Discussion Paper No. 3296 January 2008, Forschungsinstitut zur Zukunft der Arbeit (Institute for the Study of Labor).*
17. Razin, A., Rubinstein, Y. and Sadka, E (2003) Which countries export FDI, and how much. *NBER Working Paper no. 10145. Cambridge, Mass.: National Bureau of Economic Research.*
18. Razin, A. (2002) FDI Contribution to Capital Flows and Investment in Capacity, National Bureau of Economic Research (NBER) Working Paper, No- 9204
19. Richard, C.E. (1971) International corporations: The industrial economics of foreign investment. *Economica* 38:1–27.

- 321 20. Saglam, B. Bayraktar, Yalta, and Yasem, A. (2011), Dynamic Linkages Among Foreign
322 Direct Investment, Public Investment And Private Investment: Evidence From Turkey,
323 *Applied Econometrics And International Development Vol. 11-2, pp 71-82.*
324
- 325 21. Shah, Z. and Ahmad, Q.M. (2003) The Determinants of Foreign Direct Investment In
326 Pakistan: An Empirical Investigation, *Pakistan Development Review 42: 4 pp 697-714.*
327
- 328 22. Tanomponkang, K and Hovey, M (2014) *Foreign Direct Investment and Emerging*
329 *Markets : A study of Direct Investment in Thailand with a Focus on Australian*
330 *Investment*, International Conference on Trends in Economics, Humanities and
331 Management (ICTEHM'14) Aug 13-14, 2014 Pattaya (Thailand).
332
333