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BENEFIT ASSESSMENT OF OUTWARD FOREIGN DIRECT INVESTMENT ON THE ECONOMIC GROWTH: A CASE OF THAILAND

Kamphol Panyagometh*

Abstract: *This paper attempts to analyze the role of outward foreign direct investment (FDI) on the economic performance of the home country and investigate the causal relationship between outward FDI and income for Thailand. The time-series data over the period 1978-2014 were used and analyzed by a multivariate framework. The results of multivariate framework show that there is auni directional causality from GDP per capita to outward FDI in the long-run.Outward FDI does not show Granger-cause GDP per capita in the short-run, and vice versa.*

Keywords: *Outward FDI;Gross Domestic Product per Capita; Granger-Causality.*

1. INTRODUCTION

Thailand experienced for the first time in its outward FDI that exceeded inward FDI in 2012. According to data from the United Nations Conference on Trade and Development (UNCTAD) in 2012, the values of FDI inflows to Thailand and FDI outflows from Thailand were $1,194.67 and $10,486.53 million, respectively. Pananond (2004) examined FDIoutflow by Thai companies and pointed out that out ward FDI by Thailand has first started in 1950s. Wee (2007) mentioned that the development of outward FDI by Thai corporationscould be divided into four stages: 1980s, 1986-1996, 1997-2002, and 2003-present. The first stage began before the first half of the 1980s. During this period, the outward FDI by Thailand showed a small amount of investment and the keycountries of destinations were the United States, Hong Kong, Singapore, and Japan. The Thai financial institutions were the main players of this first stage since exchange transactions and capital movements were strictly controlled. Consequently, the Thai banks have decided to establish theirbranches in those destinations, for example, United States of America, Hong Kong (China), and Singapore (Pananond (2004)).

* Associate Professor, NIDA Business School, National Institute of Development Administration (NIDA), Bangkok, Thailand. *Email : k_panyago@yahoo.com*

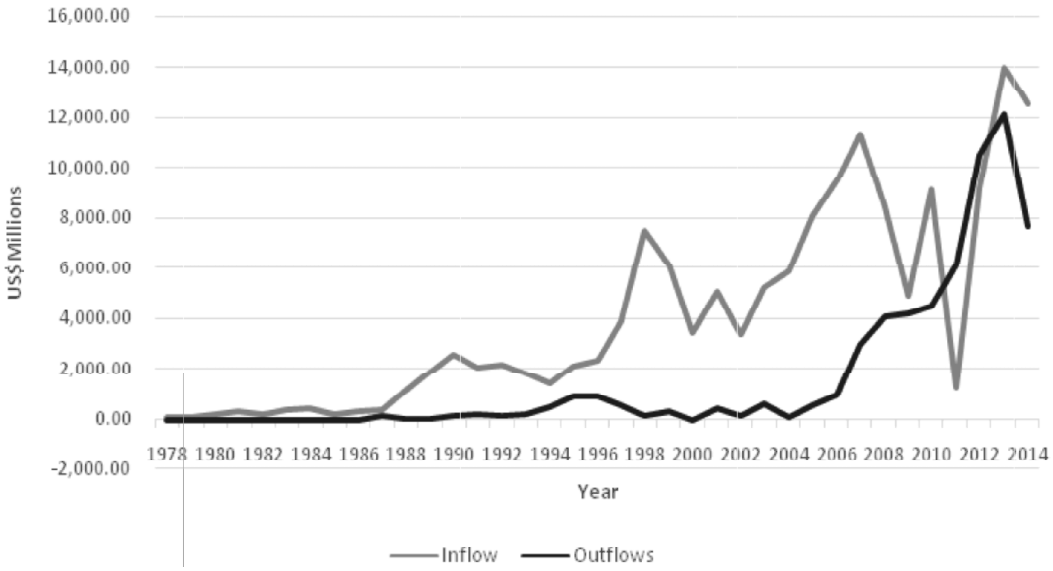

Figure 1: FDI Inflows and Outflows of Thailand

Source: UNCTAD

The second phase of Thai FDI outflows was during 1986–1996. It was called the take-off stage of food processing and textile manufacturersto launch their businesses. More over, the outward investment at this stage was poured in to neigh boring countries *e.g.* Indonesia, Malaysia, the Philippines, Cambodia, and Vietnam as well as European countries (Wee (2007)). The U.S. and Hong Kong have continued to be the key host countries for Thailand's outward FDI while China has showed a rapid trend on outward FDI in recent years.Figure 1 showed a movement of outward and inward FDI since 1978.

The third phase was defined as the financial crisis during 1997 to 2002. As a consequence of this financial crisis in 1997, Thai firms were not able to expand and maintain their businesses in foreign countries. The country inevitablyallowed the baht to float freely against the dollar. As a result, Thai companies decided not to invest their businesses overseas, thereby resulting in a sharp decline in outward foreign direct investment by Thailand.

The fourth phase of outward FDI was during 2003. The key countries of Thai outward FDI were ASEAN and China. Meanwhile, outward FDI to Europe and the US resumed at a slow pace. Manufacturing businesses were the main players at this stage. This was due to a robust economy, a better financial position of corporations, and the necessity of new market access, as well as the Thai companies were encouraged to invest overseas. Since 2006, Thai FDI out flows have been seen to rise dramatically, caused by these following factors: shortage of

operational workers, national minimum wage increase, and aging society. More over, regional policies to promote the ASEAN community played an important role in attracting outward FDI to foreign countries (Cheewatrakoolpong and Boonprakaikawe (2014)).

Since the studies on inward FDI have received much attention and those investigations also place their emphasis on economic growth(Lee (2010a)),the purposes of this research are to assess the benefits of outward FDI on the economic growth of Thailand and to investigate the causal relationship between outward FDI and income. More over, it aims to contribute to the literature by the assessment of the causal relationship between GDP per capita and outward FDI from the developing country (Thailand). This contribution of this study is in addition to the causal relationship between GDP per capita and outward FDI from the developed country (Japan).The results would also serve as the recommendations for policy makers responsible for Thailand's outward FDI.

Empirical Studies on Outward and Inward FDI

Herzer (2008) examined the long-run relationship between outward FDI and domestic output with 14 industrialized countries over the year 1971-2005. The results indicated that outward FDI showed positive long-run effects on domestic output. More over, the increased outward FDI was both a cause and a sequence of increased domestic output.

Lee (2010a) studied the relationship between economic growth (GDP per capita) and outward FDI of Singapore. The data used were annual net out flows of FDI as a percentage of GDP and GDP per capita (constant 2000 US) covering the period 1970–2006. Coin tegration and Granger-causality were adopted to study the relationship of GDP per capita and out ward FDI. The results showed that there was no long-run causality between GDP per capita and outward FDI due to statistically insignificant coefficient of error correction term. Besides, although an increase in outward FDI was a cause of higher GDP per capita, higher GDP per capita continuously decreased outward FDI in Singapore. Lee (2010a) also explained that local companies with higher income invested in the country more.

Lee (2010b) analyzed the role of outward FDI in economic performance and the impact of economic growth on outward FDIof Japan. The analysis was conducted by applying bivariate and multivariate Granger causality frame works. The results from the analysis showed that the bivariate framework could not draw a conclusion as it ignoredimportant determinants. The results of multivariate frame work confirmed the existence of a long-run positive unidirectional causality from out ward FDI to GDP per capita. On the contrary, both GDP per capita and out ward FDI did not show a Granger-cause in a short-run.

Chen and Zulkifli (2012) investigated the relationship between FDI and economic growth of Malaysia during 1980-2010. The study applied them ultivariate frame work as an analyzing method. The results from vector error-correction model revealed that there was a positive long-run relationship between outward FDI and growth as well as long-run bi-directional causation between them. Granger-causality between outward FDI and growth is not found in the short run.

Ahmad *et al.* (2015) examined the impact of out ward FDI on economic growth of home countries of selected ASEAN countries including China. The selected ASEAN countries were Malaysia, Singapore, Thailand, and Philippines. The data covered the period 1981–2013. Cross country regression was used for ASEAN economies analysis while data in relation to China adopted time-series approach. Single equation and coin tegration were also applied for analysis. The results indicated that there was a negative relationship between out ward FDI from the selected ASEAN countries and economic growth. For China, the results demonstrated that out ward FDI was negatively associated with economic growth. Further more, the results of Granger-causality in the VECM frame work showed that both out ward FDI and economic growth were unilateral in the short run and the long run.

With a large number of debates whether or not the out ward foreign direct investment contributes to the country's benefits in terms of economy (Kerdchuen (2015)) as well as adding to the literature by focusing on income rather than gross domestic product (GDP), this paper attempts to analyze the bene fits of out ward FDI on the economic growth of the home country and to investigate the causal relationship between outward FDI and income.

2. METHODOLOGY

This study used annual time-series data from 1978 to 2014(constant 2005 US). This is the updated data. The data use dare from Bank of Thailand (BOT), the United Nations Conference on Trade and Development (UNCTAD), National Statistical Office of Thailand (NSO), Thailand Trading Report, and World Bank. The data analysis is carried out under the multivariate frame work. The long-run model is demonstrated in the equation1 below.

$$GDPP = \alpha + \beta_1 OFDI_t + \beta_2 DI_t + \beta_3 OPEN_{t+t} \quad (1)$$

All the variables were measured in real term of natural logarithm. The variables selected for the assessment of the bene fits of out ward FDI on Thailand's economic growth werebased on the work of Chen and Zulkifli (2012) and Lee (2010b) since the first work demonstrated Malaysian out ward FDI was beneficial

to its economy while the latter showed the empirical evidence of out ward FDI and economic growth from the developed country. Further more, to investigate the causal relationship between outward FDI and income, the variables used for analysis were derived from the work of Lee (2010b) since this study investigated the causal relationship between out ward FDI and GDP.GDP per capita (GDPP) functions as a dependent variable and also denotes the domestic economic growth. The independent variable is outward FDI The two controlled variables include domestic investment (DI) and openness (OPEN). DIis measured by the ratio of gross fixed capital formation to GDP while OPEN is derived from the summation of exports of goods and services and imports of goods and services divided by GDP. The two controlled variables are added in the multivariate long-run relationship in order to capture the country specific effect

The research starts with Unit Root Test (Phillip (1987a), Phillip (1987b) and Phillip (1987c)), using Augmented Dickey Fuller (ADF)Test (Dickey and Fuller (1979) and Dickey and Fuller (1981)), and Philip-Perron (PP) Test (Phillips and Perron (1988)) with the aim to test the stationary of all the variables. Then, coin tegration test (Johansen (1991) and Johansen 1995)) performed toexamines the existence of long-run equilibrium relationship between variables in the models. Besides, vector error correction model (Eagle and Granger (1987)) is adopted to explain the adjustment from the short-run to the long-run equilibrium and Granger-causalitytest(Granger (1980))is used for identification of causal interactions between out ward FDI and GDPP.

3. RESULTS

This part demonstrates the results from the data analysis, which contains five sections: descriptive statistics, unit root tests, cointegration tests, long-run estimates, and Granger-causality.

3.1 Descriptive Statistics

The mean of DI was $41,200,000,000 with the standard deviation of $18,500,000,000. For GDPP, the mean was $2,176.85 with the standard deviation of $915.27. For outward FDI, the mean was $1,600,000,000 with the standard deviation of $3,010,000,000. For OPENESS, the mean was 0.96 with the standard deviation of 0.38.

3.2 Unit Root Tests

Before the coin tegration, long-run estimates, and Granger causality are performed, it is necessary to check whether variables are stationary or non-stationary. More over, the results of the unit root tests would suggest the

Table 1
Summary of descriptive statistics

Variables	*DI*	*GDPP*	*Outward FDI*	*OPENESS*
Mean	41,200,000,000	2,176.85	1,600,000,000	0.96
Median	43,100,000,000	2,243.74	183,000,000	0.94
Maximum	75,500,000,000	3,768.79	12,100,000,000	1.54
Minimum	14,200,000,000	881.52	-19,820,000	0.45
Std. Dev.	18,500,000,000	915.27	3,010,000,000	0.38
Observations	37	37	37	37

cointegration methods. In addition to cointegration, they would also suggest the model should be estimated in the vector error correction model (VECM). The results of the unit root tests are illustrated in the Table 2. For unit root tests, all variables were conducted based on Augmented-Dickey Fuller (ADF) and Philip-Perron (PP) at level and first difference with the inclusion of intercept and trend. The results indicated that the variables were non-stationary at level and stationary when first differencing was performed. It can be concluded that the integration of all variables is order one (1). The cointegration test were carried out in the next step.

Table 2
Unit root tests

	ADF test		*PP test*	
Variables	*Level*	*First difference*	*Level*	*First difference*
GDPP	–2.667641	–4.293127***	–1.32980	–3.411143*
OFDI	0.858855	–2.045658**	–3.15172	–8.066262***
DI	–2.397588	–3.353769*	–1.749796	–3.259445*
OPENNESS	–1.74824	–5.862323***	–1.866826	–5.681305***

***, ** and * indicate 0.01, 0.05 and 0.1 significant level, respectively. The lag length selection in ADF test is based on Schwarz Info Criterion (SIC) and PP test is based on Newey-West Bandwidth.

3.3 Cointegration Tests

Because all variables had been found to be non-stationary at level and stationary at first difference in the unit root tests by ADF and PP, the cointegration was analyzed based on Johansen-Juselius tests with the aim to examine whether there is a long-run equilibrium in the equation (1). Before the coin tegration test was proceeded, the order of lag length must be identified to find the lag length that is sufficient to make the error term serially uncorrelated. The identification was conducted based on correlogram test and the results by Ljung-Box Q test revealed that the null hypothesis of lag order 1 cannot be rejected.

Table 3
Johansen-Juselius cointegration test

Null Hypotheses	*Test Statistics*		*Critical Values (5%)*	
	Trace(α trace)	*Max-Eigen(α max)*	*Trace*	*Max-Eigen*
None	48.59984**	26.22630**	47.85613	27.58434
At most 1	22.37354	13.26817	29.79707	21.13162
At most 2	9.105371	7.666218	15.49471	14.2646
At most 3	1.4391552	1.439152	3.841466	3.841466

** Indicates rejection of null hypotheses at 0.05.

As shown in Table 3 above, there is one coin tegrating vector between income and its independent variablesrevealed by trace statistics. Like wise, based on max-eigen, there exists one cointegrating vector between income and its determinants.

3.4. Long-Run Estimates

Because the model contains cointegration relationship among the variables, vector error correction model was selected to estimate the long-run relationship. The long run equation is expressed as follows:

$$GDPP = 88.10232 + 0.205474\ OFDI_{t-1**} + 3.736598\ DI_{t-1\ **} + 5.635491\ OPEN_{t-1**}$$
$$(0.84553)(3.736598)(3.76783)$$

The results showed that all variables were statistically significant at similar level. The *t*-statistic for each variablewas presented in parenthesis. The asterisk ** indicated the 0.5 significant level. It can be also noted that there wasa positive relationship between income (GDPP) and out ward FDI, which supports the work of Lee (2010b) and Chen and Zulkifli (2012).

3.5 Granger-causality

Short-run dynamic interaction among the variables is integrated and the dynamic adjustment return to the long-run is also examined. The variables function as endogenous within the VECM frame work. The Table 4 demonstrates the results of Granger-causality test.

According to Table 4, DGDPP functions as a dependent variable and the error correction term (ECT_{t-1}) is at the 0.1 significant level. It can be implied that GDPP would move toward to its long-run equilibrium path to meet the changes in the regressors, which establishes the existence of long-run equilibrium between GDPP and its independent variables. These variables include out ward FDI, domestic investment (DI), and trade openness (OPENESS). As a result, out ward

Table 4
Granger-causality test

Independent variables					
x^2 *–statistics of lagged first differenced term [p-value]*					
Dependent variable	Δ*GDPP*	Δ*OFDI*	Δ*DI*	Δ*OPENNESS*	ECT_{t-1} *coefficient (t-ratio)*
ΔGDPP		0.96	1.71	5.13	
		[0.63]	[0.42]	[0.077]	0.006***(0.72)
ΔOFDI	0.18		0.31	0.072	0.09
	[0.92]		[0.86]	[0.96]	(0.28)
ΔDI	4.85	0.30		4.72	0.053**
	[0.0885)	[0.86]		[0.0944]	(1.91)
ΔOPENNESS	2.30	0.63	0.75		-0.0025**
	[0.32]	[0.73]	[0.69]		(-0.145)

The number of *p*-value is placed in squared brackets and those in parenthesis indicate*t*-statistics. *** and ** represent statistical significant at the 0.01 and 0.05 levels, respectively. Ä denotes the short-run.

FDI, domestic investment, and trade openness are suggested to Granger-cause GDPP in the long-run. The causal relationship in the long run between income and out ward foreign direct investment is conversely unidirectional, which does not support the work of Lee (2010b) as in the case of Japan. Lee (2010b) confirmed the existence of a positive long-run unidirectional causality from out ward FDI to GDP per capita.This research does not in alignment with the work of Lee (2010a) which stated there was no long-run causality between GDP per capita and out ward FDI in Singapore. An increase in GDP per capita causes Thailand's out ward FDI while Singapore's out ward FDI leads to higher GDP per capita.

When considering a short-run causality, the variables are independent and do not have significant impacts on each other at the 0.5 significant level. According to the Table 4, it can be concluded that an increase in outward FDI does not have any impact on the domestic growth in terms of income in the short-run and from domestic growth to out ward FDI. This results are also supported by the work of Lee (2010b) and Chen and Zulkifli (2012).

4. CONCLUSION

This paper examined the benefits of outward FDI on the economic growth of Thailand and investigated the causal relationship between out ward FDI and income using time-series data analysis. The results showed that outward FDI does not Granger cause GDPP: contrariwise, GDPPdoes Granger-cause out ward FDI in the long-run within the VECM frame work. How ever, there exists a positive long-run relationship between income (GDPP) and out ward FDI.

In terms of policy implications, the government might facilitate Thailand's outward FDI to the developed countries where Thai companies can access to advance technologies and other know-how rather than production and market related advantages. On the contrary, low-end manufacturing businesses should be located in the countries where the land and labor costs are cheaper, for example, in CLMV countries (aka Cambodia, Lao PDR, Myanmar and Viet Nam). Although the government has been establishing the foreign affiliates to promote and facilitate outward FDI of Thailand, a more concrete implementation plan for establishing the Thai company should be pursued.

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