Does the exchange rate volatility affect the foreign direct investment? the case of Thailand

Mosteut, Safini and Masih, Mansur

INCEIF, Malaysia, Business School, Universiti Kuala Lumpur, Kuala Lumpur, Malaysia

10 November 2017

Does the exchange rate volatility affect the foreign direct investment? the case of Thailand

Safini Mosteut[1] and Mansur Masih[2]

Abstract:A country's economic growth and stability can be seen from their inflow of foreign direct investment, high gross domestic product and high exports, but somehow their exchange rate risk i.e. depreciation or appreciation can be worrisome to the home country and foreign investors as well. A daunting situation would be the volatility of their currency exchange, whether less volatile or high volatile is good for their economy and whether it can attract or deter foreign investors to invest in their country. This study aims to explore whether exchange rate volatility affects the inflow of foreign direct investment in Thailand using the standard time series techniques. The temptation to study this issue is because of the curiosity to know whether Thailand's government should impose a policy on their foreign direct investment flow and whether they should come out with new strategies to ensure that their currency volatility is stable. We utilized Johansen's cointegration approach to test the theoretical relations among the variables and follow with other techniques such as Long Run Structural Modelling, Vector Error Correction Method and Variance Decompositions. The findings tend to indicate that exchange rate volatility has significant relation with foreign direct investment while insignificant to exchange rate and gross domestic product. The results suggest that, currency volatility should not be worrisome to the foreign investors since it is the most endogenous and Thailand's government can intervene in case of excess volatility since their country is under managed float exchange rate which can be manipulated by the Bank of Thailand.

Keywords: *Exchange Rate Volatility, Foreign Direct Investment, Exchange Rate, Managed Float Exchange Rate, Thailand*

---

[1] INCEIF, Lorong Universiti A, 59100 Kuala Lumpur, Malaysia.

2 **Corresponding author**, Senior Professor, UniKL Business School, 50300, Kuala Lumpur, Malaysia.

Email: mansurmasih@unikl.edu.my

1 INTRODUCTION

Economic activity is globally unified today to an unprecedented degree. Changes in one nation's economy are rapidly transmitted to that nation's trading partners. These fluctuations in economic activity are reflected, almost immediately, in fluctuations in currency values. Consequently, multinational corporations, with their integrated cross-border production and marketing operations, continually face devaluation or revaluation worries somewhere in the world.

Thailand is a unique country and categorized under upper middle income[1] with economy heavily export-dependent and also has been one of the fastest growing countries in the world where their exports, account for more than two-thirds of the gross domestic product (GDP). Thailand experienced a huge impact during the Asian financial crisis and due to the adoption of a floating exchange rate regime causing their currency to lose half of its value. But since the collapse of the economy, they recovered and rebuilt its productive capacity, while proving resilient to numerous shocks.

Since the crisis, the Bank of Thailand (BOT) has maintained a managed-float exchange rate regime[2]. Where, under the managed-float exchange rate, BOT will readily intervene in the case of excess volatility while at the same time the intervention is to focus on curbing short-term volatility and maintaining regional competitiveness, while keeping the exchange rate aligned with economic fundamentals in the medium and long term.

The purpose of this study is to gather an understanding of why an exchange rate might change and affect the growth of the economy through the inflow of foreign direct investment into the country, where our case study is Thailand. This paper investigates the impact of exchange rate, exchange rate volatility on the inflow of the foreign direct investment (FDI). Our motivation is to study whether volatility of the exchange rate can increase or decrease the FDI inflows, also whether Thailand's government should impose any other policies to make sure that their exchange rate volatility are stable and whether the volatility might be the source of worries for other nation's trading partners to build the business relationship with Thailand. Our results show that there is a significant

[1] http://data.worldbank.org/country/thailand

[2] https://www.bot.or.th/English/MonetaryPolicy/MonetPolicyKnowledge/Pages/ExchangeRate.aspx accessed on 04/12/2015.

relationship between exchange rate volatility and foreign direct investment, while exchange rate and gross domestic product show an insignificant relationship.

However, exchange rate volatility should not be the source of worries for the nation's trading partner because from our study we found that exchange rate volatility to be endogenous and it did not have big impact on the inflows of foreign direct investment in Thailand. Also, the Thailand's government will intervene in the situation where their exchange rate volatility is too high or too low. We also figured out that exchange rate to be one of the exogenous variables as we know that it has a big impact on the inflows of foreign direct investment in country, their depreciation and appreciation has become the source of worries for the nation's trading partners as well as multinational companies.

2 LITERATURE REVIEWS

We have found many literatures carried out study on the effect of exchange rate depreciation or appreciation on the economic growth of a country but however, fewer studies are to investigate between exchange rate volatility and the economic growth. One of the studies that catching our eyes and that a related to our study are a case study on Nigeria conducted by (Osinubi & Amaghionyeodiwe, 2009) where they investigates the empirical evidence on the effect of exchange rate volatility on foreign direct investment (FDI) by using secondary time series data from 1970 to 2004. They used the error correction model as well as OLS method of estimation. The results suggest, among others, that exchange rate volatility need not be a source of worry by foreign investors. Also, the study further reveals a significant positive relationship between real inward FDI and exchange rate. This implies that, depreciation of their currency increases real inward FDI. Also, the result shows a negative impact on real inward FDI when the country impose the structural adjustment programme (introduced in Nigeria in 1986), which could be due to the deregulation that was accompanied by exchange rate volatility.

Another study by (Ullah, Haider, & Azim, 2012) investigates the relationship of FDI with exchange rate and exchange rate volatility for Pakistan. They used time series yearly data from 1980-2010 for foreign direct investment, exchange rate, exchange rate volatility, trade openness and inflation. They found that, FDI is positively associated with depreciation of their currency and exchange rate volatility deters FDI. Trade openness

dramatically increases FDI while the premise does not hold for inflation as it is insignificant while, the results of Granger causality test suggested that exchange rate volatility granger causes foreign direct investment but not *vice versa*.

In addition to the above studies, (Kiyota & Urata, 2004) study on the exchange rate and its volatility affects on foreign direct investment in Japan by extending previous studies in several ways. First, they explicitly take into account regional and sectoral differences in FDI. Second, they extend some analytical framework by incorporating the impacts of the failures of law of one price between different markets on real exchange rate volatility. They also examine the impacts of the US-dollar pegged system on FDI as well as the impacts of the exchange rate and its volatility on Japan's FDI at aggregated as well as disaggregated industry levels. The results generally indicate that the depreciation of the host country currency attracts FDI while large volatility in real exchange rates discourages FDI.

This paper somewhat similar to the above mentioned literature, where tends to examine the impact of exchange rate volatility on the inflow of FDI inwards Thailand's economy. Our motivation is to study whether volatility of the exchange rate can increase or decrease the FDI inflows, also whether Thailand's government should impose any other policies to make sure that their exchange rate are less volatile and whether the volatility might be the source of worries for other nation's trading partners to build the business relationship with Thailand. Covering quarterly data from year 1994 until 2014, lead us to collect information and data on the effective exchange rate, exchange rate volatility, foreign direct investment and gross domestic product for Thailand as our study variables.

3 DATA & METHODOLOGY AND EMPIRICAL RESULT

3.1 DATA

The variables used in the study are Foreign Direct Investment (FDI), Effective Exchange Rate (EER), Real Gross Domestic Product per capita (GDP) and Exchange Rate Volatility (VOL). Sample covers quarterly data from 1994-2014 for Thailand yield to 84 observations. Data has been extracted from Thomson Reuters DataStream.

3.2 METHODOLOGY

All the variables have been used in their raw form which makes interpretation more robust and meaningful and to avoid any biases that might exist. Exchange rate volatility is measured by standard deviation of the exchange rate and is calculated as the annual standard deviation of the log of the monthly changes in the exchange rate. Others time series econometric techniques are utilized to fulfil our objectives which include testing for Cointegration, Long Run Structural Model (LRSM), Vector Error Correction Model (VECM) and Variance Decompositions (VDCs).

3.2.1 Testing Stationarity of Variables

The first and foremost step that we have to do is to make sure that all the variables are non-stationary in their level form and significant in first difference form. This is because, for time series technique, we need the data to be non-stationary in their original level form for us to test the theoretical relationship in the cointegration step. We have conducted the Augmented Dickey Fuller (ADF) test to both level form and first difference form.

In order to decide whether the variable are non-stationary or stationary, we have choose the result from the highest AIC and SBC. Our result shows that, all the variables LEER, LGDP, LFDI & LVOL are non-stationary in their level form with t-statistics less than the critical value. When the series are in non-stationary, most likely the supply-side policies are to be effective. On the other hand, it is stationary in the first difference form where the t-statistic is greater than the critical value and the stationary condition purpose that, the demand-side short run macroeconomic stabilisation policies are more likely to be effective. Once all the variables have been test for their stationarity, we can proceed to next step.

LEVEL FORM						
VARIABLES		**VALUE**	**ADF**	**T-STAT**	**C.V.**	**RESULT**
LEER	AIC	129.3815	2	-2.0016	-3.3767	NON-STATIONARY
	SBC	123.6027	1	-2.5038	-3.4648	NON-STATIONARY
LGDP	AIC	188.5343	1	-2.3714	-3.4648	NON-STATIONARY
	SBC	183.8209	1	-2.3714	-3.4648	NON-STATIONARY
LFDI	AIC	-41.2468	5	-2.1599	-3.4200	NON-STATIONARY
	SBC	-49.3482	5	-2.1599	-3.4200	NON-STATIONARY
LVOL	AIC	19.4493	1	-3.0338	-3.5389	NON-STATIONARY
	SBC	14.7617	1	-3.0338	-3.5389	NON-STATIONARY

1ST DIFFERENCE FORM						
VARIABLES		**VALUE**	**ADF**	**T-STAT**	**C.V.**	**RESULT**
DEER	AIC	126.9921	1	-7.6707	-2.8585	STATIONARY
	SBC	123.4764	1	-7.6707	-2.8585	STATIONARY
DGDP	AIC	183.9184	1	-5.6343	-2.8585	STATIONARY
	SBC	180.4027	1	-5.6343	-2.8585	STATIONARY
DFDI	AIC	-42.1596	5	-3.3660	-2.9291	STATIONARY
	SBC	-49.1852	5	-3.3660	-2.9291	STATIONARY
DVOL	AIC	16.7883	1	-5.6698	-2.7891	STATIONARY
	SBC	13.2922	1	-5.6698	-2.7891	STATIONARY

Table 1: ADF test for all variables in level form and difference form

3.2.2 Determination of Order of the VAR Model

At this stage, we are trying to test the number of lags (VAR order), all variables used are in first difference form. Here we found some conflicting with the optimal order depending on the criteria of choice, AIC give an optimal order of 4 while SBC give an optimal order of 1. For proceeding to the next stage, we have decided to choose the highest order which is based on the AIC which shows an optimal order of 4. We need to figure out the optimal order lag for us to continue with the cointegration test. While, table below shows the excerpt of the diagnostic test, it shows that both variables DEER and DGDP have serial correlation with test statistics less that 5%.

Test Statictics : Serial-Correlation		
Variables	**LM Version**	**Implication**
DEER	0.001	There is serial correlation
DGDP	0.016	There is serial correlation
DFDI	0.236	There is no serial correlation
DVOL	0.107	There is no serial correlation

Table 2: OLS estimation of a single equation in the Unrestricted VAR

3.2.3 Testing Cointegration

Now, we are ready for the cointegration test. There is two version of cointegration approach: Engle-Granger test and Johansen test. The different between both tests is that Engle-Granger test uses residual based approach and it can identify only one cointegration while Johansen test uses maximum likelihood and it can identify more than one cointegration. We use both approach, however the table below is excerpt for the Johansen test only. The result shows that our variables are cointegrated at I(1) for both the Maximal Eigenvalue and Trace test where for Maximal Eigenvalue we compare the statistic with 95% critical value and it should be less than the critical value, while for Trace test the statistic should be less than 90% critical value. This approach also gives us multiple cointegrating vectors, for Maximal Eigenvalue, Trace test and SBC it shows 1 cointegrating vector while for AIC and HQC it shows 4 cointegrating vector.

Cointegration LR Test Based on Maximal Eigenvalue of the Stochastic Matrix

Null	Alternative	Statistic	95% Critical Value	90% Critical Value	Result
r = 0	r = 1	35.7537	31.7900	29.1300	1 cointegration
r<= 1	r = 2	16.5736	25.4200	23.1000	

Cointegration LR Test Based on Trace of the Stochastic Matrix

Null	Alternative	Statistic	95% Critical Value	90% Critical Value	Result
r = 0	r>= 1	75.5919	63.0000	59.1600	1 cointegration
r<= 1	r>= 2	39.8382	42.3400	39.3400	

Table 3: Cointegration LR Test based on Maximal Eigenvalue and Trace.

Criteria	Number Of Cointegrating Vector
Maximal Eigenvalue	1
Trace	1
AIC	4
SBC	1
HQC	4

Table 4: Number of Cointegrating Vector based on different criteria

3.2.4 Long Run Structural Modelling (LRSM)

Long Run Structural Modelling (LRSM) is aimed to estimate theoretically meaningful long-run relations by imposing on those long-run relations both identifying and over-identifying restrictions based on theories and information that we have collected from previous steps. For our study, we impose identifying on the variable LVOL where we make the variable equal to one. Surprisingly, the result shows that variable LEER and LGDP are insignificant where we compute the t-ratio manually by dividing the coefficient with the standard error. Any variables that have t-ratio less than two are considered insignificant.

Theoretically, we assume variable LEER to be significant because economics theory state that, exchange rates play a crucial role in linking a country to the global supply chains. Exports generally include high import content and the impact of exchange rate depreciation or appreciation on any finished product is therefore complex. Theoretically, exchange rate depreciation makes exports of final products become cheaper and it makes imported components more expensive for domestic producers.

Consequently, we impose an over-identifying on the both variables LEER and LGDP to test our null hypothesis that the restriction is true, where we make both variables equal to zero. The result confirm that our restriction is correct depicted from the value of t-ratio and also can be look at the Chi-Square [p-value] which is the p-value should be greater than 5% for the null hypothesis to hold. The excerpt of the result can be seen in the following table while full results are being attached as appendices.

Variables	Coefficient	Standard Error	t-ratio	Implication
		A1=1		
LVOL	1.00000	(*NONE*)	-	-
LEER	-0.09009	1.08630	-0.08293	Insignificant
LFDI	-1.20190	0.37053	-3.24373	Significant
LGDP	-0.68983	4.36250	-0.15813	Insignificant
		A1=1, A2=0		
LVOL	1.00000	(*NONE*)	-	-
LEER	0.00000	(*NONE*)	-	-
LFDI	-1.21450	0.34724	-3.49758	Significant
LGDP	-0.94993	3.16330	-0.30030	Insignificant
			CHSQ(1)=0.0066650[0.935]	
		A1=1, A4=0		
LVOL	1.00000	(*NONE*)	-	-
LEER	-0.21230	0.73306	-0.28961	Insignificant
LFDI	-1.15000	0.15983	-7.19514	Significant
LGDP	0.00000	(*NONE*)	-	-
			CHSQ(1)=0.028039[0.867]	
		A1=1, A2=0, A4=0		
LVOL	1.00000	(*NONE*)	-	-
LEER	0.00000	(*NONE*)	-	-
LFDI	-1.11610	0.10692	-10.43865	Significant
LGDP	0.00000	(*NONE*)	-	-
			CHSQ(2)=0.11633[0.943]	

Table 5: LRSM for Restriction and Over-identifying

3.2.5 Vector Error Correction Model (VECM)

Previous step, we already inform about which variable are significant and which variable are insignificant but, however we did not know which variables are the exogenous and which variable are the endogenous. To figure it out, we have come to the next step which is Vector Error Correction Model (VECM). Our study found that the variable dLVOL to be endogenous with p-value less than 5% and the leading variables are dLEER, dFDI and dGDP with p-value greater than 5%. However, this test only tell us which variable are exogenous and endogenous but we did not know their relative exogeneity and endogeneity i.e which variables are the most leading and the most lagging one. Here, we

found a bit conflict with the result, where in our study we would love if variable dLOVL to be exogenous, but the result shows otherwise.

ecm1(-1)	Coefficient	Standard Error	T-Ratio [Prob.]	C.V	Result
dLVOL	-0.39506	0.086312	-4.5772 [0.000]	5%	Endogenous
dLEER	0.027594	0.032482	0.84952 [0.400]	5%	Exogenous
dLFDI	0.21501	0.29562	0.72732 [0.471]	5%	Exogenous
dLGDP	0.018259	0.0097247	1.8776 [0.067]	5%	Exogenous

Table 6: VECM test

3.2.6 Variance Decompositions (VDCs)

As we know that both the orthogonalised and the generalised variance decompositions (VDCs) are designed to indicate the relative exogeneity or endogeneity of a variables by decomposing the variance of the forecast error of a variable into proportions attributable to innovations in each variable in the system including its own. However, they do differ in some ways where the orthogonalised VDCs are more biases toward the particular ordering of the variables in the VAR and give higher rank for first variable order. On the other hand, the generalised VDCs are invariant to the ordering of the variables, and generalised VDCs also do not put restriction when a particular variable is shocked, the other variables in the system are more or less switched off. But the orthogonalised are the other way round.

For our study, we have run both the orthogonalized VDC and generalised VDCs to see how the variables are rank. We only choose horizon 10 and horizon 20 for our study where our data is a quarterly data; we define the period at 20. From our result, we found that, variable LEER has been place at first ranking due to the highest coefficient and then followed by the variable LGDP, LFDI and LVOL.

HORIZON		LVOL	LEER	LFDI	LGDP	TOTAL
10	LVOL	23.97%	29.63%	28.79%	17.61%	100.00%
10	LEER	27.31%	65.87%	0.17%	6.64%	100.00%
10	LFDI	16.03%	22.45%	48.01%	13.50%	100.00%
10	LGDP	7.10%	34.35%	6.85%	51.70%	100.00%

HORIZON		LVOL	LEER	LFDI	LGDP	TOTAL
20	LVOL	20.24%	29.75%	32.68%	17.32%	100.00%
20	LEER	25.27%	67.79%	0.10%	6.84%	100.00%
20	LFDI	16.40%	25.75%	42.76%	15.08%	100.00%
20	LGDP	6.09%	34.87%	8.60%	50.44%	100.00%

Table 7: Orthogonalized VDCs at horizon 10 and 20.

HORIZON		LVOL	LEER	LFDI	LGDP	TOTAL
10	LVOL	23.97%	51.46%	43.32%	32.18%	150.93%
10	LEER	27.31%	88.70%	3.23%	11.77%	131.01%
10	LFDI	16.03%	36.97%	61.25%	26.17%	140.42%
10	LGDP	7.10%	36.32%	12.22%	65.11%	120.76%

HORIZON		LVOL	LEER	LFDI	LGDP	TOTAL
20	LVOL	20.24%	48.60%	47.53%	32.35%	148.73%
20	LEER	25.27%	88.11%	3.17%	12.59%	129.15%
20	LFDI	16.40%	41.01%	56.86%	28.98%	143.24%
20	LGDP	6.09%	35.30%	14.44%	64.50%	120.33%

Table 8: Generalised VDCs before normalizing

HORIZON		LVOL	LEER	LFDI	LGDP	TOTAL
10	LVOL	16%	34%	29%	21%	100%
10	LEER	21%	68%	2%	9%	100%
10	LFDI	11%	26%	44%	19%	100%
10	LGDP	6%	30%	10%	54%	100%

HORIZON		LVOL	LEER	LFDI	LGDP	TOTAL
20	LVOL	14%	33%	32%	22%	100%
20	LEER	20%	68%	2%	10%	100%
20	LFDI	11%	29%	40%	20%	100%
20	LGDP	5%	29%	12%	54%	100%

Table 9: Generalised VDCs after normalizing

3.2.7 Impulse Response Functions (IRF)

Impulse Response Functions (IRFs) generally produce the same information with the VDCs where only different in that the information can be plotted and shows in graph which can give clear visualization about the information. IRFs essentially map out the dynamic response path of a variable owing to a one-period standard deviation shock to another variable. We choose to plot the graph for both the orthogonalized and generalized impulse responses for all the variables with the same period with VDCs. All graphs are shown below.

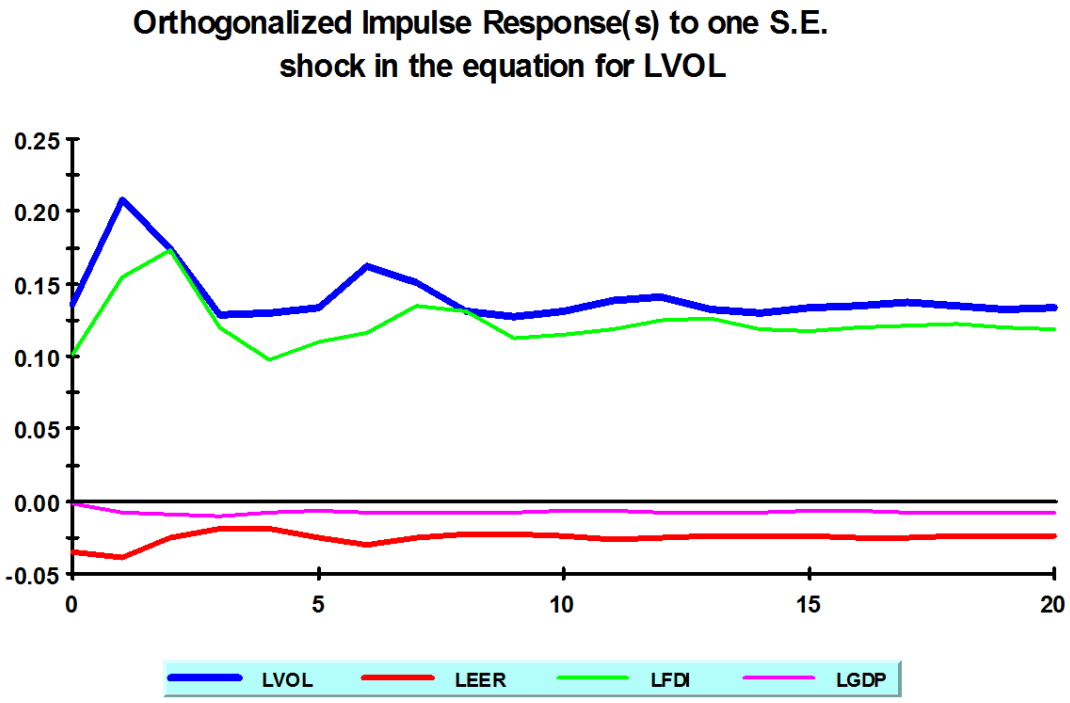

Figure 1: Orthogonalized Impulse Response: Shocking the variable LVOL

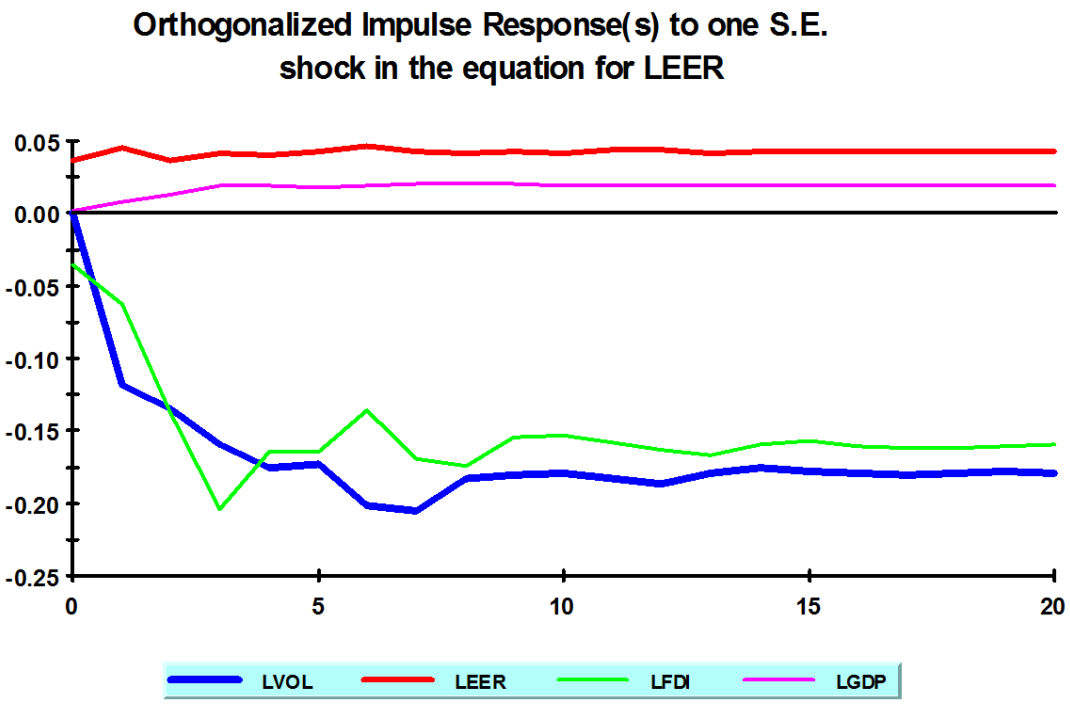

Figure 2: Orthogonalized Impulse Response: Shocking the variable LEER

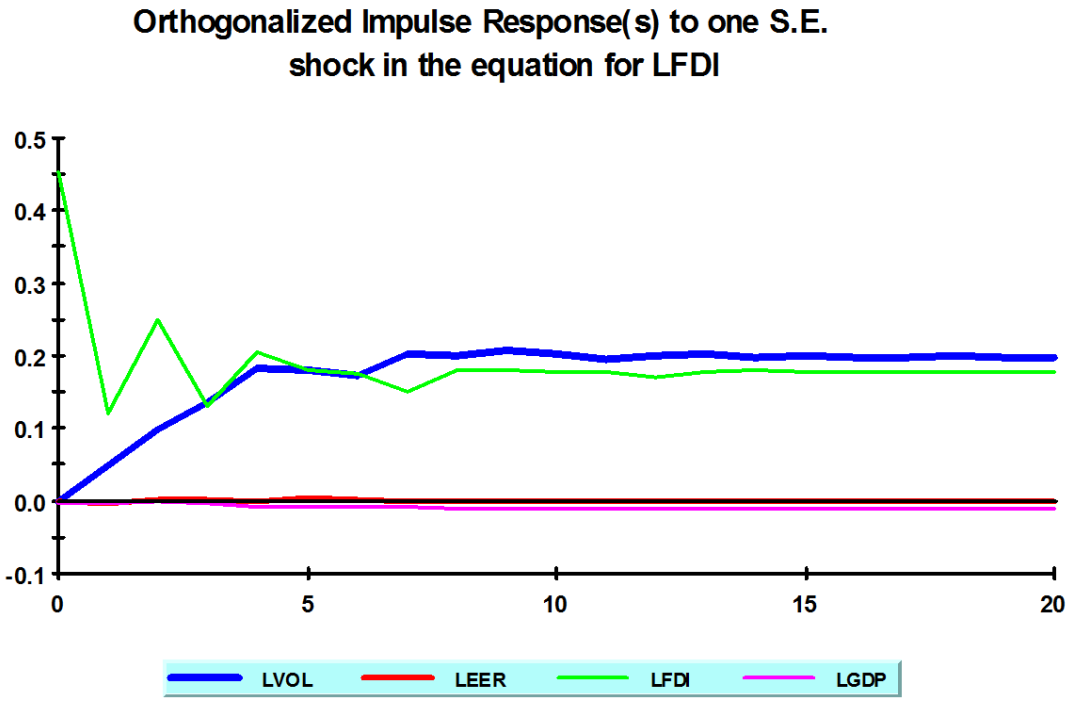

Figure 3: Orthogonalized Impulse Response: Shocking the variable LFDI

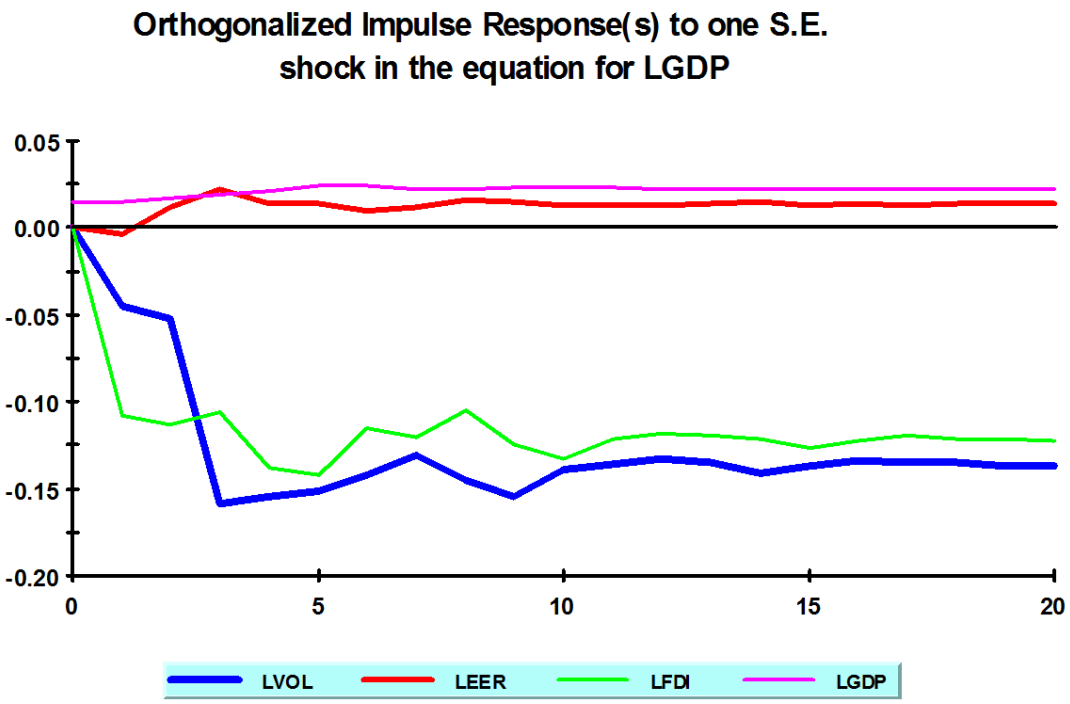

Figure 4: Orthogonalized Impulse Response: Shocking the variable LGDP

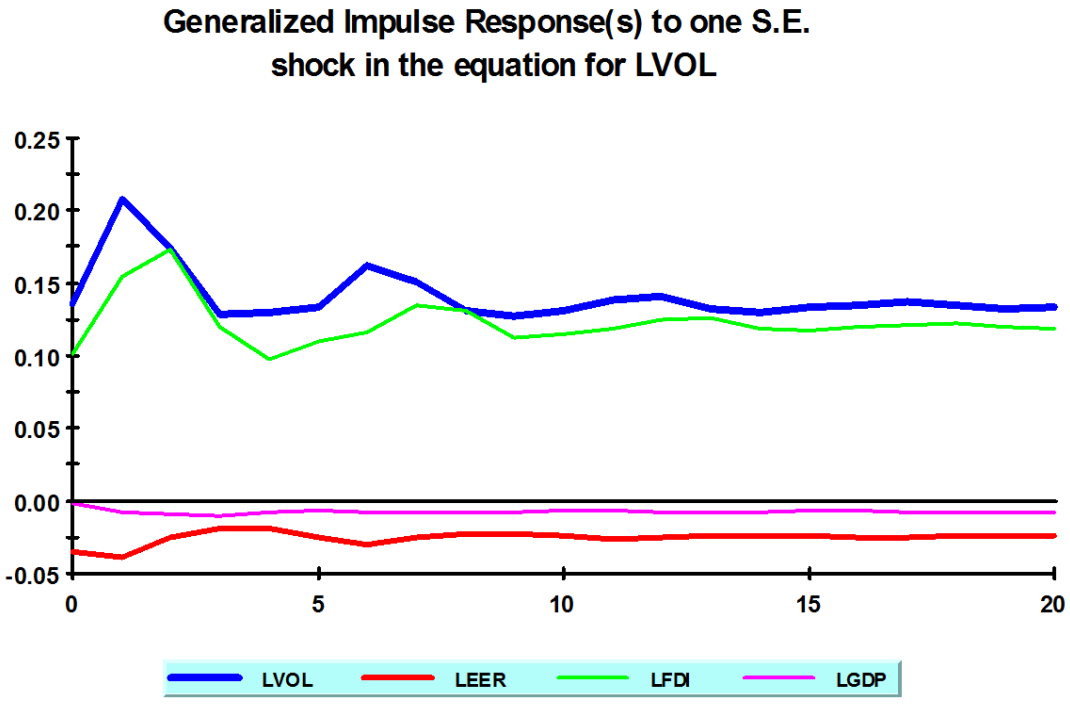

Figure 5: Generalized Impulse Response: Shocking the variable LVOL

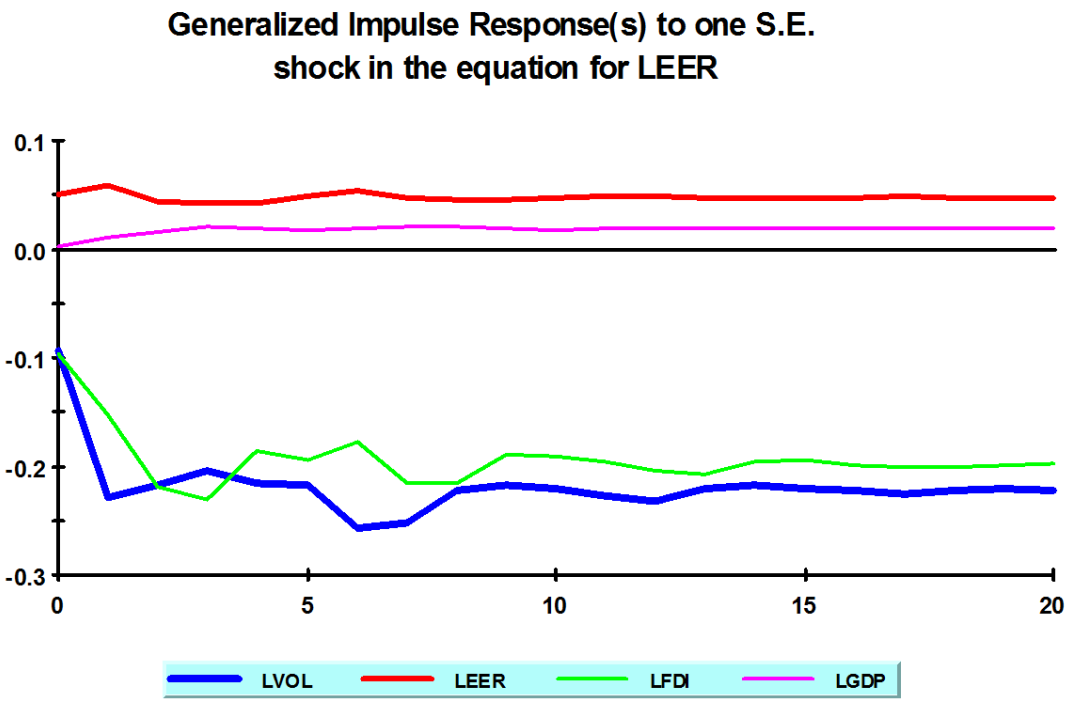

Figure 6: Generalized Impulse Response: Shocking the variable LEER

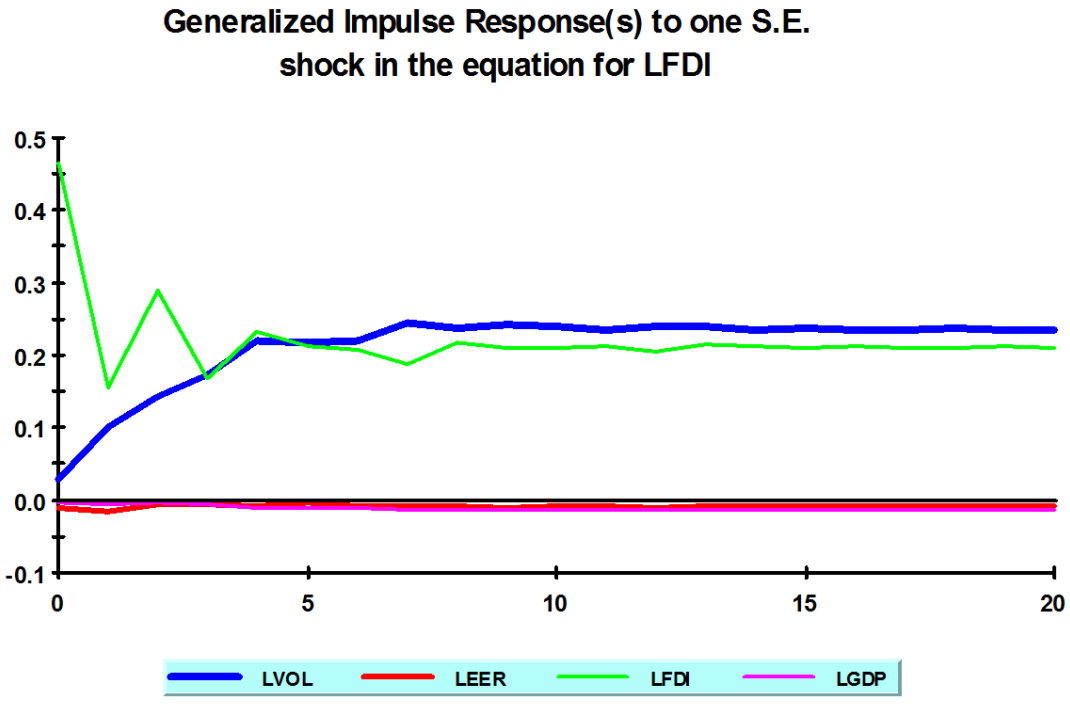

Figure 7: Generalized Impulse Response: Shocking the variable LFDI

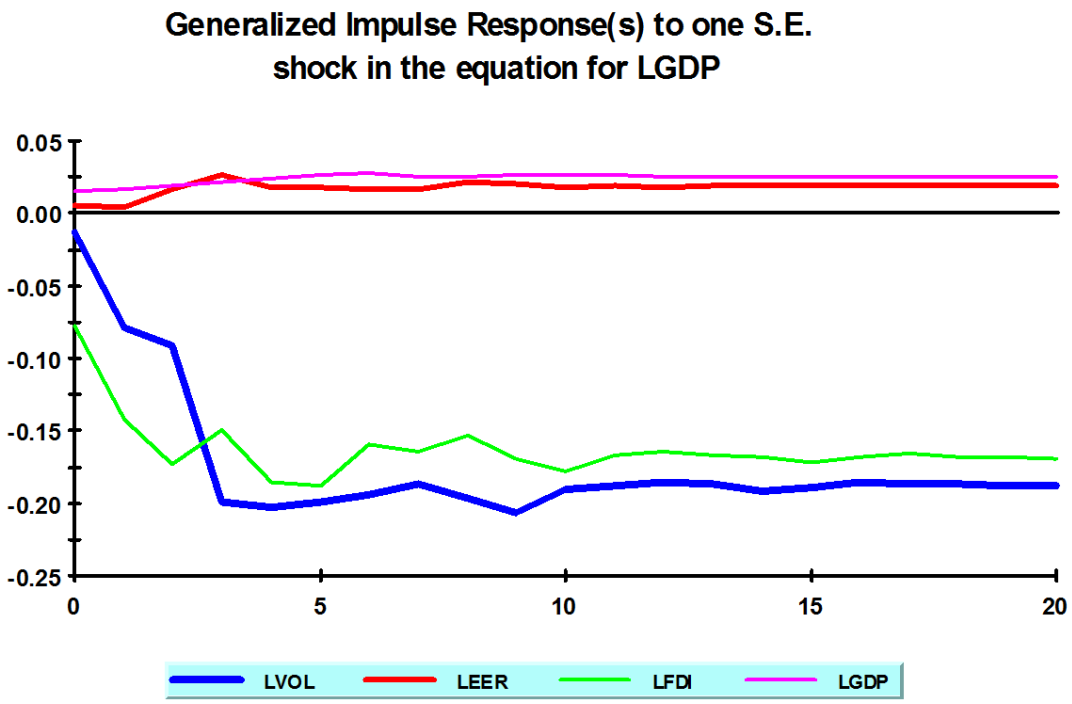

Figure 8: Generalized Impulse Response: Shocking the variable LGDP

3.2.8 Persistence Profile (PP)

Persistence profile (PP) also map out the dynamic response path of the long-run relations. What makes PP different from IRFs is that, PP trace out the effects of a system-wide shock on the long-run relations but the IRFs trace out the effects of a variable-specific shock on the long-run relations.

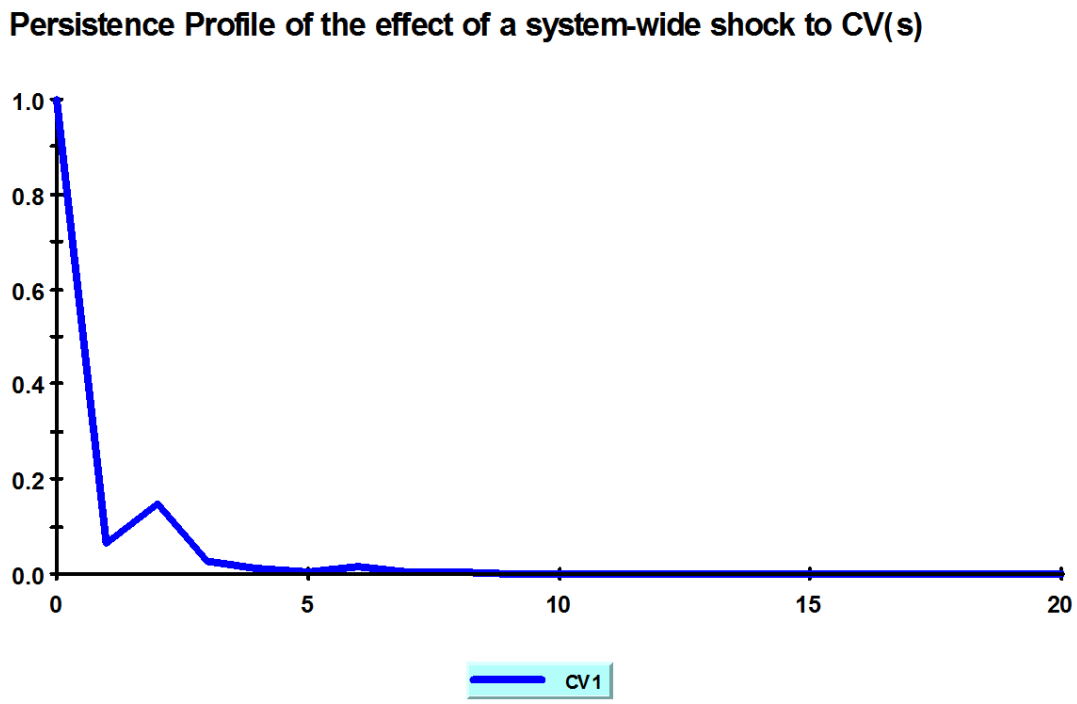

Figure 9: Persistence Profile of the effect of a system-wide shock to CVs

4 DISCUSSION ON EMPIRICAL RESULT

Currency volatility refers to the amount of uncertainty or risk involved with the size of changes in a currency exchange rate or it's simply refers to the degree of unpredictable change over time for a certain currency pairs. A change dramatically in the price of a currency over a short time period in either direction means that the currency is experiencing high volatility. A lower volatility would mean that an exchange rate does not fluctuate dramatically, but changes in value at a steady pace over a period of time.

Our findings show that, exchange rate volatility should not a worrisome for the foreign investors and Thailand's government as well this is because the economy of Thailand is an export-dependent and mostly their income comes from export activities, however, Thailand also seen an increase in FDI when their government set a certain policy on the investment where they focus on some sectors like agriculture, textiles, garment and industrialized products. This suggests that, even their currency facing high volatility it would not deter their inflows of FDI. At the same time, Thailand is under managed float exchange rate regimes where their central bank will intervene in the case of excess volatility and will ensure that their exchange rate volatility is stable. This result also can

be confirmed with a growth that has been directly related to the flow of investments from nation's partners trading. Thailand government has embarked on an IMF-supervised program designed to make the economy more open and transparent for foreign investment after the Asian Financial Crisis.

However, since our data covering include 1 year of 'Black Tragedy' and two financial crisis year, the FDI inflows show a decrease where their economy further tested in consequent of tragedy "11 September 2001"an attacks on the United States, there was a worldwide contraction in foreign direct investment (FDI) and the government instituted a number of incentives to compete for scarcer investment funds, including tax incentives for firms to locate their regional headquarters in Thailand and several new government-backed investment funds to attract foreign money. Thailand has ten export processing zones located within industrial estates to which businesses may import raw materials and export finished products duty free, this is to support its industrial exports.

5 CONCLUSION

It is worth to state that, exchange rate volatility should not be the source of worries for the nation's partners trading and foreign investors to invest in Thailand. As according to the monetary framework imposed by the Thailand's government, Thailand has adopted the managed float exchange rate exchange rate regime which is distinct from the system of free float exchange rate in most developed countries since July 1997. Hence, both the direct and indirect investment flows into Thailand should be less likely affected by exchange rate risk compared to other develop country like United State, United Kingdom, German and Japan. However, in the future Thailand's government should be prepared with unplanned issues that might come up with today's economic condition that are very fragile, Thailand should ensure their currency remain stronger for facing future challenges and they also should be prepared with short run and long run policies and restriction for foreign investors so that their economic growth remain stable and more glorious.

6 LIMITATION OF THE STUDY

Apart from having the insignificant exchange rate, our study has some others limitation which make the findings less meaningful is that because the exchange rate volatility is

computed by taking the annualised standard deviation. For further research we suggest that the volatility of the exchange rate is to be computed using ARCH and GARCH technique for volatility, this will make the result to be more robust. Another limitation is that, instead of using FDI that is measured by percentage of GDP, we should use the real inward FDI and most probably divide it according to the sectors where we can figure out which sectors contributed the most FDI inwards into the country. Another limitation would be, the number of variables, for further study we suggest that for adding the inflation as one of the variable because exchange rate and inflation seem to have a positive relationship. The last limitation would be the number of observation, for the result to be more accurate we should increase the number of observation, and our limitation is that our data are less covering then we have limited observation.

7 REFERENCES

Bank Of Thailand, Annual reports.

Johansen, S. (1991). Estimation and Hypothesis Testing of Cointegration Vectors in Gaussian Vector Autoregressive Models. *Econometrica*, *59*(6), 1551-1580

Kiyota, K., & Urata, S. (2004). Exchange Rate, Exchange Rate Volatility and Foreign Direct Investment, *World Economy*, 27(10), 1501 - 1536

Moosa, I.A. (2002). Foreign Direct Investment: Theory, Evidence and Practice, London, Palgrave Macmillan.

Osinubi, T. S., & Amaghionyeodiwe, L. A. (2009). Foreign Direct Investment and Exchange Rate Volatility in Nigeria. *International Journal of Applied Econometrics and Quantitative Studies, 6(2) ,*83-116.

Pesaran, M.H. and Y. Shin (2002). Long Run Structural Modeling. Econometric Reviews, 21(1), 49-87.

Shapiro, A. C. (2010). *Multinational Financial Management.* California: John Wiley & Sons, Inc.

Ullah, S., Haider, S. Z., & Azim, P. (2012). Impact On Exchange Rate Volatility On Foreign Direct Investment - A Case Study Of Pakistan. *Pakistan Economic and Social Review, 50(2),* 121-138.

World Bank, Annual Country Reports, Thailand.

Zhang, K.H., (2001). How does foreign investment affect economic growth in China? *Economics of Transition*, 9(1), 679–693.