The Impacts of Financial Liberalization on Growth: The Case of 4-ASEAN Economies

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Abstract: *The aim of this paper is to analyze the positive/negative effects of financial liberalization, through exchange rate variation, on growth. This paper focuses on four ASEAN countries, and investigates the relationship of exchange rate variation with financial depth, saving rate and capital to GDP ratio which have a positive effect on growth. The results show that the country with better financial system has more positive or less negative effect.*

1. Introduction

In most developing economies, capital is a scarce resource and an important fuel for economic growth. Accumulation of capital is proved in the growth literature that it is a necessary condition for economic improvement. Recent development in several developing economies indicates that domestic acquisition of capital through saving is not sufficient to move an economy in a faster pace. Capital liberalization has become such a key element in the modern successful economic development in several developing economies particularly in East Asia. Furthermore, the growth effects of international financial liberalization and integration have become a major concern in the international economics literature. In spite of substantial research efforts, it is fair to say that a consensus remains to be reached (see for examples, the surveys by Eichengreen, 2001, Ateta et al., 2001, and Edison et al., 2002a).

Historical evidences experienced by countries and the related literature have shown both the positive and negative growth effects of financial liberalization. The three major arguments in favor of financial liberalization are more efficiency allocation of capital, better risk management through diversification and availability of capital from abroad, and lower cost of capital. On the negative side, there is an argument that financial liberalization, most of the time, creates greater variations in exchange rate, which can lead to greater financial instability. Moreover, from the authority standpoint, implementing economic policy can be more costly and, in some cases, monetary policy can be less effective.

This leads to several questions related to financial liberalization in developing countries:

1. Will financial liberalization lead to exchange rate stability?

2. The question about the readiness of developing economies to cope with external pressures, ability to manage financial risk particularly exchange rate risk and the availability of (international) financial instruments as well as efficiency financial system (or market).

3. What factors determine the success of financial liberalization in each developing economy?

4. Does it necessary that greater variations in exchange rate bring more harms than goods?

Just to mention a few. The scope of this paper aims to focus on the last question particularly.

The financial liberalization in Latin America (Argentina, Chile and Uruguay) in the 1970s and early 1980s ended as disastrous failures: widespread bankruptcies, rising unemployment, high inflation, and the re-imposition of financial repression. Some economists claimed that this occurred because no attention was paid to the correct order of liberalization[1]. Thus, before adoption of broad-based liberalization measures (of the banking system and foreign exchange and trade regimes), it is necessary to improve the macroeconomic background. Particularly, the country should reduce or eliminate the government budget deficits and reduce inflationary expectations. Villanueva and Mirakhor (1990) examined the financial liberalization programs[2] of two groups of countries: the "rapid liberalizes" (Argentina, Chile, Malaysia, Philippines, Turkey, and Uruguay) and the "gradual liberalizes" (Indonesia, South Korea, Singapore, Sri Lanka, and Taiwan). They found that one reason for the relative success of the second group was that they first provided a relatively stable macroeconomic environment. For example, they have manageable budget deficits

[1] The order of liberalization should be as following:
Reduce fiscal deficit → financial liberalization trade reform → reform exchange rate → reform capital account.

[2] Financial liberalization included interest rate and credit rationing policies, supervision of banking system and banking regulation.

and slower rate of money growth before reducing the degree of interest rate management and credit rationing.

Rodrik (1998) found no effect of liberalized capital accounts either on the per capita GDP growth rate or the investment to GDP ratio. However, by using different indicator of capital account liberalization and different econometric techniques, both Quinn (1997) and Edwards (2001) found positive growth effects. Edwards concluded that a certain level of economic development must be reached before an open capital account had positive growth effects. Arteta et al. (2001) claimed that the different results between Rodrik (1998) and Edward (2001) are due to the use of different indicators of capital account liberalization. Rodrik used the IMF binary indicator but Edward used a multi-level index of Quinn (1997). Edison et al. (2002b) employed a wide variety of indicators of international financial liberalization and integration and found that there was no effect of financial liberalization on economic growth. Moreover, Vlachos and Waldenstrom (2002) used both the methodology and the basic data employed by Rajan and Zingales to investigate the effects of capital liberalization on growth. They found that the liberalization did increase the growth rate of both production, and firm creation giving the condition that the countries had reached a relatively high level of financial development.

There is another group of studies which focused on the growth effects of equity market liberalization, Henry (2000a, b) carefully classified the economic reforms in 11 developing countries, then analyzed the effects of those reforms. He found that stock prices and investment only temporary increased after stock market liberalization. Chari and Henry (2001) applied firm level evidence and found that firms' capital stocks increased after liberalization. Nevertheless, they could not ensure whether the increase in capital stock was due to a lower cost of capital or not. Using a different methodology to classify liberalization events, Bekaert et al. (2001) found that equity market liberalization led to an increase in annual real economic growth by one percent over a five-year period. Therefore, the liberalization effect was not permanent.

As suggested by the pervious literature and evidence in Latin America, we can possibly conclude that the financial liberalization has both negative and positive

impacts on growth. However, the sum of both effects could be negative and positive depends on the economic conditions in each country.

The aim of this paper is to analyze the positive/negative impacts of financial liberalization, through exchange rate variation, on growth. Policymakers can use the results from this study as a guideline to determine the appropriate degree of financial liberalization in their country at each stage of economic development. Greater financial depth (measured by the M2 to GDP ratio) and a higher saving rate can lead to faster economic growth. The capital-output ratio, on the other hand, should be lower so as to stimulate growth in the economy. International financial liberalization usually creates more variation in exchange rate. However, with a well-developed financial system, efficient forward and future markets, each country can reduce the negative effects of liberalization. In order to investigate such effects of exchange rate variation, we shall try to estimate the relationship among financial depth, saving-output ratio, capital-output ratio, and the volatility of exchange rate. In this study, we consider four ASEAN economies: Indonesia, Malaysia, Singapore, and Thailand, which are separated by the levels of financial development in order to examine the different degree of negative effects under several financial conditions. The paper is divided into five sections. The second section explains how financial liberalization affects economic growth through the volatility of exchange rate from the theoretical aspect. In the third section, the time series model employed in the study is discussed in more details. The results are presented and analyzed in the following section. Finally, conclusion is provided in the last section.

2. The negative impacts of financial liberalization on growth

Hollwood and MacDonald (1994) employed the data of 80 developing countries from the World Bank to investigate the relationship of growth with financial depth (the M2-GDP ratio), high saving rate (Gross national saving/ GDP), and lower capital-output ratio. According to Hallwood and MacDonald, a high level of economic growth in developing countries is associated with greater financial depth, high saving rate, and lower capital-output ratio.

Table 1. Financial depth, saving and growth in developing countries, 1965-87

Country group by GDP growth rate[a]	M2/GDP	Gross national Saving/GDP	ICOR Capital/GDP
High[b]	43[e]	28	3.8
Medium[c]	31	18.5	4.24
Low[d]	24	19	9.9

[a] High, medium, low ranked respectively as over 7 per cent, 3-7 per cent and less than 3 per cent per annum.
[b] Seven countries.
[c] 51 countries.
[d] 72 countries.
[e] 1977-87.

Data are weighted averages multiplied by 100 and are based on a sample of 80 developing countries. M2 is currency in circulation plus demand, time and saving deposits at banks. Investment is gross domestic investment.

Source: Hollwood and MacDonald (1994).

Hallwood and MacDonald (1994) claimed that there are three types of regulations affecting on the financial depth, saving rate and capital efficiency: low interest rate (ceiling deposit interest rate), segmented capital market, and extraordinarily high reserve ratios imposed on banks.

Interest rate ceilings create distortion in an economy as low deposit rate of interest discourage saving and divert saving into unproductive sectors such as real estate, foreign exchange, and stock market speculations which in turn generate inflationary bubble. As more money taken out of the banking system, it will reduce the financial depth. Liberalizing the financial system by removing the interest rate ceiling would increase the financial depth as well as generate a higher rate of saving and thus, leads to an increase in growth rate.

However, recent financial liberalization in several countries is not limited to the domestic level. In fact, it has been extended toward international level. The main argument for international liberalization is for country to be more efficiently allocation of resources and lower the cost of capital. This implies that the exchange rate system and capital account have to be reformed. Generally, the higher the degree of financial liberalization is often resulted in more exchange rate volatility which increases banks' operating costs. If banks still want to keep the same level of profit, as

their costs of capital increase, they have to reduce cost by decreasing the deposit interest rate. With the same logical reason mentioned above, the lower deposit rate would lead to a decrease in both financial depth and saving rate[3]. Moreover, the higher risk in exchange rate put an upward pressure on the cost of capital because of the higher cost of borrowing abroad. The economy is forced to substitute other factors of production for capital, resources are misallocated, and inefficient utilization of capital. Therefore, the impact of exchange rate volatility is usually accompanied by a high capital-GDP ratio.

Segmentation of capital markets is partly due to governmental efforts to cope with the high loan rates charged by banks. This is done by establishing public sector development banks designed to give low cost loans to favored enterprises. But loans are often not allocated efficiently. Moreover, as loan rates changed by development banks are below market rate, the subsidization of capital costs may lead to unduly high capital-GDP ratio. To liberalize financial system at domestic level, the negative impact of segmentation of capital markets can be diminished.

Since the volatility of exchange rate, created by financial liberalization at the international level, increases the risk of firms with foreign transaction, the cost of lending is higher for those firms. Therefore, the allocation of capital may not be efficient especially when the forward or future foreign exchange market is not well-developed. As the result, the higher capital-GDP ratio is associated with greater exchange rate variation.

High bank reserve ratios reduce the efficiency of financial intermediaries. Reserve ratios act as a tax on banks, diverting funds from commercial loans to central bank and to the financing of the government's budget deficit[4]. As the result, the financial depth decreases. Therefore, the reduction in reserve requirement will increase the M2-GDP ratio. However, banks have to make more reserve to protect them from the changing of exchange rate.

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[3] As the return to the saving in financial sector decrease, households will change the saving's behavior (the saving rate decrease) and the money go to the financial system in reduced.

[4] Financing the budget deficit is the main reason for imposing the high reserve in the first place.

Moreover, there are some other ideas on how volatility of exchange rate affects M2, saving and capital. First, the risk in changing of exchange rate reduce the return for foreign saving since the return for foreigner who save or invest in home country would be decrease if the home country's currency depreciate. Therefore, if the country has a lot volatility of exchange rate will cause the foreign investor not to invest or save in the country to avoid the risk of exchange rate which leads to a decrease in Gross national saving –GDP ratio. Second, the direct effect that the exchange rate volatility increases the cost of capital should not be forgotten[5]. This will lead to an inefficiency of capital (the capital-GDP ratio increase).

In sum, the higher degree of financial liberalization will lead to the more variability of exchange rate. This factor may increase the cost of capital, which will affect the interest rate and the efficiency of banking system, i.e., changes in financial depth (M2-GDP ratio), saving rate (gross saving-GDP ratio), and the capital utilization rate (capital-GDP ratio). Therefore, it is important to study the relationship between exchange rate volatility and those ratios.

3. Data and Methodology

In order to address the effects of financial liberalization through exchange rate variation on growth for the four ASEAN countries: Indonesia, Malaysia, Singapore, and Thailand. The variables employed in this paper for each of the countries are exchange rate, money (M2), gross national income, consumption, gross fixed capital, and gross domestic product. All the data are annually from 1970 to 2002. There are two reasons for using the annual data. First, the exchange rate of ASEAN countries in the past did not move much, due to the implementation of fixed or pegging exchange rate system, and we need some variation of it. The annual data can show the higher variation than the quarterly or monthly data. Second, the gross domestic product reported in annual data is more reliable and accurate than the one reported in higher frequency. All data are obtained from the International Financial Statistics annual report (IFS) various issues.

The paper intends to illustrate the response of the M2-GDP ratio, the gross saving-GDP ratio, and the capital-GDP ratio to the volatility of exchange rate. Unfortunately, we could not find the gross national saving and the total capital data for each of the countries. Since the major purpose of adding the capital-GDP ratio to the analysis is to understand the impact of exchange rate volatility on how efficient capital is utilized, the gross fixed capital data, which are available for all four countries, are used in place of the total capital. The gross national saving is calculated by subtracting consumption form the gross national income. The volatility of exchange rate is calculated by using the autoregressive model, which will be mentioned later in more details.

Exchange rate variation is obtained by assuming that exchange rates follow autoregressive order one, AR(1), process

$$EX_t = \rho EX_{t-1} + \varepsilon_t$$

EX_t and EX_{t-1} denote the exchange rate in period t and t-1 respectively. The index for exchange rate volatility derived from the standard errors of the AR(1) process. Then, the index is used in the vector autoregressive model (VAR) to demonstrate the impact of exchange rate volatility on money velocity, saving-GDP ratio and capital-GDP ratio for the four ASEAN countries: Indonesia, Malaysia, Singapore, and Thailand. And finally, the impulse response functions are estimated in order to analyze the response to shocks in exchange rate.

All four variables in the VAR model are first tested for stationary. By testing for unit root (Augmented Dickey-Fuller test: ADF test, and the Phillip-Perron test: PP test), we found that the M2-GDP ratio, saving-GDP ratio, and capital-GDP ratio in each country are integrated of order one, I(1), variable while the exchange rate volatility variables are stationary variables, i.e., I(0). Thus, all the variables that are I(1) will enter the VAR model as the first-difference. The "standard" form of the multivariate VAR models for each country can be written as following:

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[5] Mostly, this effect is forgotten because the financial liberalization helps to reduce the cost of capital.

$$X_t = A_0 + A_1X_{t-1} + A_2X_{t-2} + \ldots + A_pX_{t-p} + e_t$$

where X_t = a (4×1) vector consist of each of the four variables included in the VAR; the variation of exchange rate, M2-GDP ratio, saving-GDP ratio, and capital-GDP ratio.

A_0 = a (4×1) vector of intercept terms

A_i = (4×4) matrices of coefficients

e_t = a (4×1) vector of error terms.

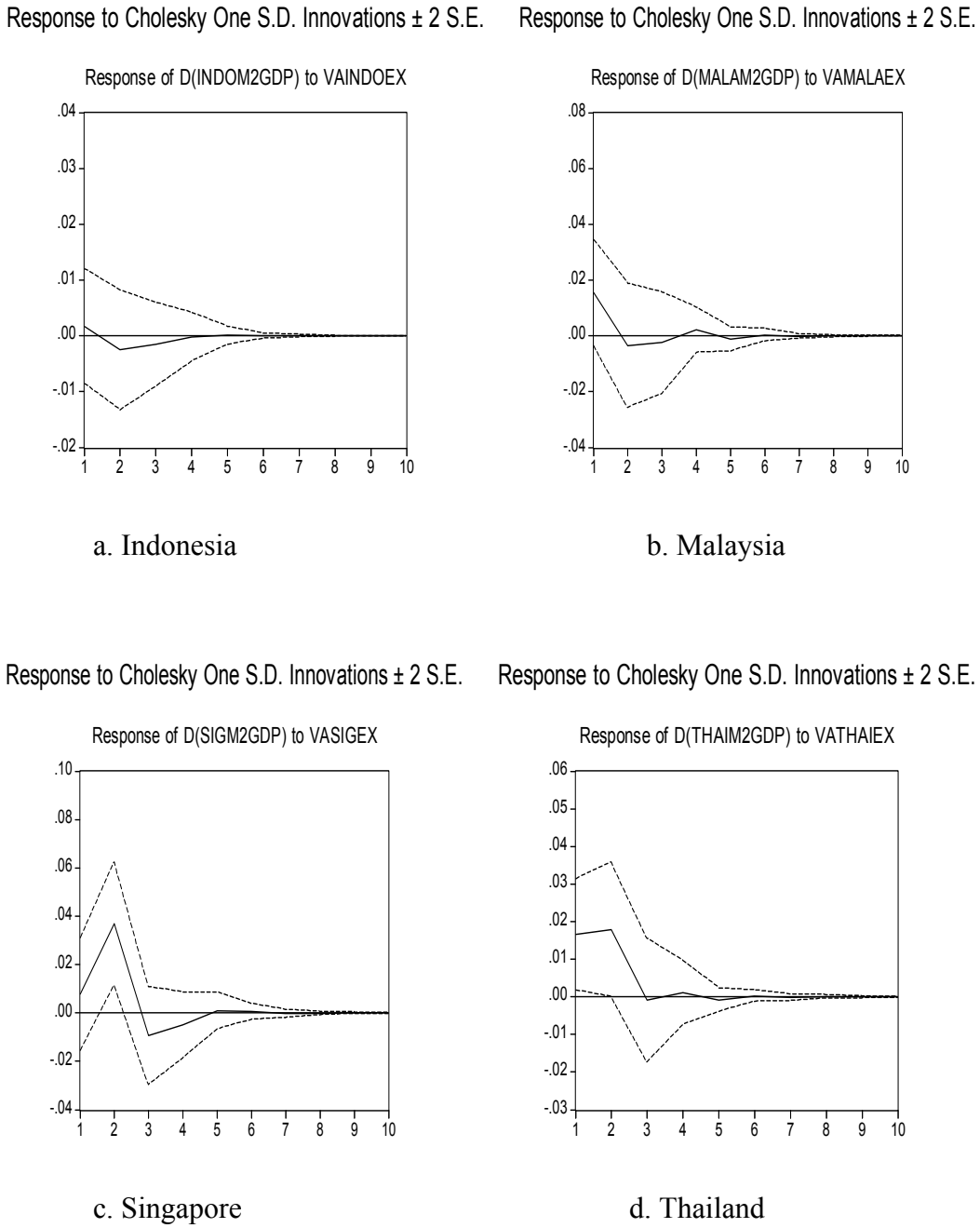
The optimal lag length, p, is determined by the AIC and SBC statistics. We found that the VAR models for each of the countries all have the optimal lag length equal to one.

4. Empiriacal Results

We expect to see the negative effects of the volatility of exchange rate, i.e., a higher exchange rate variation associated with lower M2-GDP and saving-GDP ratios, but greater capital-GDP ratio. Surprisingly, the results are opposite of what we excepted. The results obtained suggest that the volatility of exchange rate should have both negative and positive effects on those ratios. Furthermore, the sizes of the effects depend on the economic as well as financial conditions of the country.

First, we look at the results of financial depth. For Indonesia, the impulse response function indicates that when a shock to the volatility of exchange rate increases by one strand error, the Indonesia financial depth ratio increase in the first period, decrease in the second and third period, and then the effect disappeared. The values of the impact are 0.0017, -0.0025, and -0.0015 respectively. The aggregate impact of exchange rate volatility on M2-GDP ratio is about -0.0023. The effect of exchange rate volatility on financial depth in Malaysia has the same pattern as the case of Indonesia in that an increase in the first period (0.016) and a decrease in the second and third period (-0.0034, -0.0024), but the aggregate effect is positive (0.0095). For Singapore and Thailand, the pattern of the effect is the same. The M2-GDP ratio responses to an increasing of exchange volatility by increase in the first two periods

and decrease in the third period (for Singapore, there is still a small decreasing in the fourth period). The magnitudes of the effect (Singapore : Thailand) are 0.0078 : 0.0166 in the first, 0.037 : 0.0179 in the second and -0.0093 : -0.0008 in the third period. The aggregate impacts in case of Singapore and Thailand are 0.0355 and 0.0337 respectively.



a. Indonesia b. Malaysia

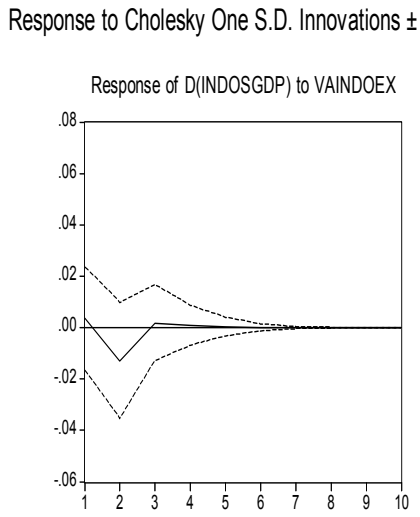
c. Singapore d. Thailand

Figure 1. The Response of Financial Depth to Exchange Rate Volatility

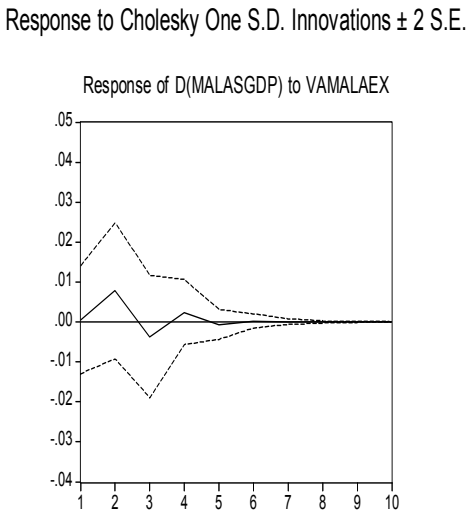
As mentioned above, the higher financial depth ratio implies that more money goes to the financial system instead of investing in unproductive sectors. Since the more volatility of exchange rate increase financial intermediaries' operating cost which lead to a reduction of the deposit rate, and also force the financial institutions to keep more reserve, the financial depth ratio should decrease. The question is why, as witnessed above, the volatility of exchange rate increases the financial depth ratio. The answers to this question are that 1) the negative effect can be reduced and 2) there are some positive effects. The negative effect of exchange rate volatility on the M2-GDP ratio can be reduced by having an efficient foreign exchange forward or future market. Financial institutions can cover exchange rate risk in the forward market, which can help mitigate the cost of exchange rate variations. The possible positive effect could be that savers are discouraged from holding wealth in foreign currencies, and hence, switch back to save in domestic currency in order to avoid the exchange rate risk. The point is well illustrated in case of Singapore, with the most efficient forward market among the four countries in this study, has more positive impacts than the others.

Second, consider the response of exchange rate volatility on the saving rate (Saving-GDP ratio). The results obtained from estimating the impulse response function for Indonesia show that an increase of exchange rate volatility has small positive impacts on Indonesia's saving rate in the first and third periods. It has negative impact in the second period, and then the effect is eliminated in the forth year. The magnitudes of the impacts are 0.0035, -0.0129 and 0.0018 respectively. The total effect is -0.0076. For Malaysia, the positive impact of increasing in exchange rate variations on the saving rate occur in the second and fourth period, 0.0078 and 0.0024 respectively, and has the negative impact in the third period by -0.0036. The aggregate impact of Malaysia is opposite to the case of Indonesia that is 0.0064. The impact of exchange rate volatility on Singapore saving-GDP ratio has the similar pattern to the case of Indonesia, which are 0.0009, -0.0013, and -0.0055. However, the effects occurred in Singapore have smaller magnitudes than in Indonesia. The aggregate impact of Singapore is -0.0059 compare to -0.0076 of Indonesia. For the response of the Thai saving rate to the variance of exchange rate, they are negative since the first year until the third year, -0.0044, -0.0006, and -0.0037 respectively. In the fourth period, the Thai saving rate responses to the increasing of variance of exchange rate by increasing a litter bit (0.0014) and then the effects are eliminated in the next period.

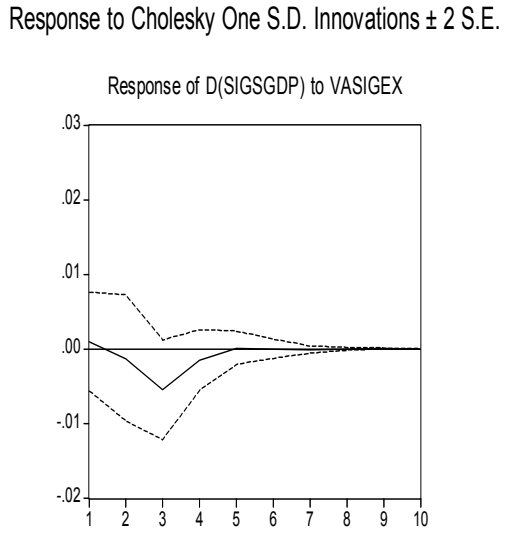
Therefore, it is clear that the total impact of Thai exchange rate volatility on the saving-GDP is negative which is -0.0073.



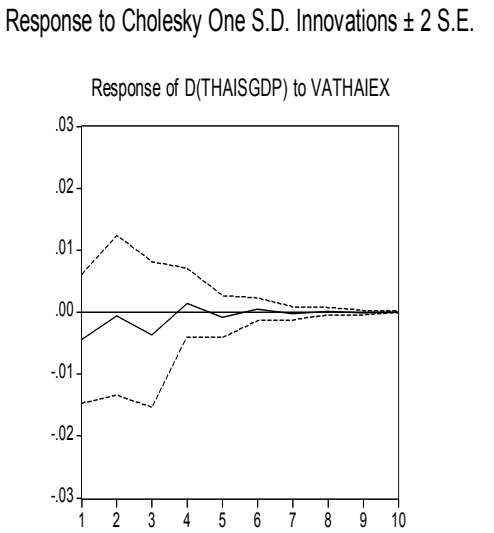
a. Indonesia



b. Malaysia



c. Singapore



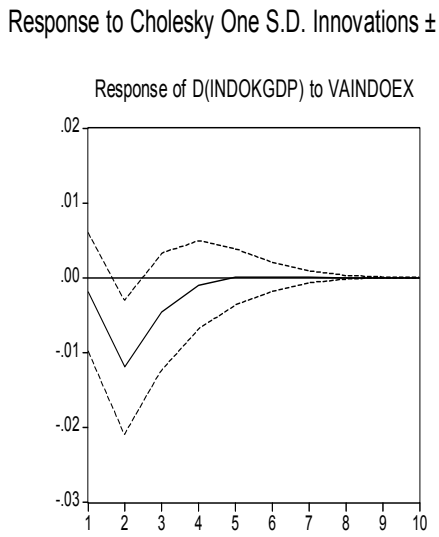
d. Thailand

Figure 2. The Response of Saving Rate to the Exchange Rate Volatility

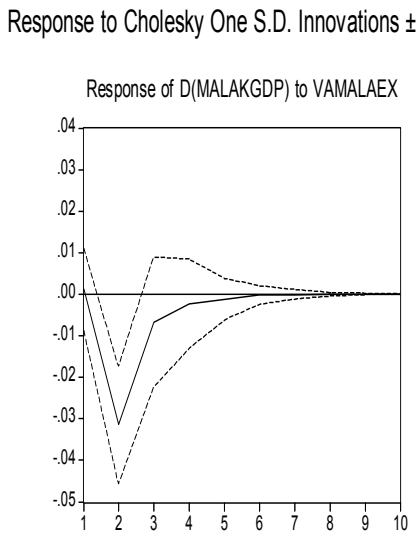
According to the results, the exchange rate volatility affects the saving rate in each country differently. This means there are both positive and negative effects. The negative effect is that the higher operating cost of financial intermediaries causes the deposit interest rate to decrease. As the return on saving decreasing, the behavior of saver will change by reducing their saving. On the other hand, the increase of exchange rate volatility will create the higher risk of household's future expenditure.

Therefore, for households to smooth their consumption, they will increase their saving rate. In each country, the two effects have different magnitudes depending on the condition of the economy. For example, Singapore with the most efficient forward market have the smallest negative effect because the better developed forward market can reduce the foreign exchange risk for financial intermediaries and the smoothing of the future household's expenditures.

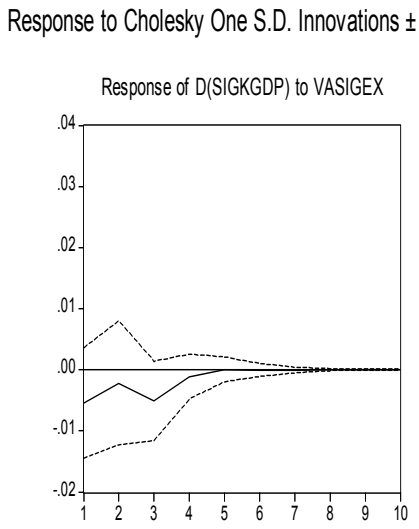
Finally, the increase in exchange rate volatility affects on capital efficiency (capital-GDP ratio) in all four countries in positive way that is the ratio decreases[6]. The Indonesia capital-GDP ratio decreases from the beginning until the fourth period: which are -0.0019, -0.0119, -0.0046, and -0.001 respectively. Its total effect is -0.0194. Malaysia's capital-GDP ratio receive the higher positive impact than of Indonesia by 0.0011, -0.0314, -0.0068, and -0.0024 in the first, second, third and fourth period respectively. As the result suggested, the aggregate decrease of capital-GDP due to a one standard error increase in exchange rate variation is -0.0395, which is much higher than of Indonesia. The capital-GDP ratio of Singapore has the smallest effect. The capital-GDP in the first year decrease by -0.0055, by -0.0012 in the second year, by -0.0051 in the third year and -0.0019 in the fourth year. The sum of impact is -0.013. The reason is that Singapore with the strong financial system already stands at a higher level capital efficiency than the rest of the countries so that the decrease of capital-GDP (improving the rate of capital utilization) can be achieved with more difficulty. Most of the time, it has to be accomplished by technology advancements or breakthrough. Among the four economies, Thailand has performed the best in terms of improving its capital utilization in response to an increase of exchange rate variation. The exchange rate volatility has a positive impact on Thai's capital efficiency for three periods. The volumes of the impact are -0.0156, -0.0219, and -0.0073 respectively. The aggregate impact of exchange rate volatility on capital-GDP ratio is -0.0448.



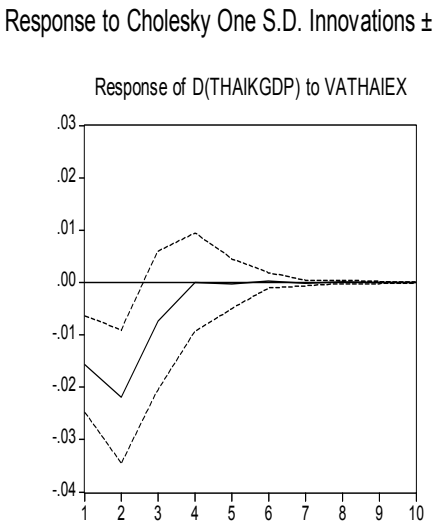
a. Indonesia



b. Malaysia



c. Singapore



d. Thailand

Figure 3. The Response of Capital Efficiency to the Exchange Rate Volatility

The issue concerning the efficiently use of capital is the allocation of capital. Efficient allocation of capital plays such a key role in the utilization of capital and thus, economic development. This means capital needs to go into the appropriate sector. The sectors, concerned in this analysis, are divided into foreign sector, firms

6 The smaller capital-GDP ratio means using less capital to produce one unit of output.

with international transactions, and the domestic sector, firms that operates only domestically. According to the results, the impact of exchange rate volatility on the capital efficiency is positive[7]. The reason is that if the variance of exchange rate is not too high, the movements of exchange rate reveal the true cost of firm in foreign sector through market mechanism. Therefore, the financial intermediaries are able to function more effectively and cut down on its costs. However, if the volatility is too high, international activities are discouraged and capital is allocated too much for the domestic sector. In such case, opportunities are wasted and capital is directed toward less efficient sector. The further emphasis on the role of central bank is keeping exchange rate variation at bay.

5. Conclusion

In all four ASEAN countries, the volatility of exchange rate is positively related to financial depth, the more volatility in exchange rate, the more capital flows into the productive sector of the economy. Negative relationships between exchange rate variation and the saving rate are discovered for Indonesia, Singapore, and Thailand while positive relationship is found for Malaysia. More exchange rate volatility leads to better capital utilization rate in all cases. Three important conclusions can be drawn from the study:

- Not allowing the variation in exchange rate under fixed or pegging exchange rate system is itself a source of distortion.
- By allowing for some variation in exchange rate so that it reflects and enhances the role of market mechanism, which in turn allowing for simultaneous adjustment, can lead to faster economic growth.
- Excessive volatility in exchange rate (particularly from speculations) can create huge negative impacts on economic growth such that it outweighs the potential positive effects on growth.

Thus, greater financial liberalization, an appropriate variation in exchange rate according to market mechanism, and well-developed financial system are the key ingredients to a stable economic growth.

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[7] The capital-GDP ratios of all countries decrease.

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