

FINANCIAL SECTOR DEVELOPMENT, GOVERNMENT SIZE, TRADE OPENNESS AND ECONOMIC GROWTH: AN EMPIRICAL ANALYSIS IN ASEAN-4 COUNTRIES

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Abstract

The main objective of this paper is to evaluate the relative impact of financial sector development, government size and trade openness of a country on its economic growth. This is done to investigate which factors play more prominent role in leading the growth of the economy. Four ASEAN countries known for their similar economic orientation, namely Malaysia, Thailand, Indonesia and Singapore have been selected for this purpose. To achieve the objective, a series of econometric tests is applied. These include unit root test and cointegration test. A vector error correction model (VECM) is then applied to capture both the short-run dynamic and the long-run equilibrium relationship between variables. Impulse response function is utilized to look at the impact of each variable on economic growth while variance decomposition is used to measure the magnitude of the impact. The results show that trade openness plays the leading role in promoting economic growth in Malaysia, Singapore and Indonesia. For Malaysia financial sector development follows second and the government size comes third while for Singapore the order is reverse. For Indonesia, the government size overtakes the leading role at the later stage while the financial sector development is immaterial. For Thailand, no firm conclusion can be made, as the results are not promising. The results signify that the right policies have been taken by the selected countries to promote higher economic growth.

Keywords: *Economic growth, financial sector development, government size, trade openness.*

INTRODUCTION

Malaysia, Singapore, Thailand and Indonesia, four neighboring countries known as ASEAN-4 countries had shown remarkable economic growth prior to 1997. This impressive growth could be attributed to their openness to the world trade, their financial sector development and the role of their government promoting economic activities via government spending. Accordingly, many researchers have done studies on these growth factors which have contri-

buted to much said hypotheses of export-led-growth, financial-led-growth and government-led-growth.

Most previous studies have focused on only one of the growth hypotheses that undeniably have opened a considerable room of debates¹. This paper is our attempt to combine the three growth hypotheses in

¹ Some of the empirical studies done on the specific growth hypotheses are discussed in the second part of this paper.

order to look at which one of the factors play more prominent role in leading the economic growth. We select four ASEAN countries mentioned above because of several reasons.

First, they are known for having similar economic orientation. During the years 1980s, most of them transformed their economic concentration from import substitution industrialization to export orientation strategy. As a result, they have experienced higher degree of trade openness that have led their economies to grow at higher rate. For Malaysia, the degree of openness measured by total of import and export as a percentage of real GDP is averaging 120.42 percent for a period of 1960 to 2000 while for Singapore the degree of trade openness is much higher with an average of 252.42 percent for 1965 to 2000. Thailand and Indonesia show lower degree of trade openness with the average of 54.69 (1954 to 2000) and 48.14 percent (1969 – 1999) respectively.

Second, while most economies in the world have gone global in term of financial structure, most of these countries have also deregulated their financial sectors to become more liberalized. The objectives are to enhance the development of an efficient financial system via a greater dependence on market forces as well as to improve the effectiveness of monetary policy. This financial development known as financial deepening is developed to attract more players coming into the market and create more funds to be used for the fast-growing sectors, which in turn will stimulate the economy from various channels. For Malaysia, the average degree of financial sector development measured by M2 as a percentage of real GDP is 55.18 percent. Singapore, however, shows the highest percentage of 76.44 in average, while Thailand and Indonesia are third and fourth with the average of 46.73 and 27.9 percent respectively.

Third, the governments of these four nations have also played quite extensive roles to get their economy going at faster rate. The proportion of government expenditure to the real GDP known as the government size for Malaysia is on average 26.36 percent. Singapore is second with the average of 19.12 percent while Indonesia and Thailand are third and fourth with the average of 18.62 and 15.82 percent respectively.

To achieve our objective, we develop a VAR model for each of the countries to examine the long run relationship between the economic growth and its growth factors, which are the financial sector development, the government size and the trade openness. We also use impulse response function and variance decomposition techniques to determine at what extend these growth factors contribute to the economic growth.

To simplify our discussion, we organize this paper as follows. Next section provides a summary of the literature review which is then followed by overview of the financial sector development, the government size and the openness in ASEAN-4 countries. A section of research methodology and data used is presented after that, followed by a section of empirical result. Finally, the last section consists of some concluding remarks and policy implications.

LITERATURE REVIEW

In this section we discussed some of the studies done to investigate the hypotheses of the financial-led-growth, the export-led-growth and the-government-led-growth.

The financial-led growth hypothesis postulates that financial sector development can promote economic growth. Joseph Schumpeter was the first to put the idea as early as in 1911 (see King & Levine, 1993). Since then, many studies have been done to investigate the relationship between financial sector development and economic growth. As a result, many economists hold

the view that the financial development is necessary condition for achieving high rates of economic growth (Goldsmith, 1969; McKinnon, 1973; Shaw, (1973). Demetriades and Hussein (1996), and Arestis and Demetriades (1993) have tested the financial-led hypothesis on several Asian countries. Their empirical findings also support the financial-led growth hypothesis.

In export-led-economic growth hypothesis, export-promotion policies are seen to have significant impact on economic growth. These policies have been strongly advocated as a superior development strategy for semi-industrialized countries (SIC). Empirical supports for this hypothesis come from the statistically significant correlations found between export expansion and output growth (see for example, Michalopoulos and Jay (1973), Michaely (1977), Balassa (1978, 1985), Tyler (1981), Feder (1982) and Kavousi (1984).

In the government-led-growth hypothesis, the government expenditure is expected to play a considerable role in promoting economic growth. Rubinson (1977), Feder (1982), Ram (1986), Grier and Gordon (1989), Barro (1990,1991), Levine and Renelt (1992), Romer (1989) and Abizadeh and Yousefi (1998) have done empirical analysis of the impact of the government size on the long run economic growth. Their findings support the government-led-growth hypothesis. Recent study by Ghali (1998) also reaches the same conclusion. Using data on ten OECD countries, he finds that the government size granger causes economic growth for all of the countries. An innovation shock of government size generates a permanent effect on the growth rate of GDP. Nevertheless, study by Kormendi and Meguire (1985) find no significant relationship between the average growth rate of real GDP and the average growth rate of the government size. Other studies done by Grier and Tullock (1987), Landau (1983),

Barro (1990) and Grossman (1988), on the other hands, find a significantly negative relationship between the growth of real GDP and the growth of the government share in GDP. These studies, however, support the crowding-out hypothesis.

Another growth hypothesis, which has been in discussion quite sometimes, is the investment led growth hypothesis. In this hypothesis, investment usually proxied by Foreign Direct Investment (FDI) is seen to play a new role in promoting the economic growth. Many scholars have applied time series data analysis and directed their FDI-led growth studies towards the use of the Granger no-causality testing procedure (for example, see Karikari (1992), Saltz (1992), de Mello (1996), Kasibhatla and Sawhney (1992), Kholdy (1995), Pfaffermayr (1994) and United Nations (1993).

OVERVIEW OF FINANCIAL SECTOR DEVELOPMENT, GOVERNMENT SIZE AND TRADE OPENNESS IN ASEAN-4

Since the main focus of this study is to investigate the impact of financial sector development, government size and trade openness on economic growth in ASEAN-4 countries, it is essential to examine the magnitude and pattern of financial sector development, government size and openness of each of the countries. In general, financial sector development includes financial deepening, financial broadening and financial liberalization. Financial deepening is commonly measured by the ratio of monetary aggregate to GDP for example M2/GDP or M3/GDP. Financial broadening implies an increase in the number of financial institutions and financial instruments while financial liberalization means deregulation of interest rates, free movement of foreign capital and removal of other restrictive practices. In this study, the ratio of M2/GDP will be used to measure the financial sector development in ASEAN-4 countries.

Table 1: Financial Development Ratio (M2/GDP) in ASEAN-4 Countries

Year	Ratio (M2/GDP)			
	Malaysia	Singapore	Thailand	Indonesia
1970	33.02	66.29	30.60	9.89
1980	51.47	64.03	38.01	16.96
1990	64.38	93.05	70.03	40.13
2000	102.62	107.46	105.91	57.64

Note:

M2= money + quasi-money (line 34-35 in IFS)

GDP = Gross Domestic Product

Table 2: Government Size and Openness in ASEAN-4 Countries

Year	Government Size				Trade Openness			
	Malaysia	Singapore	Thailand	Indonesia	Malaysia	Singapore	Thailand	Indonesia
1970	21.81	18.11	17.85	13.34	87.92	64.58	38.24	28.68
1980	33.07	19.70	18.30	23.82	112.59	369.88	54.48	52.65
1990	27.68	19.94	13.95	18.36	146.89	308.46	75.79	52.49
2000	24.89	18.91	17.41	19.45	231.44	295.60	124.42	62.36

Note:

SIZE = government expenditure as a percentage of GDP

OPEN = the degree of openness measuring by total export + import as a percentage of GDP

Table 3: Correlation Analysis

	Malaysia	Singapore	Thailand	Indonesia
	Real GDP			
Financial Sector Development	0.986	0.867	0.983	0.95
Trade Openness	0.879	0.708	0.914	0.757
Government Size	0.319	0.179	0.523	0.189

As shown in Table 1, the degree of financial development (FDEV) in each ASEAN-4 country is increasing since 1970 until the year 2000. For example, the ratio of M2/GDP in Malaysia increased from 33.02 percent in 1970 to 102.62 percent in 2000. In Singapore and Thailand, the ratio also increased from 66.29 and 30.60 to 107.46 and 105.91 respectively. The significant increase in the M2/GDP ratio reflects the movement towards higher level of monetized economy in those countries. Meanwhile, Indonesia shows the lowest in M2/GDP ratio from 9.89 percent (1970) to 57.64 percent (2000). This indicates that the

financial sector development in Indonesia is less monetized compared to other ASEAN members.

Table 2 explains the degree of government size and trade openness from 1970 to 2000. Among the four countries, Malaysia shows the largest percentage of the government size in all year shown. In the meantime, Singapore trade openness is the largest in all period except in 1970. Malaysia appears to be second while Thailand and Indonesia is third and fourth respectively. The figures show that Singapore is serious in getting its economy grows by its trade sector.

Table 3 summarizes coefficients of correlation between the financial sector development, the government size and the trade openness with economic growth for each of the countries. As expected, the financial sector development and the real GDP have highly positive correlation. Moreover, the correlation between trade openness and the real GDP is also positive and becomes the next highest in term of the value of the coefficient. The government size and the real GDP, however show the lowest coefficient of correlation.

MODEL FRAMEWORK AND DATA ANALYSIS

To investigate how the financial development, the government expenditure and the trade openness do influence economic growth of a country, we develop a simplified model as below:

$$\text{LRGDP} = f(\text{LFDEV}, \text{LGSIZE}, \text{LOPEN}) \dots [1]$$

where LRGDP is gross domestic product in real term, LFDEV is the financial sector development indicator which is a ratio of M2 to the real GDP, LGSIZE is the government size in the form of a ratio of government expenditure to the real GDP and lastly LOPEN is the trade openness indicator which is a ratio of import plus export to the real GDP. All variables are in the form of natural logarithm and are treated as endogenous. The data are accumulated from International Financial Statistics and time period

covered in this study differ from country to country. Malaysian data are for 1960 to 2000, Singapore for 1964 to 2000, Thailand for 1954 to 1999 and Indonesian for 1969 to 1999.

Since data are time series, a usual test of unit root is applied to each of them to determine its stationary level. This test is important in order to avoid getting a spurious regression whereby the t and F test are not valid to make inferences. For this purpose, we use the usual Dickey Fuller (1981) and Augmented Dickey Fuller tests. To find optimum lag for each variable, we use a Modified Akaike Criteria instead of the usual Akaike Information Criteria (AIC). However, prior to that, a maximum number of lags are set up to be one third of the number of observations. For comparison, we also use Phillip Perrons (1988) unit root test to get more information before deciding the stationarity level of the variables.

If the variables are all stationary at the same level, then a cointegration test will be applied to examine their long run relationship. Since more than two variables are being used, we run Johansen (1988) cointegration technique due to its robustness. If a cointegration does exist among the variables, a vector error correction model (VECM) is then applied to capture the adjustment period of a shock to its equilibrium condition. The model can be summarized as below:

$$\begin{pmatrix} \Delta lrgdp \\ \Delta lfdev \\ \Delta lg\ size \\ \Delta lopen \end{pmatrix} = \begin{pmatrix} \alpha_1 & \lambda_1 \\ \alpha_2 & \lambda_2 \\ \alpha_3 & \lambda_3 \\ \alpha_4 & \lambda_4 \end{pmatrix} + \begin{pmatrix} \mathbf{1} \\ \mathbf{0} \\ \mathbf{0} \\ \mathbf{0} \end{pmatrix} + \begin{pmatrix} \beta_{1i} & \beta_{1j} & \beta_{1k} & \beta_{1l} \\ \beta_{2i} & \beta_{2j} & \beta_{2k} & \beta_{2l} \\ \beta_{3i} & \beta_{3j} & \beta_{3k} & \beta_{3l} \\ \beta_{4i} & \beta_{4j} & \beta_{4k} & \beta_{4l} \end{pmatrix} \begin{pmatrix} \sum_{i=1}^n \Delta lrgdp_{t-i} \\ \sum_{j=1}^n \Delta lfdev_{t-j} \\ \sum_{k=1}^n \Delta lg\ size_{t-k} \\ \sum_{l=1}^n \Delta lopen_{t-l} \end{pmatrix} + \begin{pmatrix} \mu_1 \\ \mu_2 \\ \mu_3 \\ \mu_4 \end{pmatrix} \dots [2]$$

where err_{t-1} refers to lagged error term which is actually the error term derived from the estimation of cointegrating equation while each μ refers to impulse or innovation in the language of VAR. Δ indicates first difference. The same lag length as in the cointegration test is applied. An impulse response function and variance decomposition techniques are then used to trace out the response of the dependent variables in the VAR system to shocks in the error terms and to evaluate the magnitude of the response. Other advantage of this model is it can also indicate a causal relationship between the variables.

If, on the other hands, the variables are not cointegrated, then a standard VAR model is applied to look at the causal relationship as suggested by Granger (1969). The model looks similar as the above VECM, except that the error terms are omitted.

We do not present the normal procedures of the unit root test, the cointegration test and the VECM in order to conserve space.

EMPIRICAL FINDING

The results of the unit root tests are shown in **Table 4**. Based on the findings of DF/ADF and PP tests, almost all variables are shown to be stationary in the first difference either in the model with constant only or in the model with constant and trend. Although some variables are significant in the level form, the significant level of each of the variables is no better than 1 percent. We then assume the variables as having weak stationarity.

Consequently, running a cointegration test using all variables in one equation or in VAR model will not produce a spurious regression. Results of the cointegration tests using the Johansen method are shown in **Table 5**. As indicated, there is one cointegrating equation for each of the countries. Therefore, there is a long run relationship between the financial sector development, the trade openness, the government size and the real GDP for each of them. In other words, the variables move as if in the same wavelength.

Table 4: Results of Unit Root Tests

<i>Model with constant only</i>								
Variables	Malaysia		Singapore		Thailand		Indonesia	
	DF/ADF	PP	DF/ADF	PP	DF/ADF	PP	DF/ADF	PP
lfdev	-0.1607 (2)	0.5564	0.1989 (2)	-0.5010	1.3114 (0)	2.2728	-1.0733 (0)	-1.0733
lgsize	-2.1738 (2)	-2.3279	-2.2723 (0)	-2.2893	1.4942 (0)	1.7579	-1.9642 (4)	-2.7600 ^c
lopen	1.2005 (2)	1.0828	-2.3556 (0)	-2.3556	-2.5741 (0)	-2.7738 ^c	-0.6519 (5)	-3.0342 ^b
lrgdp	0.4742 (1)	0.2432	-2.2911 (2)	-3.4388 ^b	-0.0166 (1)	-0.0774	-1.2150 (0)	-2.2791
Δ lfdev	-6.8532 (0) ^a	-14.2316 ^a	-4.8742 (0) ^a	-4.8478 ^a	-6.0366 (0) ^a	-6.2951 ^a	-4.0769 (0) ^a	-3.9220 ^a
Δ lgsize	-5.6356 (0) ^a	-5.6168 ^a	-6.2446 (0) ^a	-6.4162 ^a	0.2868 (14)	-6.2569 ^a	-5.0307 (0) ^a	-5.0270 ^a
Δ lopen	-0.7309 (13)	-6.1086 ^a	-6.2598 (0) ^a	-6.2362 ^a	-8.6652 (0) ^a	-9.5766 ^a	-7.0210 (0) ^a	-7.1061 ^a
Δ lrgdp	-2.7670 (2) ^a	-4.9017 ^a	-3.2341 (0) ^b	-3.0036 ^b	-4.7561 (0) ^a	-4.8283 ^a	-1.6472 (4)	-5.3494 ^a

<i>Model with constant and trend</i>								
Variables	Malaysia		Singapore		Thailand		Indonesia	
	DF/ADF	PP	DF/ADF	PP	DF/ADF	PP	DF/ADF	PP
lfdev	-0.4331 (13)	-3.9651 ^b	-2.3541 (0)	-2.3697	-2.5550 (0)	-2.5102	-1.9611 (0)	-2.19634
lgsize	-2.0067 (0)	-1.8610	-2.2515 (0)	-2.2515	0.6546 (11)	-1.6295	-2.6992 (0)	-2.7802
lopen	-0.2902 (13)	-3.3004 ^c	-1.8414 (0)	-1.8414	0.1013 (16)	-4.0419 ^b	-0.0066 (11)	-3.9440 ^b
lrgdp	-1.9097 (0)	-2.0683	-0.8760 (0)	-0.6714	-2.1469 (1)	-1.8406	-1.3998 (1)	-1.8173
Δ lfdev	-6.7050 (0) ^a	-13.2192 ^a	-4.7956 (0) ^a	-4.9887 ^a	-6.0452 (0) ^a	-7.9154 ^a	-1.5273 (6)	-3.8899 ^b
Δ lgsize	-5.8263 (0) ^a	-8.3780 ^a	-6.1448 (0) ^a	-6.3075 ^a	-6.9073 (0) ^a	-7.1507 ^a	0.2355 (10)	-5.0976 ^a
Δ lopen	-6.5719 (0) ^a	-15.4974 ^a	-6.7394 (0) ^a	-6.8159 ^a	-8.4585 (0) ^a	-9.7574 ^a	-6.8989 (0) ^a	-6.9816 ^a
Δ lrgdp	-4.9040 (0) ^a	-4.9490 ^a	-3.8439 (0) ^b	-3.8190 ^b	-0.3776 (16)	-4.7794 ^a	-3.8125 (4) ^b	-5.5964 ^a

Note:
- a = significant at 1% level, b = significant at 5% level, c = significant at 10% level
- number in the parentheses is the optimum lag.
- Δ indicates first difference

Table 5: Results of Cointegration Tests

	Trace Statistics	5% Critical Value
Vector containing [lrgdp lfdev lgsizelopen]		
Malaysia		
r = 0	55.4056*	47.21
r ≤ 1	24.50975	29.68
r ≤ 2	11.60476	15.41
r ≤ 3	0.102698	3.76
Singapore		
r = 0	50.30553*	47.21
r ≤ 1	23.48714	29.68
r ≤ 2	11.21963	15.41
r ≤ 3	1.102428	3.76
Thailand		
r = 0	49.72972*	47.21
r ≤ 1	27.98499	29.68
r ≤ 2	11.38149	15.41
r ≤ 3	3.818216*	3.76
Indonesia		
r = 0	55.47693*	47.21
r ≤ 1	22.85929	29.68
r ≤ 2	10.69665	15.41
r ≤ 3	2.193484	3.76

Note:

* Indicates significance at 5 % significant level.

The results of the VECM, shown in the **Table 6** reveal how fast disequilibrium caused by a shock adjust to its equilibrium condition. As shown in the table, all error terms in each country equation except Thailand are significant at least at 5% level. This indicates that in Malaysia, 1 percent shock or deviation of the variables from its equilibrium, only 0.17 percent will be adjusted to its equilibrium. The adjustment for Singapore and Indonesia are slower at 0.06 percent and 0.11 percent respectively.

Another advantage of the VECM is that it also shows the directions of short run

causality between the variables. In **Table 7**, we summarize the results. As indicated, the directions of causality run from financial sector development growth to economic growth for Malaysia and Singapore while for Indonesia the direction of causality reverses. Only Thailand shows no causality between the mentioned variables. In the meantime, the growth of the government size and the economic growth in Indonesia have bi-directional causalities, while in Thailand only the economic growth causes the growth of the government size.

Table 6: Results of VECM

	Malaysia	Singapore	Thailand	Indonesia
Dependent variable:	DLRGDP			
Error term	-0.173398 (0.07407) [-2.34113]*	-0.063986 (0.02792) [-2.29196]*	-0.002552 (0.03011) [-0.08475]	-0.111764 (0.04231) [-2.64150]*
D(LRGDP(-1))	0.434024 (0.17723) [2.44896]	0.424939 (0.15071) [2.81963]	0.306222 (0.17996) [1.70161]	0.186833 (0.19544) [0.95596]
D(LFDEV(-1))	0.323677 (0.17085) [1.89451]	-0.303287 (0.15628) [-1.94061]	-0.077932 (0.23657) [-0.32942]	-0.296930 (0.36700) [-0.80908]
D(LGsize(-1))	-0.104268 (0.11642) [-0.89563]	0.038130 (0.06539) [0.58313]	0.131290 (0.12101) [1.08497]	-0.545726 (0.29000) [-1.88179]
D(LOPEN(-1))	0.123377 (0.12472) [0.98923]	0.014385 (0.04447) [0.32346]	0.039351 (0.11552) [0.34063]	0.475857 (0.21412) [2.22240]
C	0.043901 (0.02217) [1.98051]	0.072015 (0.02015) [3.57397]	0.074436 (0.02414) [3.08415]	0.169959 (0.05290) [3.21290]
R-squared	0.290402	0.451917	0.116846	0.598561
Adj. R-squared	0.182887	0.350420	0.003621	0.511291
Sum sq. resids	0.110963	0.054185	0.122231	0.334251
S.E. equation	0.057987	0.044798	0.055983	0.120551
F-statistic	2.701043	4.452514	1.031979	6.858771
Log likelihood	58.97275	58.97069	69.08910	23.56661
Akaike AIC	-2.716551	-3.210345	-2.803960	-1.211490

Table 7a: Causality direction from lfdev, lgsz or lopen to lrgdp

Independent variables	Malaysia	Singapore	Thailand	Indonesia
	Dependent variable = Δ lrgdp			
Δ lfdev	yes	yes	no	no
Δ lgsz	no	no	no	yes
Δ lopen	no	no	no	no

Table 7b: Causality direction from lrgdp to lfdev, lgsize or lopen

	Independent variable	Dependent variables		
		Δ lfdev	Δ lgsize	Δ lopen
Malaysia	Δ lrgdp	no	no	no
Singapore		no	no	no
Thailand		no	yes	no
Indonesia		yes	yes	no

Impulse response function and variance decomposition are two methods dynamically used to look at the direction of a shock of one variable to the others and also the magnitude of the effects. **Figures 1** shows the impulse response effect for each country. As the figures reveal, a one-time standard deviation shock in the financial sector development produces a positive impact on the real GDP for Malaysia and Singapore. For Thailand however, the impact on the real GDP is negative in the short term but becomes positive as time horizon increases. For Indonesia, the impact of financial sector development on the real GDP is negative and it continues to be negative in the long run.

Impact of other variables on the real GDP is positive except in Indonesia where the impact of the government size on the real GDP is negative at the beginning but gradually become positive as time period expands.

To look at the magnitude of the impact, **Table 8** summarizes the results of the variance decomposition. As the results indicate, the trade openness in each country except Thailand has relatively large impact on its economic growth compared to other vari-

ables. For Malaysia, the trade openness contributes to about 12.58 percent of the variation in the real GDP as the time horizon increases into ten periods. The government size follows second and the financial sector development third. For Singapore, the trade openness also plays the leading role. It contributes 29.77 percent of the variation at the longer period. The financial sector development follows second while the government size comes next.

For Thailand, nothing much can be said about the relative magnitude of each variable because the value is less than 1 percent. It seems that the government size plays the leading role. Nevertheless, the magnitude is decreasing while the trade openness and the financial sector development are catching up as time period expands.

For Indonesia, trade openness lead the way as it explains much of the variation in early period. At period seven, the government size overtakes the leading role. It becomes gradually important as it reaches 44.56 percent to explain the variation in the real GDP. The financial sector development however, plays no significant role.

Figure 1: Impulse Response Effect in Malaysia, Singapore, Thailand and Indonesia

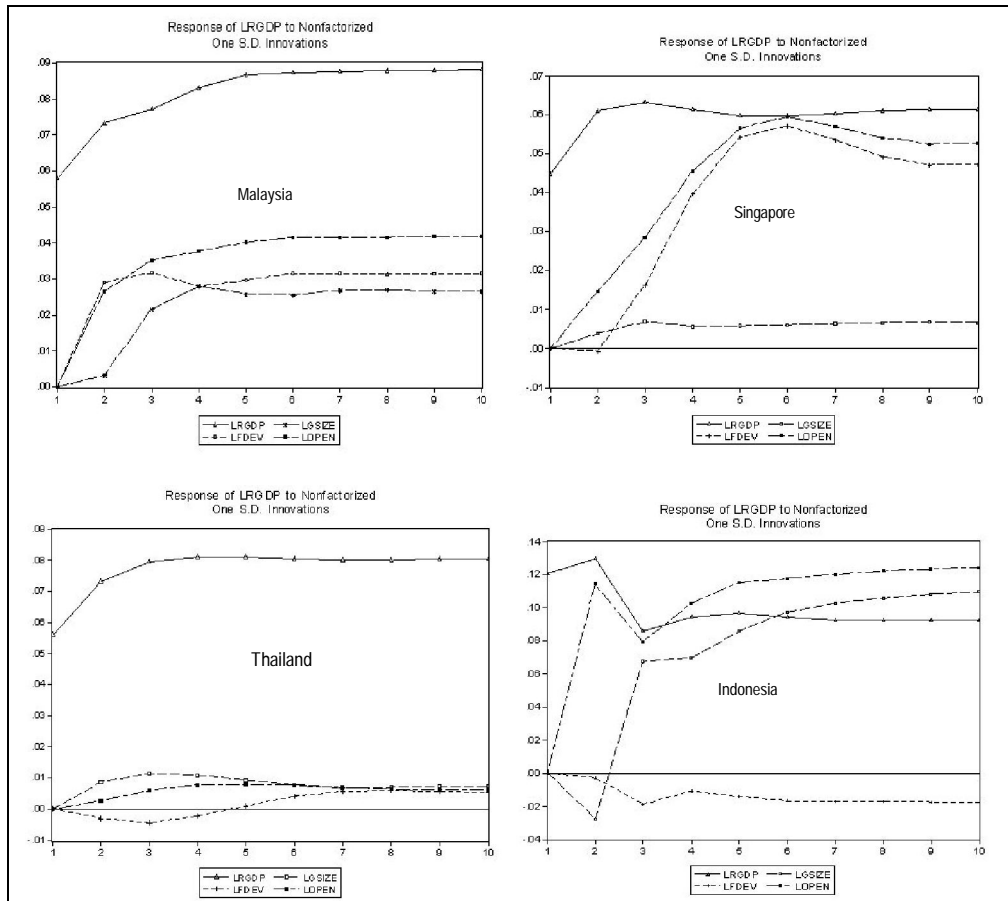


Table 8: Results of Variance Decomposition

Variance Decomposition of LRGDP Malaysia						Variance Decomposition of LRGDP Singapore					
Period	S.E.	LRGDP	LFDEV	LGSIZE	LOPEN	Period	S.E.	LRGDPS	LFDEVS	LGSIZES	LOPENS
1	0.057987	100	0	0	0	1	0.044798	100	0	0	0
2	0.09729	91.89138	2.945668	0.30942	4.85353	2	0.077926	95.98129	0.48996	0.335699	3.193056
3	0.125242	84.99377	4.072159	2.825949	8.108121	3	0.105408	90.08676	0.711272	0.794924	8.407046
4	0.150534	81.64579	3.84184	4.803013	9.709359	4	0.133278	78.91028	4.271042	0.851236	15.96744
5	0.174634	80.20535	3.634304	5.478952	10.68139	5	0.161397	68.6031	8.346593	0.862659	22.18765
6	0.196381	79.18247	3.604041	5.839055	11.37443	6	0.186504	62.42998	10.80085	0.877695	25.89147
7	0.215913	78.40224	3.589314	6.164604	11.84385	7	0.207651	59.46028	11.82654	0.905409	27.80777
8	0.233932	77.87857	3.559285	6.400516	12.16163	8	0.225776	58.14332	12.14946	0.934599	28.77262
9	0.250768	77.5095	3.537249	6.556448	12.3968	9	0.242088	57.45177	12.2539	0.957741	29.33659
10	0.266554	77.2185	3.524558	6.676008	12.58094	10	0.257387	56.9026	12.35131	0.973507	29.77258

Variance Decomposition of LRGDP Thailand						Variance Decomposition of LRGDP Indonesia					
Period	S.E.	LRGDP	LFDEV	LGSIZE	LOPEN	Period	S.E.	LRGDP	LFDEV	LGSIZE	LOPEN
1	0.055983	100	0	0	0	1	0.120551	100	0	0	0
2	0.09168	99.1562	0.08606	0.698909	0.058834	2	0.167169	66.85075	0.025153	0.164616	32.95948
3	0.120845	98.71219	0.130081	0.936699	0.221028	3	0.204931	51.54087	0.547677	15.42591	32.48555
4	0.144367	98.58811	0.099512	0.942706	0.369674	4	0.244595	40.89774	0.454981	23.41922	35.22806
5	0.163809	98.57469	0.09037	0.867849	0.467089	5	0.287887	32.74265	0.428081	30.1374	36.69187
6	0.180591	98.5635	0.136812	0.784505	0.515185	6	0.329751	27.20277	0.441368	35.41531	36.94056
7	0.195704	98.54447	0.207791	0.715974	0.531764	7	0.368987	23.4155	0.444147	39.20539	36.93496
8	0.209735	98.53227	0.268217	0.66607	0.533447	8	0.405917	20.71656	0.442424	41.95873	36.88228
9	0.222992	98.53097	0.306175	0.632266	0.530585	9	0.440677	18.72119	0.441955	44.02946	36.8074
10	0.235613	98.53606	0.325965	0.609883	0.528091	10	0.473394	17.2019	0.442191	45.63402	36.72189

CONCLUSION AND POLICY IMPLICATION

This paper investigates the relative impact of the financial sector development, the government size and the trade openness of each ASEAN-4 country namely Malaysia, Singapore, Thailand and Singapore on its economic growth. Based on the time series analysis, we develop a VAR model to examine the long run relationship that might exist between the economic growth and its probable factors. A vector error correction model (VECM) is applied to capture both the short-

run dynamic and the long-run equilibrium relationship between variables. Impulse response function is then utilized to look at the impact of each variable on economic growth while variance decomposition is used to measure the magnitude of the impact.

The results show that all variables are cointegrated in each country while the VECM tests indicate statistically significant coefficient of the speed of adjustment for each country except Thailand. The short-run dynamic relationship then reveals causality directions from the financial sector devel-

opment growth to the economic growth for Malaysia and Singapore, and from the government size growth to the economic growth for Indonesia. The causality directions also run from the economic growth to the financial sector development growth for Indonesia and to the government size growth for Thailand and Indonesia. The impulse response and variance decomposition results indicate that the trade openness in each country except Thailand has relatively large impact on its economic growth compared to other variables. In Malaysia the government size comes next while the financial sector development follows third while in Singapore the reverse is true.

For Thailand, the government size seems to play the leading role but the trade openness and the financial sector develop-

ment are coming to catch up. Nevertheless, the conclusion should be read more carefully as all the variables only explain less than 1 percent for the variation in the real GDP. For Indonesia, even though the trade openness leads the way in early period, the government size overtakes the leading role at the later stage. The financial sector development however, shows no significant contribution.

The implication of these results suggests that the export orientation strategy done by most of the ASEAN countries has been successful in promoting the economic growth. It is believed that the existing and future trade liberalization in Asian region could spur more trade activities in each ASEAN countries and in turn promote even higher economic growth.

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