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Revising the Impact of Trade Openness on Economic Growth

Sook-Yen, Lee [a], Chin Mui-Yin [b]

[a] *Faculty of Accountancy, Finance and Business, Tunku Abdul Rahman University College, Malaysia (Corresponding Author)*

[b] *Faculty of Accountancy, Finance and Business, Tunku Abdul Rahman University College, Malaysia.*

Abstract

The impact of trade openness on economic growth remained debateable despite the increasing trend of globalisation and liberalisation. This is attributable to the low capacity of the developing countries that mainly produce and export intermediate goods. Thus, developing countries might not compatible in free trade and result in a decline in economic growth. Apart from the capacity issue, previous research findings reveal that the multinational corporations (MNCs) mainly exploit the resources in the home countries without stimulating or sustaining their economic growth. Therefore, this study's objective is to analyse the impact of trade openness on the economic growth in selected developing countries, i.e. Malaysia and Thailand using time series data. The results show that trade openness has positive impact on economic growth in both countries which support the trade-led growth theory. Besides, the results note that financial developing plays an influential role in economic growth for the countries under study.

Keywords: Trade openness, economic growth; developing countries; Malaysia; Thailand

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1. Introduction

Based on the study by Singh (2015), many studies suggested that trade openness increases economic growth. However, Franciso and Jorge (2003) put forward the argument that trade liberalisation alone may not be enough to significantly reduce poverty and inequality issue. In other words, even though open market allows free movement of goods and services but it cannot ensure all countries are able to gain from trade. Thus, free trade might cause the poor countries getting poorer. Income inequality among countries has become a globalisation issue. According to Vasiliki (2008), developing countries tend to export raw material and are facing poor infrastructures problem which lead to competitive disadvantage. In addition, these countries resources were exploited by MNCs under free trade. Thus, trade openness might not increase economic growth in developing countries. In other words, trade barrier may help in enhancing economic growth because it protects the domestic industry.

Due to the inconsistent view on the benefit of trade openness on economic growth in developing countries, this paper aims to analyse the impact of trade openness on the economic growth in selected developing countries, i.e. Malaysian and Thailand from 1971 to 2013 using time-series data. As this paper assesses the significance of trade openness in developing countries, it is useful for the policy makers in implementing the trade barrier policy. Besides, the outcome of this study would provide insights for further development of growth theory.

This paper is organised as follows: Section 2 presents the analysis of the role of trade openness in economic growth for developing countries; Section 3 describes the methodology adopted in this study; Section 4 discusses the empirical results and Section 5 concludes the paper and provide policy recommendation.

2. Literature Review on the Determinants of Economic Growth in Developing Countries

Stancheva-Gigov (2014) aimed at exploring the relationships between the impact of foreign trade and economic growth. This study signified that trade openness is the key component of the economic growth with the presence of human capital, investment, institutional quality, education, corruption, population growth rate and government expenditure. However, it is contradict with the empirical result by Samar Nawaz, Arshad Aziz and Khalid Zaman (2014) which concluded that trade liberalization imposes negative effect on the economies. Similarly, the population growth does not give significant result which is inconsistent with the neoclassical theory projections which suggested that higher population growth will lead to lower economic growth.

Besides, Enrico and Marcello (2011) attempted to evaluate the impact of integration in the global economy and economic growth of China and India. In their study, they recommended a descriptive analysis of economic growth, trade openness, foreign direct investment (FDI) flow and trade specialization to compare the trends of the two countries. Due to the institutional reform, China and India experienced increasing trade openness of merchandise and FDI. In terms of trade specialization, China and India export higher valued added manufacturing good than their past. Due to the role of two "giants" in the Asia region, this study was wanted to find out if high degree of openness is beneficial to a large developing country. The result noted that the impact of trade openness and FDI on economic growth still remain positive. Indeed, the result is consistent with findings of Stancheva-Gigov (2014). Enrico and Marcello (2011) suggested that free trade must accompanied by international financial system reforms to

achieve satisfactory growth rates. In overall, this study has contributed to the both countries decision makers in gaining information regarding benefits of trade openness. Besides that, it also provides some new insights towards how trade openness beneficial to large developing country.

Besides, Kim, Lin and Suen (2012) tested on the relationship between economic growth, financial development and trade openness. The result indicated that there is a positive impact of trade openness on economic growth. However, it has negative effect of financial development on economic growth in inferior countries which is inconsistent with the findings of Wajahat Ali and Azrai Abdullah (2015) who suggested that there is a positive relationship between financial development and economic growth. Overall, the finding of Kim et al. (2012) emphasizes the importance for knowledge gain on interaction among economic growth, trade liberalization and financial development.

Separately, Tang (2013) had done a research on the energy-led growth hypothesis. She suggested that energy is crucial in manufacturing and transportation sectors. The result shows that there is a positive relationship between energy consumption and economic growth which is consistent with the studies by Danish (2015). However, Zhang (2016) suggested that energy has a negative relationship on economic growth as result of negative shock on energy consumption. When there is supply shock of energy such as oil, it will definitely lead the economic growth to stagnation because production is heavily rely on the energy related material.

Based on the previous studies, the impact of trade openness on economic growth of developing countries remains debateable. Besides, many other factors such as energy consumption or financial development are vital for economic growth. Thus, this paper would provide a comprehensive study to analyze if trade openness stimulate economic growth and to identify other factors that accelerate the economic growth of countries under study.

3. Methodology

This paper employs Johansen's cointegration test to investigate the impact of trade openness on economic growth in Malaysia and Thailand and to identify other determinants of economic growth. Augmented Dickey Fuller (ADF) test and Phillips-Perron test will be first adopted to test for the stationary. Subsequently, Johansen's cointegration test is applied to examine cointegrating relationship among the variables while VECM will be used to test the Granger causality among the variables.

Once the unit roots are confirmed to be integrated in I(1), Johansen's cointegration test is adopted to test the relationship among the variables. The Johansen method applies the maximum likelihood procedure to identify the existence of cointegrated vectors in the non-stationary time series. The testing hypothesis using Johansen maximum likelihood procedure with null of non-cointegration versus the alternative of presence of cointegration. In order to examine the cointegration relationships among two or more variables, the test statistic that consists of unique distribution (a function of a single parameter) is used in the procedure as expressed in the following equation:

$$X_t = \alpha + \Pi_1 X_{t-1} + \Pi_2 X_{t-2} + \ldots + \Pi_k X_{t-k} + \nu_t \quad (t = 1, 2, \ldots, T)$$

Where

X_t = px1 vector of non-stationary I(1) variables

α = px1 vector of constant terms

$\Pi_1, \Pi_2 \ldots \Pi_k$ = pxq coefficient matrices

ν_t = px1 vector of white Gaussian noises with mean zero and finite

If the variables are found to be cointegrated, Vector Error Correction Model (VECM) will be developed to investigate the relationship between dependent and independent variables. The VECM will provide the direction of Granger-causality within the sample period. The VECM allows the long-run components of variables to follow equilibrium constraints meanwhile short run components to have a flexible dynamic specification. Thus, this model is used to changes in one variable (Y_t) to changes in another variables (X_t) and past period's disequilibrium, ε_t. If X_t and $Y_t$have similar stochastic trend, current variables in Y_t (endogeneous variables) is in part, the result of Y_t moving in line with trend value of X_t (exogenous variable). According to the Granger (1986), VECM allows the discovery of Granger V/Causality relation through error correction term (ECT).

The vector time series can be expressed as $Y_t = (Y_1, Y_2 \ldots Y_n)$', while the common VECM formula is in Equation 2:

$\Delta Y_t = \delta 0 + \Pi Y_t\text{-}1 + \Sigma\, \theta i \Delta Y_t\text{-}i + \omega_t$ (2)

where

Y_t = (n x n) vector of variables
$\delta 0$ = (n x 1) vector of constants
Π and θ = (n x n) matrices reflecting the short-run and long run effects
ω = (n x 1) vector of white noise disturbances

Meanwhile, the dependent variable of the empirical model is economic growth which proxied by Real Gross Domestic Product (RGDP).The independent variables consist of trade openness, financial development and energy. According to the Carbaugh (2009), trade openness can be defined as the ratio of the total export and import to GDP. The empirical model is expressed as below:-

$$(RGDP)_t = \beta 0 + \beta 1\ (OPEN)_t + \beta 2\ (FD)_t + \beta 3\ (LENG)_t + \mu_t \quad (3)$$

where the proxy for each of the variables are

$(RGDP)_t$ = real gross domestic product
$(OPEN)_t$ = trade (% of GDP)
$(FD)_t$ = domestic credit provided by financial sector (% of GDP)
$(LENG)_t$ = energy consumption (kg)
μ_t = random error term
$\beta 0$, = constant term
t = time

The independent variables taken on board based on past empirical studies and economic theories. Robert and David (1999) and Hafiz Waqas et al. (2016) suggested that there is a trade-led growth relationship because it can create job opportunity and reduce production cost as producer can obtain cheaper importer

goods. King and Levine (1993) initiated that there is a finance led growth hypothesis. As suggested by King et al. (1993), well functioned of financial institutions is able to mobilizing local savings and investment through a liberalized financial system which can result at a healthy financial market. Besides, energy led growth theory suggested that energy growth imposes positive impact on economic growth. This is because the higher consumption of energy, the higher production of manufactures goods (Tang 2013).

3.1 Source of Data

All data used are the annual statistics covering a period 43 years form 1971 to 2013. To enhance the consistency, all of data are taken from World Development Indicators (WDI) that published by World Bank and database from International Monetary Fund.

4. Empirical Result and Discussion

4.1 Malaysia

Table 1: ADF Unit Root Test Result

Variables	Levels		First Difference		
	Intercept	Trend and Intercept	Intercept	Trend and Intercept	Unit Root
RGDP	-2.2029(6)	-2.6106(6)	-4.7507(3)***	-4.6565(3)***	I(1)
TO	-1.7625(1)	0.2915(0)	-4.6159(0)***	-5.0932(0)***	I(1)
FD	-1.6087(0)	-1.3941(0)	-4.7290(1)***	-5.6501(0)***	I(1)
LENG	-1.0059 (0)	-2.0432(0)	-4.2053(2)***	-4.6234(2)***	I(1)

Notes: Figures in () are the lag lengths. The value refers to T-statistics while Asterisks (*), (**), and (***) are represents 10%, 5%, and 1% significance level, respectively.

From the result of Table 1, it has revealed that all of the data series are stationary and significant after first differencing in both tests which is fit for the cointegration test.

Table 2: Johansen and Juselius Cointegration Test Results

H_0	H_1	λ-trace	λ-max
r=0	r≥1	54.4128***	36.1068***
r≤1	r≥2	18.3060	11.9197
r≤2	r≥3	6.3862	3.5640
r≤3	r≥4	2.8222	2.8222

Notes: Asterisk (***) denotes significant at 1%, and r is the number of cointegration Vector.

Based on the result from Table 2, both trace test and maximum eigenvalue test show that they reject null hypothesis of zero cointegration vector (r = 0) at 1% significance level. Thus, it signifies that there is a long run relationship between all the variables. Thus, VECM could be used to estimate the coefficient.

Table 3: Long Run Elasticities of Normalized Cointegration Vector

Parameter	Constant	RGDP	TO	FD	LENG	ECT
Estimated Coefficients [t-statistics]	-0.0229	1.0000	0.0678 [3.0647]***	-0.1020 [-4.1118]***	0.0108 [0.6051]	-0.8967 [-3.6544]***

Notes: Asterisk (***) denotes significant at 1%.

Based on the result from Table 3, the result from VECM is presented as equation shown at below:-

$$RGDP_{t-1} = -0.0229_{t-1} + 0.0678TO_{t-1} - 0.1020FD_{t-1} + 0.0108LENG_{t-1} - 0.8967u_{t-1}$$
(3.0647) (-4.1118) (0.6051) (-3.6544)

Note: Figures in the parentheses are the t-statistics values.

From the equation shown above, there are two variables, i.e. trade openness and financial development are statistically significant at 1% level. Out of which, economic growth is more responsive to financial development than trade openness as it has a higher value of coefficient. As the trade openness has a positive sign, it implies that trade openness increase by 1 %, the real GDP will rise by 0.0678%. It is consistent with the expected sign as suggested by the trade-led growth theory as well as other author such as Stancheva-Gigov (2014) that noted that trade openness imposes positive impact on economic growth. This is because it will increase market for local exporter under trade openness policy.

However, the financial development has a negative sign, it implies that if financial development increased by 1%, the real GDP will decrease by 0.102%. It is inconsistent with the expected sign as suggested by the finance led growth theory as well as the other author such as Kim et al. (2012) that noted that financial development has positive impact on economic growth but it is consistent with Wajahat Ali et al. (2015). According to Sara (2013), this might be attributable to poor or inefficient fund allocation to unproductive industries rather than productive sectors. If the fund is allocated to unproductive sector, the economic growth is negatively affected because unproductive sector tend to have low productivity on output.

In addition, the energy consumption is insignificant. This implies that energy consumption has not play an important role in boosting up the economic growth nor become the determinant of economic growth in Malaysia.

Lastly, the ECT is significant implies that all the variable are having cointegrated (long run) relationship where about 89% deviations in the economic growth would be adjusted from short run state to the long run state in one year time. In other words, the speed of adjustment from disequilibrium to long run equilibrium is relatively high in short run.

Table 4: Diagnostic Tests

Tests	**F-statistics (p-value)**
JB	0.1032
AR[2]	0.7165 (0.4959)
ARCH[1]	0.3177 (0.5763)
RESET[1]	1.2484 (0.2717)
CUSUM	Stable
$CUSUM^2$	Stable

Notes: JB is the Jarque-Bera statistic for testing normality. AR(2) and ARCH(1) are the Lagrange Multiplier tests of 2nd order serial correlation and 1st order ARCH effects. RESET(1) refer to 1st order Ramsey RESET specification test. CUSUM is cumulative sum of recursive residual stability test and $CUSUM^2$ is the cumulative sum of square of recursive residual stability test.
From Table 4, it shown that the model passed all diagnostic test. The model is free of abnormality distribution, autocorrelation, heteroscedasticity problems. Besides, it is well specified as well as stable across the sample period. As a result, the estimated results are reliable.

4.2 Thailand

Table 5: ADF Unit Root Test Result

Variables	Levels		First Difference		
	Intercept	Trend and Intercept	Intercept	Trend and Intercept	Unit Root
RGDP	-2.2716(3)	-2.8221(3)	-3.9769(3)***	-5.9516(1)**	I(1)
TO	-0.5899(0)	-2.6790(0)	-3.8944(2)***	-6.0196(1)***	I(1)
FD	-1.8681(1)	-2.3566(1)	-3.0395(0)**	-3.9170(0)**	I(1)
LENG	-0.0165(1)	-2.6928(3)	-4.8234(0)***	-4.7833(0)***	I(1)

Notes: Figures in () are the lag lengths. The value refers to T-statistics while Asterisks (*), (**), and (***) are represents 10%, 5%, and 1% significance level, respectively.

From the result of Table 5, it has revealed that all of the data series are stationary and significant after first differencing in both tests which is fit for the cointegration test.

Table 6: Johansen and Juselius Cointegration Test

H_0	H_1	λ-trace	λ-max
r=0	r≥1	54.5535***	27.7765***
r≤1	r≥2	26.777	18.0743
r≤2	r≥3	8.70268	8.6799
r≤3	r≥4	0.0227	0.0227

Notes: Asterisk (***) denotes significant at 1%, and r is the number of cointegration Vector.

Based on the result from Table 6, both trace test and maximum eigenvalue test shown that they reject null hypothesis of zero cointegration vector (r = 0) at 1% significance level. Thus, it has shown that there is a long run relationship between all the variables because it is significant at none which indicated that there is only one cointegration vector. Thus, VECM could be used to estimate the elasticities.

Table 7: Long Run Elasticities of Normalized Cointegration Vector

Parameter	Constant	RGDP	TO	FD	LENG	ECT
Estimated Coefficient (t-statistics)	2.3751	1.0000	0.5889 [4.5790]***	0.0737 [2.3772]***	-0.4285 [-4.5842]***	-0.5500 [-1.9759]**

Notes: Asterisk (***) denotes significant at 1% and Asterisk (**) denotes significant at 5%.

Based on the result from Table 7, the result from VECM is presented as equation shown at below:-

$$RGDP_{t-1} = 2.3751_{t-1} + \underset{(4.5790)}{0.5889}TO_{t-1} + \underset{(2.3772)}{0.0737}FD_{t-1} - \underset{(-4.5842)}{0.4285}LENG_{t-1} - \underset{(-1.9759)}{0.5500}u_{t-1}$$

Note: Figures in the parentheses are the t-statistics values.

From the equation as shown above, all of the variables for Thailand are statistically significant at 1% level respectively. Out of which, economic growth is more responsive to trade openness than financial development and energy consumption as it has highest value of coefficient. As the trade openness has a positive sign, it implied that if trade openness increase by 1%, the real GDP will rise by 0.5889%. Similar with that of Malaysia, the result is consistent with the expected sign as suggested by the trade-led growth theory as well as the findings of Stancheva-Gigov (2014).

Contrast with the findings for Malaysia, the financial development for Thailand has a positive sign. It implied that if the financial development increase by 1%, the real GDP will increase by 0.0737%. It is consistent with the expected sign as suggested by the finance led growth theory and the findings of Kim et al. (2012) that noted that financial development has positive impact on economic growth. This could be attributable to more output could be generated if more credit was allocated to the business.

Besides, the energy consumption has negative sign of coefficient. This implied that if energy consumption increases by 1%, the real GDP will decrease by 0.4285%. The finding is inconsisitent with the expected sign as suggested by the energy led growth theory and the findings of Tang (2013) and Danish (2015) that suggested that there is positive relationship between energy consumption and economic growth. However, it is consistent with the study of Zhang (2016) which revealed that there is negative relationship between energy consumption and economic growth. This is because Thailand is an energy-dependent county. However, they rely heavily on energy import rather than own production. Thus, it will has a huge impact on the economic growth if there is an occurrence of negative shock of energy such as a hike in oil price. As evidence, there is a hike in oil price in 1980 to 1986, 1990 and 2005 to 2014 which adversely affected the economic growth in Thailand. This is because Thailand must purchase oil at higher cost since it is an important raw material in the manufacturing sector. Subsequently, they are facing high production cost problem and causing money outflow to other countries (Zhang 2016). As a consequence, it result in less capital accumulation in Thailand which lead to low economic growth.

Similar with the case of Malaysia, the ECT term shows that about 55% deviations in the economic growth would be adjusted from short run state to the long run state in one year time. In other words, the speed of adjustment from disequilibrium to long run equilibrium is moderately high in short run.

Table 8: Diagnostic Tests

Tests	F-statistics (p-value)
JB	0.9072
AR[2]	2.2244 (0.1398)
ARCH[1]	1.4948(0.2292)
RESET[9]	1.9222(0.1044)
CUSUM	Stable
$CUSUM^2$	Stable

Note: Asterisk (**) denotes significant at 5% level. JB is the Jarque-Bera statistic for testing normality. AR(2) and ARCH(1) are the Lagrange Multiplier tests of 2rd order serial correlation and 1st order ARCH effects. RESET(9) refer to 9th order Ramsey RESET specification test. CUSUM is cumulative sum of recursive residual stability test and $CUSUM^2$ is the cumulative sum of square of recursive residual stability test.

From Table 8, it shows that the empirical model for Thailand is fit for moderation and estimated results are reliable as the model passed all the diagnostic test.

5. Conclusion and Policy Implication

Based on the empirical result, the determinants for economic growth are varied for both Malaysia and Thailand even though countries are categories as developing countries. Nevertheless, trade openness is the crucial determinant for the economic growth in both Malaysia and Thailand. In short, it is beneficial for both countries to open the market freely to the global market and should actively engage in free trade agreement and free trade zone by reducing protectionist policies, trade barrier and to boost up economic growth. For example, by participating in TPPA, RCEP and One Belt One Road, the economic growth of these countries would be accelerated

For the case of Malaysia, financial development impose a negative impact on economic growth. Therefore, it is suggested that Malaysia should restructure the lending criteria where the credit provided should be based on productivity of industry in order that it can ensure the flow of fund to productive industry which is efficient in boosting economic growth. Furthermore, Malaysia should oversee the institution quality of financial sectors and promote transparency of the procedure of application of loan.

On the contrary, financial development emerged as one of the main determinants of economic growth in Thailand. Thus, Thailand must continue to maintain the quality of the bank and financial institutions in order to allow more efficient lending channel to the productive sectors. However, since energy consumption impose the negative impact on economic growth, Thailand should reduce her reliance on energy related raw material to avoid the negative shock of energy. In fact, Thailand might engage in Green Technology which can reduce the consumption of energy.

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