Does Export Led Growth Hypothesis Hold Under World Crisis Recovery Regime in Malaysia?

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Abstract

This paper examines empirically the nature of the impact of the exchange rate on import, export and economic growth in Malaysia from 2009 until 2018. The objective of this study is to investigate the long-term and short-term relationship between endogenous and exogenous variables and also to identify the effects of exchange rates on dependent variables including imports, exports and the Gross Domestic Product (DGP) that represent the productivity of the country. This study further focuses on investigating the impact or the role of export in drive the county economic growth. In achieving these objectives, the Augmented Dickey-Fuller (ADF) testing procedure is used to test the presence of unit root. In order to investigate the incidence of long run relationship between the data series, the Johansen Juselius Cointegration Vector is utilized. The Granger Causality in Vector Error Correction Model (VECM) framework is employed to differentiate between short run and long run causal effects in examining the led growth determinants. The result shows that there is causality between exchange rate, import, export and GDP. Moreover, this study shows that exchange rates responded positively to import and export and negatively to GDP. The result further support for export led growth hypothesis in this study. Thus, confirm for the role of export in motivating the economic growth productivity in after World Crisis regime in year 2008. However, Malaysia must not only relay on international trade to generate income for the country. This is because Malaysia is fortunate to have survived the negative effects of the global crisis; the international trade is exposed to exchange rate instability. If Malaysia wants to succeed in international trade, it may be able to focus on food and services trade. As alternative Malaysia may focuses on agriculture sector by improving the research and development and be a champion on food supply for the world.

Keywords: exchange rate, import, export, gross domestic product, Vector Error Correction Model

1. Introduction

After a decade of the onset of the debt crisis, many countries are still struggling to achieve a current account situation that is in line with reduced external financing and moderate output growth rates leading to higher exchange rates. Exchange rate is an important element for a country because it plays a role in determining international trade flows. Despite some large empirical research, the effect of exchange rate movements on trade flows is still not well understood (Fabus et al., 2019). So, the objective of this study is to investigate the impact of exchange rate on import, export and economic growth in Malaysia. Not only that, the role of international trade in driving the economic growth productivity is also important for short and long term. According to Rambeli and Podivinsky (2013); Wang, Peng & Lv (2018), The Export-Led Growth Hypothesis (Hereafter: ELGH) can be specified as export expansion is one of the main determinants of economy growth. According to the ELGH, overall growth of countries (in our case is Malaysia) can be generated not only by increasing the amounts of labour and capital within the economy, but also by expanding exports. In recent years, many countries have experienced the value of exchange rate uncertainty, including Malaysia. The exchange rate is, and has always been a very sensitive subject in the WTO (McKinnon, Ronald and Schnabl, 2003; Keho, 2017). This relationship's sensitivity may have more than one source. First, exchange rates are the religious variables derived from complicated macroeconomic, financial shock, economic crisis and global trading trade changes. Second, the exchange rate affects the unsymmetrical real economic costs between different producers and economics (Hussain et al., 2018). Thirdly, Brada and Mendez (1988); Boutayeba (2017) said

trade in international trade and the result of monetary support supported, and then strengthened the ruler with a lack of history, retaining the opposite nature (Sasongko, Huruta & Wardani, 2019). There for, the focal point of this study is to investigate the role of export led growth hypothesis under recovery regime of World Crisis in year 2008 for Malaysia experience. To this case, the exchange rates are considered as financial shock shipment lines to real economy and vector 'financial dumping'. Moreover referring to study by Rambeli and Podivinsky (2013), they claimed that the exchange can ruled the productivity of the country, thus give the significant impact through dynamic relationship. Therefore, the impact of changes in nominal and real exchange rates is an important macroeconomic change due to the integration of financial markets and the acceleration of capital flows that lead to instability through two key approaches. Therefore, the purpose of this paper is to study the relationship between exchange rate and import, export and economic growth in Malaysia from 2009 to 2018. The rest of this paper is organized as follows: next section presents model specification. Follow by finding and conclusion in the last part of this article.

2. Methodology

2.1 Model Specification

As mention before, this study performed the unit root for stationary test. In this case, the Augmented Dickey Fuller test is employed. For integration test, the Johansen Juselius will use. Finnaly the Granger Causality test is conducted under VECM framework. Inspired by Shan, and (1998a) and Rambeli and Podivinsky (2013) the augmented dynamic model for endogenous and exogenous data series are as follows;

2.2 Dynamic Model

$$\Delta LOG\_GDP_t = \alpha_{10} + \sum_{i=1}^{n} \alpha_{1i} LOG\_\Delta ER_{t-i} + \sum_{t=1}^{n} \beta_{1i} \Delta LOG\_IMP_t + \sum_{i=1}^{n} \phi_{1i} \Delta LOG\_EX_{t-i}$$

$$+ \sum_{i=1}^{n} \gamma_{1i} \Delta LOG\_GDP_{t-i} + \delta_1 ECT_{(t-1)} + \Omega_{1t}$$

2.3 Data Sources

This study uses quarterly time series data covering the period from 1987 to 2017. Exchange rate, import, export and GDP data have been extracted from various sources. For exchange rate data, researchers obtain data from the official trading website. Researchers obtain import and export data from FRED's website. Meanwhile for GDP data, researchers obtain from the World Bank.

3. Finding

In this section will be described in detail related to the results of the analysis of the study. The description will start with the results from Unit root, co-integration and VECM.

3.1 Unit Root Test (ADF)

The result of the ADF unit root tests, the three at the level and at first differencing are reported in Tables 1, by taking into consideration with pure random walk (none), random walk with drift/intercept and random walk with drift and time trend.

Table 1. The result of Augmented Dickey Fuller Tests for exchange rate, import, export and economic growth

Data Series	At Level Form			At 1st Different		
	none	intercept	time trend	none	intercept	time trend
Exchange Rate	0.533361	-1.744273	-2.364977	-7.532907*(12)	-7.570324*(12)	-7.533565*(12)
Import	1.200734	-2.411290	-1.939224	-8.336284*(12)	-7.533273*(12)	-7.737034*(12)
Export	1.025634	-1.587791	-2.432969	-8.591001*(2)	-8.837251*(2)	-9.583527*(2)
Economic Growth	0.695150	-1.658039	-1.725207	-4.833341*(3)	-5.952177*(3)	-6.104689*(3)

Notes: Figures in parentheses are the lag order selected based on the AIC where '*' indicates significant at the 99% level

According to the Table 1, the results show that at level form with pure random walk (none), the result for exchange rate, import, economic growth and export are non-stationary. This means that all variable at pure random walk (none) is insignificant. This result supported by the value of Wald Test less than F critical value. However, at first different, the result is stationary and significant at 99% for all four variables. The same results are same for intercept and time trend at level form across the series. Meanwhile, at 1st different, the results show these variables are stationary and significant at 99% for all types of unit root analysis. In order to get the optimal lag, VAR is utilized. The result of VAR for exchange rate, import, export and GDP are reported in Table 2 in Appendix. The information criteria approach is applied in this study as a direction to choose the lag order. Table 2 confirms the lag lengths selected by different information criteria. The result reveals the results of each lag starting lag 2 until lag 12. It is presented with its Akaike Information Criterion (AIC) value as the general selection would have been done. However, we will be using the AIC value for the optimum lag length selection. Table 2 also shows the optimum lag length is lag 5 with AIC -8.961775. However, in order to perform the VECM test, we will be using lag 10 minus lag 1. So, lag 4 will choose to do the VECM. (Vahid and Engle, 1993; Lai, 2018)

3.2 Johansen Juselius Cointegration Test and VECM

The prerequisites for a series of combined combinations are that they need to be integrated in the same order. So far, the results of the unit testing process are I (1), now we can continue the cointegration test.

Table 3. The results of Johansen Cointegration Tests for exchange rate, import, export and economic growth

Data Period: Jan, 1987 to Dec, 2017							
Hypothesis		λ Trace	5% critical value	1% critical value	λ Max	5% critical value	1% critical value
H0	H1						
r=0	r>0	48.89499*	47.21	54.46	24.91666	27.07	32.24
r≤1	r>1	23.97833	29.68	35.65	18.47406	20.97	25.52
r≤2	r>2	5.504269	15.41	20.04	5.321876	14.07	18.63
r≤3	r≤3	0.182393	3.76	6.65	0.182393	3.76	6.65

The critical values for the Johansen Juselius test were obtained from (Osterwald-Lenum, 1992)

Table present the results of the cointegrating test, the statistical test results show that the null hypothesis r = 0 against the alternative is r> 1, which is easily rejected at the 0.01 and 0.05 levels significantly. The calculated value 48.89499 is greater than the critical value of 0.05 which is 47.21 and 0.01 at 54.46. However, if tested the null hypothesis r≤1, it receives the hypothesis because the calculation value at 23.97833 is smaller than the critical value at 0.05 and 0.01 significant levels, which are 29.68 and 35.65. Therefore, based on trace statistical test, it can be concluded that there exists a single cointegrating vector in the model. This study proposes similar results for Lambda Trace and Lambda Max. These results indicate that the exchange rate and macroeconomic determinants show long-term relationships in one convergence. This means the series in the system move together and cannot move away from each other. Table 4 in Appendix shows the error correction term (ECT) equation. The detection of a cointegration equation in the previous section means that a VECM can be performed. This analysis is important in identifying long-term and short-term relationships between variables. The table 7 shows the result of F-statistic and probability (in bracket). There are some are not available (-) from the table. This because researcher does not want to measure the relationship between the endogenous and exogenous variable itself, rather than researcher wishes to determine the short run relationship between the independent variables with the other the dependent variables.

Table 5. The result of Vector Error Correction Model (VECM) for exchange rate, import, export and economic growth

Variable	ECT	Δ Exchange Rate	Δ Import	Δ Export	Δ GDP

Δ Exchange Rate	-0.006642 (0.1049)	-	1.078507 (0.3616)	2.307767 (0.1045)	5.766538 (0.0003)***
Δ Import	-0.028681 (0.1498)	2.514206 (0.0622)*	-	1.485101 (0.1404)	-1.438082 (0.1533)
Δ Export	-0.013031 (0.0002)***	6.412822 (0.0023)**	2.537532 (0.0442)*	-	1.564672 (0.2139)
Δ GDP	0.000736 (0.6596)	-7.257939 (0.0000)***	1.711747 (0.1528)	3.267244 (0.0421)*	-

According to Table 5, it shows the series of variables effect each one to another in the short term. The results suggest that, during the post regime of world crisis, the export impact economic growth positively. This indirectly support for Export-led Growth Hypothesis for Malaysia case.

4. Conclusion

In overall, it is can conclude that the bi-directional and unidirectional causality between variables in Malaysia. The result also support for the role of Export in driving the economic growth in the short and long term. However, Malaysia must not only relay on international trade to generate income for the country. This is because Malaysia is fortunate to have survived the negative effects of the global crisis; the international trade is exposed to exchange rate instability. If Malaysia wants to succeed in international trade, it may be able to focus on food and services trade. The alternative choice for Malaysia is maybe back to agriculture sector by improving the research and development in agriculture and be a champion on food supply for the world.

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Appendix

Table 2. The Result of variance for exchange rate, import, export and economic growth

LAG	AIC
2	-8.904320
3	-8.914047
4	-8.890960
5	-8.961775
6	-8.886047
7	-8.683478
8	-8.558305
9	-8.500245
10	-8.325305
11	-8.282140
12	-8.162230

Notes

* indicates lag order selected by the criterion

AIC: Akaike Information Criterion

Error Correction Term (ECT)

Table 4. The Results of Error Correction Term (ECT) for Exchange Rate, Import, Export and Economic Growth

(ECT(-1) = 26.35795+1*ER(-1)+9.2672088*EX(-1) −8.796705* IMP(-1) + 0.843818* GDP(-1))

Cointegrating Eq:	CointEq1
ER(-1)	1.000000
EX(-1)	21.88155
	(5.62228)
	[3.89194]
IMP(-1)	-16.60626
	(4.80432)
	[-3.45653]
GDP(-1)	0.726475
	(3.38453)
	[0.21465]
C	-59.25807