

Is The Export-Led Growth Hypothesis Valid for Malaysia?

Ong Poh Lim^{a*}, Shirleen Tan Shea Ling^b
School of Social Sciences, Universiti Sains Malaysia, Malaysia
Email: desmondong168@gmail.com

School of Social Sciences, Universiti Sains Malaysia, Malaysia
Email: shirleen-08@hotmail.com

Abstract

Export has been one of the most important economic components for developing countries. The relationship between exports and economic growth has been widely discussed and empirically tested in a number of developing countries including Malaysia. Based on empirical evidence, although results of the study suggest export-led growth in many developing countries, but the relationship between exports and economic growth is not robust because empirical results are not consistent. As most of the studies, many question of formulation that still need to be further investigated and proceeded with a solid outcome. In overview, this study is to examine the export-led growth hypothesis by analyzing the case of Malaysia from 1970 to 2013. We are applying time series econometric techniques of cointegration and causality on a long run and short run relationship on GDP, exports and import of Malaysia. The result revealed that GDP, export and import Malaysia; they are a unidirectional causal relationship which economic growth drive export and import growth. This result highlighted the importance of economic stability and continuous growth for Malaysia to further improve the export and attract more foreign and domestic investment.

Keywords: *Export-Led Growth Hypothesis, Economic Growth, Granger-Causality, Johansen Cointegration Test*

1. Introduction

In general, economic components tell us that expansion of export will lead to a higher economic growth of the country. Export expansion is the main determinants of growth and many developing countries have the focus on the export strategy to accelerate economic growth. However, a study in Mexico state that export expansion may not be able to accelerate economics growth if an increase of import is larger than each incremental in export (Ibarra, 2008). Moreover, export-led growth has become the standard model of development that the IMF recommends to all its client countries. With seventy-five developing countries (Sachs 1998) now subject to permanent IMF programs, this means that it has become common for global development model. Therefore, it has been increasingly applied around the world especially for low and middle-income countries.

Recently, the export-led-growth (ELG) hypothesis is a hot research topic which most of study originally were concentrated on simple correlation between exports and income (Kravis, 1970). With the development of time series techniques and availability of time series data, the investigation covers co-integration and causality of the relationship between exports and economic growth (Jung et. al., 1985). Nowadays, many empirical study and analyses on ELG hypothesis has been carried out using different approach and technique and get the different result. There is extensive literature covering in the relationship, but there is still not clear consensus and consistency of empirical results that export cause economics growth. For

instance, Napoles (2001) study on Mexico revealed Mexico export failed to lead the growth of economy due to import has reduced the trade Imbalance. His results show that increasing of manufacturing export is offset by increasing in imports. However, Ghatak et al. (1997) study on Malaysia ELG from the period 1955 to 1990 using cointegration and Granger causality testing indicated the positive relationship which export lead to growth.

This paper is aim to study the relationship of the variable of gross domestic products, exports and import of Malaysia. We will test on the unit root, and then used the co-integration test developed by Johansen test developed by Johansen (1998) to provide further empirical evidence on the causal relationship of exports and economic growth in Malaysia from 1970 to 2013 based on bivariate frameworks.

This paper will be organized as follow: Section 2 presents the literature review. Section 3 will be elaborate on the methodology and empirical result and final section of 4 will be the conclusion of the study.

2. Literature Review

The relationship between export and economic growth is known as export-led growth (ELG) hypothesis. In neoclassical growth theory, export contributes to output growth, it promotes economies of scale and penetration of world market economy. In addition, there is a study suggests that international trade will increase productivity as well as technology innovation (Grossmand, 1991).

An empirical study on ELG hypothesis has been extensive. The study covered difference countries involved difference time interval and statistical methods. However, there are no clear consensus on whether export-led growth or economic drive export. Koccat (2008) study concluded his finding as no long run relationship on ELG hypothesis. Darart (2007) did not find any causality evident in Turkey to support the hypothesis. Findings from the empirical literature point to the possibility of several types of relationships between exports and economic growth depending on the econometric model, data frequency, and the country or region studied. In general, we can't make consensus whether the export is causing growth or growth is causing export and there is bidirectional causality or there is no causality (Konya 2004).

A number of empirical studies on ELGH have revealed a strong relationship between export and economy growth. Research on Hong Kong and Singapore by Tang & Lai (2001) has shown a positive bilateral causality between export and GDP. Bahmani, Oskooee and Alse (1993) study on developing countries support ELG hypothesis. Many empirical studies on developing countries that investigated the link between export and economic growth reported the existence of a positive relationship between export and economic growth, and empirical evidence in support of the export-led growth hypothesis (Shah & Yusoff, 1990; Doraisami, 1996; Chong et al. 2005; Ibrahim, 2001). Empirical study revealed that the relationship between export and economic growth is not conclusive and therefore, remain an empirical issue.

Malaysia, in recent year, has experienced rapid growth which is driven by export activities. There are several studies that attempt to identify the ELG hypothesis with focusing mainly on Malaysia. Tang (2013) studies result indicated that causality for ELG hypothesis is stable. In 2010, Khalid Yousif's empirical study of Malaysia by using VAR analysis was not conclusive about the relationship between export and economics growth. There was weak support for export-led growth after Malaysia shifted the strategy in export-oriented development. The

econometric methods used in most of the empirical investigations are dominated by the work of Granger (1988), Sims (1972), Engle and Granger (1987), Johansen (1988) and Johansen and Juselius (1990).

In 2013, Kalaitzi had examined relationship between primary export, manufactured export and economics growth for the period 1980 – 2010. However, the empirical finding showed that relationship between export and economic growth exists but the test showed unidirectional causality. According to Liang and Zuradi (2012), they had studied the validity of the ELGH for Malaysia for the period 1970 to 2011 by using cointegration test and Granger Causality test. The empirical findings revealed that real exports and imports are in long run positive relationship with economic growth.

3. The Methodology, Data & Empirical Results

3.1 Data

The annual data were to download from the Mundi Index database. The gross domestic products (GDP), exports goods and service (EX), imports goods and services (IM) were converted into real term using the GDP deflator.

3.2 Specifications of Model

We will create a time series multivariate regression derived using existing neo-classical model from Feder (1982). The model includes a number of explanatory variables include real GDP, EX, and IM.

Economic Model:

$$GDP_t = f(EX_t, IM_t)$$

Econometric Model:

$$\ln GDP_t = \beta_0 + \beta_1 \ln EX_t + \beta_2 \ln IM_t + \varepsilon_i$$

Dependent Variable:

$$GDP_t = \text{real Gross Domestic Products}$$

Independent Variables:

EX_t = Exports of goods and services

IM_t = Imports of goods and services

ε_i = Error term

3.3 Analyzing Model Regression

$$\ln GDP_t = 10.77 + 0.97 \ln EX_t - 0.27 \ln IM_t$$

Std. Error =	(0.5688)	(0.2741)	(0.2845)
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t-statistics =	(18.9373)	(3.5388)	(-0.9810)
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$$R^2 = 0.9468 \quad \bar{R}^2 = 0.9442$$

As per above estimated model regression, it showed that $R^2 = 0.9468$ and $R^? = 0.9442$. The above results shown that the variation of the dependent variable that can be explained by the all independent variables.

The coefficient of determination in this model regression, $R^2 = 0.9468$. It means this estimated regression shows that there is 94.68% of the variation of dependent variable can be explained by the independent variables. The adjusted $R^2 = 0.9442$ is used to compare the fits of the equation. Based on the above results, manufactured exports and total export have led economics growth in Malaysia where both independent variables have a positive relationship with the dependent variable.

3.4 Unit Root Test.

The null hypothesis of this test is the process of unit root vs alternative hypothesis of the process has no unit root.

Table 1 : Results of Augmented Dickey-Fuller (ADF) Test

Variables	ADF Test	Test Stat	1% CV	5% CV
<i>ln GDP</i>	<i>At Level</i>	-1.8554	-3.5924	2.9246
	<i>At 1st Difference</i>	-5.4667	-3.5966	2.9331
<i>ln EX</i>	<i>At Level</i>	-2.0011	-3.5924	2.9314
	<i>At 1st Difference</i>	-5.3061	-3.5966	2.9331
<i>ln IM</i>	<i>At Level</i>	-2.0707	-3.5924	2.2931
	<i>At 1st Difference</i>	-4.6083	-3.5966	2.9331

In Table 1, ADF (Dickey,1979) tested results of variables of $\ln GDP$, $\ln EX$ and $\ln IM$. The results revealed that all variables contain the unit root at level because their test statistics is much lower than all critical value at 1% as well at 5% level of significance. Further, results revealed that variables are free from the unit root at first differenced because their test statistics lower than the critical value at 1% as well at 5% level of significant. So, variables transformed to stationary at first difference.

3.5 Johansen Cointegration Test

Table 2 indicated the tested results of Johansen's co-integration test (Johansen, 1988) which has been employed to check the relationship of the 3 variables namely $\ln GDP$, $\ln EX$ and $\ln IM$. The Maximum Eigenvalue test has to exceed the 5% significance which concluded that long-term relationship established for the 3 tested variables.

Table 2 : Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized		Max-Eigen	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**

None *	0.515296	29.69291	21.13162	0.0025
At most 1 *	0.295434	14.35708	14.2646	0.0483
At most 2	0.024711	1.025871	3.841466	0.3111

Max-eigenvalue test indicates 2 cointegrating eqn(s) at the 0.05 level
 * denotes rejection of the hypothesis at the 0.05 level
 **MacKinnon-Haug-Michelis (1999) p-values

Based on Johansen Cointegration Test, we are used P=0.05 (5%) level of significant in the test. We reject the null hypothesis if the p-value is smaller than 0.05.

H_0 : None

To test the null hypothesis of none of co-integration, the p-value is 0.0025 which is smaller than 0.05. So, we can reject the null hypothesis at 5% level of significant and conclude that there are no cointegration equations.

H_0 : At Most 1

To test the level of the null hypothesis of at most 1 cointegration, the p-value is 0.0483 which is bigger than 0.05. So, we cannot reject the null hypothesis at 5% level of significant and conclude that there are cointegration equations. From the result above, we can say that there are cointegration equations at the level of 0.05.

3.6 Granger Causality

Granger causality is a statistical concept of causality or determining whether one-time series is useful for another and it can be used to know the direction and also the relationship between long run and short run. Hence, we can run with Granger causality method. The purpose we choose Granger causality test because as per our model shows us that we have long run relationship with error term included. Other than that, it could show the short run relationship as well. However, the test result has not included error term but it only show a short run relationship.

Results of Granger Causality Test

Table 3 : Results of Granger Causality Test among variables under investigation

Null Hypothesis:	Obs	F-Statistic	Prob.
LNEX does not Granger Cause LNGDP	42	1.44107	0.2496
LNGDP does not Granger Cause LNEX		3.34081	0.0464
LNIM does not Granger Cause LNGDP	42	1.35640	0.2701
LNGDP does not Granger Cause LNIM		3.40301	0.044
LNIM does not Granger Cause LNEX	42	0.53945	0.5876
LNEX does not Granger Cause LNIM		2.74278	0.0775

According to table 3, there is no causal relationship from the growth of export to GDP. On the

other hand, there is a unidirectional causal relationship from GDP growth to export growth. As Granger Causality results reveal that export will not lead to economic growth, but the prosperity of the Malaysia economy will impact on the export growth. This relationship is growth drive export which a change in GDP of Malaysia will lead to a change in its export expansions.

4. Conclusion

In this study, our attempt has been made to an investigation on the export-led growth (ELG) hypothesis in Malaysia. ADF test has been used to check the unit root within data. This step is important before we can proceed to test on cointegration using Johansen's cointegration technique to explore cointegration among the variables of GDP, EX and IM. Johansen's cointegration test revealed that variables under investigation contain 1 cointegration equation at 5% critical level which indicate that the cointegration and long run relationship among variables. We further testing the causality relationship using Granger causality method. The result revealed that GDP and the export, GDP and the import; they are a unidirectional causal relationship which economic growth led export and import growth. This results highlighted the importance of economic stability and continuous growth for Malaysia to further improve the export and attract more foreign and domestic investment. A stable and sustainable economy in Malaysia may drive the export growth substantially based on our empirical study.

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