Does international trade lead industrial production or the other way around ? evidence from Malaysia

Ikram, Ahmad and Masih, Mansur

INCEIF, Malaysia, Business School, Universiti Kuala Lumpur, Kuala Lumpur, Malaysia

30 November 2018

Does international trade lead industrial production or the other way around ? evidence from Malaysia

Ahmad Ikram[1] and Mansur Masih[2]

Abstract

The focus of the paper is to discover a relationship between industrial production and international trade. This study is important as the result will help the policymakers draw the appropriate policies that affect these two aspects of the economy. The standard time series techniques are employed and Malaysia is used as a case study. We have reviewed a number of studies that analyze some other open East Asian countries such as, South Korea and Taiwan and we found that the relationship between the two variables in those countries is unidirectional from trade to industrial production, in the sense that trade openness tends to increase industrial production through technological transfer. In the case of Malaysia as well, the key empirical finding of this study is that international trade is driving the industrial production like many other East Asian open economies. The results are plausible and contain strong policy implications.

Keywords: industrial production, trade balance, productivity, economic growth, Malaysia

---

[1] INCEIF, Lorong Universiti A, 59100 Kuala Lumpur, Malaysia.

2 **Corresponding author**, Senior Professor, UniKL Business School, 50300, Kuala Lumpur, Malaysia.

Email: mansurmasih@unikl.edu.my

Introduction

Since its formation in 1963, the Malaysian economy has depended traditionally on its natural resources, particularly rubber and tin. The government's direct involvement diversifies the country's economy from a commodity-oriented to an industry-based economy. Economic liberalization measures have also been introduced across the board that helped improve competitiveness and productivity.

International trade for instance has played an important role in bringing Malaysia to the global market and instills competitiveness to Malaysian productions. In 2016 alone, Malaysia's total trade amounting to RM1.485 trillion, a 1.5 per cent increase from the previous year, with a trade surplus as much as RM87.27 billion. This marks the 19th consecutive year of trade surplus since 1998. This remarkable performance of trade has motivated us to explore further the growth factor of international trade in Malaysia.

Based on a review of previous studies, we identify a few determinants of trade growth of a country. However, due to many limitations, this study will cover only one factor of which we assume having a relationship with trade growth in Malaysia, and that is industrial production. The reason for the choice of this factor is due to very limited studies on this subject.

Our objective in this study is to uncover the relationship between industrial production and international trade in Malaysia, as well as to compare our result against the empirical evidences in other previous studies. This study is important in the sense that to help Malaysian policymakers in making decision based on empirical evidences rather than merely intuition in coming up with appropriate policies to support trade growth.

This paper is divided into seven parts, in which the first part will highlight the objective of this study, the second part will present some review on previous literature related to our subject, the third part gives the readers some overview on the latest performance of trade and industrial productivity in Malaysia, the fourth part will cover the theoretical underpinnings of our subject, the fifth part will highlight the details of our data and methodology with which we use to conduct this analysis, the sixth part will present our empirical results from Granger-causality test done to our data, and in the seventh part, we will conclude this paper with the summary of our results and some policy implications for the Malaysian policymakers.

1.0 Objective of the study

This study is attempting to find answers to the below questions:

- What is the relationship between industrial production and international trade?
- What is the policy implication for the Malaysian government on industrial production and international trade?

2.0 Literature Review

Based on our research, there are not many studies done on this particular subject. Previous studies have been surrounding mostly on the relationship and impact of other economic indicators such as oil price, foreign direct investment and exchange rate towards domestic industrial production and trade balance. However, we found several studies that have some close relations with our subject that cover on relationship between industrial development, international trade and economic growth. For instance, M Kniivilä has written on the role of industrial development for economic growth and poverty reduction by analysing industrial and trade policy development in some selected countries. According to this study, international technology diffusion is essential for productivity growth, but often developing countries have limited access to technological frontier. International economic relations, especially international trade are important channels of technology transfer and increased productivity growth. In addition, trade openness can also attract foreign investment which is likely to increase productivity as domestic companies are facing external competition (M Kniivilä, 2007). Another study has also highlighted that the rapid economic growth of South Korea and Taiwan was very much contributed by the policy shifting from import substitution to export orientation. This policy shifting has allowed the two countries to direct attention to more sophisticated export items. This has enabled productivity to rise, and increased innovative ability and adaptation of technological advance which promotes more production growth (World Bank, 2004). M Kniivilä further concluded that all countries analysed have, at some point in time, carried out selective industrial policies, by which they have aimed to change the sectoral structure of production towards sectors believed to offer greater prospects for faster productivity growth (M Kniivilä, 2007).

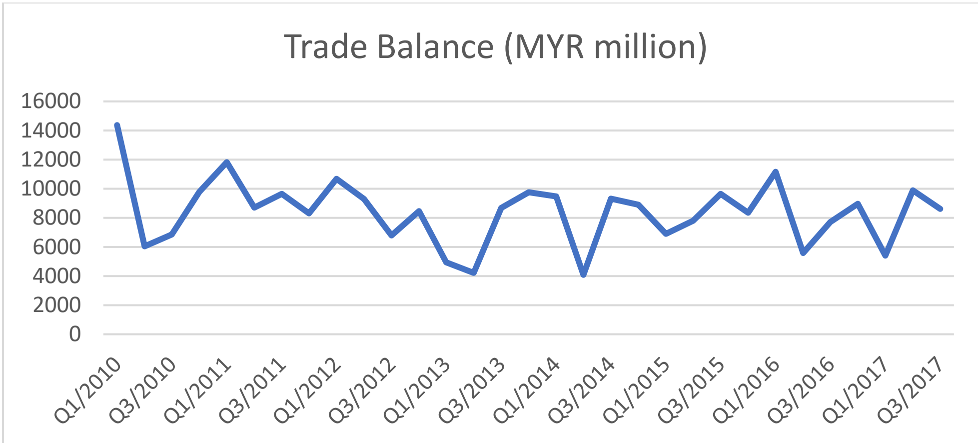
Another study by (Choudhri, E.U. and Hakura, D.S., 2000) has attempted to discover the relationship between international trade and productivity growth by exploring sectoral effects across industry in developing countries. Their finding is interesting in the sense that international trade affects various sectors differently depending on the technological sophistication of the sectors. For instance, in low-growth (traditional) manufacturing sectors, increased international trade has little or no effect on productivity growth. For medium-growth sectors, however, greater import competition is found to have a significant growth-enhancing effect. There is also some evidence that export-expansion in high-growth sectors leads to an increase in productivity growth.

3.0 Overview of Trade and Productivity Performance of Malaysia

Trade Performance

The main trade partners to Malaysia include ASEAN countries, China, the United States of America (USA), Hong Kong SAR, Japan, the European Union (EU) and Taiwan. The main sectors for export include manufactured goods, mining goods and agriculture goods. As for imports, the main sectors include intermediate goods, capital goods and consumption goods. Malaysian total trade for the first ten months of 2017 amounted to RM1.465 trillion, grew by 21.5% compared with the same period of 2016. Exports totalled RM772.66 billion, an increase of 21.1% while imports stood at RM692.51 billion, rose by 21.9%. Trade surplus of RM80.15 billion was recorded, higher by 14.4% compared to the corresponding period of 2016. Malaysia is reported to experience a consistent trade surplus since November 1997 despite a bit decreasing trend since 2010 as depicted by Graph 1 below.[1] In our opinion, this positive performance is mainly contributed by proactive actions by the Malaysian government in supporting trade growth.

[1] Trade Performance Report for The Month of October 2017 and the Period of January- October 2017, Malaysia External Trade Statistics



Graph 1: Quarterly Trade Balance account of Malaysia (2010-2017)

Productivity Performance

The industrial production index measures the change in output in Malaysian manufacturing, mining, construction, and electricity, gas and water. Output refers to the physical quantity of goods produced, unlike sales value, which combines quantity and price. The index covers the production of goods and power for domestic sales in Malaysia and for export. It excludes production in the agriculture, transportation, communications, trade, finance, and service industries, government, and imports. Report for Industrial Production Index in Malaysia is published monthly by the Department of Statistics. According to the latest report as of October 2017, the manufacturing sector output grew moderately by 4.2% in October 2017 after recording a growth of 5.7% in September 2017. The major sub-sectors which contributed to the increase in October 2017 were: electrical and electronic products (5.9%), petroleum, chemical, rubber and plastic products (2.1%) and food, beverages and tobacco products (7.0%). The mining sector output increase by 0.8% in October 2017 (September 2017: 2.1%). The growth in October 2017 was driven by an increase of 1.4% in Natural Gas Index and 0.3% in Crude Oil Index. The electricity sector output increase by 4.6% in October 2017 on yearly basis.[2]

4.0 Theoretical Underpinnings

Industrial production and international trade have always been an important aspect of an economy as they contribute largely to the economic growth of a country and the well-being of its citizens.

[2] Report of Industrial Production Index for October 2017, Department of Statistics Malaysia

This may possibly be explained by the fact that the increasing level of production requires higher capacity utilization which subsequently bring to the creation of more jobs in the economy. Higher supply of jobs will then increase the minimum wages for labors. As for trade, it allows a country to expand its market for both goods and services that otherwise may not have been available to it.

International trade also allows a country to specialize in sectors that they have the comparative advantage, so that they can maximize the utilization of resources to produce goods and services more efficiently, and thus gaining competitiveness in the global market. Trade balance account has been considered as a measure of trade growth of an economy. A trade surplus account indicates that a country exports more than it imports, and thus bringing more revenue to the country. A trade surplus account is not possible without a certain level of productivity.

The aim of this study is to find the relationship between industrial production and international trade in Malaysia. Based on our research, we found a number of empirical evidences of a unidirectional relationship from trade to industrial production growth. According to those studies, trade liberalization policy tends to bring the economy towards higher industrial production growth through technological transfer with the trade partners countries. In our opinion, this finding is logical in the sense that, developing countries like South Korea and Taiwan in the 1960s and 1970s (M Kniivilä, 2007) are usually trading with more advanced countries like the United States and United Kingdom which allows the transfer of technological advance from those countries to promote better quantity and quality of production.

Our key result in this study indicates that, there is a significant relationship from trade to industrial production. According to our VDC empirical result (Table 9, Table 10, Table 11), a shock on Malaysian trade tends to have a considerable impact on Malaysian industrial production. This is what is expected in an open economy like Malaysia.

5.0 Data and Methodology

Data

This study is using monthly data samples for eight years starting from January 2010 with 94 observations. There are 5 variables used in this study; two variables are our focused variables namely; Industrial Production Index (IPI) as a proxy for industrial production and Trade Balance account as a proxy for international trade performance. Another three variables are used as control variables and those are; Real Effective Exchange Rate (REER), Brent Crude Oil Price and Consumer Price Index (CPI). Table 1 below are the details of the sources for data extraction.

Variables	**Sources**
Industrial Production Index (IPI)	Bank Negara Malaysia website
Real Effective Exchange Rate (RER)	Bank for International Settlements database
Brent Crude Oil Price (OIL)	Thomson Reuters
Consumer Price Index (CPI)	Bank Negara Malaysia website
Trade Balance Account (TRD)	Bank Negara Malaysia website

Table 1: Sources for data extraction

Methodology

In proceeding with the research, a few tests were done, and we decided to use the Granger-causality test for our analysis. Despite one of our variable being stationary at level form, we found three cointegration in our model based on Johansen test. This result has made it appropriate to use the Granger-causality test for this analysis. Below are the required tests in completing this study.

i) Unit Root Test: To test whether the data are stationary or non-stationary at both Level and Differenced forms. This test is done by using Augmented Dickey Fuller (ADF) test.
ii) Lag Order Selection: To determine the number of lag for our data.
iii) Cointegration test: This test is done by using Engle-Granger and Johansen test to identify the long-run relationship among variables in our model.
iv) Long Run Structural Modelling (LRSM): To test the long run coefficient of statistical value of our variables against its theoretical expected value.
v) Vector Error Correction Model (VECM): To observe the lead-lag situation of the variables; which variables are endogenous, and which are exogenous.
vi) Variance Decomposition (VDC): To find the relative value of exogeneity and endogeneity of the variables.
vii) Impulse Response Function (IRF): Graphical visual of VDC by way of tracing variables response towards shock.

viii) Persistence Profile: To show how long it would take for the whole system to stabilize if all the variables are shocked by some external factors

6.0 Empirical Result

This section will report the findings of each test taken for the Granger-causality test in running the data.

i) Unit Root Test

Before embarking into Granger causality analysis, it is necessary for us to first determine the stationarity of data in the level form, I(0) as well as in the first-differenced, I(1) form. For this purpose, we employ the Augmented Dickey Fuller (ADF) test. The result from the test depends on each variable T-statistic value; if the T-stat is higher than the Critical Value, the variables are stationary and if the T-stat lower than the Critical Value, then the variable is considered as non-stationary. Both tests are performed on the extracted data and the results obtained are as Table 2 and Table 3 below.

Variables in log (level) form, I(0)

VARIABLES		VALUE	T-STAT	CRITICAL VALUE	REMARK
LIPI	AIC	184.1596	-6.2826	-3.4608	Stationary
	SBC	176.7810	-7.3420		
LRER	AIC	246.9919	-2.6471	-3.4608	Non-stationary
	SBC	242.0372			
LOIL	AIC	94.4052	-2.3450	-3.4608	Non-stationary
	SBC	89.4505			
LCPI	AIC	373.9587	-3.4051	-3.4608	Non-stationary
	SBC	368.2228	-3.8727		Stationary
LTRD	AIC	-63.6255	-3.2905	-3.4608	Non-stationary
	SBC	-73.5348			

Table 2: ADF test result for variables in level form

Variables in first-differenced form, I(1)

VARIABLES		VALUE	T-STAT	CRITICAL VALUE	REMARK

DIPI	AIC	179.9690	-9.1662	-2.8947	Stationary
	SBC	171.3383			
DRER	AIC	241.7974	-6.5681	-2.8947	Stationary
	SBC	238.0985			
DOIL	AIC	91.1272	-5.3952	-2.8947	Stationary
	SBC	87.4284			
DCPI	AIC	366.5884	-5.7852	-2.8947	Stationary
	SBC	362.5172	-7.7164		
DTRD	AIC	-67.9162	-5.2116	-2.8947	Stationary
	SBC	-76.5469			

Table 3: ADF test result for variables in differenced form

ii) VAR Lag Order

Before proceeding with cointegration test, first we need to determine the order of the Vector Auto Regression (VAR), that is, the number of lags to be used. To determine the number of VAR order, we need to look at the highest number of AIC and SBC and we choose the respective corresponding order. As per Table 4 below, the result shows that AIC gives six (6) lag orders whereas SBC gives one (1) lag. Due to the different result given by the two, we are inclined to choose one (1) lag order as given by SBC which is the lower order to avoid over parameter in our model.

Lag Order	AIC	SBC
6	818.1212	
1		765.7544

Table 4: VAR Lag Order result

iii) Co-integration test

This study employs the Engle-Granger and Johansen multivariate cointegration approaches to test the existence of cointegration, i.e. long run relationship among the variables. The main difference between Engle-Granger and Johansen test is that, E-G can only test whether there exist any cointegration among variables, but it does not identify the number of cointegrating vectors. On the other hand, Johansen test solves the weakness of E-G by identifying the availability of cointegration in addition to identifying the number of cointegrating vector in the model. The respective Table 5 and Table 6 below show the result of our Engle Granger and Johansen test for cointegration. The existence of cointegration from these tests is determined from the T-statistic. If the T-statistic is higher than the Critical Value, it means the null hypothesis of 'no cointegration' is rejected, i.e. there is cointegration among variables. From the Johansen test, we noted there are three cointegration in our model.

Engle Granger Test				
	AIC	**SBC**	**T-Statistic**	**Critical Value**
ADF (3)	183.4623	178.5076	-6.5554	-4.5762

Table 5: Engle Granger cointegration test result

Johansen Test				
Maximal Eigenvalue				
Null	**Alternative**	**T-Statistic**	**95% Critical Value**	**90% Critical Value**
r = 0	r = 1	105.5019	37.8600	35.0400
r <= 1	r = 2	64.8135	31.7900	29.1300
r <= 2	r = 3	36.5398	25.4200	23.1000
Trace				
Null	**Alternative**	**T-Statistic**	**95% Critical Value**	**90% Critical Value**
r = 0	r >= 1	219.8808	87.1700	82.8800
r <=1	r >= 2	114.3789	63.0000	59.1600
r <=2	r >= 3	49.5654	42.3400	39.3400

Table 6: Johansen cointegration test result

iv) Long Run Structural Modelling (LRSM)

In this phase of our analysis, we will do the Long Run Structural Modelling to test the long run coefficient of statistical value of our variables against its theoretical expected value. In other words, we are trying to quantify the theoretical relationship among other variables. Cointegration that we find in the previous step indicates the long-run relationship among the variables. But it may not include the theoretically relevant coefficients. Using LRSM can help us to identify the theoretical relationship by imposing exact identifying and over identifying restrictions on the cointegrating vector.

In order to estimate theoretically meaningful long-run coefficients, we impose exactly identifying restriction "A5=1" on variable "LTRD" and over identifying restriction "A4=0" on variable "LCPI". After imposing these two restrictions, we find that all our variables are statistically significant. In addition, p-value of the Chi-Square is also evaluated to verify whether our restriction is correct, and we find that the restriction is correct as the p-value is higher than 5%. Table 7 below shows the result of our exact identifying and over identifying restrictions in LRSM.

VARIABLES	EXACT IDENTIFYING RESTRICTION	OVER IDENTIFYING RESTRICTION
LIPI	-25.9289 (8.1064)	-30.4176 (9.9169)
LRER	5.7657 (3.2276)	8.5665 (2.8586)
LOIL	-.62767 (.42408)	-.97911 (.42383)
LCPI	-19.3966 (14.8708)	0.00 (*NONE*)
LTRD	1.0000 (*NONE*)	1.0000 (*NONE*)
TREND	.13618 (.037102)	.11445 (.033094)
CHSQ (1)	None	1.4322 [.231]

Table 7: LRSM test result

v) Vector Error Correction Model (VECM)

In the next step, we employ the method of Vector Error Correction Model (VECM) to determine which of our variables are exogenous and endogenous. Exogenous variable is defined as a factor in a causal model whose value is independent from the states of other variables in the model. In contrast, endogenous variable is a factor in a causal model whose value is determined by the states of other variables in the model (Hendry, D.F. 1995, Pearl, Judea. 2000). In other words, exogenous variable is a leading variable while the endogenous is a following variable. From this test, the exogeneity or endogeneity of a variable is determined by the probability of T-ratio. If the probability is lower than 5% of Critical Value, the variable is considered as endogenous and vice versa for the exogenous. Table 8 below shows the result of our VECM test.

ecm1(-1)	Coefficient	Standard Error	T-ratio (Prob.)	C.V	Result
dLIPI	.038349	.0033160	11.5649 [.000]	5%	Endogenous
dLRER	-.5031E-3	.0015952	-.31541 [.753]	5%	Exogenous
dLOIL	-.0041831	.0087746	-.47673 [.635]	5%	Exogenous
dLCPI	-.6846E-3	.3762E-3	-1.8198 [.072]	5%	Exogenous
dLTRD	-.13586	.06117	-2.2207 [.029]	5%	Endogenous

Table 8: VECM test result

Our VECM equation is as below:

$$\Delta TRD_t = \alpha + \Delta TRD_{1t-1} + \Delta IPI_{1t-1} + \Delta RER_{1t-1} + \Delta OIL_{1t-1} + \Delta CPI_{1t-1} + \varepsilon_{t-1}$$

vi) Variance Decomposition Analysis

VECM test can only tell us which variable is exogenous and endogenous, but it does not identify the degree of exogeneity or endogeneity of a variable. In the next step of this analysis, we will use the Variance Decomposition (VDC) analysis to find the relative exogeneity and endogeneity of our variables.

VDC decomposes the variance of the forecast error of a variable in proportion attributable to a shock in each variable in the system. The relative exogeneity or endogeneity is determined by ranking the variables based on percentage of self-dependency of its own past shock. The most exogenous variable is predominantly explained by its own shock and least explained by other variables. Two methods of decomposing variance are used; orthogonalized and generalized VDC. The only difference is that orthogonalized VDC is biased to the first order of the variable in the computed VAR. To this method, ordering is crucial thus assumes that when one variable is shocked, others will be switched off. However, setting all other errors to zero may stipulate a misleading picture of the actual dynamic relationships between the variables. Generalized VDC to the contrary, drops the assumption thus ordering is not important. For this reason, we employ the Generalized VDC for this analysis.

Since our data is on monthly basis, the choice of horizon on yearly period would be the most appropriate to our opinion to represent the result. Table 9, Table 10 and Table 11 below show the result of the VDC based on horizon 12, 24 and 36 respectively.

Note: The number in the VDC table below is to be read in percentage.

	HORIZON	LIPI	LRER	LOIL	LCPI	LTRD	TOTAL	RANKING
LIPI	12	32.90%	0.09	2.05	0.25	64.72	100	5
LRER	12	0.48	88.37%	3.08	3.27	4.80	100	3
LOIL	12	4.81	3.51	91.46%	0.21	0.02	100	2
LCPI	12	2.59	3.75	0.54	92.91%	0.21	100	1
LTRD	12	14.28	4.15	0.02	0.00	81.55%	100	4

Table 9: VDC test result for horizon 12

	HORIZON	LIPI	LRER	LOIL	LCPI	LTRD	TOTAL	RANKING
LIPI	24	27.25%	0.06	1.67	0.25	70.77	100	5
LRER	24	0.49	88.36%	3.08	3.27	4.80	100	3
LOIL	24	4.77	3.52	91.49%	0.21	0.02	100	2
LCPI	24	2.64	3.76	0.55	92.84%	0.21	100	1
LTRD	24	14.50	4.14	0.02	0.00	81.34%	100	4

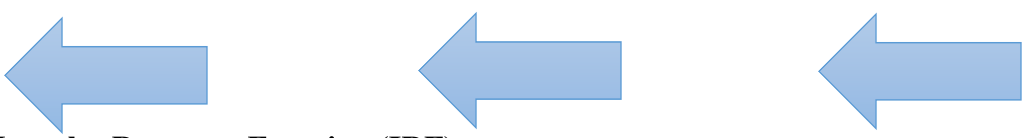
Table 10: VDC test result for horizon 24

	HORIZON	LIPI	LRER	LOIL	LCPI	LTRD	TOTAL	RANKING
LIPI	36	25.07%	0.05	1.52	0.25	73.12	100	5
LRER	36	0.49	88.35%	3.07	3.27	4.81	100	3
LOIL	36	4.76	3.52	91.50%	0.21	0.02	100	2
LCPI	36	2.66	3.76	0.55	92.81%	0.21	100	1
LTRD	36	14.58	4.14	0.01	0.00	81.26%	100	4

Table 11: VDC test result for horizon 36

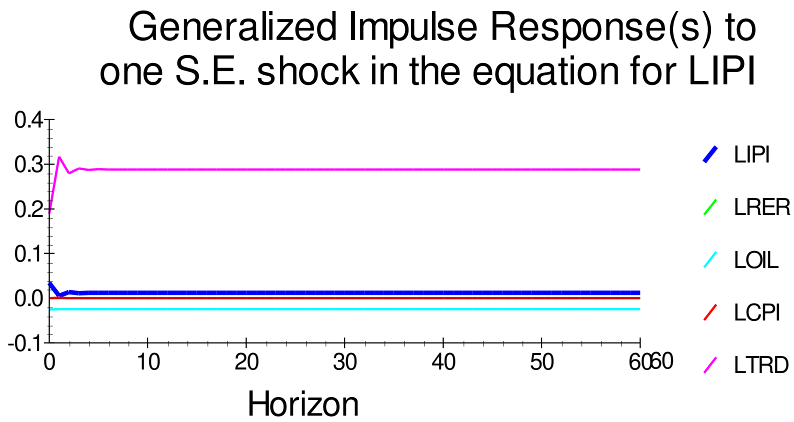
From the above VDC result, we can see that Consumer Price Index (LCPI) is the most exogenous variable, and the Oil Price (LOIL) come in second, followed by Real Effective Exchange Rate (LRER), Trade Balance (LTRD) and Industrial Production Index (LIPI). This result indicates that, LIPI will be the most affected variable if there is a shock on the LCPI as LIPI is the most endogenous. The ranking in the above VDC result is consistent throughout the three horizons chosen.

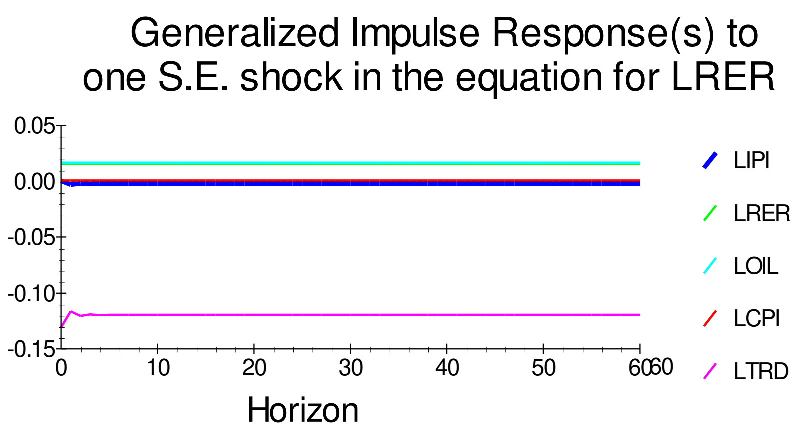
If we were to relate the relationship between the CPI as the most exogenous variable and the two of our focused variables in this study namely; IPI and TRD, we would say that the CPI will affect the TRD and the TRD will affect IPI. Hence TRD is driving IPI in an open economy like Malaysia.



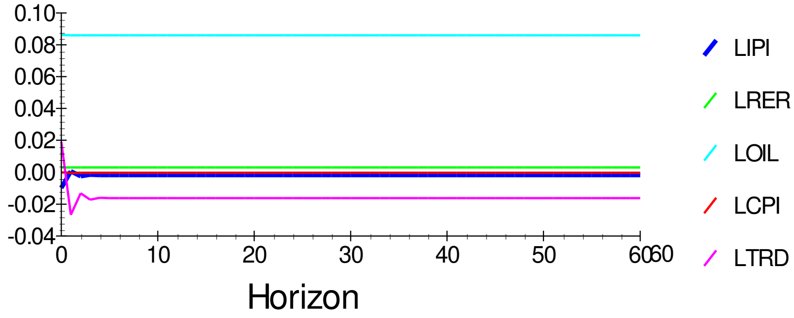
vii) Impulse Response Function (IRF)

Impulse Response Function (IRF) is graphical visual of VDC by way of tracing variables response towards shock. Below is the IRF graphs for each variable.

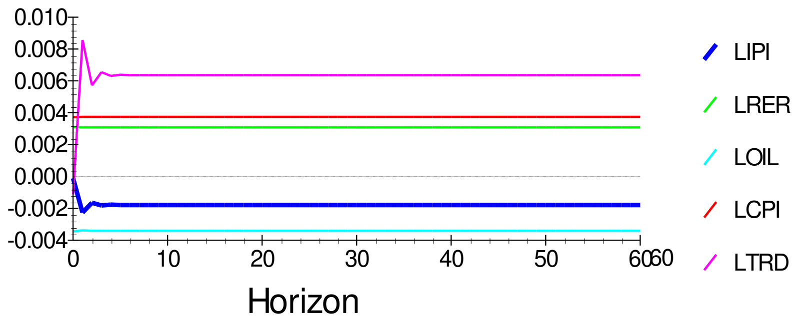

Generalized Impulse Response(s) to
one S.E. shock in the equation for LIPI
0.4
0.3
0.2
0.1
0.0
-0.1
0
10
20
30
40
50
60
60
Horizon
LIPI
LRER
LOIL
LCPI
LTRD


Generalized Impulse Response(s) to
one S.E. shock in the equation for LRER
0.05
0.00
-0.05
-0.10
-0.15
0
10
20
30
40
50
60
60
Horizon
LIPI
LRER
LOIL
LCPI
LTRD

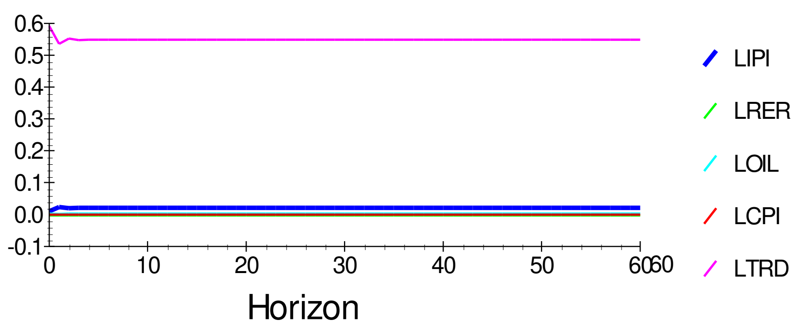
Generalized Impulse Response(s) to
one S.E. shock in the equation for LOIL



Generalized Impulse Response(s) to
one S.E. shock in the equation for LCPI

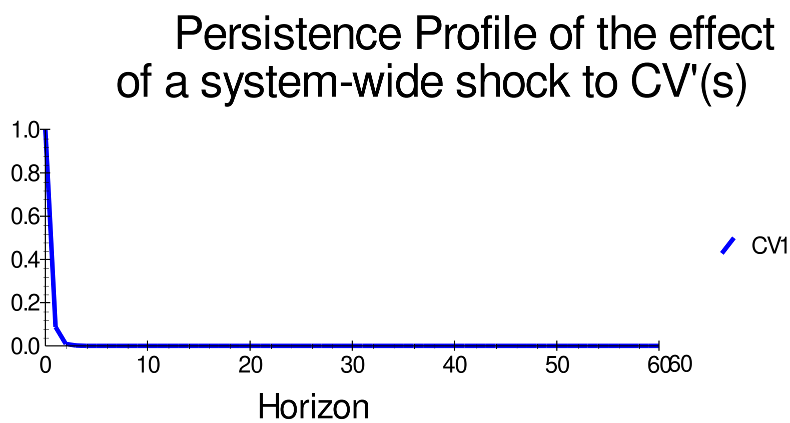


Generalized Impulse Response(s) to
one S.E. shock in the equation for LTRD



viii) Persistence Profile

Persistence profile shows how long it would take for the whole system to stabilize if all the variables are shocked by some external factors, for example, by global crisis.



7.0 Conclusion

This study has attempted to discover the relationship between industrial production and international trade in Malaysia, by comparing it against the existing empirical evidence in previous literature. Our empirical finding indicates that there exists a relationship which is from trade to industrial production in Malaysia like many other studies. This is what we expected since Malaysia is an open economy dependent on trade and hence trade would drive industrial production. The results are plausible and have strong policy implications for open economies like Malaysia.

References

Choudhri, E.U. and Hakura, D.S., (2000), International trade and productivity growth: Exploring the sectoral effects for developing countries. IMF Staff Papers, 47(1), 30-53.

Engle, R. F., and Granger, C. W. (1987). Cointegration and error-correction representation, estimation, and testing. Econometrica, 55(2), 251–276.

Johansen, S. and Juselius, K. (1990). Maximum likelihood estimation and inference on cointegration with applications to the demand for money. Oxford Bulletin of Economics and statistics*, 52*(2), 169-210.

Kniivilä, M., (2007), Industrial development and economic growth: Implications for poverty reduction and income inequality. Industrial development for the 21st century: Sustainable development perspectives, 1(3), 295-333.

Masih M., Al-Elg A. and Madani, H. (2009) Causality between financial development and economic growth: an application of vector error correction and variance decomposition methods to Saudi Arabia. Applied Economics, 41(13),1691–1699.

Pesaran, M.H. and Y. Shin (2002). Long Run Structural Modeling. Econometric Reviews, 21(1), 49-87.

Qiao, Yu (1998), Capital investment, international trade and economic growth in cHina: Evidence in in the 1980 -1090s, China Economic Review, 9(1),73 -84

Thompson, H. (1999), Production and the trade balance in a small open economy. Journal of Economic Integration, 14(3), 432-441.

Ulaşan, B. (2012) : Openness to international trade and economic growth: A cross-country empirical investigation, Economics Discussion Papers, No. 2012-25, Kiel Institute for the World Economy (IfW), Kiel, Germany.

World Bank (2004), Republic of Korea: Four decades of equitable growth. A case study Scaling up poverty reduction: A global learning process and conference, Shanghai, May 25-27.