Impact of Exports and Imports on Economic Growth in Canada: Empirical Analysis Based on Causality

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Abstract

This paper investigates the relationship between exports, imports, and economic growth in Canada. In order to achieve this purpose, annual data for the periods between 1990 and 2015 was tested by using Johansen co-integration analysis of Vector Auto Regression Model and the Granger-Causality tests. According to the result of the analysis, it was determined that there is no relationship between exports, imports and economic growth in Canada. On the other hand, we found that there is a strong evidence of bidirectional causality from imports to economic growth and from exports to economic growth. These results provide evidence that exports and imports, thus, are seen as the source of economic growth in Canada.

KEYWORDS: ***Export, Import, Economic Growth, Canada, Cointegration, VAR and Causality.***

I. Introduction :

The nexus between exports, imports and economic growth has long been a subject of much interest and controversy in trade literature. The reason is simple, the main goal of almost every nation is to increase GDP and improve the quality of life for their citizens. Canada is the world's tenth largest economy in 2014 with a gross domestic product of $ 1,887 billion. The Canadian economy is strongly linked to the US economy, due to geographic proximity and commercial treaties. In 2014 Canada exported $448B, making it the 11th largest exporter in the world. During the last five years the exports of Canada have increased at an annualized rate of 8.4%, from $298B in 2009 to $448B in 2014. The most recent exports are led by Crude Petroleum which represents 19.4% of the total exports of Canada, followed by Cars, which account for 10.1%. In 2014 Canada imported $440B, making it the 12th largest importer in the world. During the last five years the imports of Canada have increased at an annualized rate of 7.8%, from $302B in 2009 to $440B in 2014. The most recent imports are led by Cars which represent 6.11% of the total imports of Canada, followed by Crude Petroleum, which account for 4.77%. The aim of this paper, therefore, is to econometrically investigate the direct linkages between trade and economic growth of Canada, through employing yearly data for the period 1985-2015. In particular, this work tries to empirically find an answer for the question of whether exports lead economic growth or imports lead economic growth or economic growth leads exports and imports to achieve this objective the paper is structured as follows. In section 2, we present the review literature concerning the nexus between trade and economic growth. Secondly, we discuss the Methodology Model Specification and data used in this study in Section 3. Thirdly, Section 4 presents the empirical results as well as the analysis of the findings. Finally, Section 5 is dedicated to our conclusion.

II. Literature Survey

Many research works exist that examines the causal interaction of export, import and economic growth.

Iscan, Talan (1998) analyzed the effect of trade openness on total factor productivity growth for Mexican manufacturing industries for the period 1970 to 1990. The results of the GMM estimations showed that trade have positively affected on productivity growth.

Francisco and Ramos (2001) investigated the Granger-causality between exports, imports and economic growth in Portugal over the period 1865-1998. The empirical results of the study didn't confirm a unidirectional causality between the variables considered. There is a feedback effect between exports-output growth and import-output growth.

Bouoiyour, Jamal (2003) involved cointegration and Granger-causality tests to examine the relationship between trade and economic growth in Morocco over the period 1960-2000 using the VEC model. The empirical results of the study indicate that both exports and imports enter with positive signs in the cointegration equation. Also the results show that imports and exports Granger caused GDP and imports Granger caused exports.

Sarkar (2005) has found no meaningful relationship between the per capita real GDP and trade, by employing ARDL Approach to Co-integration on two Asian countries, India and Korea.

Mamoon and Mursed (2006) used data of different countries which have differences in per capita income by employing instrumental technique; their study examined the importance of institutions, trade policies relevant to economic growth. However findings of their study showed that openness measures have insignificant impact on growth.

Nath and Mamun (2006) investigated the causality between trade, investment and growth through Vector Auto regression (VAR) framework for the period 1971-2000 in Bangladesh. They presented that trade openness has promoted investment in Bangladesh. Although study suggested that growth causes trade but this study found little evidenced that trade affecting economic growth in Bangladesh.

Fullerton, Thomas M., Jr. Kababie and Boehmer, Charles R. (2012) investigated the nexus between exports, imports and economic growth in Mexico for the period 1980 – 2007**,** by using causality test and vector error correction methods, show that imports play a more critical role than exports do for economic growth in Mexico.

Mayasa Mkubwa Hamad & Burhan Ahmad Mtengwa & Stabua Abdul Babiker (2014) analyze the effect of trade liberalization on economic growth in Tanzania. The empirical findings indicated that trade openness had a positive and significant effect on economic growth in Tanzania

Andrews (2015) examined the relationship between export, import and GDP for Liberia, using historical data from 1970 to 2011. The study confirmed the existence of bidirectional causation between GDP and imports and uni-directional causation between exports and GDP and exports and imports. The results showed that Liberia is not driven by exports alone but rather a mixture of exports and imports, with the latter having a long-run impact.

Saaed and Hussain (2015) found unidirectional causality between exports and imports and between exports and economic growth in Tunisia for the period from 1977 to 2012. According to them growth in Tunisia was propelled by a growth -led import strategy. Imports are thus seen as the source of economic growth in Tunisia.

Bader S.S. Hamdan (2016) analyzed the effect of exports and imports on economic growth in the Arab countries during the period 1995 to 2013. The study used panel data approach in 17 countries: (Jordan, United Arab Emirates, Bahrain, Tunisia, Algeria, Saudi Arabia, Sudan, Oman, Qatar, Kuwait, Lebanon, Egypt, Djibouti, Mauritania, Morocco, Yemen and Palestine). The outcome indicates that exports and imports have positive effect of economic growth.

Masoud Albiman Md and Suleiman NN (2016) investigated the nexus between exports, imports and economic growth in Malaysia, using annual data for the period 1967- 2010. Cointegration analysis, VAR and Granger causality tests were employed in the empirical analysis. The results show that there is a causal relationship from exports to economic growth and from exports to imports.

III. Data and Methodology

Our investigation starts by studying the integration properties of the data, conducting a systems cointegrating analysis, and checking Granger causality tests. The data are annual Canada observations uttered and expressed by natural logarithms for the sample period running from 1990 to 2015. Data were sources from World Development Indicators (WDI), which includes logarithm of real GDP measure of economic growth, logarithm of exports of goods and services (Current US$) and logarithm of imports of goods and services (Current US$).

Early empirical formulations tried to capture the causal link between exports and GDP growth by incorporating exports into the aggregate production function (Balassa, 1978; Sheehey, 1992; Güngör Turan, 2014; Rummana Zaheer, 2014; Afaf Abdull J. Saaed, 2015). The augmented production function including both exports and imports is expressed as:

$$\boldsymbol{GDP_t = f(exports, imports)} \quad \textbf{(1)}$$

The function can also be represented in a log-linear econometric format thus:

$$\boldsymbol{\log(GDP)_t = \beta_0 + \beta_1 \log(exports)_t + \beta_2 \log(imports)_t + \varepsilon_t} \quad \textbf{(2)}$$

Where:

- β_0 : The constant term.
- β_1: coefficient of variable (exports)
- β_2: coefficient of variables (imports)
- t: The time trend.
- ε: The random error term assumed to be normally, identically and independently distributed.

The empirical methodology used in this study is in two stages and is to determine the degree of integration of each variable. In the econometric literature several statistical tests are used to determine the degree of integration of a variable. The test that will be used as part of this study is testing Augmented Dickey-Fuller (ADF).

Once the order of integration of the known series is determinate, the next step is to review the possible presence of cointegration relationships that can long exist between the variables. This analysis will be following the cointegration test procedure of Johansen (1988) more effective than the two-step strategy of Engle and Granger (1987) when the sample is small and the high number of variables (before the cointegration test, we look for the number of delays from the optimum choice criterion of use SC). If there are cointegrating relationships we will use the VECM model, if no one applies the VAR model. Finally, we apply Granger causality test.

The general form of ADF test is estimated by the following regression:

$$\Delta \mathbf{Y_1} = \boldsymbol{a} + \boldsymbol{\beta}\mathbf{Y}_{t-1} + \sum_{i=1}^{n} \boldsymbol{\beta_1}\, \Delta\mathbf{Y}_i + \boldsymbol{\varepsilon}_t \quad (3)$$

The VAR-based cointegration test using the methodology developed in Johansen (1991, 1995) is described below:

Consider a VAR of order p

$$Y_t = \mu + \Delta_t \mathbf{Y}_{t-1} + - - - - - - - + \Delta_p \mathbf{Y}_{t-\mathbf{p}} + \boldsymbol{\varepsilon}_t \quad (4)$$

If the economic variables are not cointegrated, we can proceed to use the Vector Auto-regression (VAR) representation. This VAR can be rewritten as follows:

$$\Delta \mathbf{Y}_t = \mu + \eta_{Yt-1} + \sum_{i=1}^{p-1} \tau_1\, \Delta\mathbf{Y}_{t-1} + \boldsymbol{\varepsilon}_t \quad (5)$$

In the absence of cointegration, the unrestricted VAR in first difference is estimated, which takes the following form:

$$\Delta \mathbf{GDP}_t = \sum_{i=1}^{n} \beta_{1t}\, \Delta\mathbf{GDP}_{t-1} + \sum_{i=1}^{n} C_1\, \Delta e^{t-1} + \sum_{i=1}^{n} d_{1t}\, \Delta\mathbf{Imp}_{t-1} + \varepsilon_{2t} \quad (7)$$

$$\Delta e^t = \sum_{i=1}^{n} \beta_{3t}\, \Delta\mathbf{GDP}_{t-1} + \sum_{i=1}^{n} C_{3t}\, \Delta e^{t-1} + \sum_{i=1}^{n} d_{3t}\, \Delta\mathbf{Imp}_{t-1} + \varepsilon_{3t} \quad (8)$$

$$\Delta\, \mathbf{Im\ p}_t = \sum_{i=1}^{n} \beta_{3t}\, \Delta\mathbf{GDP}_{t-1} + \sum_{i=1}^{n} C_{3t}\, \Delta e^{t-1} + \sum_{i=1}^{n} d_{3t}\, \Delta\mathbf{Imp}_{t-1} + \varepsilon_{3t} \quad (9)$$

IV. Empirical Analysis

1. Test of Correlation

In order to determine how strong the relationship is between two variables, a formula must be followed to produce what is referred to as the coefficient value. The coefficient value can range between -1.00 and 1.00. If the coefficient value is in the negative range, then that means the relationship between the variables is negatively correlated, or as one value increases, the other decreases. If the value is in the positive range, then that means the relationship between the variables is positively correlated, or both values increase or decrease together. Let's look at the formula for conducting the Pearson correlation coefficient value.

$$r = \frac{N\sum XY - (\sum X)(\sum Y)}{\sqrt{[N\sum X^2 - (\sum X)^2][N\sum Y^2 - (\sum Y)^2]}} \quad (10)$$

Where:

- $N = Number\ of\ pairs\ of\ scores$
- $\sum XY = Sum\ of\ the\ products\ of\ paired\ scores$
- $\sum X = Sum\ of\ X\ scores$
- $\sum Y = Sum\ of\ Y\ scores$
- $\sum X^2 = Sum\ of\ squared\ X\ scores$
- $\sum Y^2 = Sum\ of\ squared\ Y\ scores$

Table 1: Pearson correlation coefficient value

	LOG(GDP)	LOG(EXPORTS)	LOG(IMPORTS)
LOG(GDP)	1	0.934647179834278	0.9699481014528807
LOG(EXPORTS)	0.934647179834278	1	0.988828116726709
LOG(IMPORTS)	0.9699481014528807	0.988828116726709	1

The results of the test of correlation show the relationship between the variables is positively correlated. According to the correlation matrix of the variables, it is found that the dependent variable (PIB) and the independent variable (exports) are positively correlated with a correlation coefficient equal to (0..934647179834278). Thus, if exports increase by 1%, gross domestic product (GDP) increases by 0.934647179834278%. Otherwise, the dependent variable (GDP) and the independent variable (imports) are positively correlated with a correlation coefficient equal to (0.9699481014528807). Thus, if imports increase by 1%, the gross domestic product (GDP) increases by 0.9699481014528807%.

2. **Test for unit root**

In order to evaluate the degree of integration of each variable, we use Augmented Dickey-Fuller (ADF) test. The results show that all the variables are not stationary in level, for the first difference we note that the variable log (PIB) is not stationary, if we pass to the second difference we remark that all variables becomes stationary. This forces us to go directly from verifying if there is a co-integration of the variables.

Table 2: Test for unit root of Log (GDP)

Test for unit root in level					
LOG(GDP)		Exogenous: Constant		Exogenous: Constant, Linear Trend	
Augmented Dickey-Fuller test statistic		t-Statistic	Prob.*	t-Statistic	Prob.*
		-0.443071	0.8867	-1.533221	0.7901
Test critical values:	1% level	-3.724070		-4.374307	
	5% level	-2.986225		-3.603202	
	10% level	-2.632604		-3.238054	
Test for unit root in first difference					
LOG(GDP)		Exogenous: Constant		Exogenous: Constant, Linear Trend	
Augmented Dickey-Fuller test statistic		t-Statistic	Prob.*	t-Statistic	Prob.*
		-2.911310	0.0588	-2.738967	0.2312
Test critical values:	1% level	-3.737853		-4.394309	
	5% level	-2.991878		-3.612199	
	10% level	-2.635542		-3.243079	
Test for unit root in second difference					
LOG(GDP)		Exogenous: Constant		Exogenous: Constant, Linear Trend	
Augmented Dickey-Fuller test statistic		t-Statistic	Prob.*	t-Statistic	Prob.*
		-5.230467	0.0004	-5.653833	0.0008
Test critical values:	1% level	-3.769597		-4.440739	
	5% level	-3.004861		-3.632896	
	10% level	-2.642242		-3.254671	

Graph 1: Evolution of Log (GDP)

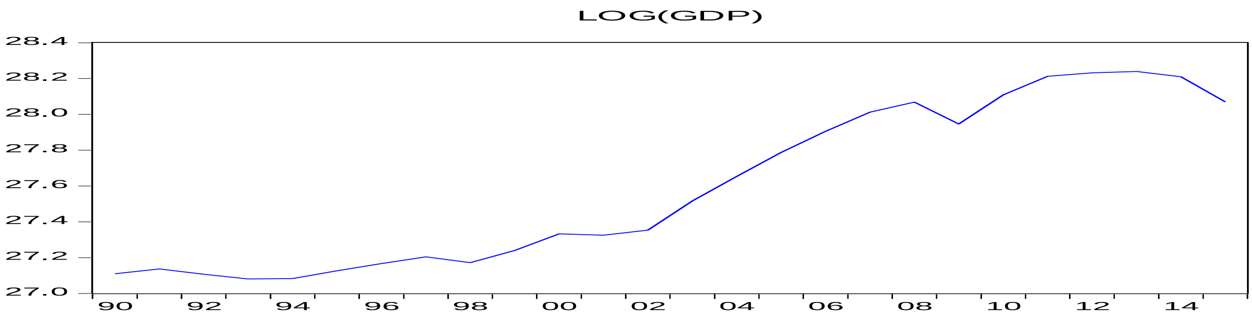


Table 3: Test for unit root of Log (Exports)

Test for unit root in level					
LOG(EXPORTS)		Exogenous: Constant		Exogenous: Constant, Linear Trend	
Augmented Dickey-Fuller test statistic		t-Statistic	Prob.*	t-Statistic	Prob.*
		-1.572330	0.4814	-1.510860	0.7984
Test critical values:	1% level	-3.724070		-4.374307	
	5% level	-2.986225		-3.603202	
	10% level	-2.632604		-3.238054	
Test for unit root in first difference					
LOG(EXPORTS)		Exogenous: Constant		Exogenous: Constant, Linear Trend	
Augmented Dickey-Fuller test statistic		t-Statistic	Prob.*	t-Statistic	Prob.*
		-4.584968	0.0014	-4.884366	0.0035
Test critical values:	1% level	-3.737853		-4.394309	
	5% level	-2.991878		-3.612199	
	10% level	-2.635542		-3.243079	
Test for unit root in second difference					
LOG(EXPORTS)		Exogenous: Constant		Exogenous: Constant, Linear Trend	
Augmented Dickey-Fuller test statistic		t-Statistic	Prob.*	t-Statistic	Prob.*
		-5.755822	0.0001	-5.714225	0.0007
Test critical values:	1% level	-3.769597		-4.440739	
	5% level	-3.004861		-3.632896	
	10% level	-2.642242		-3.254671	

Graph 2: Evolution of Log (Exports)

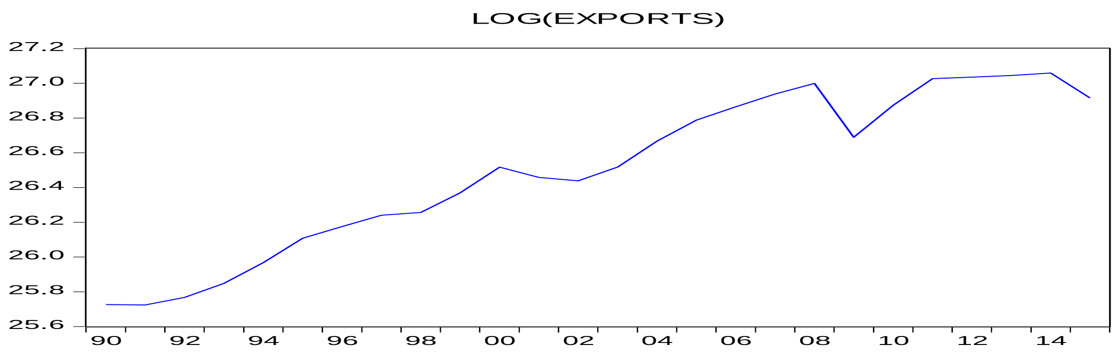
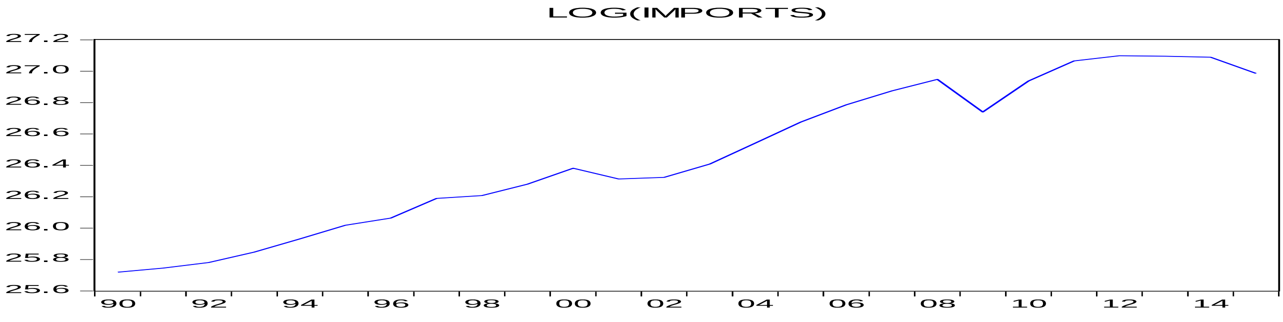


Table 3: Test for unit root of Log (Imports)

Test for unit root in level					
LOG(IMPORTS)		Exogenous: Constant		Exogenous: Constant, Linear Trend	
Augmented Dickey-Fuller test statistic		t-Statistic	Prob.*	t-Statistic	Prob.*
		-1.211660	0.6529	-1.907362	0.6208
Test critical values:	1% level	-3.724070		-4.374307	
	5% level	-2.986225		-3.603202	
	10% level	-2.632604		-3.238054	
Test for unit root in first difference					
LOG(IMPORTS)		Exogenous: Constant		Exogenous: Constant, Linear Trend	
Augmented Dickey-Fuller test statistic		t-Statistic	Prob.*	t-Statistic	Prob.*
		-4.562211	0.0015	-4.646242	0.0058
Test critical values:	1% level	-3.737853		-4.394309	
	5% level	-2.991878		-3.612199	
	10% level	-2.635542		-3.243079	
Test for unit root in second difference					
LOG(IMPORTS)		Exogenous: Constant		Exogenous: Constant, Linear Trend	
Augmented Dickey-Fuller test statistic		t-Statistic	Prob.*	t-Statistic	Prob.*
		-7.424952	0.0000	-7.366850	0.0000
Test critical values:	1% level	-3.752946		-4.416345	
	5% level	-2.998064		-3.622033	
	10% level	-2.638752		-3.248592	

Graph 3: Evolution of Log (Imports)



3. Lag order selection criteria

Most VAR models are estimated using symmetric lags, he same lag length is used for all variables in all equations of the model. This lag length is frequently selected using an explicit statistical criterion such as the AIC or SIC.

Table 5: VAR Lag Order Selection Criteria

VAR Lag Order Selection Criteria						
Endogenous variables: LOG(GDP) LOG(EXPORTS) LOG(IMPORTS)						
Exogenous variables: C						
Sample: 1990 2015						
Included observations: 22						
Lag	**LogL**	**LR**	**FPE**	**AIC**	**SC**	**HQ**
0	54.85222	NA	1.80e-06	-4.713839	-4.565060	-4.678791
1	122.5654	110.8034	8.76e-09	-10.05140	-9.456290	-9.911213
2	137.0293	19.72346*	5.64e-09*	-10.54812*	-9.506670*	-10.30279*
3	139.2499	2.422436	1.21e-08	-9.931807	-8.444022	-9.581330
4	143.8426	3.757691	2.47e-08	-9.531147	-7.597026	-9.075526
**** indicates lag order selected by the criterion***						
LR: sequential modified LR test statistic (each test at 5% level)						
FPE: Final prediction error						
AIC: Akaike information criterion						
SC: Schwarz information criterion						
HQ: Hannan-Quinn information criterion						

It is clear from Table 5 that LR, FPE, AIC, SC, HQ and HQ statistics are chosen lag 2 for each endogenous variable in their autoregressive and distributed lag structures in the estimable VAR model.

Therefore, lag of 2 is used for estimation purpose

4. Cointegration analysis and VAR estimation

Table 6: Cointegration Test

Sample (adjusted): 1993 2015				
Included observations: 23 after adjustments				
Trend assumption: Linear deterministic trend				
Series: LOG(GDP) LOG(EXPORTS) LOG(IMPORTS)				
Lags interval (in first differences): 1 to 2				
Unrestricted Cointegration Rank Test (Trace)				
Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None	0.499899	28.99692	29.79707	0.0616
At most 1	0.267479	13.05919	15.49471	0.1127
At most 2 *	0.226266	5.900130	3.841466	0.0151
Trace test indicates no cointegration at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values				
Unrestricted Cointegration Rank Test (Maximum Eigenvalue)				
Hypothesized		Max-Eigen	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None	0.499899	15.93773	21.13162	0.2285
At most 1	0.267479	7.159056	14.26460	0.4705
At most 2 *	0.226266	5.900130	3.841466	0.0151
Max-eigenvalue test indicates no cointegration at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values				
Unrestricted Cointegrating Coefficients (normalized by b'*S11*b=I):				
LOG(GDP)	LOG(EXPORTS)		LOG(IMPORTS)	
-1.621585	-28.04943		24.72003	
-1.786456	-20.62397		22.54630	
20.06459	33.66863		-49.63548	

Unrestricted Adjustment Coefficients (alpha):				
D(LOG(GDP))	0.023470	-0.024601	-0.006892	
D(LOG(EXPORTS))	0.055743	-0.018949	-0.009242	
D(LOG(IMPORTS))	0.046213	-0.018055	0.001107	
1 Cointegrating Equation(s):		Log likelihood		138.3230
Normalized cointegrating coefficients (standard error in parentheses)				
LOG(GDP)	LOG(EXPORTS)		LOG(IMPORTS)	
1.000000	17.29754		-15.24437	
Adjustment coefficients (standard error in parentheses)				
D(LOG(GDP))	-0.038059			
	(0.02302)			
D(LOG(EXPORTS))	-0.090392			
	(0.02909)			
D(LOG(IMPORTS))	-0.074939			
	(0.02427)			
2 Cointegrating Equation(s):		Log likelihood		141.9025
Normalized cointegrating coefficients (standard error in parentheses)				
LOG(GDP)	LOG(EXPORTS)		LOG(IMPORTS)	
1.000000	0.000000		-7.355620	
			(2.39928)	
0.000000	1.000000		-0.456062	
			(0.15228)	
Adjustment coefficients (standard error in parentheses)				
D(LOG(GDP))	0.005890		-0.150946	
	(0.03064)		(0.44208)	
D(LOG(EXPORTS))	-0.056540		-1.172751	
	(0.04165)		(0.60096)	
D(LOG(IMPORTS))	-0.042685		-0.923899	
	(0.03432)		(0.49520)	

It clear from the table 6 that there is no relationship of cointegration between exports, imports and Growth in Canada. That is mean that we have to use the Vector Auto-Regression estimation.

Also according to these test we find that exports have a negative effect on GDP however imports have a positive effect on GDP. But we need to check the significance of these variables by VAR method.

Table 7: Estimation of Vector Auto-Regression

Dependent Variable: LOG(GDP)				
Method: Least Squares (Gauss-Newton / Marquardt steps)				
Sample (adjusted): 1992 2015				
Included observations: 24 after adjustments				
	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	2.174422	0.499542	4.352834	0.0004
C(2)	-1.484777	0.569835	-2.605625	0.0185
C(3)	-1.096120	0.608369	-1.801736	0.0893
C(4)	0.723202	0.478942	1.510000	0.1494
C(5)	0.376588	0.766205	0.491498	0.6294
C(6)	0.197741	0.745982	0.265075	0.7941
C(7)	3.269939	1.687490	1.937753	0.0694
R-squared	**0.982129**	Mean dependent var	27.63160	
Adjusted R-squared	**0.975821**	S.D. dependent var	0.443667	
S.E. of regression	0.068988	Akaike info criterion	-2.271269	
Sum squared resid	0.080909	Schwarz criterion	-1.927670	
F-statistic	**155.7077**	Hannan-Quinn criter.	-2.180112	
Prob(F-statistic)	**0.000000**	**Durbin-Watson stat**	**1.827545**	

To check if exports and imports have effect on economic growth, C (1) must be significant, and the coefficient of C (1) should be negative for the VAR model to be significant. In our case C (1) is significant because the value of her probability is (0.0004), which is less than 5%, but the coefficient of C (1) is not negative. So, we can say that exports and imports have not any effect on economic in Canada.

5. Checking the quality of the model

To check the quality of our model and to ensure the robustness of our estimate, there is a set of tests and indicators that designates and affirms that our work is acceptable or not. Among these tests are: R-squared, Probability of Fisher-Statistic, Durbin-Watson test, Serial Correlation test and Heteroskedasticity test.

Table 8: Quality of the model

R-squared	**0.982129**	**Prob(F-statistic)**	**0.000000**
Adjusted R-squared	**0.975821**	**Durbin-Watson stat**	**1.827545**
Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	0.411037	**Prob. F(2,15)**	**0.6702**
Obs*R-squared	1.246978	**Prob. Chi-Square(2)**	**0.5361**
Heteroskedasticity Test: Breusch-Pagan-Godfrey			
F-statistic	1.088936	Prob. F(6,17)	0.4078
Obs*R-squared	6.663097	**Prob. Chi-Square(6)**	**0.3531**
Scaled explained SS	1.973864	**Prob. Chi-Square(6)**	**0.9221**

Diagnostic tests indicate that the overall specification adopted is satisfactory. The tests performed to detect the presence of Breusch-Pagan-Godfrey in the estimated equation did not reveal any problem of heteroskedasticity at the 5% threshold. The R-squared is greater than 60%, which agrees that our estimate is acceptable. Otherwise the probability of Fisher is less than 5%, which indicates that our model is well treated. Finally Durbin Watson is including between 1.6 and 2.4, which indicates that our model is acceptable.

6. Causality Tests

Table 9: Ganger Causality Tests

Pair-wise Granger Causality Tests			
Sample: 1990 2015			
Lags: 2			
Null Hypothesis:	Obs	F-Statistic	Prob.
LOG(EXPORTS) does not Granger Cause LOG(GDP)	24	5.35016	0.0144
LOG(GDP) does not Granger Cause LOG(EXPORTS)	24	1.64031	0.2202
LOG(IMPORTS) does not Granger Cause LOG(GDP)	24	3.57611	0.0481
LOG(GDP) does not Granger Cause LOG(IMPORTS)	24	1.83294	0.1871
LOG(IMPORTS) does not Granger Cause LOG(EXPORTS)	24	0.52465	0.6001
LOG(EXPORTS) does not Granger Cause LOG(IMPORTS)	24	1.16225	0.3340

The results of the Granger causality test are presented in Table 9 show that imports led to economic growth, and exports led to economic growth.

V. Conclusion

The aim of this study was to explain the nexus between exports, imports and economic growth of Canada during the period 1990-2015. The cointegration, VAR model and Granger's causality tests are applied to investigate the relationship between these three variables. The unit root properties of the data were examined using the Augmented Dickey Fuller test (ADF) after that the cointegration and causality tests were conducted. The result shows that there is no relationship between the three variables in Canada. On the other hand, we found that there is a strong evidence of bidirectional causality from imports to economic growth and from exports to economic growth. These results provide evidence that exports and imports, thus, are seen as the source of economic growth in Canada.

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