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Does Domestic Investment Produce Economic Growth in Canada: Empirical Analysis Based on Correlation, Cointegration and Causality

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Abstract

This paper investigates the relationship between domestic investment and economic growth in Canada. In order to achieve this purpose, annual data for the periods between 1990 and 2015 was tested by using Correlation analysis, Johansen co-integration analysis of Vector Error Correction Model and the Granger-Causality tests. According to the result of the analysis, it was determined that there is no relationship between the four variables in the long run term, however, there is a weak relationship between domestic investment and economic growth in the short run term. On the other hand, the results of the Granger Causality test show that there is no causal relationship between domestic investment and economic growth. The result provide that domestic investment affects economic growth on the short run term, however the domestic investment does not cause economic growth in Canada

Keywords: Domestic Investment, Economic Growth, Canada, Correlation, Cointegration, VECM and Causality.
JEL Classification: C13, E22.

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I. Introduction

Investment is considered the cornerstone of economic and social development as the primary motivation for growth through increased domestic product and provides the raw materials extra complement national savings and resources investable within each country. Respect of domestic investment at the level of the national economy, capital spending on new projects in the sectors of public utilities and infrastructure such as incision main and branch roads projects and extensions of water and sewerage connections and create urban plans and construction projects, housing and extensions of electricity and power generation, as well as social development in the areas of education, health and communication projects, projects as well to projects that relate to economic activity for the production of goods and services in the production and service sectors such as industry, agriculture, housing, health, education and tourism. 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. The latest value for Gross fixed capital formation (current US$) in Canada was $422,415,000,000 as of 2014. Over the past 54 years, the value for this indicator has fluctuated between $443,961,000,000 in 2012 and $8,631,470,000 in 1961. Also, Canadians prefer to invest locally. For example, 76% of their total investment portfolio (equities, bonds and mutual fund units) is invested in Canada. In particular, this work tries to empirically find an answer for the question of whether there is a nexus between domestic investment and economic growth in Canada, 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 and section 5 presents the empirical results as well as the analysis of the findings. Finally, Section 6 is dedicated to our conclusion.

II. Literature Review

Several empirical studies which investigated the relationship between domestic investment and economic growth found that, fixed capital formation determine the rate of future economic growth. These studies include: Blomstorm and al (1994) found that, capital formation does not cause economic growth, instead the causal direction flows from economic growth to capital formation. Ghali and Al-Mutawa (1999) investigated the causality relationship between gross fixed capital formation and economic growth using VAR. The results varied significantly across countries; for the case of Japan and UK there was feedback causality relationship, whilst in USA and France there was unidirectional causality from fixed investment to economic growth. However, for the case of Canada, Germany and Italy the economic growth rate caused fixed capital formation. Sumei Tang, E. A. Selvanathan and S. Selvanathan (2008) investigates the causal link between foreign direct investment (FDI), domestic investment and economic growth in China for the period 1988–2003 using a multivariate VAR system with error correction model (ECM). The results show that while there is a bi-directional causality between domestic investment and economic growth, there is only single-directional causality from FDI to domestic investment and to economic growth. Ghazali (2010) identified the causal relationship between private domestic investment and economic growth (GDP) in Pakistan over the period 1981 to 2008. He discovered that there is a bi-directional causality between private domestic investment and economic growth. Adhikary (2011) found that, capital formation has long run relationship with export and import in Bangladesh. On the other hand,

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the study found long run causality relationship flows from trade, capital formation and FDI to economic growth. In this way the study concluded that, capital formation has long run relationship and cause economic growth. Bakare (2011) studied the relationship between capital formation and growth rate with respect to Nigerian Economy using Harrod–Domar model. Using error correction mechanism, the study found out a positive long-run relationship between capital formation and economic growth in Nigeria Tan and Tang (2011) investigated the dynamic relationship between private domestic investment (PDI), the user cost of capital and economic growth in Malaysia over the period of 1970 to 2009. His result shows that PDI, the user cost of capital, and economic growth are cointegrated in Malaysia. The Granger causality test shows that there is a unidirectional causality running from PDI to economic growth and from PDI to the user cost of capital in the long run. Debi Prasad Bal, Devi Prasad Dash and Bibhudutta Subhasish (2016) examine the impact of capital formation on economic growth in India covering the period from 1970 to 2012.The error correction (ECM) model shows that the capital formation positively affects the economic growth in the short run. It is recommended that government increases the level of capital formation in order to achieve a higher level of economic growth.

III. Data, methodology and model specification:

1. The Data:

The analysis used in this study cover annual time series of 1990 to 2015 or 26 observations which should be sufficient to capture the short run and long run correlation between Export, Import, Fixed Formation Capital and economic growth in the model. The data set consists of observation for GDP, exports of goods and services, imports of goods and services and Fixed Formation Capital. All data set are taken from World Development Indicators 2016.

2. Methodology

We will use the most appropriate method which consists firstly of determining the degree of integration of each variable. If the variables are all integrated in level, we apply an estimate based on a linear regression. On the other hand, if the variables are all integrated into the first difference, our estimates are based on an estimate of the VAR model. When the variables are integrated in the first difference we will examine and determine the cointegration between the variables, if the cointegration test indicates the absence of cointegration relation, we will use the model VAR. If the cointegration test indicates the presence of a cointegration relation between the different variables studied, the model VECM will be used.

3. Model specification:

Early empirical formulations tried to capture the causal link between domestic investment and GDP growth by incorporating exports into the aggregate production function (Balassa, 1978; Masoud Albiman Md and Suleiman NN, 2016). The augmented production function including domestic investment, exports and imports is expressed as:

$$GDP_t = f(exports, imports, capital) \qquad (1)$$

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

$$\log(GDP)_t = \beta_0 + \beta_1 \log(exports)_t + \beta_2 \log(imports)_t + \beta_3 \log(capital)_t + \varepsilon_t \qquad (2)$$

Where:

- β_0 : The constant term.

Received:12 January 2018/Accepted:18 April 2018/Published:1 June 2018

- β_1: coefficient of variable (exports)
- β_2: coefficient of variables (imports)
- β_3: coefficient of variable (capital)
- t: The time trend.
- ε: The random error term assumed to be normally, identically and independently distributed.

IV. Empirical Analysis

A- Empirical Results

1. Statistic Descriptive

Table 1: Statistic Descriptive

	LOG(GDP)	LOG(EXPORTS)	LOG(IMPORTS)	LOG(CAPITAL)
Mean	27.59252	26.50076	26.46350	26.04641
Median	27.43552	26.51783	26.39529	25.82931
Maximum	28.23939	27.05952	27.09850	26.82789
Minimum	27.08140	25.72410	25.71952	25.40569
Std. Dev.	0.447394	0.449994	0.467829	0.530072
Skewness	0.239267	-0.374991	-0.086874	0.254517
Kurtosis	1.368956	1.862324	1.671351	1.382617
Jarque-Bera	3.130075	2.011511	1.945120	3.114630
Probability	0.209080	0.365768	0.378114	0.210701
Sum	717.4056	689.0197	688.0510	677.2065
Sum Sq. Dev.	5.004042	5.062369	5.471600	7.024409
Observations	26	26	26	26

2. The Correlation Test

Table 2: Pearson correlation coefficient value

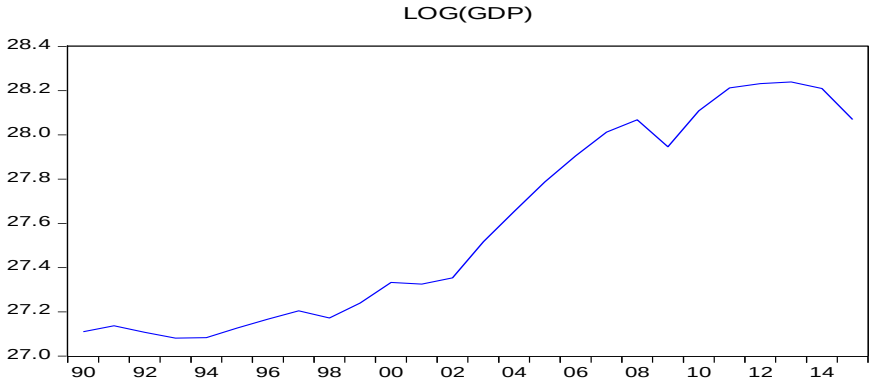
	LOG(GDP)	LOG(CAPITAL)	LOG(EXPORTS)	LOG(IMPORTS)
LOG(GDP)	1	0.99790	0.93464	0.96994
LOG(CAPITAL)	0.99790	1	0.92404	0.96276
LOG(EXPORTS)	0.93464	0.92404	1	0.98882
LOG(IMPORTS)	0.96994	0.96276	0.98882	1

Received:12 January 2018/Accepted:18 April 2018/Published:1 June 2018

3. Test for unit root

Table 3: 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	

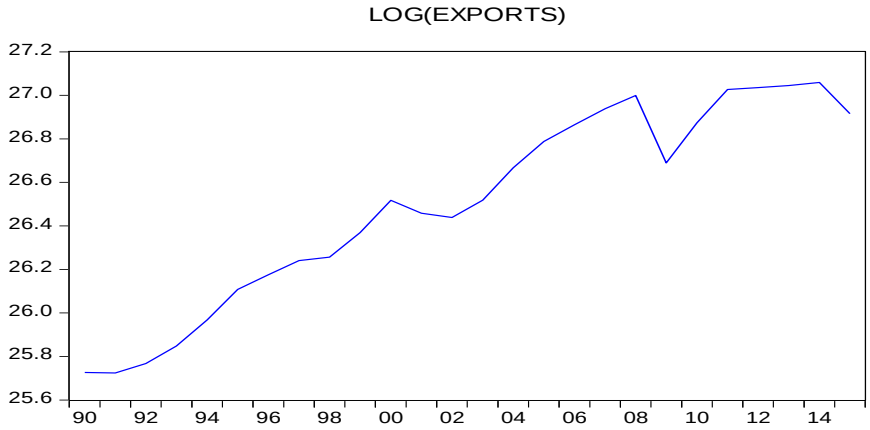


Graph 1: Evolution of Log (GDP)

Received:12 January 2018/Accepted:18 April 2018/Published:1 June 2018

Table 4: 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	



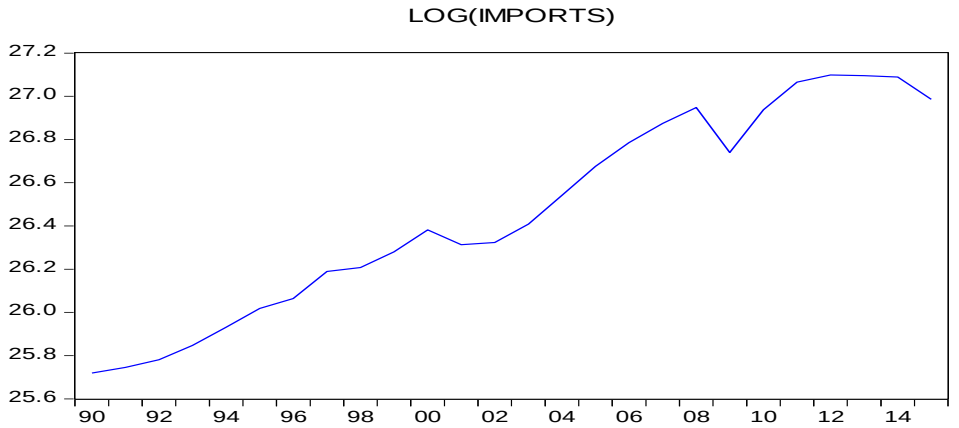
Graph 2: Evolution of Log (Exports)

Table 5: Test for unit root of Log (Imports)

Test for unit root in level

Received:12 January 2018/Accepted:18 April 2018/Published:1 June 2018

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	



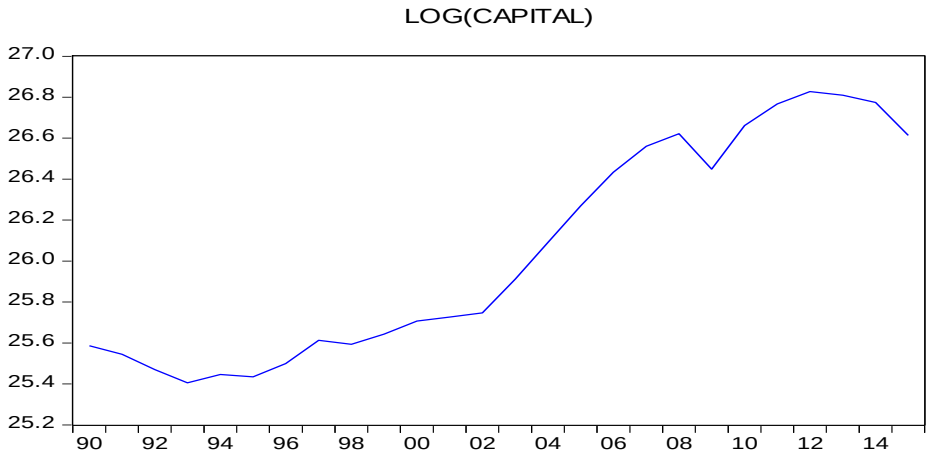
Graph 3: Evolution of Log (Imports)

Table 6: Test for unit root of Log (Domestic investment)

Test for unit root in level

Received:12 January 2018/Accepted:18 April 2018/Published:1 June 2018

LOG(DOMESTIC INVESTMENT)		Exogenous: Constant		Exogenous: Constant, Linear Trend	
Augmented Dickey-Fuller test statistic		t-Statistic	Prob.*	t-Statistic	Prob.*
		-0.253327	0.9188	-2.049736	0.5472
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(DOMESTIC INVESTMENT)		Exogenous: Constant		Exogenous: Constant, Linear Trend	
Augmented Dickey-Fuller test statistic		t-Statistic	Prob.*	t-Statistic	Prob.*
		-3.045024	0.0449	-2.813204	0.2063
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(DOMESTIC INVESTMENT)		Exogenous: Constant		Exogenous: Constant, Linear Trend	
Augmented Dickey-Fuller test statistic		t-Statistic	Prob.*	t-Statistic	Prob.*
		-6.827934	0.0000	-7.079465	0.0000
Test critical values:	1% level	-3.752946		-4.416345	
	5% level	-2.998064		-3.622033	
	10% level	-2.638752		-3.248592	



Graph 4: Evolution of Log (Domestic investment)

4. Lag order selection criteria

Table 7: VAR Lag Order Selection Criteria

Received:12 January 2018/Accepted:18 April 2018/Published:1 June 2018

VAR Lag Order Selection Criteria

Endogenous variables: LOG(GDP) LOG(EXPORTS) LOG(IMPORTS) LOG(CAPITAL)
Exogenous variables: C
Sample: 1990 2015
Included observations: 23

	LogL	LR	FPE	AIC	SC	HQ
Lag						
0	109.2926	NA	1.24e-09	-9.155882	-8.958405	-9.106217
1	190.5927	127.2523	4.36e-12	-14.83415	-13.84676	-14.58582
2	215.9462	30.86514*	2.24e-12*	-15.64750	-13.87020*	-15.20051*
3	231.9584	13.92367	3.43e-12	-15.64856*	-13.08136	-15.00292

*** 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

5. Cointegration analysis

Table 8: Cointegration Test

Sample (adjusted): 1993 2015
Included observations: 23 after adjustments
Trend assumption: Linear deterministic trend
Series: LOG(GDP) LOG(EXPORTS) LOG(IMPORTS) LOG(CAPITAL)
Lags interval (in first differences): 1 to 2
Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	Critical Value 0.05	Prob.**
None *	0.843710	76.42521	47.85613	0.0000
At most 1 *	0.576441	33.73619	29.79707	0.0167
At most 2	0.329718	13.97774	15.49471	0.0836
At most 3 *	0.187525	4.776421	3.841466	0.0288

Trace 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**
Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	Critical Value 0.05	Prob.**
None *	0.843710	42.68902	27.58434	0.0003

Received:12 January 2018/Accepted:18 April 2018/Published:1 June 2018

At most 1	0.576441	19.75845	21.13162	0.0769
At most 2	0.329718	9.201317	14.26460	0.2698
At most 3 *	0.187525	4.776421	3.841466	0.0288
Max-eigenvalue test indicates 1 cointegrating eqn(s) 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)	LOG(CAPITAL)	
-73.95615	-13.37471	-4.022867	73.93238	
35.15943	-27.23942	24.42383	-31.92980	
-27.91318	-43.14586	55.44234	9.765975	
-29.82258	5.480329	3.857455	16.50506	
Unrestricted Adjustment Coefficients (alpha):				
D(LOG(GDP))	0.006815	0.039573	-0.006709	0.011136
D(LOG(EXPORTS))	0.019024	0.063746	0.003671	0.003535
D(LOG(IMPORTS))	0.009968	0.052880	-0.005945	-0.000132
D(LOG(CAPITAL))	-0.009171	0.053436	-0.007208	0.006922
1 Cointegrating Equation(s):	Log likelihood		215.0903	
Normalized cointegrating coefficients (standard error in parentheses)				
LOG(GDP)	LOG(EXPORTS)	LOG(IMPORTS)	LOG(CAPITAL)	
1.000000	0.180846	0.054395	-0.999679	
	(0.08348)	(0.09779)	(0.03200)	

Received:12 January 2018/Accepted:18 April 2018/Published:1 June 2018

6. Estimation of VECM

a) Estimation of The Long Run Equation

Table 9: Estimation of Long Run Equation by Using Least Squares

Dependent Variable: D(LOG(GDP))				
Method: Least Squares (Gauss-Newton / Marquardt steps)				
Sample (adjusted): 1993 2015				
Included observations: 23 after adjustments				
	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	0.887376	1.045781	0.848529	0.4127
C(2)	-1.169103	0.387541	-3.016721	0.0107
C(3)	1.134698	0.948253	1.196620	0.2546
C(4)	-1.189003	0.620695	-1.915599	0.0795
C(5)	0.159053	0.711334	0.223598	0.8268
C(6)	0.136578	0.728304	0.187529	0.8544
C(7)	-1.964493	1.147575	-1.711864	0.1126
C(8)	-0.494156	1.070382	-0.461663	0.6526
C(9)	1.126319	0.652770	1.725446	0.1101
C(10)	1.383214	0.659001	2.098956	0.0577
C(11)	0.040730	0.024043	1.694052	0.1160

b) Estimation of The Short Run Equation

Table 10: Estimation of Short Run Equation by Using Wald Test

Wald Test:			
Equation: Untitled			
Test Statistic	Value	df	Probability
F-statistic	0.037093	(2, 12)	0.9637
Chi-square	0.074186	2	0.9636
Null Hypothesis: C(6)=C(5)=0			
Null Hypothesis Summary:			
Normalized Restriction (= 0)		Value	Std. Err.
C(6)		0.136578	0.728304
C(5)		0.159053	0.711334
Restrictions are linear in coefficients.			
Wald Test:			
Test Statistic	Value	df	Probability
F-statistic	1.546781	(2, 12)	0.2525
Chi-square	3.093561	2	0.2129
Null Hypothesis: C(8)=C(7)=0			
Null Hypothesis Summary:			
Normalized Restriction (= 0)		Value	Std. Err.

Received:12 January 2018/Accepted:18 April 2018/Published:1 June 2018

C(8)		-0.494156	1.070382
C(7)		-1.964493	1.147575
	Wald Test:		
	Equation: Untitled		
Test Statistic	Value	df	Probability
F-statistic	2.768587	(2, 12)	0.1026
Chi-square	5.537174	2	0.0628
	Null Hypothesis: C(10)=C(9)=0		
	Null Hypothesis Summary:		
Normalized Restriction (= 0)		Value	Std. Err.
C(10)		1.383214	0.659001
C(9)		1.126319	0.652770
	Restrictions are linear in coefficients.		

7. Checking the quality of the model

a) Serial Correlation LM Test

Table 11: Serial Correlation LM Test

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	0.224380	Prob. F(2,10)	0.8029
Obs*R-squared	0.987820	Prob. Chi-Square(2)	0.6102

b) Heteroskedasticity Tests

Table 12: Heteroskedasticity Tests

Heteroskedasticity Test: Breusch-Pagan-Godfrey			
F-statistic	0.450902	Prob. F(12,10)	0.9038
Obs*R-squared	8.075429	Prob. Chi-Square(12)	0.7792
Scaled explained SS	1.199706	Prob. Chi-Square(12)	1.0000
Heteroskedasticity Test: ARCH			
F-statistic	0.071099	Prob. F(2,18)	0.9316
Obs*R-squared	0.164598	Prob. Chi-Square(2)	0.9210
Heteroskedasticity Test: Harvey			
F-statistic	1.058711	Prob. F(12,10)	0.4707
Obs*R-squared	12.86986	Prob. Chi-Square(12)	0.3786
Scaled explained SS	9.579563	Prob. Chi-Square(12)	0.6528
Heteroskedasticity Test: Glejser			
F-statistic	0.631177	Prob. F(12,10)	0.7774
Obs*R-squared	9.912576	Prob. Chi-Square(12)	0.6236
Scaled explained SS	3.671438	Prob. Chi-Square(12)	0.9887

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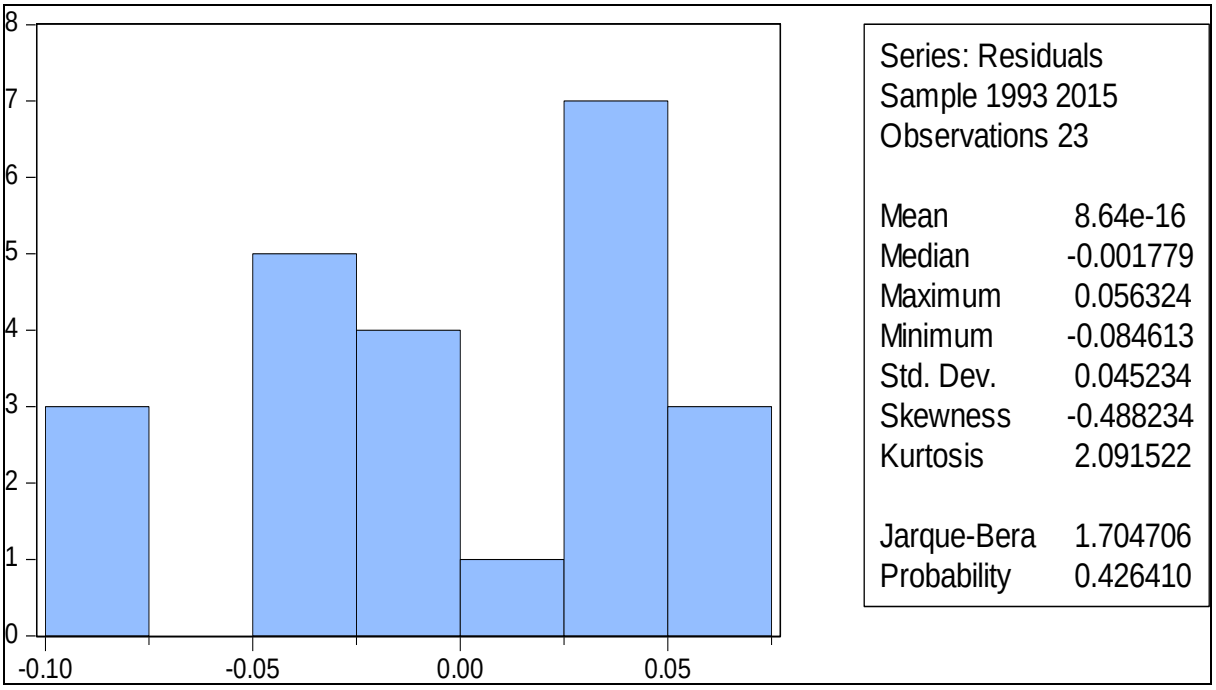
c) Test of Normality

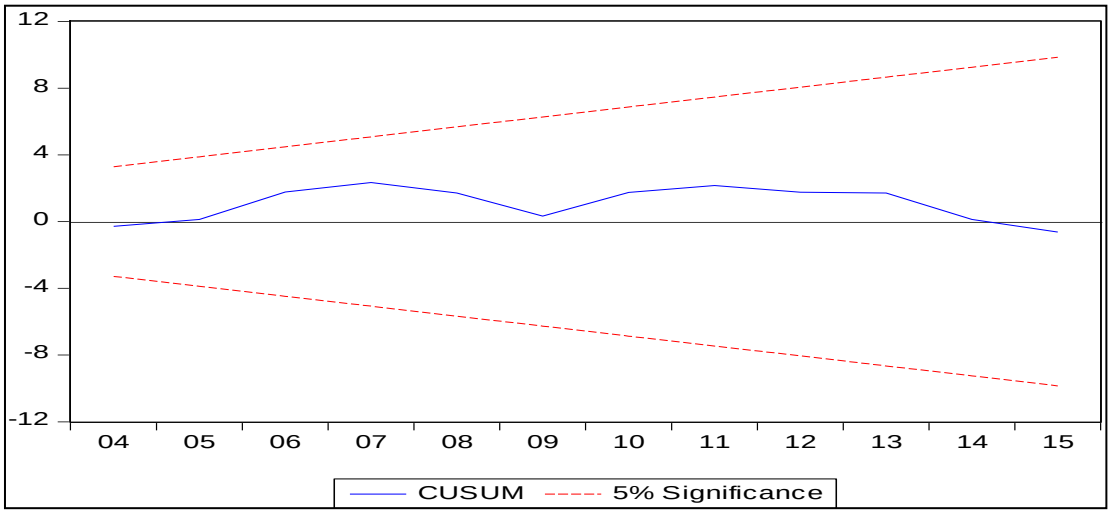


Graph 5: Test of Normality

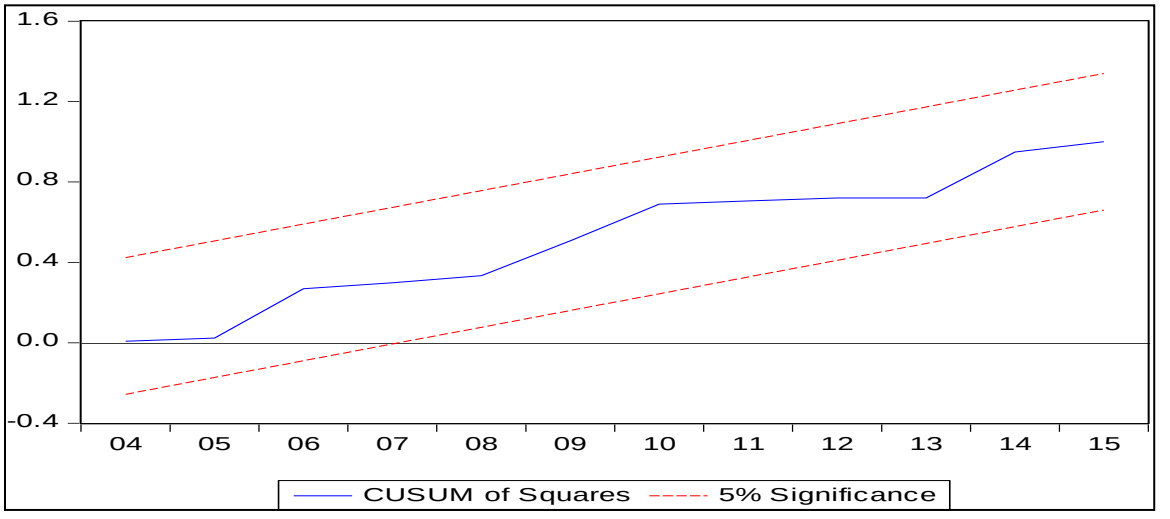
Received:12 January 2018/Accepted:18 April 2018/Published:1 June 2018

d) VAR Stability

✓ **Test CUSUM**



Graph 6: Test CUSUM



Graph 7: Test CUSUM of Squares

8. Granger Causality Tests

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Table 9: Ganger Causality Tests

Pairwise Granger Causality Tests		
Sample: 1990 2015		
Null Hypothesis:	F-Statistic	Prob.
LOG(EXPORTS) does not Granger Cause LOG(GDP)	5.35016	0.0144
LOG(GDP) does not Granger Cause LOG(EXPORTS)	1.64031	0.2202
LOG(IMPORTS) does not Granger Cause LOG(GDP)	3.57611	0.0481
LOG(GDP) does not Granger Cause LOG(IMPORTS)	1.83294	0.1871
LOG(CAPITAL) does not Granger Cause LOG(GDP)	0.47499	0.6291
LOG(GDP) does not Granger Cause LOG(CAPITAL)	2.00253	0.1625
LOG(IMPORTS) does not Granger Cause LOG(EXPORTS)	0.52465	0.6001
LOG(EXPORTS) does not Granger Cause LOG(IMPORTS)	1.16225	0.3340
LOG(CAPITAL) does not Granger Cause LOG(EXPORTS)	1.72228	0.2054
LOG(EXPORTS) does not Granger Cause LOG(CAPITAL)	3.50380	0.0507
LOG(CAPITAL) does not Granger Cause LOG(IMPORTS)	2.80716	0.0855
LOG(IMPORTS) does not Granger Cause LOG(CAPITAL)	3.03324	0.0719

B- Interpretation

Table 1 presents the descriptive statistics of our database used in our research work by presenting and describing the mean, median, maximum and minimum of each variable. Otherwise, and according to the application of descriptive statistics, one notices the existence of a heteroskedasticity between the different variables. The results of the test of correlation (Table2) show the relationship between the variables is positively correlated. According to the correlation matrix of the variables, it is found that the dependent variable (GDP) and the independent variable (exports) are positively correlated with a correlation coefficient equal to (0.9346471798342778). Thus, if exports increase by 1%, gross domestic product (GDP) increases by 0.9346471798342778%. Otherwise, the dependent variable (GDP) and the independent variable (imports) are positively correlated with a correlation coefficient equal to (0.9699481014528804). Thus, if imports increase by 1%, the gross domestic product (GDP) increases by 0.9699481014528804%. Finally, we notice that the dependent variable (GDP) and the independent variable (domestic investment) are positively correlated with a correlation coefficient equal to (0.9979023795966825), which is meaning that if domestics' investments increase by 1%, the gross domestic product (GDP) increase by 0.9979023795966825%. In order to evaluate the degree of integration of each variable, we use Augmented Dickey-Fuller (ADF) test (Table, 3, 4, 5 and 6). 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. Therefore, and according to these interpretations of the stationary of the variables, we will use the VAR model. For this reason we have applied the test of cointegration and this is done after the choice of number of delay existing in our model. It is clear that LR, FPE, AIC, SC, HQ and HQ statistics are

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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 (Table7). The results of the cointegration test (Table 8) indicates 2 cointegrating equations at the 0.05 level, and provide the existence of long run equation between GDP, exports, imports and domestic investment. According to this long run equation a 1% increase in exports leads to a decrease of 0.180846 % on GDP. On the other hand, a 1% increase in imports leads to a decrease of 0.054396% on GDP. Also, we observe that a 1% increase in domestic investment leads to an increase of 0.999679% on GDP. Otherwise, the four variables are cointegrated, which obliges us to use the VECM model to test the significance of this model. The results of the correction error model show that there is no relationship between the four variables in the long run term (Table 9). In the otherwise, the correction error model shows that there is a relationship between domestic investment and GDP in the short run term (Table 10). 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: Serial Correlation (Table 11), Heteroskedasticity tests (Table 12), test of Normality (Graph 5) and the Var stability (Graph 6 and Graph 7). Finally, the results of Granger Causality Tests show that there is no relationship of causality between investment domestic and GDP.

V. Conclusion

The aim of this study was to explain the nexus between domestic investment and economic growth in Canada during the period 1990-2015. The Pearson Correlation Coefficient Value, Co-integration, Vector Error Correction 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 empirical results show that there is no relationship between the four variables in the long run term, however, there is a weak relationship between domestic investment and economic growth in the short run term. On the other hand, and according to the results of the Granger Causality test shows that there is no causal relationship between domestic investment and economic growth. These results provide evidence that domestic investment, thus, is seen as the source of economic growth in Canada on the short term, however it seen also that growth in Canada was propelled by growth-led trade strategy.

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