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The Macroeconomic Effects of Public Debt: An Empirical Analysis of Evidence from Canada

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Abstract

Public debt refers to the amount of money which a particular country owes to the lenders either inside the country or outside the country. The lenders might be the individuals, businesses or even governments of the other countries. It might also be called as national debt or sovereign debt. Several types are associated with public debt such as domestic debt, external debt and the total debt. Public debt has critical relations with different macroeconomic factors such as economic growth, price levels and exchange rate. In this context, the current study has been conducted with the motive to explore the impact casted by public domestic debt, public external debt and total debt on the macroeconomic factors i.e. economic growth and general price level. As the study has been conducted in the context of Canada, therefore the researcher collected secondary and time series data for Canada. The collected data comprised the time of 28 years. The data regarding the variables of the study was analyzed by using different techniques and tools so that the objective of the study can be fulfilled. The results obtained from the analysis provide information that PDD has negative impact on the economic growth and positive impact on price level in short run as well. In addition, the impact of PED and TD on economic growth is positive only for shorter run and in longer run, this result is not applicable. However, the impact of PED and TD on price levels is too ambiguous to draw any conclusion.

Keywords:
Public domestic debt (PDG)
Public external debt
Total debt
Economic Growth (EG)
Price level
Canada
VAR model.

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1. Introduction

The Canadian government debt is commonly known as "public debt" or the "national debt", is based on such amount of money which is owned by its government to the holder of Canadian Treasury security (ADB, Furceri, & IMF, 2016; Garriott, Lefebvre, Nolin, Rivadeneyra, & Walton, 2020). This public debt factor indeed caused a major impact on the EG of this state. Like in 2019, its gross domestic product was increased to $1736.43, because of the productive macroeconomic factors performance (Canada, 2020).

According to the Modern Monetary Theory, public debt is such private wealth and the interest payment on a debt which is considered as private income within a state (Aybarc, 2019). This outstanding theory is based on the expression of the accumulated previous budget deficit which has been added in the financial asset of the private sector by generating demand for goods and services (Greiner & Fincke, 2016). In the business world, this is the major and important debt-based theory that helps to evaluate the financial position of a state. Previous researchers also utilized this economic theoretical approach in order to critically inspect the fiscal expropriation and capital reproduction relationship within a state (Forges Davanzati & Patalano, 2017), and

also to analyze the Marx's theory of capital economy by considering the political economy of public debt within a state (Carcanholo, 2017).

1.1. Public Domestic Debt and Economic Growth GDP

In order to justify the adverse impact of the excessive public debt on the economy's growth, research was generated by Jibran, Ali, Hayat, and Iqbal (2016) in their Pakistan Business Review Journal. According to these scholars, excessive public domestic and external debt causes a drastic opposite influence on the sustainable growth of a state. Because such debt ratio directly slow down the GDP and GNP of the state, and it becomes quite difficult in front of the government to stabilize the economic situation (Jibran et al., 2016; Shittu, Hassan, & Nawaz, 2018). In addition to this, similar researches have been made by other related scholars team, but on different developing and underdeveloped nation like Jordan and Sri Lanka, where the scholars stated that sometimes external debt plays a positive role to balance the internal EG of a state, but the domestic debt mostly cause a negative outcome on the overall EG of a state (Akram, 2017; AL-QUDAH, 2016).

1.2. Public External Debt and Economic Growth GDP

To understand the impact of external debt on the overall country's economy, a research was developed by Shkolnyk and Koilo (2018) where they stated that there is a direct relationship between these variables within the developing nation. After considering the ADL model and the correlation analysis, it becomes clear that a high level of external debt impedes the EG within a developing and underdeveloped state, but also burden its government to stabilize the situation (Shkolnyk & Koilo, 2018). Similar to this research, another informative research study was conducted by economists in their Investment Management and Financial Management related economic studies where they majorly highlight the foreign debt and their side effects on the sustainable long-term economic growth of a state (Shittu et al., 2018). These researchers majorly worked on the developing state of the Asian continent and concluded that the reasonable amount of external debt in some crucial situation may stabilize the state economy, it causes a negative impact on stabilizing the long term development projects within a state (Ciftçioğlu & Sokhanvar, 2018; Kharusi & Ada, 2018).

1.3. Total Debt and Economic Growth GDP

Ndubuisi (2017) stated that the overall debt ratio causes a major impact on the EG of a state. This researcher majorly works on the Nigeria economy and consider the GDP, exchange rate, external debt stock, external debt services and external reserves of this state, and concluded that overall the debt service payment harms the external debt stock and EG has a productive influence on growth (Ndubuisi, 2017). The other scholars also stated that there is a significant negative influence of the external debt on Oman's EG. They stated that gross fixed capital positively impact on considering the growth performance in Oman, and also recommended a need of more productive use of the external debt fund in order to affect positive growth (Kharusi & Ada, 2018). In the Journal of Chinese Economic and Business Studies, Wu (2020) stated that the local Chinese government debt is recently focused on economic policy debates. According to their Chinese region-wise analysis, the conventional growth analysis method is helpful to examine the local government debt on the regional growth in a state Wu (2020).

1.4. Public Domestic Debt and Consumer Price Index

According to Sharma (2016) in their Economic Modelling Journal, there is improper justification of their predictability of in-sample and strong evidence in their predictability of out-of-sample. These scholars majorly worked on examine the 54 countries' data in order to predict the CPI on the price returns of gold by considering the flexible generalized least square estimator (Sharma, 2016). According to the other economic scholars, the sharing of the domestic public debt over the total public debt is continuously increasing in the most developing economies. They characterized the liberalization and expansion of the tested financial market. They majorly evaluated the long term relationship between the domestic public debt and financial performance within the state based on their CPI values. In the end, they concluded that government borrowing cause a adversely influence on financial development for ab long run (AB & QC, 2019; İlgün, 2016).

1.5. Public External Debt and Consumer Price Index

In 2019, the researchers majorly worked on considering the influence of public external debt on the EG and consumer price index of a state. According to these scholars, external debt cause a productive influence on EG, while trade openness and CPI have an adverse impact (Gövdeli̇, 2019). These scholars majorly worked on the Turkey market perspectives. Also, another research was conducted by an economist who worked on developing states in these variables' perspective. According to their outcomes, it becomes concluded that there is a causal relationship between unemployment, external debt and exchange rate especially in Indonesia, and also a strong linkage occurs in the ASEAN countries (Cahyadin & Ratwianingsih, 2020).

1.6. Total Debt and Consumer Price Index

To consider the linkage between the overall debt and the consumer price index value, a research was made by scholars by specifically considered the Malaysian household debt's determinants by considering the macroeconomic variables in the analysis portion. According to these scholars, the inflation rate within the state is majorly dependent on the number of debt ratios on the country's economy. In their research, they also studied the relationship between the major macroeconomic factors named as a gross domestic product, CPI, house price index, consumption and income towards the household debt. According to their outcomes, there is an insignificant relationship between the CPI, interest rate, income and house price index with the household debt (Archad & Md Nor, 2016). In 2016, many researches has been made where the majority of scholars justified the direct influence of the overall debt ratio of a state on the consumer price index-based inflation rate. In these researches, the scholars majorly worked on the case study of developing state who0s government faced major issues in stabilizing their economy at the high debt range and inflation situation (Baker, 2016; Lau & Lee, 2016).

The problem statement of this paper is to critically investigate the influence of macroeconomic effects of the public debt on the overall EG and the consumer price index of the developed state, Canada. This research statement is an effective approach to understand the influence of public domestic, external, and total debt on the overall economy of a state.

The research objectives of this paper are;

- To critically investigate the influence of macroeconomic factors on the overall Canadian state's growth.
- To critically evaluate the impact of public domestic, external, and total debt on the overall GD of GDP of a Canadian state.
- To critically evaluate the impact of public domestic, external and total debt on the overall GD of GDP of a Canadian state.

This paper is an informative approach that covers the gap of the previous researches who worked on considering the macroeconomic effects of the public debt in Nigeria and Mozambique economy perspective (Afonso & Ibraimo, 2020; Essien, Agboegbulem, Mba, & Onumonu, 2016). Well, in considering the Canadian market, the scholars worked on considering the government debt supply on its bond market liquidity (Gao, Jin, & Thompson, 2018), and also considering the macroeconomic effect of its Government spending shocks (Hussain & Liu, 2018). But no one majorly worked on considering the impact of total external and domestic public debt factor on the Canadian EG, and this gap is successfully covered by this research paper. This paper is an informative approach for the Canadian government, its banking, and financial sectors to understand the direct impact of the macroeconomic debt factor on their country's economy and consumer price index value. Because it's valid information will help the economic policymakers to make such (short term and long term) decisions that directly hit their economic growth aim. In addition, this type of valid research will also help the local Canadian people to understand their responsibilities towards their domestic and external debt ratios. As far as its academic-based significance is concerned, it becomes clear that this research will help the upcoming scholars to further work on the Canadian macroeconomic factors and their influence on the overall economy. The section two will present the research methodology and section third will provide the empirical estimation of the tested variables. After this, the last section will be based on the discussion and conclusion of all the tested outcomes where the limitation and future implications will also be discussed in that section.

2. Methodology

This section contains the detailed procedure and methodology of the research including the data collection and description, unit root test, VAR model and other relative tests that have been used by the researcher.

2.1. Data Description

The current study has been conducted with the motive to find and investigate the effect of public domestic debt, public external debt and total debt on the macroeconomic factors i.e. economic growth and general price level. As the study has been conducted in the context of Canada, therefore the researcher has collected secondary and time series data for Canada. The collected data comprises the time period of 28 years. The data has been collected for three independent variables i.e. public domestic debt PDD, public external debt PED and total debt TD and two dependent variables i.e. economic growth through gross domestic product 'GDP' and price level through consumer price index 'CPI'. The data regarding these variables has been collected from the databases that are supposed to provide authentic and reliable data such as World Bank development Indicators and Global Economy. All the variables of the study have been transformed into their natural logarithms. This transformation of the variables into their natural logarithms is based on the reason that it reduces the heteroscedasticity issues during analysis. The researcher has carried out the descriptive analysis of the collected data so that the distribution of the data might be studied.

2.2. Unit Root Test

One of the most significant aspects of model specification is to study the behavior of the collected data. The economic data has an important property i.e. trending. Due to this property, the presence of unit root might be expected resulting in the non stationarity of the data. This might lead towards the ambiguous and unreliable results. It must be noted here that the VAR model used in the current study work well only when the data is stationary and has no trends. This is the reason why the application of unit root test is inevitable (Said & Dickey, 1984). The researcher has therefore used two unit root tests i.e. ADF and Philip Perron PP unit root tests.

2.3. Model Specification

The researcher has applied the unrestricted VAR (Vector Auto Regression) approach in the study to explore the shock of public debt on the macroeconomic effects in Canada. The basic purpose of the development of this approach was to study the macroeconomic factors and its usage was popularized by Sims (1980). In addition, this model has also been known for the study of time series economics data (Lütkepohl, 2005). The two major functions underlying this particular model include the impulse response function plus variance decomposition. Both of these functions might be helpful to realize the objectives of the study. As far as the impulse response function is concerned, its major function is to trace the effect produced by the change in independent variable on the current and future values regarding dependent variable. In this way, the researcher will be able to follow the shock casted by public debt variables on the macroeconomic factors in the current study. In continuation of impulse response function, the next function of VAR model is variance decomposition which revolves around the provision of quantitative shape to the changes in macroeconomic factors due to the independent variables. The VAR model can be applied using the following equation;

$$Y_t = A_1 Y_{t-1} + A_2 Y_{t-2} + \cdots + A_k Y_{t-k} + \mu_t$$

In this equation, Y_t represents the dependent variables, A shows the coefficients of the variables while μ_t represents the error term. One of the functions of VAR model is that all the variables of the study on which the model is being applied are considered as endogenous variables and these variables are regressed over their lags. The major gain of this model is that it provides the information about the transfer of shocks in different variables of the study with time. Based on three independent variables of the study, the following three models can be generated;

Model 1: $\Upsilon t = [PDD_t, GDP_t, CPI_t]$
Model 2: $\Upsilon t = [PED_t, GDP_t, CPI_t]$
Model 3: $\Upsilon t = [TD_t, GDP_t, CPI_t]$

3.4. Lag Selection, Residual and Stability Test

As per the optimal lag length of the models of the study, the researcher has used 5 lags. In addition, the residuals tests have also been employed by the researcher. These tests include autocorrelation test and heteroscedasticity test. The purpose of using autocorrelation tests was to find if there is any correlation in the variables of the study. Moreover, the heteroscedasticity tests have been employed to probe the heteroscedasticity among the variables. In the same way, the model stability test has also been applied by the researcher by using the roots of characteristic polynomial. All these tests have been applied in order to ensure the eligibility of the collected data in the study.

3. Results Analysis

3.1. Results of Unit Root Test

First of all, the researcher had applied the ADF plus PP tests, the results of which have been obtained and presented in Tables 2 and 3 respectively. In Table 2 of ADF test results, it is quite evident that at level, only three variables have rejected the null hypothesis of no stationarity. In other words, the data is having trends and unit root in level series. This issue has been resolved by the researcher by the application of first difference on the collected data. The first differenced data has led to the result that all variables have rejected null hypothesis and thus it can be stated that the data does not contain unit root at first difference. The similar trend can be observed in the Table 3 in which the results of PP unit root test have been shown. The detailed results along with values of constant and constant plus trend can be observed in the mentioned tables.

Table-2. ADF Unit Root.

Constructs	Level		1st Difference	
	Constant	Constant+ Trend	Constant	Constant+ Trend
GDP	-3.7264	-4.7452*	-6.6452*	-8.432***
CPI	-2.2442*	-5.7545*	-8.2553***	-10.5242***
PDD	-5.6442*	-6.2463*	-7.6432**	-9.4524***
PED	-3.6576	-3.5432	-4.6352*	-8.6342***
TD	-4.3572*	-4.6434*	-4.5224**	-7.0542***

Table-3. PP Unit Root.

Constructs	Level		1st Difference	
	Constant	Constant+ Trend	Constant	Constant+ Trend
GDP	-3.5452	-4.6434*	-6.6342*	-8.5213***
CPI	-2.7645*	-5.2452*	-8.7246***	-10.7342***
PDD	-5.5342*	-6.7342*	-7.7254**	-9.2563***
PED	-3.8565	-3.2984	-4.0245*	-8.8623***
TD	-4.2456*	-4.7643*	-4.6232**	-7.6243***

3.2. Results of Autocorrelation and Heteroscedasticity Test

The results of autocorrelation LM test plus heteroscedasticity test have been reported in Tables 4 and 5 respectively. As per the results of autocorrelation test, it is quite evident that for all the three models, the null hypothesis of no autocorrelation has not been rejected at different lags. This leads to the indication that there is no correlation issue. In the same way, the results of heteroscedasticity have shown that there is no heteroscedasticity found in case of any of the three models of the study.

Table-4. Autocorrelation LM Test.

	Model 1		Model 2		Model 3	
Lags	LM Stat	Prob	LM Stat	Prob	LM Stat	Prob
1	43.27643	0.2864	34.27355	0.8264	32.75238	0.2756
2	41.28643	0.2754	45.75384	0.0234	43.54345	0.0364
3	68.61433	0.5762	23.26374	0.2864	21.62534	0.7634
4	24.75332	0.1735	46.27534	0.2164	44.16253	0.0163
5	41.16537	0.2864	29.76424	0.3541	27.72544	0.4672

Table-5. Heteroskedasticity Test.

Joint Test	Model 1	Model 2	Model 3
Chi Sq.	1240.863	1256.275	1257.723
Df	1260	1260	1260
Prob.	0.2864	0.2754	0.7253

3.3. Impulse Responses and Variance Decomposition

The shock response of GDP to PDD and response of CPI to PDD have been presented in the Figure 1 according to which the actual response of both the variables is within the predicted or threshold range. In addition, the variance decomposition results for the first model have been presented in Table 6. The variance decomposition results suggest that the public domestic debt does not contribute that much in the response of the dependent variables. The maximum variation cause by PDD in GDP is 3.46%in the tenth quarter and in the same way, the maximum variation in CPI caused by PDD is 5.46% in forth quarter. However, the Table 6 suggests that the contribution of GDP is significant in for the response of the other variables of the study. The maximum variation in GDP caused by CPI is 11.64% and that in CPI caused by GDP is 44.23%.

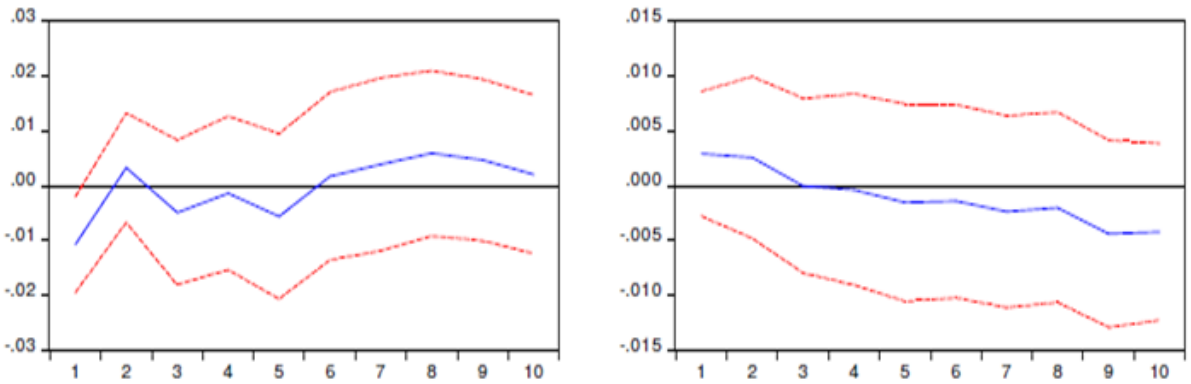

Figure-2. Response of GDP to PDD and CPI to PDD.

Table-6. Variance Decomposition Model 1.

Variable	Period	PDD	GDP	CPI
GDP	1	1.53	85.53	8.42
	4	2.73	80.42	9.64
	8	2.53	61.52	11.11
	10	3.46	61.64	11.64
CPI	1	7.35	0.00	79.33
	4	5.46	29.27	54.54
	8	4.25	44.23	29.23
	10	3.64	41.23	28.54

The shock response of both GDP to PED and response of CPI to PED have been reported in the Figure 2 which shows that the actual response of both the variables is within the potential or threshold range. Moreover, the variance decomposition results for the second model have been presented in Table 7. The variance decomposition results prove that the public external debt is not contributing very well in the response of the endogenous variables. The maximum variation cause by PED in GDP is 3.55% in the eighth quarter and in the same way, the maximum variation in CPI caused by PED is 4.66% in tenth quarter. On the other hand, the Table 7 also indicates that the contribution of GDP is significant in for the response of the other variables of the model. The maximum variation in GDP caused by CPI is 13.66% and that in CPI caused by GDP is 42.25%.

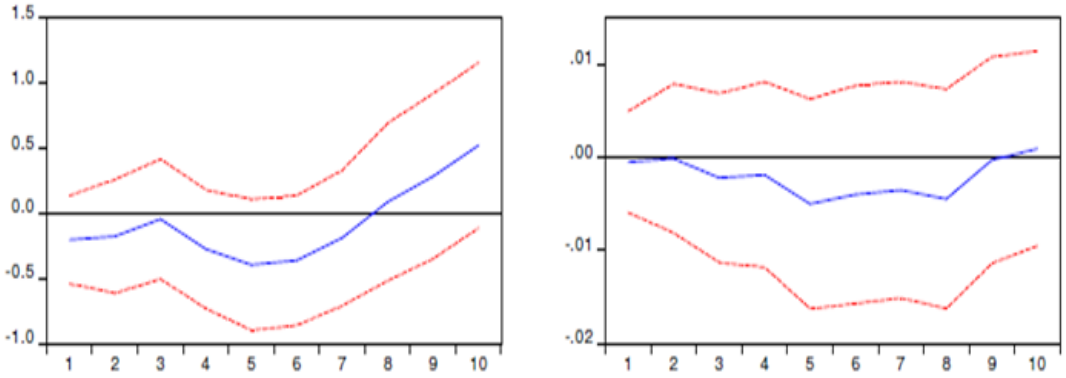

Figure-3. Response of GDP to PED and CPI to PED.

Table-7. Variance Decomposition Model 2.

Variable	Period	PED	GDP	CPI
GDP	1	0.55	83.55	7.44
	4	0.75	78.44	8.66
	8	3.55	59.54	12.13
	10	3.48	58.66	13.66
CPI	1	0.37	0.00	77.35
	4	0.48	27.23	53.56
	8	2.27	42.25	26.26
	10	4.66	41.26	27.55

The shock responses i.e. GDP to TD and CPI to TD have been graphically shown in the Figure 3 which indicates clearly that the actual response obtained by both the variables is within the potential range. Furthermore, the variance decomposition results for this model have been evidently given in Table 8. The variance decomposition results describe that the total debt has shown comparatively a good contribution in regard of the response of the endogenous variables. The maximum variation cause by TD in GDP is 18.66% in the tenth quarter and in the same way, the maximum variation in CPI caused by TD is 9.84% in tenth quarter. On the other hand, the Table 8 also depicts that the contribution of GDP is significant in for the response of the other variables. The maximum variation in GDP caused by CPI is 24.31% and that in CPI caused by GDP is 34.53%.

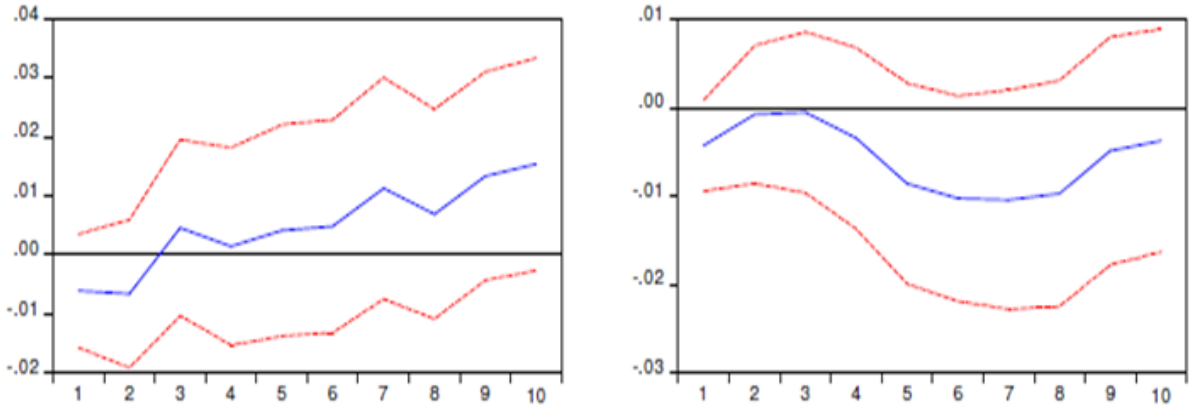

Figure-4. Response of GDP to TD and CPI to TD.

Table-8. Variance Decomposition Model 3.

Variable	Period	TD	GDP	CPI
GDP	1	4.73	75.73	7.62
	4	2.93	70.62	11.84
	8	17.73	51.72	24.31
	10	18.66	51.84	16.84
CPI	1	2.55	0.00	43.53
	4	2.66	49.47	44.64
	8	6.45	34.53	39.43
	10	9.84	31.63	38.74

4. Discussion and Conclusion

4.1. Discussion

The reason to conduct this study was to find out the impact casted by PDD, PED and TD on the macroeconomic factors i.e. economic growth and general price level. As the study has been conducted in the context of Canada, therefore the researcher collected secondary and time series data for Canada. The collected data comprised the time period of 28 years. The data regarding the variables of the study was analyzed by using different techniques and tools so that the aim of the study can be fulfilled. The results of the study show that the PDD negatively influences the economic growth of a country. The reason is that the resources that are available for the improvement and sustainability of the economy of a particular country are decreased due to PDD. This ultimately leads to the fall in economic growth. However, the other two variables i.e. PED and TD are found to show the positive influence on economic growth but this positive effect remains only for short run and not in long run. This is because when the government receives debt from the external sources, it can invest in in the improvement of the economy and thus in short run the impact is positive. But as the time passes, the government has to return the debt to the external creditors and thus the positive impact ceases in the longer run. These results are exactly in the line with the similar studies from the past that have examined the impact of debt factors on macroeconomic factors (ADB et al., 2016; Klein & Linnemann, 2019; Omrane Belguith & Omrane, 2017). As far as the other dependent variable CPI is concerned, the researcher has not got the clear results in context of PED and TD impact on CPI or in other words, a final conclusion cannot be drawn on the basis of the results in this particular case. On the other hand, the impact of PDD on the price levels has been found as positive in short run. The reason is that as the public debt is due for repayment, the interest payments have to be made in context of the debt. In this scenario, the price level is supposed to increase for the payment of interest payments. The similar results have been obtained in the past studies having similar context (Badarau, Huart, & Sangaré, 2016; Huang, Panizza, & Varghese, 2018; Krause & Moyen, 2016; Saifuddin, 2016). In a nut shell, it can be stated that PDD has negative force on the economic growth and positive force on price level in shorter run as well. In addition, the impact of PED and TD on economic growth is positive only for short run and in long run, this result is not applicable. However, the impact of PED and TD on price levels is too ambiguous to draw any conclusion.

4.2. Conclusion

The results obtained by the empirical analysis of the collected data have revealed that PDD has negative effect on the economic growth and positive effect on price level in shorter run as well. In addition, the impact of PED and TD on economic growth is positive only for shorter run and in longer run, this result is not applicable. However, the impact of PED and TD on price levels is too ambiguous to draw any conclusion. On this basis, the conclusion can be drawn that the government of Canada must lower the levels of public

domestic debt so that the economic growth might increase and the price level or inflation in the country might be lowered.

4.3. Implications and Limitations

The study is practically beneficial to the government and debt related policy makers of Canada as they can get guidance about the impacts of public debt and its impacts on the economy of the country. In addition, the current study is useful for the researchers in context of the literature and information presented in it regarding the impact of public debt on macroeconomic factors because this topic has great scope for different countries and the researchers must conduct further researches in the similar scenario. The researchers might consider a number of other macroeconomics factors and other types of public debt in future studies. They might also consider the countries other than Canada so that the perspective of those countries may also be obtained. The researchers might use the techniques and approaches to analyze the time series data similar to that used in the current study.

References

AB, N., & QC, B. (2019). Consumer price index.

ADB, A. A., Furceri, D., & IMF, P. T. (2016). The macroeconomic effects of public investment: Evidence from advanced economies. *Journal of Macroeconomics*, *50*, 224-240. Available at: https://doi.org/10.1016/j.jmacro.2016.07.005.

Afonso, A., & Ibraimo, Y. (2020). The macroeconomic effects of public debt: An empirical analysis of Mozambique. *Applied Economics*, *52*(2), 212-226. Available at: https://doi.org/10.1080/00036846.2019.1644445.

Akram, N. (2017). Role of public debt in economic growth of Sri Lanka: An ARDL Approach. *Pakistan Journal of Applied Economics*, *27*(2), 189-212.

AL-Qudah, A. M. (2016). Domestic debt, external debt and economic growth of Jordan. *Clear International Journal of Research in Commerce & Management*, *7*(4), 11-16.

Archad, J., & Md Nor, N. (2016). Determinant of Malaysia's household debt by using macroeconomics variables / Jasmin Archad and Norsyafawani Md Nor. [Student Project] (Unpublished).

Aybarc, S. (2019). Theory of public debt and current reflections. *In Public Economics and Finance: IntechOpen.*

Badarau, C., Huart, F., & Sangaré, I. (2016). *Macroeconomic effects of pooling sovereign debt in a currency union.* LEM Discussion Paper, 2016-18.

Baker, D. (2016). *Getting prices right: Debate over the consumer price index: Debate over the consumer price index.* London and New York: Routledge.

Cahyadin, M., & Ratwianingsih, L. (2020). External debt, exchange rate, and unemployment in selected ASEAN countries. *Jurnal Ekonomi & Studi Pembangunan*, *21*(1), 16-36. Available at: https://doi.org/10.18196/jesp.21.1.5029.

Canada, G. (2020). Trading economics.com. Retrieved from: https://tradingeconomics.com/canada/gdp.

Carcanholo, M. D. (2017). Marx (ism) and public debt: Thoughts on the political economy of public debt. *Critique*, *45*(3), 303-317. Available at: https://doi.org/10.1080/03017605.2017.1337960.

Ciftçioğlu, S., & Sokhanvar, A. (2018). External debt-economic growth nexus in selected CEE countries. *Romanian Journal of Economic Forecasting*, *21*(4), 85-100.

Essien, S. N., Agboegbulem, N., Mba, M. K., & Onumonu, O. G. (2016). An empirical analysis of the macroeconomic impact of public debt in Nigeria. *CBN Journal of Applied Statistics*, *7*(1), 125-145.

Evans, P. (2016). Canadians' average debt load now up to $22,081, 3.6% rise since last year. CBC/Radio-Canada. Retrieved from: https://www.cbc.ca/news/business/equifax-debt-loads-1.3884993.

Forges Davanzati, G., & Patalano, R. (2017). Marx on public debt: Fiscal expropriation and capital reproduction. *International Journal of Political Economy*, *46*(1), 50-64. Available at: https://doi.org/10.1080/08911916.2017.1310474.

Gao, J., Jin, J., & Thompson, J. (2018). The impact of government debt supply on bond market liquidity: An empirical analysis of the Canadian market. *Available at SSRN 3176181.*

Garriott, C., Lefebvre, S., Nolin, G., Rivadeneyra, F., & Walton, A. (2020). Alternative futures for Government of Canada debt management. *Journal of Financial Economic Policy.* Available at: https://doi.org/10.1108/JFEP-07-2019-0149.

Gövdeli̇, T. (2019). External debt and economic growth in Turkey: An empirical analysis. *Sosyoekonomi*, *27*, 119-130. Available at: https://doi.org/10.17233/sosyoekonomi.2019.02.07.

Greiner, A., & Fincke, B. (2016). *Public debt, sustainability and economic growth*: Springer.

Huang, Y., Panizza, U., & Varghese, R. (2018). Does public debt crowd out corporate investment? International Evidence (Doctoral Dissertation, The Graduate Institute Geneva).

Hussain, S., & Liu, L. (2018). Macroeconomic effects of Government spending shocks: New narrative evidence from Canada. *Available at SSRN 3297476.*

İlgün, M. F. (2016). Financial development and domestic public debt in emerging economies: A panel cointegration analysis. *Journal of Applied Economics & Business Research*, *6*(4), 284-296.

Jibran, K., Ali, A., Hayat, U., & Iqbal, A. (2016). Public debt and economic growth in Pakistan: A reassessment. *Pakistan Business Review*, *18*(2), 307-324.

Kharusi, S. A., & Ada, M. S. (2018). External debt and economic growth: The case of emerging economy. *Journal of Economic Integration*, *33*(1), 1141-1157. Available at: https://doi.org/10.11130/jei.2018.33.1.1141.

Klein, M., & Linnemann, L. (2019). Macroeconomic effects of government spending: The great recession was (really) different. *Journal of Money, Credit and Banking*, *51*(5), 1237-1264. Available at: https://doi.org/10.1111/jmcb.12558.

Krause, M. U., & Moyen, S. (2016). Public debt and changing inflation targets. *American Economic Journal: Macroeconomics*, *8*(4), 142-176. Available at: https://doi.org/10.1257/mac.20130014.

Lau, E., & Lee, A. S.-Y. (2016). Determinants of external debt in Thailand and the Philippines. *International Journal of Economics and Financial Issues*, *6*(4), 1973-1980.

Lütkepohl, H. (2005). *New introduction to multiple time series analysis*: Springer Science & Business Media.

Ndubuisi, P. (2017). Analysis of the impact of external debt on economic growth in an Emerging Economy: Evidence from Nigeria. *African Research Review*, *11*(4), 156-173. Available at: https://doi.org/10.4314/afrrev.v11i4.13.

Omrane Belguith, S., & Omrane, H. (2017). Macroeconomic determinants of public debt growth: A case study for Tunisia. *Theoretical & Applied Economics*, *24*(4), 161-168.

Said, S. E., & Dickey, D. A. (1984). Testing for unit roots in autoregressive-moving average models of unknown order. *Biometrika*, *71*(3), 599-607. Available at: https://doi.org/10.1093/biomet/71.3.599.

Saifuddin, M. (2016). Public debt and economic growth: Evidence from Bangladesh. *Global Journal of Management and Business Research*, *16*(5), 64-73.

Sharma, S. S. (2016). Can consumer price index predict gold price returns? *Economic Modelling*, *55*, 269-278. Available at: https://doi.org/10.1016/j.econmod.2016.02.014.

Shittu, W. O., Hassan, S., & Nawaz, M. A. (2018). The nexus between external debt, corruption and economic growth: eEvidence from five SSA countries. *African Journal of Economic and Management Studies*, *9*(3), 319-324. Available at: https://doi.org/10.1108/ajems-07-2017-0171.

Shkolnyk, I., & Koilo, V. (2018). The relationship between external debt and economic growth: Empirical evidence from Ukraine and other emerging economies. *Investment Management and Financial Innovations*, *15*(1), 387-400.

Sims, C. (1980). Macroeconomics and reality. *Econometrica*, *48*(1), 1-48.

Wu, Y. (2020). Local government debt and economic growth in China. *Journal of Chinese Economic and Business Studies*, *20*(1), 1-14.