POLITICAL FACTOR AND EXTERNAL DEBT: CASE IN MALAYSIA

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DECLARATION

We hereby declare that:

(1) This undergraduate research project is the end result of our own work and that due acknowledgement has been given in the references to ALL sources of information be they printed, electronic, or personal.

(2) No portion of this research project has been submitted in support of any application for any other degree or qualification of this or any other university, or other institutes of learning.

(3) Equal contribution has been made by each group member in completing the research project.

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LIST OF ABBREVIATION

ADF	Augmented Dickey-Fuller
AIC	Akaike's Information Criterion
ARDL	Autoregressive Distributed Lag
BD	Budget deficit
BOP	Balance of Payment
BLUE	Best Linear Unbiased Estimator
CNLRM	Classical Normal Linear Regression Model
C	Intercept
D	Deficit
ECM	Error Correction Model
ED	External Debt
EXCHR	Exchange Rate
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
GDP_{pc}	Gross domestic product per capita
GMM	Generalized Method of Moments
GNI	Gross National Income
JB	Jarque-Bera
LNTO	Natural logarithm of Trade Openness
LNTT	Natural logarithm of Terms of Trade
MDGs	Millennium Development Goals

NEEDS	National Economy Empowerment and Development Strategy
OLS	Ordinary Least Square
PSI	Policy Support Instrument
RESET	Regression Equation Specification Error Test
RM	Ringgit Malaysia
RT	Regime Type
RT_BD	Regime Type multiply with Budget Deficit
RT_ED	Regime Type multiply with External Debt
RT_ER	Regime Type multiply with Exchange Rate
RT_GDP	Regime Type multiply with Gross Domestic Product
RT_LNTO	Regime Type multiply with Natural logarithm of Trade Openness
RT_LNTT	Regime Type multiply with Natural logarithm of Terms of Trade
SIC	Schwarz Information Criterion
TO	Trade openness
TOT	Terms of Trade
TT	Terms of Trade
NCTAD	United Nations Conference on Trade and Development
US	United State
USD	United State Dollar
VIF	Variance Inflation Factors
WTO	World Trade Organization

PREFACE

As a developing country, definitely, Malaysia will require more capital to support its internal growth in the aspect of economy, social welfare, also technology. Although Malaysia had exported so many products like integrated circuit, refined petroleum, petroleum gas, also the top 3 of palm oil exporter and gain some revenue from its export, Malaysia still need to borrow from other countries to back its development. Even though borrowing is one of the easiest method to gain funds for own country development, it also brings some hidden danger if the level of borrowing is not well managed. As a result, the external debt became one of the most frequent discuss topic in the world. The well managed of the level of external debt owed by a country is very important to ensure the stability of that particular country also to reduce the probability of bankruptcy or the problem of highly indebted. The goals of this research is to investigate the effect of macroeconomic factors that lead to the raise of external debt in Malaysia. By investigating the effect of budget deficit, trade openness, terms of trade, exchange rate, gross domestic product, also the interaction variable of regime type which believed will give impact to others macroeconomic factors hence affect the level of external debt in Malaysia, the relationship between the variables could be told thus ease the policymakers to identify the relationship when implementing any policies to control the level of external debt of Malaysia in coming future.

ABSTRACT

Malaysia is similar to other country which it uses foreign loan to finance the developmental project. This study is mainly to investigate the determinants that will affect Malaysia's external debt. The determinants that used in this study is all macroeconomic factors which included budget deficit, trade openness, terms of trade, exchange rate, gross domestic product (GDP). Except those five macroeconomic factors, in this study we also included regime type as our interaction term. Autoregressive Distributed Lag (ARDL) testing is used to determine the effect of the macroeconomic factors and interaction term on the external debt in Malaysia in both long run and short run relationship. After carried out the econometric testing, it found out that all the factors are significant to the level of external debt in Malaysia. Gross product domestic is found out to be negatively affecting the level of external debt in long run relationship. It examined that exchange rate is positively related to external debt in short run relationship. While, budget deficit and external debt is negatively related in short run as well. Besides, the regime type is negatively related to gross product domestic, exchange rate, budget deficit and trade openness. The term of trade is found out to be positively related to regime type.

CHAPTER 1: RESEARCH OVERVIEW

1.0 Introduction

External debt incurred when a country borrows money or funds from other countries instead of the local market and it can be used to finance projects also to meet the obligations (Choong, Lau, Liew & Puah, 2010). External debt also used as to gain capital in order to boost up the economy. With enough of capital, the country can invest in the production sector so that it could increase the export rate. Sector like agriculture and manufacturing can get benefit from the external debt, and as the government have the enough funds to support the industrial sector, the overall productivity for the economy will increase. When export rate increase, the GDP of country will increase too. Hence the overall economy performance of country will rise. Although the external debt can improve a country's economy but it also has its downside (Zaman &Muhammad Arslan, 2014). Too much of external debt a country committed will lead to bankruptcy if it failed to pay off. Moreover, it may also lead to the financial crisis to be happened. There are many side effect of external debt has created. Those downsides will actually affect the economy of a country or even the global economy. So, government should think carefully before taking any fund aid from other countries in order to prevent involve in the financial crisis. Short-term debt may cause a financial crisis when it hits the limit, this is because the short-term debt and economic growth have negative relationship. The larger amount of short-term debt will cause many disadvantages to holder, such as high interest cost, taxes rate and debt crises.

The accumulation of foreign debt had received substantially less attention in the role played by the politics. The government become deeply indebted when they need to borrow against the future to keep themselves in power, and different political system will generate different incentives to borrow and invest. The differences in the political institution within which the parties govern reflects the variation in governments' need to borrow against the future. Different political systems may generate different motives to borrow and invest, and the regime type

hypothesis which discovered by the scholars in the studies of the Latin American debt crisis of the early 1980's suggest this kind of pattern. The democratic institution based government allow societies to constrain their behavior implement different policies than autocratic based government, which operate within political institution to limit the participation of the public in politics. The differences in regime type in accumulation of the government debt can look through the facts of the developing countries like Zambia, one of the world's poorest societies, owned more than 200 percent of national debt to foreign creditors. The product of the impact of regime type on government borrowing and investment decisions can study through the variation in foreign indebtedness. Autocratic regimes will invest less in public welfare and borrow more fund from foreign countries to keep themselves in power ceteris paribus. Consequently, large foreign debt burden will be developed by the autocracies than democracies.

1.1 Research Background

According to World Bank, Malaysia is not only considered as a developing country, but also one of the open economy. Besides, Malaysia government is working hard to let Malaysia become a high-income country. One of the prominent national concern is the sustainability of the external debt, especially for the under-developed countries. Therefore, it raises a great concern about debt management among Malaysians because the way that government use to finance the debt will influence the economy growth. After the General Election 14, there are more and more people including non-financial professional and financial professional focus and discuss about government debt as government reported RM 1 trillion of government debt recently. The announcement is a jolt to investors. Most of the Malaysians worried that Malaysia will become bankruptcy if the government unable to repay the debt (Rao, 2018).

External debt could lead to external debt crisis happen (Romanus, 2014). Countries that experienced the external debt crisis would be the Eurozone countries and also Asian countries, there are some reason behind that causes the crisis occur. Some of

the factors like the country politic is unstable, government abuse the usage of loan and increment of interest rate (Nawaz, 2015). When the crisis sustained for a quite long period the debt may be defaulted and countries might face bankruptcy issue. Other than that, if country has high external debt it may result a scenario which is debt overhang problem (Uzun, Karakoy, Kabadayi & Emsen, 2012). Debt overhang problem is depicting when a country's debt is too large until it could not finance any new borrowing for future investment or development. This would be a serious problem not only for the country itself but also the countries that trading with them. Debt overhang issue might continue happen until a long period of time and it is crucial to control the debt level of the country (Redo, 2017). Then, large external debt may also cause the crowding out effect to be happened (Uzun, Karakoy, Kabadayi & Emsen, 2012). Crowding out effect will affect the entire economy as it inhibits the growth of economic due to reduction in investment. Next, the external debt is positively correlated with the capital flight (Saxena & Shanker, 2016). Capital flight is mean when there is a huge lump sum of money is being moved out from the country. It would bring a negative impact to the financial system of the country. Furthermore, the rising of external debt could eventually lead to debt trap (Solomon, 2010). Debt trap happen when countries are unable to pay back its debt and require a new debt to repay the old one. The scenario will keep repeating until the country unable to pay back the debt and the debt will be defaulted. Those are likely the impact of external debt if a country committed too much of external debt.

According to World Bank (n.d.), the gross external debt is defining as the outstanding amount of current liability owned by residents that required repayment of interest and principal in the future date and the debtor is nonresident of Malaysia. Furthermore, when it comes to the topic of external debt, people usually relate it to sovereign debt crisis which take place in Europe country. Sovereign debt also refers to central government's debt which issued in foreign currency and the funds borrowed is used to finance economic development and growth (sovereign debt, n.d.). After the Asian Financial Crisis in 1997, the Indonesia government face a sharp decline of fiscal revenue and rise of government spending as the government take over the responsibility to assist community. After that, the Indonesia government could not afford and suffering under the huge debt which is used to finance the fiscal deficit. Therefore, maintain the fiscal deficit level less than 3% as

stated in their law of republic and maintain liquidity to keep the solvency had become their main goal. Therefore, it motivates us to have further research on the topic of Malaysia external debt as the Indonesia case can be an alert to us on the subject matter of budget deficit and external debt.

In last year December, the external debt of Malaysia had increased to RM883.4billion which is almost two third of GDP ("Malaysia's external debt", 2018). Although Bank Negara Malaysia said that it is manageable, however, from Figure 1.1 we can observed that there is an upward trend from year 2007 until 2015. Therefore, we would like to explore further and find out nexus between macroeconomic and political factor and external debt in Malaysia.

Figure 1.1: The external debt of Malaysia from year 1980 to 2014
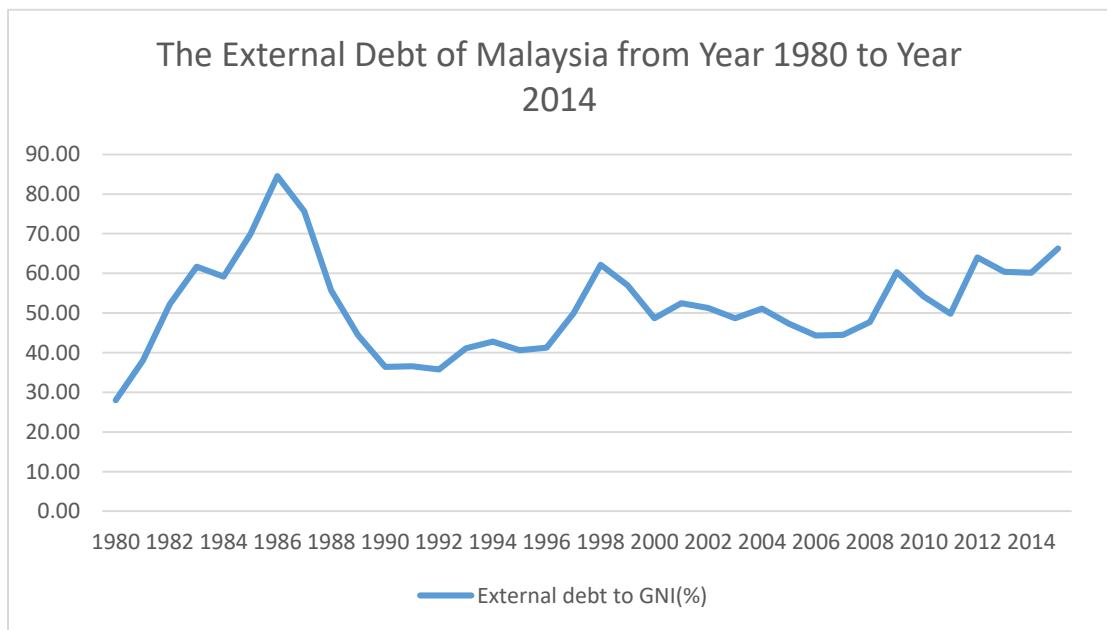
Source: The Global Economy, 2018

Besides, Malaysia is undergoing budget deficit these year, it indicates that government tax revenue do not compensate the expenditure. Government fiscal policy will influence the external debt as it can be used to adjust the tax rate and government spending and affect the economy. When government spending exceeds tax revenue, there will be a budget deficit, conversely, it will be budget surplus. Government will incur more external debt to finance the budget deficit. According to Al-Fawwaz (2016), Jordan government heavily rely on external debt to finance

account deficit. Therefore, we will like to examine whether budget deficit influence the amount of external debt.

Furthermore, there is a slightly downward trend on the terms of trade in recent 10 years. As we observed from the Figure1.2 the terms of trade move in opposite direction with external debt. This may indicate that the negative relationship between terms of trade and external debt. The terms of trade are the ratio between sales price of export goods and purchase price of import goods. When export goods have lower value than import goods, there will be a lower terms of trade. After the Global Financial Crisis in 2008, the terms of trade in Malaysia had dropped from 109.03% in 2008 to 95.66% in 2009. According to Bakhtyar (2017), the oil price had drop when the crisis happens, therefore the value of export good also decrease. This might be the reason for the decline of terms of trade. After that, the terms of trade slightly increase. After 2009, the oil price starts increase and led to upward trend of export growth, in another word, the value of export goods increase (Bakhtyar, 2017).

Figure 1.2: Comparison of Terms of Trade and External debt from year 1980 to 2014
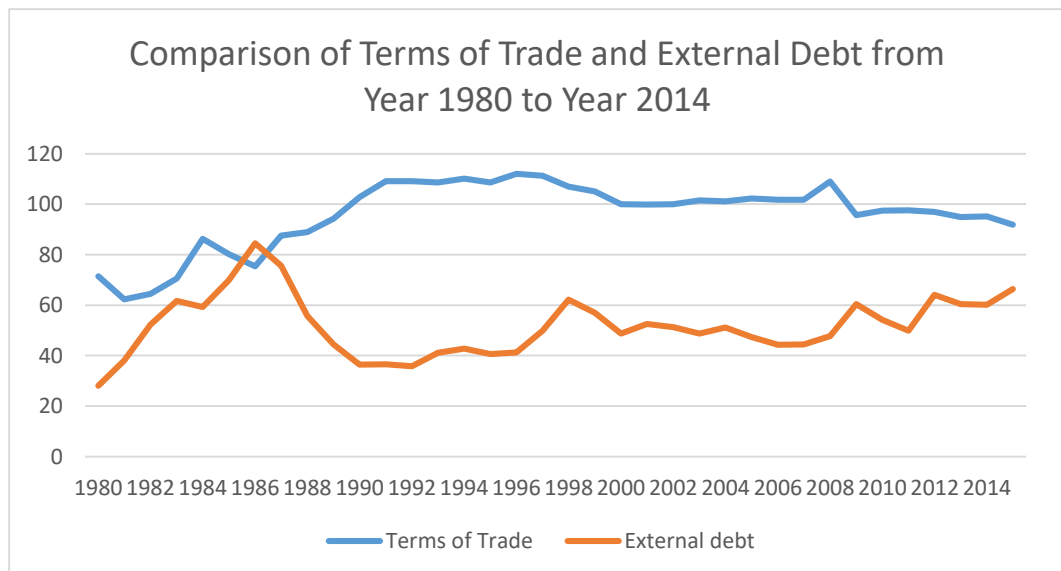
Source: World Bank, the Global Economy, 2018

Another issue that brought our concern is the rise of exchange rate which cause depreciation of Ringgit Malaysia. From the Figure 1.3 we can observe that the

Ringgit Malaysia depreciate a lot during Asian Financial Crisis in year 1997 since the exchange rate increase about 153% from 2.525 in year 1996 to 3.875 in year 1997. Hence, if the exchange rate increase, it means that we need to pay more Ringgit Malaysia in order to obtain foreign currency such as US dollar. When the exchange rate increase, it reduces the ability of Malaysia government to pay the debt and the cost of external debt increase (Awan & Asghar, 2011). It also makes people doubt if there are any ways to let Ringgit Malaysia appreciate since people also suffer a lot from the issue of rising exchange rate. For example, when Malaysians travel abroad, they need to pay more Ringgit Malaysia to demand for foreign currency and this make travel become expensive.

Figure 1.3: Exchange rate OF Ringgit Malaysia to USD from year 1980 to 2014
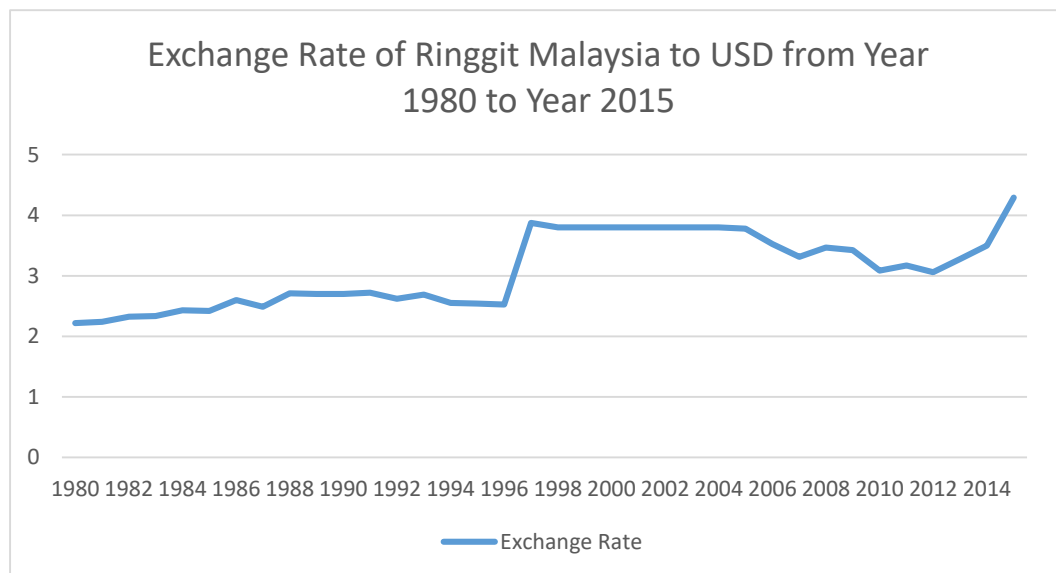
Source: Bloomberg, 2018

In a nutshell, these economic problem actually bring inconvenience to Malaysians and government, therefore, we are conducting this research in order to examine the true effect of these problem on External debt of Malaysia government.

1.2 Problem Statement

There are many factors could lead to the increase of external debt in Malaysia and many problems will be arising if the debt is accumulating up to certain level. Although Malaysia as a developing country is not easy to escaped from relied on various debt including the external debt in order to support the development of the country such as use the borrowing debt to finance the profit generating project also for other purposes. However, the heavily dependence on external debt is believed will have a negative effect towards Malaysia's economic growth. According to the data collected by World Bank (2018), the external debt of Malaysia is fluctuating in the initial but increase after year 2014 and reported an external debt of RM883.4billion on last year December ("Malaysia's external debt", 2018). This huge amount of external debt indicates that highly dependence of Malaysia's economy –on external debt. Based on the research done by Choong, Lau, Liew and Puah (2010), the heavily rely on external debt could lead to the situation of debt overhang which would burden the country's future economic growth as the debt borrowed will required the country to increase tax collection in future to finance the interest of borrowing. The consequences are, the tax revenue which originally use to invest in productive activities will be reduced and thus hurt the development of the economy.

There is a positive also significant relationship between external debt and budget deficits in most of the developing countries including Malaysia (Chihi and Normandin, 2013). This indicates that, the higher the budget deficits reported, the higher the external debt will be needed in order to finance the budget deficit. Put this to Malaysia, there is a budget deficits (% of GDP) is being reported from year 1998 until year 2015 (Bloomberg, 2018) and this had lead Malaysia to increase its debt to finance those budget deficits and the amount of external debt increase due to this will be based on how is the mix of financing method that Malaysia had been chosen. According to Adam and Bevan (2005), they proposed that there are three ways to finance the budget deficit which include the method of seigniorage, issuing domestic or through the method of borrow from foreign country. Different types of financing method will bring out different problem especially when choosing the

external debt as a country's financing method as this financing method could lead to the bankruptcy of a country if the country did not well manage with the amount of debt accumulated.

As refer to the Figure 1.2 in research background, there is a contrary of direction between the external debt and terms of trade in Malaysia. To verify is there a negative relationship between these two variables, some literature is being studied and the conclusion made by those researchers will be discussed. Terms of trade could be one of the factors that could give impact on Malaysia's external debt accumulation (Nor'Aznin Abu Bakar and Sallahuddin Hassan, 2008). From their research, they illustrated that the usage of external debt will only have the probability to increase if the terms of trade is deterioration as they found that the deterioration of terms of trade could lead to budget deficit. Link to Malaysia, in year 2008, Malaysia's terms of trade is 109% and the budget reported by Malaysia is RM 6292 million; while in year 2015, Malaysia's terms of trade had dropped to 92% which means the currency outflow is more than currency inflow from export and the budget report by Malaysia in the same year is RM 2091 million (Bloomberg, 2018).

Based on the previous study of Noor Alam and Fauzia Md. Taib (2013), there is a positive relationship between exchange rate depreciation and external debt in Malaysia. his could be proved by the data collect from Bloomberg as the exchange rate of Malaysia to US dollar is RM 3.0835 for every $1 and the external debt reported at that time is 54.19% of gross national income (GNI) while in year 2015, every $ 1 will worth RM 4.2925 and the external debt reported in year 2015 had increased to 66.31% of GNI. From the data collected, it is not deniable that exchange rate will really give an impact to Malaysia external debt as the depreciation of Malaysia's currency value means that Malaysia's citizens will have lower purchasing power also the lower value of currency could lead to expensive debt repayment as now more amount is needed to be repaid due to the depreciation of exchange rate. In short, the lower the Malaysia's currency value, the higher the external debt as the depreciated value of Malaysia's currency will lead to the situation of increase of the value of external debt.

Moreover, Siti (2016) proposed that the inverted U-shaped relationship is being verified between the government debt and the growth of economic which means that initially there will be a positive effect between debt borrowing and economic growth but when up to certain level, negative effect will be instead of positive effect. Due to the negative impact will be encountered by Malaysia if the external debt is accumulated above the average, we have the initiative to examine that what is the factors that contribute Malaysia to accumulate more and more debt. Thus, this study will examine the relationship between external debt with budget deficit, exchange rate, terms of trade, trade openness, gross domestic product and regime type.

1.3 Research Question

There are 2 research question, which act as the guidance for the argument and inquiries of our research.

    1.3.1   How is the effect of changes in macroeconomic factors (budget deficit, trade openness, terms of trade, exchange rate, gross domestic product) affect Malaysia's government external debt during the period of 1980 to 2015?

    1.3.2   How the political factor (regime type) act as interaction term and overall affect the Malaysia's government external debt during the period of 1980 to 2015?

1.4 Research Objective

1.4.1 General Objective

The increasing trend of the issue of Malaysia's government external debt accumulation has inspired us to execute the empirical study to solve for the rising government external debt problems. Hence, the general objective of our research is

to investigate the effects of the changes in macroeconomic and political factors on Malaysia's external debt from year 1980 to 2015.

1.4.2 Specific Objective

There are 2 specific objectives we aim to investigate in our study:

1.) To examine the effects of macroeconomic factors (budget deficit, trade openness, terms of trade, exchange rate, gross domestic product) on Malaysia's government external debt during the period of 1980 to 2015.

2) To identify the effects of political factor (regime type) as an interaction term that overall affect the Malaysia's government external debt during the period of 1980 to 2015.

1.5 Significance of Study

As the increase of external debt will give a huge impact to a country's economy, to investigate factors that will affect the level of accumulation of Malaysia's government external debt. The time period that we chose for our study is from year 1980 to year 2015. The reason we choose this period is because, during this period there are three crisis happened in Malaysia which is the Commodity Shock that happened from year 1985 until 1986, and Asian Financial Crisis that happened in year 1997 also the Global Financial Crisis that happened in year 2008 and we wish to examine that is this financial crisis will increase the external debt of Malaysia.

The independent variables for our study includes the budget deficit, trade openness, terms of trade, exchange rate, gross domestic product also our contribution variables which is regime type as these variables is believed will give an impact to a country's external debt (Al-Fawwaz, 2016). According to Bakhtyar (2017), Malaysia GDP had entered into a recession after the Global Financial Crisis which occurred in year 2008. This indicates that the happened of financial crisis will give impact to the country's external debt in indirect form. Then, based on the research conducted by

Jalles (2010), there is a positive relationship between democratic regime type and GDP, which means the more democratic the country is, the higher the growth of GDP will be. From the study of Zumkehr and Andriesse (2008), the country that willing to give more liberal to its citizens will experienced a relatively fast of recovery process after the financial crisis.

From this we could observe that the financial crisis could give an impact to the independent variables and thus affect the external debt of a country while the regime type is an interaction variable that could speed up or lower down the recovery process. We had decided to find out the relationship between the independent variables and dependent variable also how the regime type will affect the independent variables and thus influence the dependent variable. Our research will be slightly different with other research as we have taken into the consideration of regime type as an interaction variable but not like most of the researchers that just focus on the direct relationship between the external debt and the factors that lead to external debt.

Then, under this study, a time series analysis will be used as time series analysis enable us to examine the pattern of intervention across time which is not easy to do if cross sectional or panel data is being used (Velicer & Fava, 2003). Also, by using time series analysis, it will make us more convenience when conducting Chow Test in Chapter 4 to test the external debt of Malaysia before the crisis and after the financial crisis as the time series analysis only focus on one country for the period that had been chosen by us in doing our research.

In short, the reason we chose this topic as our research topic is because we wish to know more about what is the factors that will affect Malaysia's external debt and how the regime type used by a country will affect the explanatory variables of external debt and thus affect the external debt. Finally, we also wish that our research could give some contribution to the government when deciding the policies.

1.6 Chapter Layout

The upcoming chapter which is Chapter 2, consists of the literature review regarding previous researcher's studies about the determinants of external debt. Next, Chapter 3 presents the sources of data, data description, econometric framework and proposed methodology. Subsequently, Chapter 4 mainly focused on the interpretation of empirical results. Lastly, policy implications, limitations and recommendations that are useful for future researchers will be discussed in Chapter 5.

1.7 Chapter Summary

In conclusion, we conducted this research to examine the effect of budget deficit, terms of trade, real exchange rate, GDP, trade openness, regime type and on external debt of Malaysia. Besides, this chapter had present the background of Malaysia external debt including hot issue exist. The problem statement, research question, research objective and significance of study also been discussed accordingly in this chapter. This research also helps people to understand deeply about external debt.

CHAPTER 2: LITERATURE REVIEW

2.0 Introduction

In this chapter, the theory that backed our research will be discussed and a thorough study will be done by reviewing the literatures and journals. Under this topic, the relationship between the independent variables and dependent variable will be touched on. Finally, the chapter summary will be provided to summarize the things that we had done in Chapter 2.

2.1 Theoretical Review

2.1.1 Theory of Two Gap Model

According to Sa'ad, Umar, Waziri and Maniam (2017), the "Two Gap" model which also known as Dual Gap model is one of the key to explain the reason for increasing external debt. The theory suggests that there are two gaps which is savings gap and foreign exchange gap, both of them actually restrain economic from reaching good performance. Besides, saving gap (I-S) is the difference between domestic saving and investment, foreign exchange gap (M-X) is the gap between export and import. The following equation is the basis of Two Gap model:

Investment – Savings = Import – Export

When there is decline on export or excess of import, the foreign exchange gap is said to be exist, the revenue gain from the transaction will decrease and foreign exchange in international reserve also decrease as well. This actually led to the situation of essential to borrow external fund to boost the

economic growth (Forgha, Mbella & Ngangnchi, 2015). According to Nasir (2015), if internal resources of a country is not enough to satisfy the amount needed for economic development for a developing country like Malaysia, the foreign aid in the form of liability is required to fill the gap. For example, if Malaysia is facing budget deficit which indicate excess of expenditure over revenue, the country does not have enough funds for investment to ensure economic growth, therefore, the foreign capital is used help Malaysia to improve the economic conditions. In a nutshell, by filling the gap exist, a country need to borrow external funds to measure and accelerate the continued growth of economic.

2.1.2 Development theory

There are several literatures examine if the regime type is driver of economic growth. According to Papaioannou and Siourounis (2008), the theory to explain the relationship between democracy and economic growth is "Development theory". This theory emphasis the role play by representative institution to influence the economic growth in beneficial aspect. In this theory, redistribution become a component leads to positive relationship between democratic regime and economic growth. The median-voter will demand for fiscal policy that can promote redistribution because of income inequality issue. Papaioannou and Siourounis (2008) also said that the rise of economic growth could happen after the fiscal policy that aimed to promote redistribution is implemented and the tax income is used in education investment and recover capital market from imperfection. Furthermore, when the government a country transforms its political regime from democracy type to other, it usually undergoes slower economic growth. According to the data we found in Our World in Data, Malaysia used to be a democratic country from year 2009 to 2013 and thereafter, the country turned to be a hybrid democracy. Therefore, we adopt "Development theory" since it describes about how democracy could led to policy changes and affect the economic growth.

2.2 Empirical Review

2.2.1 Exchange Rate and External Debt

According to the research carried out by Muhammad Mustapha Abdullahi, Nor Aznin and Sallahuddin (2015), there is a significant and negative relationship between exchange rate and external debt. The negative relationship is not only proved by the negative coefficient of 0.529 percent increase in Nigeria's external debt for every 1 ₦ depreciation of Nigerian Naira as compared to US dollar but also testimony by the historical fact as there is a huge decline of world crude oil prices that happened in year 1978. Due to the significant dropped of crude oil prices, Nigeria's oil exporting also been affected and this lead to a situation of increase of budget deficit reported by Nigeria. The government had manipulated the policy instrument to solve the problem but this action had harm the exchange rate of Nigeria and the consequences is increase of external debt of Nigeria from $ 4.6 billion in 1980s to $ 32.9 billion in the end of 1990s. This had proved that the more a currency is depreciated, the higher the external debt of a particular country will be. Bader and Magableh (2009) also agreed that there is a significant and negative relationship between exchange rate and external debt as for every 1 depreciate of Jordanian Dinar to US dollar which lead to an increase of 6.95 Jordanian Dinar of external debt in Jordan.

Based on the research done by Noor Alam and Fauzia (2013), a positive relationship is found between the exchange rate depreciation and external debt. From their study, they claimed exchange rate depreciation playing an important role in explaining the external debt and the output of Chow Test indicates that this variable has a positive relationship with external debt in both debt trap and non-debt trap countries. From the study, the depreciation of exchange rate could increase the value of the amount of outstanding debt as the weak currency will increase the burden when incurred into the matters

of repaying debt due to weak currency will worth less against other countries' currency.

Even there are some studies are saying negative relationship exist between exchange rate and external debt but they do have some researchers have different opinion in this case. In the research done by Benedict, Ehikioya and Asin (2014), a direct, significant yet positive relationship is being found on the exchange rate towards external debt of Nigeria. After running the econometric testing, for every percent increase in exchange rate, the external debt of Nigeria will increase by 0.811 percent as the higher exchange rate will become a motivation factor for the citizens to demand more imports goods which could increase the external debt of a country. This finding is agreed by Awan, Anjum and Rahim (2015) as the result of ARDL approach indicates that there not only a long run relationship but also the positive and significant relationship between these two variables.

2.2.2 Trade Openness and External Debt

Based on the study done by Bölükbaş (2016), a strong positive relationship is being found between trade openness and external debt as according to the research, 1 percent increase in trade openness could increase two-fold of the ratio of external debt in Turkey. Trade openness is being calculated through adding up the export and import in a particular year of that particular country and then divided by the country's GDP. Through the researcher's research, the conclusion could be made that any changes in import and export compared to GDP could give an impact to the external debt in Turkey. Bölükbaş (2016) proposed that import is more significant in Turkey as compared to export, this means more import goods is obtaining in Turkey compared to the export goods that Turkey export. Due to the reason of total import is more than total export, the money outflow is relatively more and thus the external debt of Turkey reflect a significant positive relationship between trade openness and terms of trade.

Kızılgöl and İpek (2014) also agreed that there is a positive relationship between trade openness and external debt. Based on the research done by (Kızılgöl & İpek, 2014), the result of ARDL shows that trade openness has a positive and significant relationship between trade openness and external debt in Turkish for both long and short run. This means the higher the trade openness, the higher the external debt will be in Turkish. The reason for this relationship is due to trade taxes. Kızılgöl and İpek (2014) illustrated that when the country is decided to open their economy, the taxes that impose on trade will become one of the sources of revenue but due to the trade liberalization policies in Turkish had force the country to reduce or eliminate the tariffs, a type of tax that imposed on import and export goods. The reduction in revenue due to the trade liberalization policies could result a fiscal gap in Turkish and to cram this gap, the external debt of Turkish will be increase and thus the positive relationship is between these two variables. According to Awan et al (2015) too, a positive relationship is being found between the two variables. Under the research done, there are long run and positive relationship between trade openness and external debt as there will be an increase of 0.46425 percent in external debt for every 1 percent raise in trade openness. In short run, the external debt of Pakistan will increase 0.23470 percent for every 1 percent increase in trade openness during short run.

According to the research done by Benedict et al (2014) there is a negative relationship between trade openness and external debt in Nigeria. Although the negative relationship is being found, the final verdict that reach by these researchers is congenial with the finding of Bölükbaş (2016) even a positive relationship is found in the research conducted by Bölükbaş (2016). The point that shows the findings is congenial to certain degree between these two research is, under the research of Bölükbaş (2016) mentioned that the positive relationship is due to the higher import bills as compared to income from export so that there is a positive relationship between these two variables; for the study that carry out by Benedict et al (2014) had suggested that a negative relationship between trade openness and external debt would be instead of positive relationship if the revenue generate from exports

goods is able to cover the import bills. This suggestion also agreed by the research done by Muhammad Zakaria (2012) as even the research done found a positive relationship but the same conclusion is being made which is the relationship between trade openness and external debt is decide by the country's import and export transaction but not the trade openness itself.

2.2.3 Term of Trade and External Debt

According to the research which focused the study on the impact of terms of trade towards Pakistan's external debt indicates that there is a negative while significant relationship between terms of trade and external debt in long run (Awan, Asghar & Rehman, 2011). In their research, the researchers had done a Johansen and Juselius Cointegration Test to investigate whether there is a long run relationship between the terms of trade and external debt and the result shows that terms of trade is a significant variable to explain the external debt in long run. Based on their research, they proposed that the deterioration of terms of trade could increase the indebtedness of a country as terms of trade as an indicator that used to measure the country's economic health by comparing the amount of a country's export prices to its import's price then times one hundred, the shrink of this ratio means that more currency is outflow instead of inflow. If this situation is continuing and without a proper manage, in long run, there will be a need for external debt to finance the amount of import goods.

However, Awan et al (2015) proposed another point of view as they argued that there is a negative but insignificant relationship between terms of trade and external debt. From their study they argued that the terms of trade are insignificant in explaining Pakistan's external debt as the result of Autoregressive Distributed Lag (ARDL) Model approach tells that there is not a significant relationship between terms of trade and external debt which means the terms of trade is not the explaining variables towards the increase of debt burden in Pakistan. The finding is conformed with research done by

Benedict et al (2014) which used Nigeria as the sample of their research had proposed that there is a negative but insignificant relationship between terms of trade and external debt. Although they found a long run relationship between terms of trade and external debt through running the Johansen Cointegration Test, however, the result of Ordinary Least Square also indicates a negative and insignificant relationship between these two variables. Even there is a negative relationship between the two variables which reflect the increase of terms of trade could lighten the burden of external debt of Nigeria, but due to the insignificant relationship found, terms of trade became insignificant in explaining the external debt of Nigeria. From their study, they found that the insignificant relationship is because of the export product of Nigeria is price inelastic which indicates that the demand or supply will not be affected by the changes of price of the export product. Indirectly, this indicates that the demand is fixed and thus this variable is not suitable to be used to explain a country's external debt if the country's export is inelastic in price.

Although there are many researchers proposed that there is a negative relationship between the terms of trade and the external debt, however, there are still some researchers argued that there is positive relationship between these two variables. According to the research done by Al-Fawwaz in year 2016, the positive and significant relationship in long run is being illustrated by the researcher as the result of ARDL approach had demonstrated the relationship between the variables. Also, from the study conducted, the researcher found that there will be 53 percent increase of external debt for every 1 percent increase in terms of trade. This argument is being endorsed by Muhammad Zakaria (2012). Based on the study conducted by Muhammad Zakaria (2012), terms of trade are positively and significantly affect the external debt of Pakistan. Moreover, generalized method of moments (GMM) estimation technique is being used to solve the chance of bias caused by the endogenous explanatory variables. From the research done, the researcher proposed that if the terms of trade in other countries are growing prosperous, the external debt of Pakistan will be affected in a positive way as the demand for exported goods of Pakistan is price elastic

also the main export goods in Pakistan is the goods with low value added or raw materials. Furthermore, the products that export by Pakistan is experiencing a decline of world prices so the improvement of others countries terms of trade could increase the burden of debt of Pakistan indirectly as the growth of terms of trade of others countries will increase the value of currency of others countries which could lead to more money is needed to repay the debt that the country accumulated before.

2.2.4 Gross Domestic Product and External Debt

Based on the research conducted by Abdul Waheed (2017) which focused the study on 12 oil and gas exporting and 12 oil and gas importing countries to examine the factor that could give impact to the external debt. The duration of study is from year 2004 until year 2013, there is a verdict of negative and significant relationship between gross domestic product and external debt had been reached by the researcher. According to the study done, Abdul Waheed (2017) found that the growth of gross domestic product could lower down the external debt in both oil and gas exporting and importing countries. This is because the growth of gross domestic product means that there is an economic growth, when the economic is growing well, there will be a budget surplus and thus could lower down the external debt of that particular country. This finding is reach the same verdict with the findings of Tiruneh (2004) which centralized the study on the determinants that affect the level of external debt accumulation in developing countries and the study period is from 1980s to 1990s. Based on the research that executed by Tiruneh (2004) proposed that a country with relatively weak position in terms of economic growth will require more borrowing from foreign countries as compared to the country with higher growth rate in gross domestic product. This is because a country with lower gross domestic product indicates a sluggish economic for that particular country which might lead to a situation of income instability and thus more

external borrowing is needed to finance the past debt obligations or the import bill.

Moreover, Al-Fawwaz (2016) also proposed that there is a negative and significant relationship between gross domestic product and external debt in Jordan. Under the research carried out by Al-Fawwaz (2016), the Autoregressive Distributive Lag approach is being used to test the long-run relationship between these two variables and the result shows that for every 1 percent increase in gross domestic product, there will decline approximately 78 percent of external debt in Jordan. This finding is agreed by Benedict et al (2014) as they also discovered that gross domestic product is one of the main determinant that significantly affect the external debt of Nigeria in a negative way. According to the Ordinary Least Square that had ran by the researchers, for every 1 percent increase in gross domestic product, holding other variables constant, the external debt will decrease 2.786 percent. This result of investigation is meet with the theoretical expectation that the increase in domestic product of goods and services will lower down the demand for external debt. Furthermore, Shamsuddeen Aliyu Sa'ad, Ahmed Tukur Umar, Salisu Ibrahim Waziri and Ganthi Selvi Maniam (2017) also suggested that there is a negative relationship between gross domestic product and external debt in both short and long run after running the ARDL Cointegration Test. The researchers proposed that the adverse growth of gross domestic product could weaken the country's purchasing power also erode the power of repaying the debt.

According to the research conducted by Lau, Lee and Arip (2015), they proposed a contrary opinion as they illustrated that there is a positive relationship between gross domestic product and external debt. This is because when a country's economic is doing well indicates that the particular country's economic is growing faster than other countries and this might increase the desire of imports goods by the citizens of that particular country. If the degree of spending is not managing properly, there could be a possibility of demand for external debt. Also, for the country with prosperous growth of economic, the acceptance for that particular country

in the use of debt will be increased and thus the positive relationship is between these two variables (Jong, Kabir & Nguyen, 2007).

2.2.5 Budget Deficit and External Debt

According to Osinubi and Olaleru (2006), the positive relationship does happen between budget deficit and external debt in Nigeria as they claimed that the occurred of budget deficits means that a lower amount of private saving from public is used to invest in economic stimulating investment. This is because the amount that a country could have in developing investment is the private saving deduct with the government spending and tax. When there is a budget deficit, lower amount will be left to use in investment, to maintain the economic growth of the country, an external debt will be required to support the amount that the country need for development project and thus increase the debt accumulation. The positive relationship found between budget deficits and external debt in Nigeria also due to this reason as the normal way that Nigeria government used to finance the budget deficit is through external borrowing which normally accompany with the accumulation of debt and the risk of debt overhang if the amount borrowed is not managed properly. Based on the research of Bader and Magableh (2009), budget deficits are positively and significantly related to external debt of Jordan as the chronic government deficits is being reported will increase the demand for external debt. However, Benedict et al (2014) illustrated another point of view of budget deficit is insignificant but positively related to external debt which means that an increase in budget deficits also could raise the external debt of Nigeria but might not a significant variable in explaining the Nigeria's external debt.

Still, there are some researchers conclude that budget deficit is negatively related to external debt. According to Muhammad Mustapha Abdullahi et al (2015), a negative but significant relationship is being found between budget deficit and external debt of Nigeria as there found that the higher the

budget deficit the country is reported, the lower the debt stocks will be. Debt stocks could be considered as the amount of money that foreign investors willing to put in a particular country in the form of holding the country's stock, when the budget deficits is reported, the foreign investors might choose to pull themselves out from continuing invest and this decrease the dependence of debt of a country to other countries and thus the higher budget deficits could lower down the external debt that a country owed to the outsiders.

Based on the research of Mohammed Issa Shahateet, Al-Habashneh and Khalid Ali Al-Majali (2014), an opposite point of view is proposed. From their research, the budget deficit is reported to be have no relationship with the external debt of Jordan as the result of Cointegration Test and the Granger Causality Test also stated that there is no long run even granger relationship between these two variables. According to the study of Mohammed Issa Shahateet et al (2014), the relationship between these two variables not to be existed is due to the spending of Jordan had depends on the external debt for so long due to the direct effect of the interest rate, inflation rate also the economic growth of Jordan.

2.2.6 Regime Type and External Debt

Based on the past studies, the choose of regime type to apply in a particular country could give an impact towards the economic growth of the particular country. The countries which abandoned autocratic regime but use democratic regime could benefit in long run (Papaioannou & Siourounis, 2008). Papaioannou and Siourounis (2008) had found that there is a positive relationship between democrazation and economic growth as the output of their research indicated that democratic regime could lead to almost 1 percent growth in gross domestic product. Based on Kormendi and Meguire study (as cited in Jalles, 2011), they also proposed a positive effect between civil liberties and economic growth as they found that a high level of civil

liberties face about 1 percent greater economic growth and vice versa. On the paper of Jalles (2010) also agreed with the findings, according to their study some new panel data-based evidence has presented the statistically positive effect of democratic regime on the economic growth. The research conducted by them had controlled the initial income, human capital, investment and policy variables, the results shows that the sustained democratic transition increase per capita GDP growth, while for sustained autocratic transitions, there was no support to prove such hypothesis. Although there are many researchers support with the positive relationship between democratic regime and economic growth, there is an opposite viewpoint from Barro (1996). Based on Barro (1996), the relationship between democracy and economic growth showing an inverted u-shape as the author found that the country's GDP will first increase when more political rights is giving to citizens, however, when the democratization attained moderate level, the economic growth will be retarded instead of continuing growth. This is because, when more and more rights are giving to the hand of citizens, the main concern of citizens will move to income redistribution but not the overall growth (Barro, 1996).

Apart from the relationship between regime type and gross domestic product, some researchers also found a positive relationship between democratic regime type and fiscal deficits. On the paper of Udoh, Joshua and Etok (2012), they made a conclusion of democratic regime could increase the fiscal deficit of a country as the country may tend to spend more to impress the voters to secure their tenure. Fiscal deficits are the difference between a country's expenditures and revenues (Nimani, 2013). The reported of fiscal deficits indicates that the amount the country generated is not enough for its spending and this could lead to the budget deficit as the country might need to bear some liabilities to complement the country's expenditures. If the fiscal deficit is continuing been reported, and the same method was used by the particular country to clear the expenses, there will be an obvious increase in country's external debt. Although the statement made by those researchers is comply with logic, there are still some opinion from opposite side. Anwar and Ahmad (2012) had conducted a research on the

determinants of budget deficit of Pakistan between year 1976 to year 2000. The output of bound test shown that there is a long run relationship between democracy and budget deficit. In the result of ARDL, the negative result is gained between democracy and budget deficit which imply that the lack of democracy could increase the budget deficit. The reason is because, the lack of democracy may reduce the transparency and weaker the institutional quality of a country and lead to higher budget deficit (Anwar & Ahmad, 2012).

Finally, for the trade openness, some studies proved that the democratic regime do affect the trade openness hence influence the dependent variable which point towards external debt. Based on Adsera and Boix (2002), they proposed a positive and significant relationship between the regime type used and the trade openness. The researchers found that the democratic regime used by a country could encourage the country to become more trade openness. The joint test is being apply for the research and the result of the test indicates a positive and significant relationship between both variables. This means, by applying democratic regime, the revenue of the country could be boosted with the widespread of trade openness (Adsera & Boix, 2002). As mentioned before, the form of huge amount of external debt might be due to the long sustain of fiscal deficit, the accumulated revenue from trade openness could become one of the methods to overcome or minimize the debt burden. However, in the research conducted by Ondo (2017), a convex relationship is found between democratic regime and trade openness. From the research, the author found that there is a convex relationship between democracy and trade openness as at initial the trade openness will be reduced due to the democracy but by later it will raise as the country reach a hybrid democracy as hybrid democracy tend to adjust the flexibility of the trade policy for the interest of the State agent to satisfy the protectionist lobbies and thus increase the tolerance for trade openness (Ondo, 2017).

In the perspective of the regime type and the terms of trade, the previous researcher, Milner and Kubota (2005) claimed that the lower trade barriers

happened in the democratization in labor abundant developing countries. Also, the democratization empowers the owners of factors with which the country is abundantly endowed with trade liberalization. They thus made the conclusion that there is the positive impact of the regime type on the terms of trade. On the other hand, Frieden and Rogowski (1996) suggested that in order to win the election, the democratic politicians sensitive to the demands of the interest group who makes a favor of support in return for the trade protection. The researcher, Henisz and Mansfield (2006) supported the fact that the autocracies is less susceptible to societal pressure, as it only needs to appeal to few segments of society to secure their position.

In conclusion, since the past studies had proved the indirect relationship between democratic regime and external debt, we had included it into our research as an interactive variable to examine how the democratic regime could affect the other independent variables and thus influence the dependent variable which is the external debt of Malaysia.

2.3 Chapter Summary

In conclusion, for the Two Gap Model, the more the public saving leftover the government spending and tax, the lesser the probability that a country need to require external debt to finance a development project. For the Development theory, the regime type that choose by a country could affect the country's policy also give impact to the economic growth. Throughout the study, most of the researchers claimed that the exchange rate will have a negative relationship to the external debt. For the trade openness, the relationship of this variable with the dependent variable in this study is said to be depends as the relationship of this variable with the external debt is mainly determined by the total imports and exports the country trade. Then, when comes to terms of trade and gross domestic product, majority of researchers reported a negative relationship of these variables to external debt. Finally, the positive relationship is being concluded by most of the researchers when discuss about the relationship between budget deficit and external debt. Based on

the review, there is a gap in the literature on regime type, interaction variable relationship need to be covered up.

CHAPTER 3: METHODOLOGY

3.0 Introduction

In this chapter, the source that we obtain our data will be recorded and the definition for each variables also will be provided. Then, the theoretical framework also basic model that we gain from the main journal we used and the extended model that include our contribution, follow by the explanation for each test that we will be used later. Finally, the method that we will be used in conducting the following research also will be discussed.

3.1 Source of Data

Table 3.1: Source of Data

Variables	Source of Data
External Debt	The Global Economy
Budget Deficit	Bloomberg
Trade Openness	Bloomberg
Terms of Trade	World Bank
Exchange Rate	Bloomberg
Gross Domestic Product	Bloomberg
Regime Type	Our World in Data

3.2 Data Description

Table 3.2: Data Description

Variables	Definition
External debt	World Bank (n.d.) defined external debt as the present value of debt is the sum of short-term external debt plus the discounted sum of total debt service payments due on public, publicly guaranteed, and private nonguaranteed long-term external debt over the life of existing loans. The GNI denominator is a three-year average.
Budget deficit	World Bank (n.d.) defined budget deficit as the entry records the difference between national government revenues and expenditures, expressed as a percent of GDP. A positive number indicates that revenues exceeded expenditure (a budget surplus), while a negative number indicates the reverse (a budget deficit). Normalizing the data, by dividing the budget balance by GDP, enables easy comparisons across countries and indicates whether a national government saves or borrows money. Counties with high budget deficits generally have more difficulty raising funds to finance expenditures, than those with lower deficits.
Trade Openness	World Bank (n.d.) defined the trade openness as the sum of exports and imports of goods and services measured as a share of gross domestic product.
Terms of Trade	World Bank (n.d.) defined the Terms of Trade as the net barter terms of trade index is calculated as the percentage ratio of the export unit value indexes to the import unit value indexes, measured relative to the base year 2000. Unit value indexes are based on data reported by countries that demonstrate consistency under UNCTAD quality controls, supplemented by UNCTAD's estimates using the previous year's trade values at the Standard International Trade Classification three-digit level as weights. To improve data coverage, especially for the latest periods, UNCTAD constructs a set of average prices indexes at the three-digit product classification of the Standard International Trade Classification revision 3 using UNCTAD's Commodity Price Statistics,

	international and national sources, and UNCTAD secretariat estimates and calculates unit value indexes at the country level using the current year's trade values as weights.
Exchange Rate	World Bank (n.d.) defined the Exchange Rate as the official exchange rate refers to the exchange rate determined by national authorities or to the rate determined in the legally sanctioned exchange market. It is calculated as an annual average based on monthly averages (local currency units relative to the U.S. dollar).
Gross Domestic Product	World Bank (n.d.) defined the GDP at purchaser's prices as the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. Data are in current U.S. dollars. Dollar figures for GDP are converted from domestic currencies using single year official exchange rates. For a few countries where the official exchange rate does not reflect the rate effectively applied to actual foreign exchange transactions, an alternative conversion factor is used.
Regime Type	United State Institute of Peace (n.d.) defined the regime type as the set of political institutions by which government of a state is organized. Regime type include democracy, dictatorship, monarchy and theocracy.

3.3 Theoretical Framework

Independent variables

- Exchange Rate
- Budget Deficit
- Terms of Trade
- Trade Openness
- GDP

Regime Type

Dependent variable

External Debt of Malaysia Government
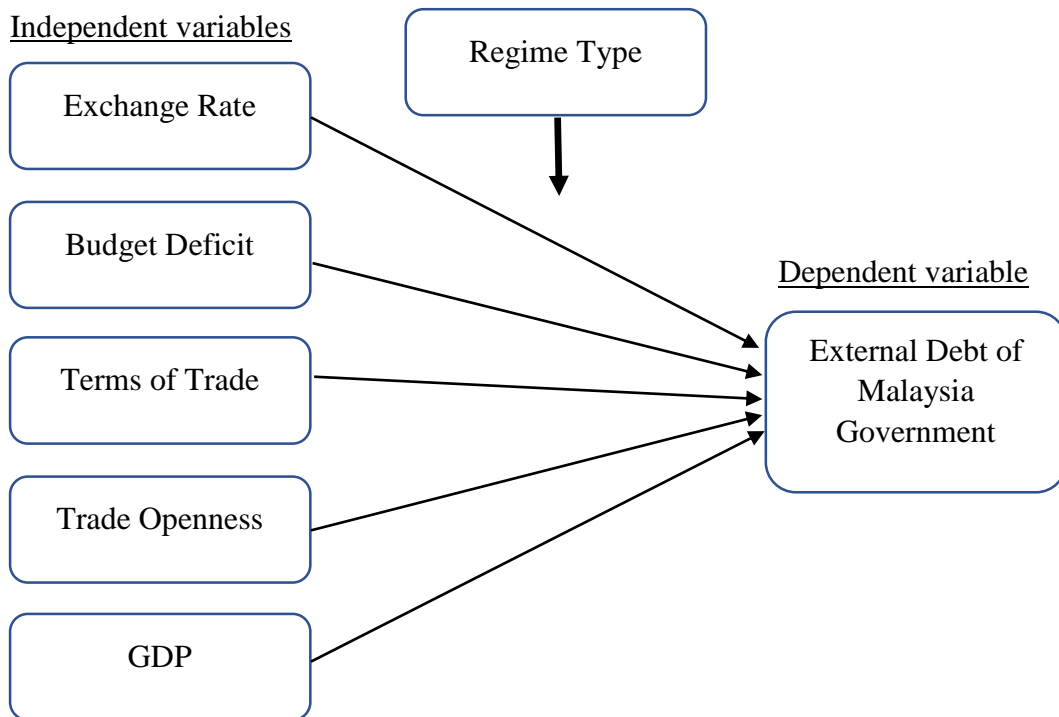
In the theoretical framework, the interaction variable, regime type is added to the whole framework to test the effect on the different independent variables like the exchange rate, budget deficit, terms of trade, trade openness, and GDP and have the overall consequential effect on the dependent variable, External Debt of Malaysia government.

3.3.1 Basic Model

The econometric model that had been used by Al-Fawwaz (2016) when conducting his study is as below and the author believe that there is a positive relationship between the dependent and independent variables. This model had been adopted by our group to investigate the factor that lead to increase of external debt. This is the model:

$$Log\ EDt = \alpha + \beta_1 Log\ Dt + \beta_2 Log\ TOt + \beta_3\ Log\ TOT$$
$$+ \beta_4\ Log\ EXCHRt + \beta_5\ Log\ GDPpct$$

Where,

ED = External debt

D = Deficit

TO = Trade openness

TOT = Terms of trade

EXCHR = Exchange rate

GDP $_{pc}$ = Gross domestic product per capita

3.3.2 Estimated Model

Our group had added in one contribution variables which is regime type to investigate the interaction of regime type with various independent variables and how the regime type could affect the independent variables and thus give impact to the dependent variable. The estimated model is as below:

3.3.2.1 Model 1

$$ED_t = \alpha + \beta_1 BD_t + \beta_2 Log\ TO_t + \beta_3\ Log\ TT_t + \beta_4 ER_t + \beta_5 GDP_t + \varepsilon_t$$

3.3.2.2 Model 2

$$ED_t = \alpha + (\beta_1 BD_t \times RT_t) + \beta_2 BD_t + (\beta_3 TO_t \times RT_t) + \beta_4 TO_t$$
$$+ (\beta_5 TT_t \times RT_t) + \beta_6 TT_t + (\beta_7 ER_t \times RT_t) + \beta_8 ER_t$$
$$+ (\beta_9 GDP_t \times RT_t) + \beta_{10} GDP_t + \varepsilon_t$$

Where,

ED = External debt in % of GNI

BD = Budget deficit in –ve % of GDP

RT = Regime type in democracy level

Autocracy (-10 to -6)

Anocracy   (-5 to   5)

Democracy (6   to 10)

TO = Trade openness in % ratio of total trade to GDP

TT = Terms of trade in % ratio of export unit value indexes to the import unit value indexes

ER = Exchange rate in % ratio of total currency unit in Malaysia to US dollar

GDP = Gross domestic product in % of GDP

3.4 Diagnostic Checking

3.4.1 Unit root test

Augmented Dickey-Fuller (ADF) is a unit root test developed by Dickey and Fuller (1981) that is use to determine the presence of unit root problem in time series data. The statistic used in ADF test is negative number, and there will be high possibility to reject null hypothesis when the statistic is more negative. The null hypothesis of this test is:

H_0: Yt is non-stationary/ unit root

If the null hypothesis is rejected, the data is said to be stationary. Non-stationary means that the covariance and mean of time series data is not constant. Thus, the test will become unreliable is there is unit root problem. Furthermore, there are two type of model under ADF test which is "with constant without trend" and "with constant and trend". The equation of ADF test is as follow:

With constant and with trend:

$$\Delta y_t = \mu + \beta trend + \delta y_{t-1} + \sum_{i=1}^{k} \Delta y_{t-i} + \varepsilon_i$$

y_t in our research refers ED denotes external debt; BD denotes budget deficit; RT denotes regime type; TO denotes trade openness; TT denotes terms of trade; ER denotes exchange rate; and GDP denotes gross domestic product.

With constant without trend:

$$\Delta y_t = \mu + \delta y_{t-1} + \sum_{i=1}^{k} \Delta y_{t-1} + \varepsilon_i$$

The null of unit root can be tested with

$$\delta \geq 0 \ (y = ED, BD, RT, TO, TT, ER, GDP)$$

$$\delta < 0 \ (y = ED, BD, RT, TO, TT, ER, GDP)$$

The test statistic calculation formula is as below:

Test Statistic $= \dfrac{\delta - \delta}{SE(\delta)}$

If test statistic is less than lower critical value, we will reject null hypothesis, otherwise do not reject it. The optimal lag length is determined by using minimum Schwarz Information Criterion (SIC) and Akaike's Information Criterion (AIC).

3.4.2 Ordinary Least Square (OLS)

Ordinary Least Square (OLS), one of the estimation model that normally used to explain the relationship between one dependent variable and few independent variables (Hutcheson, 2011). This model is the most common model apply by researchers, forecasters also practitioners as by applying OLS, the output of the research could be optimized while the possibility of forecasting error could be minimized (Pickett, Reilley & Meintyre, 2005). This is because the applied of OLS model need to fulfil all the assumptions under Classical Normal Linear Regression Model (CNLRM) in order to gain the most accurate result. The assumptions under CNLRM includes (1) The linear regression model should be obtained in parameter. (2) The X values should be fixed in repeating sampling. (3) The X values should be in variable and outlier should be absented. (4) A zero covariance should be gained between the explanatory variables and error terms. (5) The error terms should be zero mean value. (6) Absent of heteroscedasticity problem among the error terms. (7) The number of parameters should lesser than the number of observation (n > k). (8) Normal distribution in error terms. (9) Absent of specification bias.

An OLS model is said to become a Best Linear Unbiased Estimator (BLUE) if all the assumptions stated above is meet (Gujarati & Porter, 2013). The BLUE refer to best, linear, unbiased, and efficient. Best means that a minimum variance is gained by the estimators, linear means the parameter is in linear form, unbiased indicates that the expected value of estimators is close with actual value of estimators. Finally, efficient means the estimators is trustable, an accurate result could be obtained (Gujarati & Porter, 2013). In order to make sure our research is free from any problem and safe to apply OLS model, we will use E-views 10 to perform the diagnostic checking. This study will form a regression model of external debt of Malaysia with budget deficit, exchange rate, terms of trade, trade openness, gross domestic product also one interaction variable which refer to regime type.

3.4.3 Normality Test – Jarque Bera Test

Jarque –Bera test is a type of goodness-of-fit test, and usually used to test on the normality of the model in statistical application. Jarque and Bera (1987) proposed the concept of the test and gained a huge acceptance among the econometricians. The application of the test is based on the sample of skewness (S) and Kurtosis (K) of the OLS model. The test statistic formula is given as below:

JB = [(S2/6) + (K-3)2/24]

In the Jarque-Bera Test, it involves the chi-square test and the degree of freedom is 2. A small p-value for Jarque Bera test and large test statistic result (Jarque-Bera value) will tell the fact of the not normally distributed error term, by comparing the result with the specific critical value (Andale, 2016). A few studies had also been carried out in the consequences of normality assumptions violation when the normality assumptions are violated, there will be the consequences of the use of suboptimal estimators, invalid inferential statements and to inaccurate conclusions, strengthening the importance of testing the validity of the assumptions. For instance, in

estimation, the ordinary least- squares estimator, which is efficient under normality, can be sensitive to the long- tailed distribution. With the usual of t and F- test in the inferential procedures, and demonstrate that sensitivity to non-normality is determined by the regressor's numerical values. Also, some adjustment in the degree of freedom of these test may be required to obtain the desired significance level. Moreover, serial independence and homoscedasticity tests suggested for the result of the incorrect conclusion under non- normality is caused by the normal disturbances.

3.5 Estimation Model

3.5.1 Autoregressive Distributed Lag (ARDL)

Autoregressive Distributed Lag model is use in this study to determine the long-run relationship between external debt and macroeconomics variables such as budget deficit, exchange rate, GDP, terms of trade and trade openness and political variable such as regime type. This cointegration test is developed by Pesaran, Shin and Smith (2001) to study the long-run relationship between the variables. The bound testing cointegration procedure can be used to examine the ARDL model. We choose the ARDL as model on this study as long as the procedure is easy to conduct. Besides, by comparing the model established by Johansen and Juselius (1990) and Engle and Granger (1987), ARDL bound test allows us to examine the cointegration relationship with the OLS method if the lag order of the model is known.

Furthermore, the variables of ARDL model are not necessary to be integrated in the same order and this method can be applying no matter how is the stationarity of independent variable. Besides, this methodology can be used to examine small size of sample data efficiently and generate reliable result. According to Nkoro and Uko (2016), ARDL bound test can help to

obtain unbiased estimates of long run model. As mentioned by Royfaizal (2009), the ARDL model can be used to examine the short run relationship directly and the long run relationship indirectly by including the lags of both endogenous and exogenous variables.

To investigate the long-run relationship between external debt and both economic and political variables, the unconditional ECM model is form and shown as follow:

$$\Delta \log(ED)_t = \sigma_0$$

$$+ \sum_{i=1}^{p-1} \sigma_{1i} \Delta(\text{ED})_{t-i} + \sum_{i=0}^{q_1-1} \sigma_{1i} \Delta(\text{ED})_{t-i}$$

$$+ \sum_{i=0}^{q_2-1} \sigma_{2i} \Delta(\text{BD})_{t-1}$$

$$+ \sum_{i=0}^{q_3-1} \sigma_{3i} \Delta \log(TT)_{t-1} + \sum_{i=0}^{q_4-1} \sigma_{4i} \Delta \log(TO)_{t-1}$$

$$+ \sum_{i=0}^{q_5-1} \sigma_{5i} \Delta(\text{GDP})_{t-1} + \sum_{i=0}^{q_6-1} \sigma_{6i} \Delta(\text{ER})_{t-1}$$

$$+ \sum_{i=0}^{q_7-1} \sigma_{7i} \Delta(\text{RT})_{t-1} + \delta_0(\text{ED})_{t-1} + \delta_1(\text{BD})_{t-1}$$

$$+ \delta_2 \log(TT)_{t-1} + \delta_3 \log(TO)_{t-1} + \delta_4(\text{GDP})_{t-1}$$

$$+ \delta_5(\text{ER})_{t-1} + \delta_6(\text{RT})_{t-1} + \varepsilon_t$$

$$\Delta\log(ED)_t = \sigma_0$$

$$+ \sum_{i=1}^{p-1} \sigma_{1i}\Delta(\text{ED})_{t-i}$$

$$+ \sum_{i=0}^{q_1-1} \sigma_{1i}\Delta(\text{ED})_{t-i} + \sum_{i=0}^{q_2-1} \sigma_{2i}\Delta[(\text{BD})_{t-1} \times \text{RT}_{t-1}]$$

$$+ \sum_{i=0}^{q_3-1} \sigma_{3i}\Delta[\log(TT)_{t-1} \times \text{RT}_{t-1}] + \sum_{i=0}^{q_4-1} \sigma_{4i}\Delta[\log(TO)_{t-1}$$

$$\times \text{RT}_{t-1}] + \sum_{i=0}^{q_5-1} \sigma_{5i}\Delta[(\text{GDP})_{t-1} \times \text{RT}_{t-1}]$$

$$+ \sum_{i=0}^{q_6-1} \sigma_{6i}\Delta(\text{ER}_{t-1} \times \text{RT}_{t-1}) + \delta_0(\text{ED}_{t-1} \times \text{RT}_{t-1})$$

$$+ \delta_1(\text{BD}_{t-1} \times \text{RT}_{t-1}) + \delta_2[\log(TT)_{t-1} \times \text{RT}_{t-1}]$$

$$+ \delta_3[\log(TO)_{t-1} \times \text{RT}_{t-1}] + \delta_4(\text{GDP}_{t-1} \times \text{RT}_{t-1})$$

$$+ \delta_5(\text{ER}_{t-1} \times RT_{t-1}) + \varepsilon_t$$

The dynamic short run relationship between variables can be written in an ARDL-in-level form as below:

$$\log(ED)_t = \alpha + \sum_{i=1}^{p} \alpha_{1i}(\text{ED})_{t-i} + \sum_{i=0}^{q1} \alpha_{2i}(\text{BD})_{t-i} + \sum_{i=0}^{q2} \alpha_{3i}\log(TT)_{t-i}$$

$$+ \sum_{i=0}^{q3} \alpha_{4i}\log(TO)_{t-i} + \sum_{i=0}^{q4} \alpha_{5i}(GDP)_{t-i}$$

$$+ \sum_{i=0}^{q5} \alpha_{6i}(ER)_{t-i} + e_t$$

$$\log(ED)_t = \alpha + \sum_{i=1}^{p} \alpha_{1i}\,(ED)_{t-i} + \sum_{i=0}^{q1} \alpha_{2i}\,(BD_{t-i} \times RT_{t-i})$$

$$+ \sum_{i=0}^{q2} \alpha_{3i}[\log(TT)_{t-i} \times RT_{t-i}]$$

$$+ \sum_{i=0}^{q3} \alpha_{4i}[\log(TO)_{t-i} \times RT_{t-i}]$$

$$+ \sum_{i=0}^{q4} \alpha_{5i}\,(GDP_{t-i} \times RT_{t-i}) + \sum_{i=0}^{q5} \alpha_{6i}\,(ER_{t-i} \times RT_{t-i})$$

$$+ e_t$$

3.6 Chapter Summary

In a nutshell, few types of diagnostic test will be conducted in our research such as White test, VIF test, Jarque-Bera test, Ramsey Reset test. Unit root test including ADF and PP will be applied to test stationary of data. Besides, ARDL model will be adopted to examine short-run and long-run relationship between our dependent variable and independent variable.

CHAPTER 4: DATA ANALYSIS

4.0 Introduction

In this chapter, we had use E-views 10 to run diagnostic checking and examine the relationship between Malaysia government external debt and five macroeconomic variable which is budget deficit, exchange rate, gross domestic product, terms of trade, trade openness and one political variable which is regime type.

4.1 Diagnostic Checking Objective 1

4.1.1 Normality Test

Series: Residuals	
Sample 1980 2015	
Observations 36	
Mean	-1.31e-15
Median	0.265869
Maximum	17.04314
Minimum	-20.35727
Std. Dev.	8.001280
Skewness	-0.272516
Kurtosis	3.077022
Jarque-Bera	0.454487
Probability	0.796727
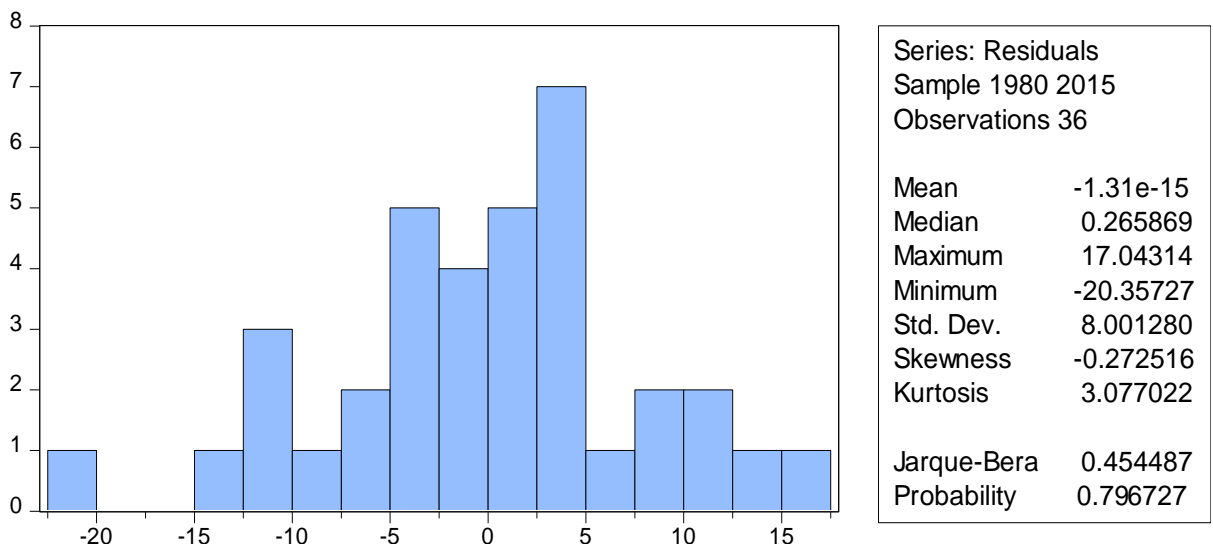
The model normality was important to a research, to test does the model meet the normality assumption on the error term we should use the Jarque-Bera Test to measure it (Das & Imon, 2016). The result of the normality test for objective 1 show that the p-value of it was 0.796727, and the significant level that we used was 5%, hence, the p-value was larger than significant

level, the decision rule for this test was when p-value smaller than the significant level, we should assume that the error is not normally distributed, but in this situation, the p-value was larger than 0.05, so the model was meet the normality assumption on the error term. Besides that, we also can decide based on the Jarque-Bera statistic (0.454487). In this case, the critical value (5.991) was larger than the statistic, the conclusion will be same as referring to p-value.

4.2 Diagnostic Checking Objective 2

4.2.1 Normality test

Series: Residuals	
Sample 1 36	
Observations 36	
Mean	1.76e-13
Median	-1.034912
Maximum	13.55074
Minimum	-16.69656
Std. Dev.	7.062486
Skewness	-0.193048
Kurtosis	2.782123
Jarque-Bera	0.294811
Probability	0.862944
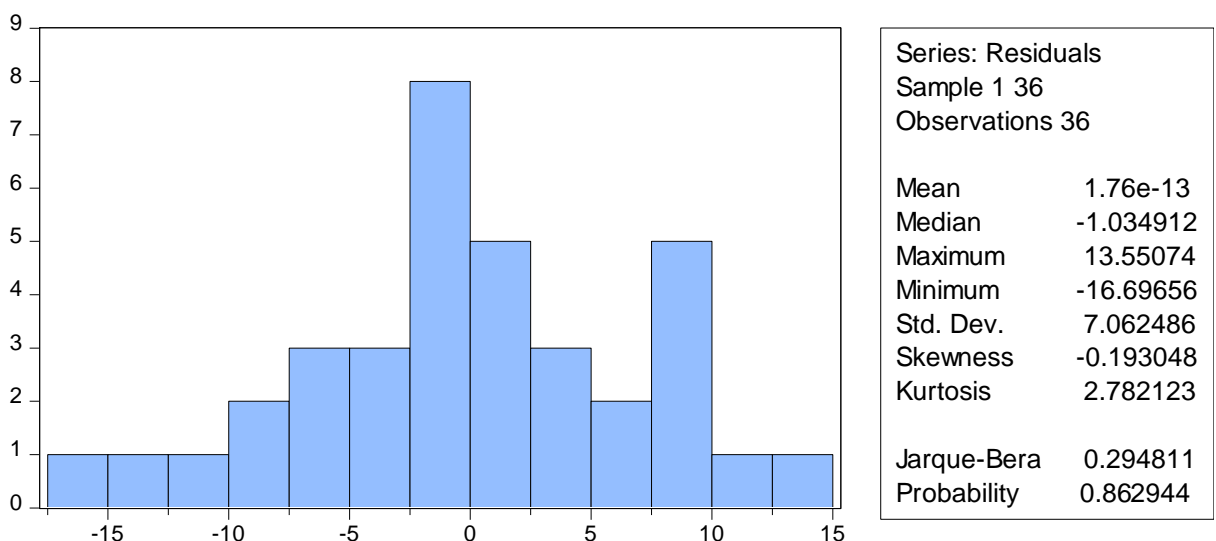
From the result, we know that the p-value for the normality test is 0.8629. The p value is larger than the significance level 5%. Hence we can conclude that the data is normally distributed even after including the regime type factor. If the observation is not normally distributed it will affect the test like t test to be incorrect (Rani Das & Rahmatullah. A. H. M, 2016). So, before

carry out any tests we have to make sure the data is normally distributed then only we can proceed to other test like F test. In our case, it Jarque Bera test shown that the data is normally distributed.

4.3 Unit Root Test

For Model 1, we run the unit root test to test whether there is a unit root problem in the independent variables also the interaction variable which may give impact to the external debt of Malaysia and the result of for Model 1 is stated under Table 1.

Table 4.1: Augmented Dickey-Fuller unit root test for model 1

Variables	Augmented Dickey-Fuller (ADF)			
	Individual Intercept		Individual Intercept and Trend	
	Level	1st Difference	Level	1st Difference
ED	0.0057***	0.0006***	0.0364**	0.0046***
ER	0.7040	0.0001***	0.5462	0.0012***
GDP	0.0005***	0.0000***	0.0027***	0.0000***
RT	0.0000***	0.0010***	0.0000***	0.0041***
Log TT	0.2933	0.0000***	0.4263	0.0001***
Log TO	0.0209**	0.0078***	0.4566	0.0143**
BD	0.2957	0.0000***	0.0065***	0.0001***

Note: ***, ** and * refers to rejection of null hypothesis at significance level of 1%, 5% and 10% respectively. ER denotes Exchange rate, BD denotes Budget deficit, GDP denotes Gross domestic product, LNTO denotes log Trade openness, LNTT denotes log Terms of trade.

For Model 2, the interaction variable of regime type is taking into consideration as it could affect the independent variables thus influenced the external debt of Malaysia in indirect form. The result for unit root test of Model 2 is sated below.

Table 4.2: Results of the Augmented Dickey-Fuller unit root test for model 2

Variables	Augmented Dickey-Fuller (ADF)			
	Individual Intercept		Individual Intercept and Trend	
	Level	1st Difference	Level	1st Difference
RT*BD	0.0266**	0.0000***	0.0449**	0.0000***
RT*ER	0.7521	0.0000***	0.3391	0.0000***
RT*GDP	0.0127**	0.0000***	0.1000*	0.0000***
RT*LOG TT	0.0000***	0.0000***	0.0000***	0.0002***
RT*LOG TO	0.0000***	0.0012***	0.0000***	0.0008***
RT*ED	0.3154	0.0001***	0.6823	0.0005***

Note: ***, ** and * refers to rejection of null hypothesis at significance level of 1%, 5% and 10% respectively. ER denotes Exchange rate, BD denotes Budget deficit, GDP denotes Gross domestic product, LNTO denotes log Trade openness, LNTT denotes log Terms of trade.

For this research, two model was applied, model 1 is about the factors that will influence the dependent variable which refer to external debt of Malaysia in this research. Then, the model 2 taking into consideration of interaction variable which is regime type and how this variable will give impact to other independent variables chose hence affect the dependent variable. Augmented Dickey-Fuller (ADF) test is the first test to be conducted before any diagnostic checking and Autoregressive Distributed-lagged model (ARDL) as the pass of unit root test is the first checkpoint of reliable output since most of the time series data is non-stationary in nature. ADF test is a unit root test that normally used to examine the existence of unit root problem in a time series data (Dickey & Fuller, 1981). Unit root test is compulsory to conduct as based on past studies, even the same set of time series data could provide a distinct prediction only by using different stationary process such as difference stationary or trend stationary to predict (Diebold & Kilian, 2000; Diebold

& Senhadji, 1996). A trend stationary process could be used if the trend of mean is deterministic while a difference stationary process should be used when the trend of mean is presence in stochastic. Although both data could become stationary in the end, but the used of different stationary process may need to undergo different removal procedures and thus the result of prediction will be different (Stadnytska, 2010).

By conducting the ADF test, the accuracy of the forecasting result could be enhanced, in addition, it ensures the 'true' model could be successfully picked as unit root test provide a formal criterion for forecasters to decide whether the set of data should be difference or not (Diebold & Kilian, 2000). A constant mean and variance will be obtained if the observe data is stationary (Stadnytska, 2010). The constant variance need to be obtained to prevent heteroscedasticity problem as the heteroscedasticity problem may occur due to the absent of invariant variance (Klein, Gerhard, Buchner, Diestel & Schermelleh-Engel, 2016). The exist of heteroscedasticity might lead to inefficient in prediction and thus affect the validity of hypothesis testing. In short, in order to ensure the stationary of time series data also the absent of stochastic trend in the variables chose, a unit root test is important to conduct.

Table 1 and Table 2 above showed the output of Augmented Dickey-Fuller (ADF) test. From Table 1 which refer to model 1, the variable of exchange rate (ER) and log of terms of trade (Log TT) could not obtain a stationary result at level in both intercept and trend; log of trade openness (Log TO) unable to gain stationary result at level in trend while the budget deficit unable to get stationary output at I (0) in intercept. For model 2, the result in Table 2 shows that both the variable of regime type times exchange rate (RT*ER), regime type times external debt (RT*ED), regime type times trade openness (RT*TO) failed to gain a stationary result at level in both intercept and trend while the regime type times terms of trade (RT*TT) could not get a stationary result in level under intercept. In order to make sure all the variables provide a stationary result before running ARDL test, we proceed with the first difference of ADF test and finally a stationary result is obtained and all the variables in first difference now able to reject the null hypothesis and most of them is significant in 1% except the log of trade openness which significant in 5%.

In conclusion, all the variables are significant in first difference, I (1) and meet the requirement to proceed with the Autoregressive Distributed-lagged model (ARDL) and bound test to examine the short run and long run relationship between those independent variables and dependent variable.

4.4 Bound Test

The Autoregressive Distributed Lag model (ARDL) is use to determine long run relationship between dependent variable and independent variable. As long as the F-statistic of Bound Test is greater than upper critical value, the conclusion can be made that long run relationship exist among variables, otherwise it does not exist if F-statistic falls between upper critical value and lower critical value or less than lower critical value. The F-statistic of Bound Test for research objective one is 12.6610 and it is greater than critical value at 1%, 5% and 10%. As a conclusion, the long run effect of macroeconomic factors on government debt does exist.

4.5 Long Run Relationship between Malaysia's Government External Debt and Macroeconomic Variables for Model 1

Table 4.3: Results of Long Run Parameter

Variable	Coefficient	Std. Error	t-Statistic
ER	2.951624	6.519782	0.452718
BD	1.120271	1.174185	0.954083
GDP	-2.882487	1.030159	-2.798099**
LNTO	-19.14925	26.76089	-0.715569
LNTT	-30.76299	73.70880	-0.417358

C	308.7973	210.7137	1.465483

Note: ***, ** and * refers to rejection of null hypothesis at significance level of 1%, 5% and 10% respectively. ER denotes Exchange rate, BD denotes Budget deficit, GDP denotes Gross domestic product, LNTO denotes log Trade openness, LNTT denotes log Terms of trade.

Results from table 4.3 illustrate that there is long run relationship between external debt and gross domestic product (GDP). The coefficient of GDP is -2.882487 and significant at 5% significance level. It represents a negative and significant relationship exist between external debt and GDP. For every 1% increase in GDP, on average, Malaysia government external debt will decrease by 2.88%. This outcome is support by the panel empirical research done by Abdul Waheed (2017), his research is focused on 12 countries that export oil and gas and 12 countries that import oil and gas. He found out that with higher GDP, the country tends to have lower external debt, ceteris paribus. The reason behind is when a country has a growing economic, there will be a surplus on the budget and thus reduce burden of external debt for the country.

From a different perspective, a country with adverse growth of GDP usually lead to income instability, therefore the country will require more external borrowing to finance internal debt obligation and import expenses (Tiruneh, 2014). Furthermore, similar result also being found in the research of Benedict, Ehikioya and Asin (2014). According to Benedict et al. (2014), when there is a rise in local goods and services, it reduces the demand to borrow foreign loan. Other researcher also found out similar outcome which is negative and long run relationship occur between external debt and GDP after they carried out ARDL Cointegration test (Shamsuddeen, Ahmed, Salisu & Ganthi, 2017). They proposed that unfavorable economic condition could erode the ability of a country to import goods and reduce the power of debt repayment.

4.6 Error Correction Model

Table 4.4: Conditional Error Correction Regression

Variable	Coefficient	Std. Error	t-Statistic
D(ED(-1))	0.546156	0.132419	4.124440
D(ED(-2))	0.086112	0.101872	0.845295
D(ED(-3))	0.190540	0.241570	0.788760
D(ER)	5.926617	2.285377	2.593278*
D(ER(-1))	0.310255	11.07224	0.028021
D(ER(-2))	-12.30975	5.635099	-2.184477*
D(BD)	-0.121964	1.503301	-0.081131
D(BD(-1))	-1.723743	0.451847	-3.814881**
D(GDP)	-0.809446	0.530108	-1.526945
D(GDP(-1))	1.110944	0.832904	1.333820
D(GDP(-2))	0.683816	0.362287	1.887497
D(LNTO)	-30.82769	30.13727	-1.022909
D(LNTO(-1))	-10.21113	13.52659	-0.754894
D(LNTO(-2))	-17.12649	12.67393	-1.351317
D(LNTT)	-2.701533	82.10418	-0.032904
D(LNTT(-1))	41.56350	24.78548	1.676930
D(LNTT(-2))	28.28440	17.35145	1.630089

Note: ***, ** and * refers to rejection of null hypothesis at significance level of 1%, 5% and 10% respectively. ED denotes External debt, ER denotes Exchange rate, BD denotes Budget deficit, GDP denotes Gross domestic product, LNTO denotes log Trade openness, LNTT denotes log Terms of trade.

After observing the long run relationship between external debt and significant macroeconomic variables, this research also studies the short run relationship between variables by using Error Correction Model (ECM). There is existence of short run relationship if the variable is significant as 1%, 5% or 10% significance level.

Table 4.4 shows that there is significant relationship between exchange rate and external debt in short run. Coefficient of D(ER) which is 5.926617 is significant at 10% significance level which also indicates a positive relationship exist between exchange rate and external debt. For every 1% increase in exchange rate, on average, there is 5.92% increase in external debt in short run. There are some previous researcher's studies support the above result. Noor Alam and Fauzia (2013) found a positive relationship between exchange rate and external debt. As the exchange rate depreciate, the value of home currency become weak and the burden of a country to meet its foreign debt obligation also increase. In other word, if the denominated currency of the debt appreciates, the amount of debt that the country need to pay also increase. If Ringgit Malaysia depreciate, Malaysia government will suffer a greater burden to repay external debt. By using similar method which is ARDL test, Awan, Anjum and Rahim (2015) also discovered there is positive relationship between external debt and exchange rate. Lastly, a significant and positive relationship between both variable also been found in research conducted by Benedict, Ehikioya and Asin (2014). In their study, the empirical result show that the depreciation of Nigeria exchange rate will lead to accumulation of Nigeria's external debt. Moreover, coefficient of D(ER(-2)) which is -12.30975 is significant at 10% significance level which indicates a short term negative relationship exist between exchange rate and external debt. For every 1% increase in exchange rate, on average, there is 12.31% decrease in external debt in short run.

Furthermore, results from table 4.4 indicates a negative relationship occur between budget deficit and external debt as the coefficient of D(BD(-1)) is -1.723743. The p-value of D(BD(-1)) is 0.0189 which is less than 0.05 so budget deficit is significant at 5% significance level. Similar to the previous findings by Muhammad, Nor and Sallahuddin (2015), they conclude that significant and negative

relationship exist between budget deficit and external debt when they choose Nigeria as their research sample. Based on their finding, it shows that there is negative relationship between the budget deficit in the country and the debt stocks. Debt stocks can be defined as the amount of money that investors are willing to invest in particular country, especially in term of holding the stock of country. However, the foreign investors will consider to choose not to make investments and it would reduce the dependence of country to other countries in term of debt. In conclusion, the higher budget deficits could lower the amount of external debt.

4.7 Long Run Relationship between Malaysia's Government External Debt and Macroeconomic Variables and Political Variable for Model 2

Table 4.5: Results of Long Run Parameter

Variable	Coefficient	Std. Error	t- Statistic
RT_ED	-0.272410	0.093565	-2.911449**
RT_BD	-5.212776	0.459202	-11.35182**
RT_GDP	-0.855834	0.340279	-2.515094
RT_ER	7.772348	3.266023	2.379759
RT_TT	1.481525	0.271823	5.450322**
RT_TO	-0.517637	0.084210	-6.146978**
C	-74.45649	24.35048	-3.057701**

Note: ***, ** and * refers to rejection of null hypothesis at significance level of 1%, 5% and 10% respectively. ER denotes Exchange rate, BD denotes Budget deficit, GDP denotes Gross domestic product, LNTO denotes log Trade openness, LNTT denotes log Terms of trade.

The test statistic of the result shows that the regime type has the significant relationship to the external debt, budget deficit, term of trade and trade openness.

Through the ARDL result, we find out that the p- value for the variable of regime type to external debt, 0.0436, variable of regime type to budget deficit, 0.0003, variable of regime type to terms of trade, 0.0055 and the last variable of regime type to trade openness, 0.0036 are smaller than the significance level of 5%. Hence, we can conclude that all these variables have the significant impact on the external debt.

Besides, among these significant variables, the variable of regime type has the significant negative relationship to the external debt, budget deficit and trade openness, where there is negative sign in their coefficients of -0.272410, -0.0003 and -0.517637. On the other hands, only the variable of regime type to the terms of trade shows the significant positive relationship as the coefficient shows the positive sign, 1.481525.

There is the debate among the previous researchers in the view of the impact of the regime type on the budget deficit. Udoh, Joshua and Etok (2012) concluded that democratic regime (range 6 to 10) could increase the budget deficit of the country, the democratic party politic tend to impress the voters to secure their tenure by spending more money on the campaign. On the other hand, our research points out that there is the negative sign in the coefficient of the variable of regime type to the budget deficit and consistent with the opinion proposed by Anwar and Ahmad (2012) which carried out the research on the long run relationship between democracy and the budget deficit. They found out that the regime type has a negatively impact on the budget deficit, in the viewpoint of, the lower in the degree of democracy will reduce the transparency and weaken the country's institutional quality and lead to the problem of higher budget deficit.

Trade openness is another important variable considered while carrying out the research. Many past studies have different arguments against the positivity and negativity relationship in the regime type to the trade openness. Our study shows that the result turns to be regime type negatively affect the trade openness, given the negative sign in the coefficient of the variable in the combination of the regime type and trade openness. Our study is supported by the previous researcher, Ondo (2017), stated a convex relationship found in the context of the regime type and the trade openness. As at the initial, the trade openness will be reduced when the party politic practicing the democracy but by later it will raise as the country switch to a

hybrid democracy. Hybrid democracy tend to increase the flexibility of the trade policy to the interest of the State agent by manipulating the trade policy decisions in order to satisfy the protectionist lobbies. However, the other researcher, Adsera and Boix (2002) opposed the viewpoint and made the claims that the regime type has the positive significant relationship to the trade openness, as the empirical analysis shown that the in authoritarian in free trade regimes, for instance the East Asian economies, the public sector in GDP is 10% smaller than in the democratic system with the same economic integration.

In the context of the regime type and the terms of trade, some of the researcher, Milner and Kubota (2005) pointed out that the lower trade barriers are found in the democratization in labor abundant developing countries. Also, trade liberalization will ensue when the democratization empowers the owners of factory with which the country is abundantly endowed. They thus came out the conclusion that there is the positive relationship between the regime type to the terms of trade. Frieden and Rogowski (1996) suggested that in order to win the election, the democratic politicians sensitive to the demands of the interest group who makes a favor of support in return for the trade protection and is consistent to our research with the negative sign in the coefficient of the variable in the combination of regime type and terms of trade. The previous study done by Henisz and Mansfield (2006), shown that autocracies is less susceptible to societal pressure, as it needs to appeal to only few segments of society to secure their position.

In the study done by the previous researcher, Oatley (2010) in the context of the regime type and the external debt, they pointed out that the autocratic regime will borrow more fund to keep themselves in power and invest less in the public welfare. Thus, the autocracies regime will develop more debt burden than the democracy regime. The study is persistent to our research, where there is the negative impact of the regime type typically the autocracy (-10 to -6) on the increasing external debt with the expected negative sign in the coefficient of the variable in combination of the regime type and the external debt.

CHAPTER 5: DISCUSSION, CONCLUSION AND IMPLICATIONS

5.0 Summary

Throughout the research, the co- integration between the macroeconomic variables, political regime type and external debt are being investigated. ARDL approach has been used to investigate the relationship of the effect of macroeconomic variables on the external debt, and political regime type on macroeconomic variables in long run. Moreover, the ECM approach has been applied to estimate the coefficient of various macroeconomic variables implications to verify the effect of these variables in government external debt in short run.

In the applied of the ARDL approach in the impact of the political regime type on the macroeconomic variables, the result shows that the negative significant relationship to the fiscal deficit. The result has been proven by Anwar and Ahmad (2012), stated that the transparency and the country's institutional quality will be reduced in the lower of the degree of democracy and lead to the problem of higher budget deficit in long run. Also, the trade openness shows that there is the negative significant relationship to the regime type. A convex relationship between these two variable explain that the trade openness at the initial stage will be reduced if democracy structure is being adopted but by later it will increase as the country adopt the hybrid democracy. The flexibility of the trade policy will be increased when practicing the hybrid democracy in order to fulfil to the interest of the State agent by manipulating the trade policy decisions, and satisfy the protectionist lobbies

Besides, the regime type has the significant positive impact on the terms of trade, as the Milner and Kubota (2005) found out that in democratization of labor abundant country, there will be lower trade barriers and democratization empowers the owners of factors to motivate the trade liberalization.

Regime type typically the autocracy has the significant negative impact on the government external debt. The result is consistent to Oatley (2010), that in order to keep themselves in power, they will borrow more fund and invest less in the public welfare.

According to the model 2, in the study of the various macroeconomic variables on the government external debt, ECM and ARDL approaches have been used to verify the result. In the short run, exchange rate and the external debt shows a significant positively relationship. Noor Alam and Fauzia (2013) found that as the exchange rate depreciate, the devaluation of the home country will increase the burden of a country in order to meet its foreign debt obligation. On the other hand, the fiscal deficit imposes the significant negatively relationship on the government external debt. The result is also being supported by the study of Muhammad, Nor and Sallahuddin (2015), where when the country is facing the problem of budget deficit, the foreign investor may choose not to invest the debt stock in that particular country, in fear of their future prospect. When the debt stock in that particular country in excess, which means that the country will not going to pay the par or the redeem price in the future to the foreign investors. Hence, the government external debt is being reduced.

In the long run, there is the significant negative relationship of the GDP to government external debt and is consistent to the research done by Abdul Waheed (2017), where when the country is in the growing economies, there will be the surplus in the budget and will reduce the external debt burden for the country.

5.1 Implication of the Policy

The external debt can have the duality effect on the economy performance of the country. If the external debt is being wisely used by the Malaysian government, it will help to finance the profitable projects, attract more of the foreign investor to investor in our home country, boost the local production sector, enhance the

capability of the export sector, increase the country's BOP level, and strengthen the local economy structure. On the other hand, improper conduct of the government external debt can bring the severe consequences to the development of the country like the debt overhang problem. Short term debt will cause the financial crisis and when there is the increasing in the external debt in long term, the debt overhang problem will occur.

Through our research, we found out that the regime type like the democratic in the political structure have the indirect beneficial impact on the government external debt through influencing the determinant of the economy measures like the GDP, budget deficit, terms of trade, trade openness and exchange rate. All these improvements in the aspect of the economy measures can be achieved through the policy implemented by the democratic in political structure.

In the perspective of the Gross Domestic Product, the inflow of the Foreign Direct Investment (FDI) is an important measure of its investment attractiveness and displays its internalization. It is also a significant booster in the economy growth of the host country. There are many forms of the investment incentives to offer within the framework of the target programs, and also regulated by the law. The foreign investors can benefit from the incentives given by the government of the Poland country and it meets the result of the conducted considerations. Ślusarczyk (2018) used the Poland country as an example to illustrate that the country has been an active participant of the capital market for more than a quarter of the country as a result of the liberalization of the capital movement. The accession of Poland to the European Union has been acted as an important stimulus for the inflow of capital in the form of FDI. The credibility and attractiveness of the Poland as the location of investment has been strengthened through the liberalization of capital movement. At the end of the year 2015, the foreign direct investment (FDI) in Poland reached 712.1 Billion PLN, 39.6% of GDP. Hence, attractive incentives are required to encourage the foreign investor to invest their capital in the specific country. Also, the investment related policies have been used most intensively by the countries like in Asia and Africa. Asian Development Bank points out that the Asian host economies targeted the investment incentives and often use them as the establishment of the special economic zone tool, to bypass the prohibited tax incentives for exporters established by the World Trade Organization (WTO)

subsidy rule. There are a few categories of the fiscal FDI incentives which has been adopted by the Poland government can be followed by the Malaysian government. Firstly, reduced the direct corporate taxation, aimed at easing the corporate tax burden, like the special tax- privileged zones. It is liked the establishment of the "ring fenced" zones with low corporate taxation amount with the fiscal FDI incentives given. Lastly, reduced impediments to cross border operation, to attract the companies to location where there is minimal cost on the cross border transfer of funds imposed by the fiscal system. Definitely, such of the incentives can help to attract the foreign investors to invest in the host country, increase the FDI, indirectly boost the economy and reduced the inactivity of the capital market. Hence, the ability to pay back the external debt will be increased.

Next, in term of the budget deficit, efficient debt management strategies can be used to help to prevent the future debt crisis. Romanus (2014) revealed that the lack of fiscal discipline as a result of the lack of integrity and accountability, over dependence on the oil revenue and poor project analysis were the determinants for the Nigerian debt crisis in the past. After that, Nigeria country implemented the Policy Support Instrument (PSI) led to an agreement in principle to grant the country 60 percent about 18.5 billion Dollars debt relief, and agreed to pay amount of 6 billion Dollars upfront and another 6 billion Dollar thereafter. Meanwhile, the Nigeria's Gross Domestic Product (GDP) grew marginally, and there is the transfer of the average not less than 6% of its GDP to external creditors through the debt servicing. The Nigeria's debt stock and debt services obligation has been reduced through the debt burden, and lifted the heavy debt burden out of the economy. 18 Billion USD debt has been written off and constitute to a direct savings on debt services payment. The critical priority sectors like the health, basic education and, water, security, food, power, network and other infrastructure has been funded to stimulate the economy. The implementation of the National Economy Empowerment and Development Strategy (NEEDS), and the attainment of the Millennium Development Goals (MDGs) are attained through the savings of the debt services. The debt relief also helps to reduce the net transfer Nigeria obligated to pay its creditors by 4 Billion Dollar a year. Hence, there is the direct beneficial impact and improvement on Nigeria 's fiscal situation and output. Nigeria external debt started to become sustainable, able to maintain the level of debt indebtedness,

investing the borrowed fund to gain advantage and servicing the debt without affecting the nation's growth and development. The debt relief help to encourage the investment in the private- sector- driven economy and job creation to boost the economy with wide employment by accessing the resources available to the critical infrastructure needs. When there is the improvement in the budget deficit, the economy will start to recover, increasing the purchasing power of the economy and reduce the debt burden.

In the perspective of the exchange rate, the depreciation will affect the country's balance of payment through the export and imports, and also through the amount of debt servicing and the external debt real value. If the currency is depreciated, the country's export will be cheaper on the world market while it is costly for the country which experience the depreciation in the currency to have the world market goods. If there are no idle capacity from the previous investment in the export opportunities at the lower exchange rate, which can provide the profitable investment, then the economy will not benefit in the same way in the depreciation of the exchange rate. This scenario happens when the Mexican currency depreciated in 1982, there is no idle capacity in the exporting sector with insufficient investment policies and lead to less resource being available to the exporting sector. Consequently, the capital imports became relatively more expensive the than before. The higher prices on the capital imports because of the currency depreciation retards the industrialization and export growth. The devaluation in the domestic currency have the negative impact on the external debt, especially the external debt value increases when denominated in the foreign currency (Sundel &Lemdal, 2011).

Through the impact on the fiscal balances and the external balances, the external debt will be reduced effectively, appeared to be supported by the development in the Philippines in the 1990's. In the year 1990 and 1993, Philippines concluded that the two commercial debt restructuring operation in fact lead to a steady improvement in the consolidated public sector deficit and a resumption of growth in year 1993. Faini and Gressani (1998) simulated the Pro- Growth policies and used to stimulate the effect on growth and inflation of a more aggressive exchange rate management. This assumption is focused on the sterilization of the impact of changes in gross reserves on monetary supply, allow the simulation to be conducted

given monetary policy and the net flows of the external debt are maintained in the unchanged. The impact of the simulated policy changes is fully reflected on the net international reserves of the Central Bank. This policy changes takes place during the year 1985, and the model is carried within the period 1986 to 1990. Through the model simulated, the result shows that the larger devalue of the monetary authorities suggest that a more aggressive exchange rate policy and increasing inflation. Both the increasing of inflation and devaluation have the effect of feedback on the budget. Moreover, there will be the rise in the foreign currency denominated expenditure when measured in the local currency, and higher price with an unchanged monetary stance will push up the interest rate. The overall effect on fiscal balance is negative and moderated by the higher revenues, caused by the expansionary effects on the output and tax receipts due to the faster rate of devaluation. The faster output growth and the higher cost of capital are important to the sustainability, caused the balance between the effects of the devaluation on investment, as they decide to what extent the investment will increase and promoted the recovery.

The importance of reducing the external debt even in absence of the foreign exchange constraint is that the debt workout reduces the budgetary burden of interest payment on external debt. It helps to reduce the sensitivity of the fiscal balances to change in the exchange rate even in the short run. Thus, effectively promoted the combination of the anti- inflation and pro- growth policies substantially.

In the trade openness, Auboin (n.d.) pointed out that the trade liberalization plays the important role in the restoration of the external viability. The trade reform helps to reinforce the external viability through improving the external debt. Participation in the trade liberalization will help to reduce the anti- export bias in the domestic policies. It also promotes an open business environment that attract the foreign investors. The elimination of the direct export controls and indirect impediments to competitiveness and distortionary import tariffs will aid in reducing the anti- export bias. The elimination of the control and the impediments will lower the production cost for the exporters, or increase their ability to obtain quality inputs at internationally competitive prices. Moreover, the long term economy growth can also be fostered by increasing the efficiency in allocation of the resources,

contributes to the balanced external account. Artificially increasing the rate of return on factors of production in protected sectors will lead to a sub- optimal mix of production, investment and consumption, as the trade barriers tend to divert the labour and capital from the most effective use. Trade reform will help to enhance the efficiency of resources allocation by removing the barrier.

The integration of many developing and transition countries into the world economy is contributed by the trade reforms. For instance, after the Berlin wall collapse, most Eastern European transition economies take part in the trade liberalization. It allows for a change in the geographical direction of their trade in favour of the European Union. They have been able to maintain a high rate of export growth over the extended periods after the deep trade reform like Latin America, Asia or in the Middle- East. Through the impact of the trade openness, there will be the surplus in BOP, capital inflow, boost the economy GDP and recover the external debt burden.

5.2 Limitation

When we preparing this research, we had faced some difficulties and challenges on finding previous research, problem on variables and lack of knowledge on using unique program. The first and important job for us to conduct this research, we must find previous research to support our viewpoint. Our dependent variable used was external debt and most of the pervious study was doing their research on how external debt to influence other variables, there was only a few researches that explain on how other variables will affect external debt. There were a few papers that we found are suitable for out topic but the publish year were too far from now, so it cannot be put in to the research because the world change time to time, so we should capture the current situation paper. The limitation for us to conduct this specific research was lack of previous research can support us and some of the paper found was require us to pay only can review on it.

The variables used in our research was not that complete cause some of the diagnostic checking result are insignificant. The result wishes to present to us is we had been omitted some important variable for our topic. The limitation for our

variables chosen is not complete. The debt from a country is total sum of external debt and internal debt, but in this research, we choose external debt to conducted and excluded internal debt at all.

Last but not least, the limitation from this research was we just focus on the macroeconomic variable that will cause the country external debt changes but ignore the internal debt. External debt cannot represent whole picture of the country debt status completely, external debt only can show debt owe to foreign creditors and or foreign country but not the debt inside Malaysia. The reason for us that not choosing the total debt as our dependent variable was, we could not find the data from Bloomberg and another website.

5.3 Recommendation

Recommendation is provided for future research so that they can avoid similar problem when extending the research on topic of external debt. Besides, future recommendation is about what future researchers can do to improve in order to provide better research for readers. First and foremost, our research only focus on Malaysia, in order to make a better comparison and increase the reference value, future researchers can include other country with different regime type into sample data. For example, India, Philippine and Indonesia which is also democracy country like Malaysia; Anocracy country such as Africa; Autocracy countries such as North Korea, China and Russia. This will be beneficial for other people such as policy maker and researchers. Hence, researcher are recommended to do different type of data analysis such as panel data analysis since it will help to have more accurate forecasting results compare to time series analysis which only focus on one country. Besides, future researchers are advised to expand the sample period as our research only include sample data from 1980 to 2015 since we could not manage to obtain data from 2015 to 2018. This research also recommends the future researcher to use

different frequency of data such as quarterly and monthly. The difference of frequency may influence the empirical result and there will be different conclusion on significance of variable. For instance, fluctuation of Ringgit Malaysia exchange rate which is one of the variable we adopt in our research is greater than other variable, therefore, future researchers should consider carefully when selecting data frequency. Besides, expanding sample size and data frequency can help to have better capture the dynamic change on short run and long run relationship between variables.

Furthermore, Malaysia government external debt is not only affected by the macroeconomic variable we adopted in our study. It can be affected by other variables such as foreign aid (Bader& Magableh, 2009), inflation rate (Lau & Lee, 2016) and real interest rate (Lau & Lee, 2016). Therefore, future researcher are encourage to adopt mentioned variable for further and deeper understanding. Future researcher are also encouraged to continue the study on factor that affect external debt of Malaysia since there is change of ruling party of Malaysia in year 2018. A different ruling party may have different thought and perspective on planning budget and affect external debt through budget deficit. On the other hand, our research only focus on external debt as dependent variable, future researchers are recommended to carry out research on internal debt to show clearer picture of Malaysia government liabilities.

5.4 Conclusion

This study will present the whole overview of the research, and the research suggested that there is significant relationship between the macroeconomic variables mainly the fiscal deficit, terms of trade and trade openness on political regime type in model 2 and the macroeconomic variables impact on the government external debt either long run or short run in model 1. Besides, this chapter includes the suggestion for policy implementation, limitation of the study and last but no least the recommendation for the future researchers.

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APPENDICES

Appendix 1: Augmented Dickey Fuller (ADF) Unit Root Test Results

Objective 1

Intercept Form: Level

External Debt

Null Hypothesis: ED has a unit root
Exogenous: Constant
Lag Length: 5 (Automatic - based on SIC, maxlag=5)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-3.898275	0.0057
Test critical values:	1% level	-3.670170	
	5% level	-2.963972	
	10% level	-2.621007	

*MacKinnon (1996) one-sided p-values.

Exchange rate

Null Hypothesis: ER has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=16)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-1.102129	0.7040
Test critical values:	1% level	-3.632900	
	5% level	-2.948404	
	10% level	-2.612874	

*MacKinnon (1996) one-sided p-values.

Gross Domestic Product

Null Hypothesis: GDP has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.727757	0.0005
Test critical values:	1% level	-3.632900	
	5% level	-2.948404	
	10% level	-2.612874	

*MacKinnon (1996) one-sided p-values.

Regime Type

Null Hypothesis: RT has a unit root
Exogenous: Constant
Lag Length: 12 (Automatic - based on SIC, maxlag=12)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.528262	0.0000
Test critical values:	1% level	-3.752946	
	5% level	-2.998064	
	10% level	-2.638752	

*MacKinnon (1996) one-sided p-values.

Log Terms of Trade

Null Hypothesis: LNTT has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=16)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-1.981209	0.2933
Test critical values:	1% level	-3.632900	
	5% level	-2.948404	
	10% level	-2.612874	

*MacKinnon (1996) one-sided p-values.

Log Trade Openness

Null Hypothesis: LNTO has a unit root
Exogenous: Constant
Lag Length: 9 (Automatic - based on SIC, maxlag=12)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-3.386695	0.0209
Test critical values:	1% level	-3.711457	
	5% level	-2.981038	
	10% level	-2.629906	

*MacKinnon (1996) one-sided p-values.

Budget Deficit

Null Hypothesis: BD has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=16)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-1.975600	0.2957
Test critical values:	1% level	-3.632900	
	5% level	-2.948404	
	10% level	-2.612874	

*MacKinnon (1996) one-sided p-values.

Intercept Form: First Difference

External Debt

Null Hypothesis: D(ED) has a unit root
Exogenous: Constant
Lag Length: 1 (Automatic - based on SIC, maxlag=5)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.693801	0.0006
Test critical values:	1% level	-3.646342	
	5% level	-2.954021	
	10% level	-2.615817	

*MacKinnon (1996) one-sided p-values.

Exchange Rate

Null Hypothesis: D(ER) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=1)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.217888	0.0001
Test critical values:	1% level	-3.639407	
	5% level	-2.951125	
	10% level	-2.614300	

*MacKinnon (1996) one-sided p-values.

Gross Domestic Product

Null Hypothesis: D(GDP) has a unit root
Exogenous: Constant
Lag Length: 1 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-7.194420	0.0000
Test critical values:	1% level	-3.646342	
	5% level	-2.954021	
	10% level	-2.615817	

*MacKinnon (1996) one-sided p-values.

Regime Type

Null Hypothesis: D(RT) has a unit root
Exogenous: Constant
Lag Length: 12 (Automatic - based on SIC, maxlag=12)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.794654	0.0010
Test critical values:	1% level	-3.769597	
	5% level	-3.004861	
	10% level	-2.642242	

*MacKinnon (1996) one-sided p-values.

Log Terms of Trade

Null Hypothesis: D(LNTT) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=15)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.236181	0.0000
Test critical values:	1% level	-3.639407	
	5% level	-2.951125	
	10% level	-2.614300	

*MacKinnon (1996) one-sided p-values.

Log Trade Openness

Null Hypothesis: D(LNTO) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=12)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-3.737108	0.0078
Test critical values:	1% level	-3.639407	
	5% level	-2.951125	
	10% level	-2.614300	

*MacKinnon (1996) one-sided p-values.

Budget Deficit

Null Hypothesis: D(BD) has a unit root
Exogenous: Constant
Lag Length: 1 (Automatic - based on SIC, maxlag=1)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.474743	0.0000
Test critical values:	1% level	-3.646342	
	5% level	-2.954021	
	10% level	-2.615817	

*MacKinnon (1996) one-sided p-values.

Intercept and Trend Form: Level

External Debt

Null Hypothesis: ED has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 5 (Automatic - based on SIC, maxlag=5)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-3.719351	0.0364
Test critical values:	1% level	-4.296729	
	5% level	-3.568379	
	10% level	-3.218382	

*MacKinnon (1996) one-sided p-values.

Exchange Rate

Null Hypothesis: ER has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=15)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.065577	0.5462
Test critical values:	1% level	-4.243644	
	5% level	-3.544284	
	10% level	-3.204699	

*MacKinnon (1996) one-sided p-values.

Gross Domestic Product

Null Hypothesis: GDP has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.768391	0.0027
Test critical values:	1% level	-4.243644	
	5% level	-3.544284	
	10% level	-3.204699	

*MacKinnon (1996) one-sided p-values.

Regime Type

Null Hypothesis: RT has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 12 (Automatic - based on SIC, maxlag=12)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-8.756811	0.0000
Test critical values:	1% level	-4.416345	
	5% level	-3.622033	
	10% level	-3.248592	

*MacKinnon (1996) one-sided p-values.

Log Terms of Trade

Null Hypothesis: LNTT has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 2 (Automatic - based on SIC, maxlag=4)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.292126	0.4263
Test critical values:	1% level	-4.262735	
	5% level	-3.552973	
	10% level	-3.209642	

*MacKinnon (1996) one-sided p-values.

Log Trade Openness

Null Hypothesis: LNTO has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 14 (Automatic - based on SIC, maxlag=14)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.217557	0.4566
Test critical values:	1% level	-4.467895	
	5% level	-3.644963	
	10% level	-3.261452	

*MacKinnon (1996) one-sided p-values.

Budget Deficit

Null Hypothesis: BD has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 14 (Automatic - based on SIC, maxlag=15)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.682580	0.0065
Test critical values:	1% level	-4.467895	
	5% level	-3.644963	
	10% level	-3.261452	

*MacKinnon (1996) one-sided p-values.

Intercept and Trend Form: First Difference

External Debt

Null Hypothesis: D(ED) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 1 (Automatic - based on SIC, maxlag=5)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.579594	0.0046
Test critical values:	1% level	-4.262735	
	5% level	-3.552973	
	10% level	-3.209642	

*MacKinnon (1996) one-sided p-values.

Exchange Rate

Null Hypothesis: D(ER) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=15)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.103316	0.0012
Test critical values:	1% level	-4.252879	
	5% level	-3.548490	
	10% level	-3.207094	

*MacKinnon (1996) one-sided p-values.

Gross Domestic Product

Null Hypothesis: D(GDP) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 1 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-7.072858	0.0000
Test critical values:	1% level	-4.262735	
	5% level	-3.552973	
	10% level	-3.209642	

*MacKinnon (1996) one-sided p-values.

Regime Type

Null Hypothesis: D(RT) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 12 (Automatic - based on SIC, maxlag=12)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.870397	0.0041
Test critical values:	1% level	-4.440739	
	5% level	-3.632896	
	10% level	-3.254671	

*MacKinnon (1996) one-sided p-values.

Log Terms of Trade

Null Hypothesis: D(LNTT) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 1 (Automatic - based on SIC, maxlag=4)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.295711	0.0001
Test critical values:	1% level	-4.262735	
	5% level	-3.552973	
	10% level	-3.209642	

*MacKinnon (1996) one-sided p-values.

Log Trade Openness

Null Hypothesis: D(LNTO) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=2)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.103367	0.0143
Test critical values:	1% level	-4.252879	
	5% level	-3.548490	
	10% level	-3.207094	

*MacKinnon (1996) one-sided p-values.

Budget Deficit

Null Hypothesis: D(BD) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=15)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.224834	0.0001
Test critical values:	1% level	-4.252879	
	5% level	-3.548490	
	10% level	-3.207094	

*MacKinnon (1996) one-sided p-values.

Objective 2

Intercept Form: Level

Regime Type*Budget Deficit

Null Hypothesis: RT_BD has a unit root
Exogenous: Constant
Lag Length: 16 (Automatic - based on SIC, maxlag=16)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-3.353268	0.0266
Test critical values:	1% level	-3.831511	
	5% level	-3.029970	
	10% level	-2.655194	

*MacKinnon (1996) one-sided p-values.
Warning: Probabilities and critical values calculated for 20 observations
    and may not be accurate for a sample size of 19

Regime Type*Exchange Rate

Null Hypothesis: RT_ER has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-0.972780	0.7521
Test critical values:	1% level	-3.632900	
	5% level	-2.948404	
	10% level	-2.612874	

*MacKinnon (1996) one-sided p-values.

Regime Type*Gross Domestic Product

Null Hypothesis: RT_GDP has a unit root
Exogenous: Constant
Lag Length: 14 (Automatic - based on SIC, maxlag=14)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-3.678576	0.0127
Test critical values:	1% level	-3.788030	
	5% level	-3.012363	
	10% level	-2.646119	

*MacKinnon (1996) one-sided p-values.

Regime Type*Log Terms of Trade

Null Hypothesis: RT_LOG_TT has a unit root
Exogenous: Constant
Lag Length: 14 (Automatic - based on SIC, maxlag=15)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.423104	0.0000
Test critical values:	1% level	-3.788030	
	5% level	-3.012363	
	10% level	-2.646119	

*MacKinnon (1996) one-sided p-values.

Regime Type*Trade Openness

Null Hypothesis: RT_LOG_TO has a unit root
Exogenous: Constant
Lag Length: 12 (Automatic - based on SIC, maxlag=14)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-9.931349	0.0000
Test critical values:	1% level	-3.752946	
	5% level	-2.998064	
	10% level	-2.638752	

*MacKinnon (1996) one-sided p-values.

Regime Type*External Debt

Null Hypothesis: RT_ED has a unit root
Exogenous: Constant
Lag Length: 1 (Automatic - based on SIC, maxlag=1)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-1.929569	0.3154
Test critical values:	1% level	-3.639407	
	5% level	-2.951125	
	10% level	-2.614300	

*MacKinnon (1996) one-sided p-values.

Intercept Form: First Difference

Regime Type*Budget Deficit

Null Hypothesis: D(RT_BD) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=15)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.700935	0.0000
Test critical values:	1% level	-3.639407	
	5% level	-2.951125	
	10% level	-2.614300	

*MacKinnon (1996) one-sided p-values.

Regime Type*Exchange Rate

Null Hypothesis: D(RT_BD) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=15)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.700935	0.0000
Test critical values:	1% level	-3.639407	
	5% level	-2.951125	
	10% level	-2.614300	

*MacKinnon (1996) one-sided p-values.

Regime Type*Gross Domestic Product

Null Hypothesis: D(RT_GDP) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=14)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-9.185054	0.0000
Test critical values:	1% level	-3.639407	
	5% level	-2.951125	
	10% level	-2.614300	

*MacKinnon (1996) one-sided p-values.

Regime Type*Log Terms of Trade

Null Hypothesis: D(RT_LOG_TT) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=1)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.929088	0.0000
Test critical values:	1% level	-3.639407	
	5% level	-2.951125	
	10% level	-2.614300	

*MacKinnon (1996) one-sided p-values.

Regime Type*Log Trade Openness

Null Hypothesis: D(RT_LOG_TO) has a unit root
Exogenous: Constant
Lag Length: 12 (Automatic - based on SIC, maxlag=14)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.735713	0.0012
Test critical values:	1% level	-3.769597	
	5% level	-3.004861	
	10% level	-2.642242	

*MacKinnon (1996) one-sided p-values.

Regime Type*External Debt

Null Hypothesis: D(RT_ED) has a unit root
Exogenous: Constant
Lag Length: 1 (Automatic - based on SIC, maxlag=1)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.426207	0.0001
Test critical values:	1% level	-3.646342	
	5% level	-2.954021	
	10% level	-2.615817	

*MacKinnon (1996) one-sided p-values.

Intercept and Trend Form: Level

Regime Type*Budget Deficit

Null Hypothesis: RT_BD has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 12 (Automatic - based on SIC, maxlag=12)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-3.677832	0.0449
Test critical values:	1% level	-4.416345	
	5% level	-3.622033	
	10% level	-3.248592	

*MacKinnon (1996) one-sided p-values.

Regime Type*Exchange Rate

Null Hypothesis: RT_ER has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.471826	0.3391
Test critical values:	1% level	-4.243644	
	5% level	-3.544284	
	10% level	-3.204699	

*MacKinnon (1996) one-sided p-values.

Regime Type*Gross Domestic Product

Null Hypothesis: RT_GDP has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=15)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-3.204789	0.1000
Test critical values:	1% level	-4.243644	
	5% level	-3.544284	
	10% level	-3.204699	

*MacKinnon (1996) one-sided p-values.

Regime Type*Log Terms of Trade

Null Hypothesis: RT_LOG_TT has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 14 (Automatic - based on SIC, maxlag=14)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-8.085425	0.0000
Test critical values:	1% level	-4.467895	
	5% level	-3.644963	
	10% level	-3.261452	

*MacKinnon (1996) one-sided p-values.

Regime Type*Trade Openness

Null Hypothesis: RT_LOG_TO has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 12 (Automatic - based on SIC, maxlag=14)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-8.583722	0.0000
Test critical values:	1% level	-4.416345	
	5% level	-3.622033	
	10% level	-3.248592	

*MacKinnon (1996) one-sided p-values.

Regime Type*External Debt

Null Hypothesis: RT_ED has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 3 (Automatic - based on SIC, maxlag=4)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-1.797668	0.6823
Test critical values:	1% level	-4.273277	
	5% level	-3.557759	
	10% level	-3.212361	

*MacKinnon (1996) one-sided p-values.

Intercept and Trend Form: First Difference

Regime Type*Budget Deficit

Null Hypothesis: D(RT_BD) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=1)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.588924	0.0000
Test critical values:	1% level	-4.252879	
	5% level	-3.548490	
	10% level	-3.207094	

*MacKinnon (1996) one-sided p-values.

Regime Type*Exchange Rate

Null Hypothesis: D(RT_ER) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=1)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.425810	0.0000
Test critical values:	1% level	-4.252879	
	5% level	-3.548490	
	10% level	-3.207094	

*MacKinnon (1996) one-sided p-values.

Regime Type*Gross Domestic Product

Null Hypothesis: D(RT_GDP) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=1)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-9.077551	0.0000
Test critical values:	1% level	-4.252879	
	5% level	-3.548490	
	10% level	-3.207094	

*MacKinnon (1996) one-sided p-values.

Regime Type*Log Terms of Trade

Null Hypothesis: D(RT_LOG_TT) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=1)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.848857	0.0002
Test critical values:	1% level	-4.252879	
	5% level	-3.548490	
	10% level	-3.207094	

*MacKinnon (1996) one-sided p-values.

Regime Type*Log Trade Openness

Null Hypothesis: D(RT_LOG_TO) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 13 (Automatic - based on SIC, maxlag=14)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.684697	0.0008
Test critical values:	1% level	-4.467895	
	5% level	-3.644963	
	10% level	-3.261452	

*MacKinnon (1996) one-sided p-values.

Regime Type*External Debt

Null Hypothesis: D(RT_ED) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 1 (Automatic - based on SIC, maxlag=4)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.465499	0.0005
Test critical values:	1% level	-4.262735	
	5% level	-3.552973	
	10% level	-3.209642	

*MacKinnon (1996) one-sided p-values.

Appendix 2: Diagnostic Checking Results for Objective 1

Normality Checking
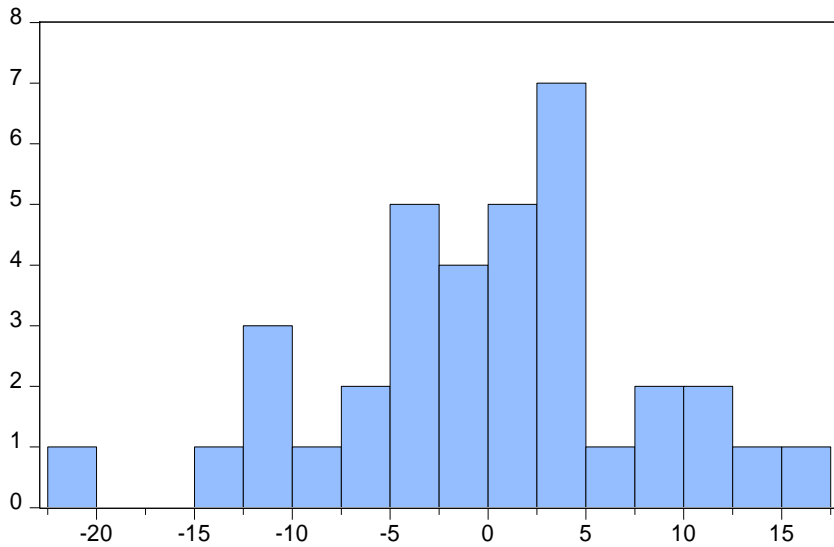
Series: Residuals	
Sample 1980 2015	
Observations 36	
Mean	-1.31e-15
Median	0.265869
Maximum	17.04314
Minimum	-20.35727
Std. Dev.	8.001280
Skewness	-0.272516
Kurtosis	3.077022
Jarque-Bera	0.454487
Probability	0.796727

Heteroscedasticity

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	1.938206	Prob. F(6,29)	0.1081
Obs*R-squared	10.30422	Prob. Chi-Square(6)	0.1124
Scaled explained SS	6.944119	Prob. Chi-Square(6)	0.3260

Ramsey-Reset Test

Ramsey RESET Test
Equation: UNTITLED
Specification: ED ER BD GDP LNTO LNTT RT C
Omitted Variables: Squares of fitted values

	Value	df	Probability
t-statistic	1.626742	28	0.1150
F-statistic	2.646288	(1, 28)	0.1150
Likelihood ratio	3.251054	1	0.0714

Appendix 3: Diagnostic Checking Results for Objective 2
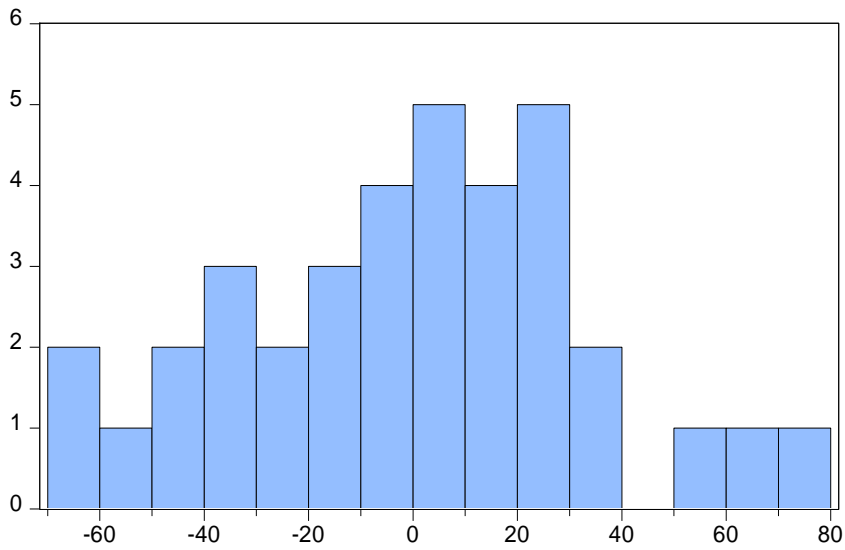
Normality Checking

Series: Residuals	
Sample 1 36	
Observations 36	
Mean	-2.63e-13
Median	1.657067
Maximum	70.73388
Minimum	-67.22139
Std. Dev.	33.30441
Skewness	-0.125501
Kurtosis	2.651777
Jarque-Bera	0.276392
Probability	0.870928

Heteroscedasticity

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	1.812306	Prob. F(5,30)	0.1406
Obs*R-squared	8.351313	Prob. Chi-Square(5)	0.1379
Scaled explained SS	4.789758	Prob. Chi-Square(5)	0.4421

Ramsey-Reset Test

Ramsey RESET Test
Equation: UNTITLED
Specification: RT_ED RT_BD RT_GDP RT_ER
RT_LOG_TT_RT_LOG_TO C
Omitted Variables: Squares of fitted values

	Value	df	Probability
t-statistic	1.370631	29	0.1810
F-statistic	1.878628	(1, 29)	0.1810
Likelihood ratio	2.259665	1	0.1328

Appendix 4: Autoregressive Distributed-Lagged Model for Objective 1

ARDL Long Run Form and Bounds Test
Dependent Variable: D(RT_ED)
Selected Model: ARDL(4, 4, 3, 4, 4, 4)
Case 2: Restricted Constant and No Trend
Date: 03/06/19   Time: 23:35
Sample: 1 36
Included observations: 32

	Conditional Error Correction Regression			
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-7.012223	7.554921	-0.928166	0.4218
RT_ED(-1)*	-1.181403	0.096707	-12.21629	0.0012
RT_BD(-1)	-1.852032	0.367507	-5.039450	0.0151
RT_ER(-1)	1.445664	2.193877	0.658954	0.5570
RT_LOG_TO(-1)	-79.33375	18.92933	-4.191049	0.0248
RT_GDP(-1)	-4.184111	0.488785	-8.560220	0.0034
RT_LOG_TT(-1)	165.3780	18.32692	9.023774	0.0029
D(RT_ED(-1))	0.533936	0.061775	8.643257	0.0033
D(RT_ED(-2))	0.231709	0.065298	3.548500	0.0381
D(RT_ED(-3))	0.414985	0.041727	9.945282	0.0022
D(RT_BD)	-0.360612	0.466844	-0.772446	0.4961
D(RT_BD(-1))	0.389211	0.492304	0.790591	0.4869
D(RT_BD(-2))	1.481852	0.525039	2.822363	0.0666
D(RT_BD(-3))	1.217166	0.380988	3.194763	0.0495
D(RT_ER)	8.197921	1.360851	6.024116	0.0092
D(RT_ER(-1))	0.653714	4.231381	0.154492	0.8870
D(RT_ER(-2))	-6.667839	2.483522	-2.684831	0.0747
D(RT_LOG_TO)	-74.25677	24.00592	-3.093269	0.0536
D(RT_LOG_TO(-1))	27.88447	21.66763	1.286918	0.2884
D(RT_LOG_TO(-2))	-4.021459	16.82308	-0.239044	0.8265
D(RT_LOG_TO(-3))	39.01792	24.07987	1.620354	0.2036
D(RT_GDP)	-1.373322	0.160157	-8.574838	0.0033
D(RT_GDP(-1))	1.583356	0.423416	3.739480	0.0334
D(RT_GDP(-2))	0.805956	0.241456	3.337897	0.0445
D(RT_GDP(-3))	0.233203	0.120882	1.929178	0.1493
D(RT_LOG_TT)	101.6568	29.40932	3.456617	0.0407
D(RT_LOG_TT(-1))	-64.35104	34.01103	-1.892064	0.1548
D(RT_LOG_TT(-2))	-18.54880	24.02788	-0.771970	0.4964
D(RT_LOG_TT(-3))	-69.90595	28.02019	-2.494843	0.0881

* p-value incompatible with t-Bounds distribution.

	Levels Equation			
__	Case 2: Restricted Constant and No Trend			
Variable	Coefficient	Std. Error	t-Statistic	Prob.
RT_BD	-1.567655	0.246181	-6.367894	0.0078
RT_ER	1.223685	1.890906	0.647142	0.5636
RT_LOG_TO	-67.15217	16.17365	-4.151949	0.0254
RT_GDP	-3.541647	0.327820	-10.80364	0.0017
RT_LOG_TT	139.9845	12.70088	11.02164	0.0016
C	-5.935506	6.456675	-0.919282	0.4257

EC = RT_ED - (-1.5677*RT_BD + 1.2237*RT_ER -67.1522*RT_LOG_TO
    -3.5416*RT_GDP + 139.9845*RT_LOG_TT -5.9355)

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	47.36759	10%	2.08	3
k	5	5%	2.39	3.38
		2.5%	2.7	3.73
		1%	3.06	4.15
Actual Sample Size	32		Finite Sample: n=35	
		10%	2.331	3.417
		5%	2.804	4.013
		1%	3.9	5.419
			Finite Sample: n=30	
		10%	2.407	3.517
		5%	2.91	4.193
		1%	4.134	5.761

Appendix 5: Autoregressive Distributed-Lagged Model for Objective 2

ARDL Long Run Form and Bounds Test
Dependent Variable: D(ED)
Selected Model: ARDL(4, 2, 3, 3, 3, 3, 3)
Case 2: Restricted Constant and No Trend
Date: 03/06/19   Time: 23:29
Sample: 1980 2015
Included observations: 32

Conditional Error Correction Regression				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	340.9981...	307.01482...	1.1106895...	0.32896...
ED(-1)*	-1.10427...	0.2702907...	-4.085520...	0.01503...
BD(-1)	1.237090...	1.4996566...	0.8249160...	0.45577...
ER(-1)	3.259414...	6.6559455...	0.4896997...	0.64998...
GDP(-1)	-3.18306...	1.3868195...	-2.295228...	0.08337...
LNTO(-1)	-21.1461...	25.815277...	-0.819131...	0.45870...
LNTT(-1)	-33.9709...	88.433790...	-0.384139...	0.72042...
RT(-1)	0.174156...	0.8987168...	0.1937830...	0.85578...
D(ED(-1))	0.546155...	0.1324193...	4.1244402...	0.01455...
D(ED(-2))	0.086111...	0.1018721...	0.8452948...	0.44554...
D(ED(-3))	0.190540...	0.2415697...	0.7887598...	0.47437...
D(BD)	-0.12196...	1.5033009...	-0.081130...	0.93923...
D(BD(-1))	-1.72374...	0.4518471...	-3.814880...	0.01886...
D(ER)	5.926617...	2.2853765...	2.5932781...	0.06047...
D(ER(-1))	0.310254...	11.072236...	0.0280209...	0.97898...
D(ER(-2))	-12.3097...	5.6350990...	-2.184477...	0.09427...
D(GDP)	-0.80944...	0.5301078...	-1.526945...	0.20148...
D(GDP(-1))	1.110944...	0.8329041...	1.3338199...	0.25314...
D(GDP(-2))	0.683815...	0.3622869...	1.8874974...	0.13213...
D(LNTO)	-30.8276...	30.137272...	-1.022909...	0.36417...
D(LNTO(-1))	-10.2111...	13.526587...	-0.754893...	0.49232...
D(LNTO(-2))	-17.1264...	12.673932...	-1.351316...	0.24796...
D(LNTT)	-2.70153...	82.104182...	-0.032903...	0.97532...
D(LNTT(-1))	41.56350...	24.785476...	1.6769297...	0.16886...
D(LNTT(-2))	28.28440...	17.351450...	1.6300885...	0.17841...
D(RT)	-2.14736...	2.6631275...	-0.806333...	0.46525...
D(RT(-1))	-2.10555...	0.9483602...	-2.220202...	0.09059...
D(RT(-2))	-3.17908...	1.1476464...	-2.770093...	0.05032...

* p-value incompatible with t-Bounds distribution.

	Levels Equation			
	Case 2: Restricted Constant and No Trend			

Variable	Coefficient	Std. Error	t-Statistic	Prob.
BD	1.120270...	1.1741853...	0.9540834...	0.39406...
ER	2.951623...	6.5197823...	0.4527181...	0.67421...
GDP	-2.88248...	1.0301589...	-2.798099...	0.04890...
LNTO	-19.1492...	26.760890...	-0.715568...	0.51380...
LNTT	-30.7629...	73.708802...	-0.417358...	0.69784...
RT	0.157710...	0.7999775...	0.1971433...	0.85332...
C	308.7972...	210.71368...	1.4654827...	0.21666...

EC = ED - (1.1203*BD + 2.9516*ER -2.8825*GDP -19.1493*LNTO -30.7630
*LNTT + 0.1577*RT + 308.7973)

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	12.66099...	10%	1.99	2.94
k	6	5%	2.27	3.28
		2.5%	2.55	3.61
		1%	2.88	3.99
Actual Sample Size	32		Finite Sample: n=35	
		10%	2.254	3.388
		5%	2.685	3.96
		1%	3.713	5.326
			Finite Sample: n=30	
		10%	2.334	3.515
		5%	2.794	4.148
		1%	3.976	5.691