



**Near East University**

*Yakın Doğu Üniversitesi, Lefkoşa KKTC*

**GRADUATE SCHOOL OF SOCIAL SCIENCES**

**DEPARTMENT OF BANKING AND FINANCE**

**MASTER OF SCIENCE BANKING AND FINANCE**

**MASTER'S THESIS**

**THE IMPACT OF MACROECONOMIC VARIABLES  
ON THE BUDGET DEFICIT IN MALAYSIA**

**IN ACCORDANCE WITH THE REGULATIONS OF THE  
GRADUATE SCHOOL OF SOCIAL SCIENCES**

**HALKAWT ISMAIL M-AMIN**

**NICOSIA 2015**



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**SUPERVISOR: ASSIST. PROF. DR. ERGIN AKALPLER**

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**DECLARATION**

I hereby declare that all information in this document has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that, as required by these rules and conduct, I have fully cited and referenced all material and results that are not original to this work.

Name: Halkawt Ismail M-Amin

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## **DEDICATION**

To my lovely parents Mr. Ismail and Mrs. Aesha, I dedicate this thesis to them as they are the most important people in my life. Also, I would like to thank my brothers and sisters for their unlimited support and love. I dedicate this thesis to them as they are the most important people in my life.

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All praises and glories are for Allah (SWT) for his guidance, favour, and bounties. May the peace and mercy of Allah be on our prophet Muhammad (SAW) and his Companions and those who follow him faithfully till the Day of Judgment.

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## ABSTRACT

In this study the impact of macroeconomic variables on the budget deficit in Malaysia is researched. The statistical technique advocated by Granger (1995) for handling economic variables that might spuriously move together is utilized to examine the long-run causal relationships between budget and current account deficits. The relationship is questioned by using data for the period of time between 1980 and 2013, with a view to answering the questions of whether there is a significant relationship between the variables and also to determine the causal effect between four macroeconomic variables namely, Current Account Balance (CAB), Interest rate (INR), Total Investment (INV), Gross National Saving (GNS) and the budget deficit in Malaysia. Multiple regression analysis (OLS) is also used in the beginning in order to examine the significance of the variables. The empirical results show a significantly negative relationship between CAB and INV variables with the budget deficit. Also a significantly positive relationship between INR and budget deficit. The Granger causality reviewed the presence of unidirectional causality between INR and BDF. CAB and INV both have a unidirectional association with INR. The study, therefore, suggests the need for policy intervention from the part of the Malaysian government in terms of its fiscal operations and its external sector performance in order to minimise frequent deficits in both budget and current account balances.

**Keywords:** Budget deficit, Macroeconomic variables, Ordinary Least Square (OLS), Malaysia, Stationary Tests, Granger Causality testing.

## ÖZET

Bu çalışmada Malezya ekonomisindeki bütçe açığındaki makroekonomik değişkenlerin etkisi araştırılmıştır. Bütçe ve cari açık arasındaki uzun vadeli ilişkiyi değerlendirmek için yapay olarak birlikte hareket etme potansiyeli olan ekonomik değişkenleri ölçümlemek için Granger tarafından savunulan istatistiksel teknik uygulanmıştır. Aradaki ilişki 1980- 2013 yılları arasındaki zaman aralığındaki verileri kullanarak değişkenler arasında önemli bir ilişki olup olmadığına ve değişkenler ile Cari hesap dengesi (CAD) ,Faiz oranları (FO) , Toplam yatırım (TY),Gayrı safi milli tasarruf (GSMT) ve Malezya' daki bütçe açığı olarak adlandırabileceğimiz değişkenler arasında tesadüfi bir ilişki olup olmadığına da cevap verebileceğimiz bir bakış açısıyla sorgulanmıştır. Başlangıçta değişkenlerin önemini değerlendirmek için Çoklu gerileme analizi (ÇGA) kullanılmıştır. Araştırmanın bilimsel sonuçları bütçe açığı ile CHD ve TY değişkenleri arasında önemli bir olumsuz etkileşim olduğunu göstermektedir. Buna karşın FO ile bütçe açığı arasında da olumlu bir ilişki vardır. Granger nedensellik ölçüğü FO ile BA arasında tek yönlü bir neden sonuç ilişkisi varlığını tespit etmiştir. Cari hesap dengesi ve TY 'nin ikisinin de FO ile arasında tek yönlü bir ilişki vardır. Dolayısıyla bu çalışma Malezya hükümet kanadı tarafından mali işletmeleri ve dış sektör performansı açısından hem bütçede hem de cari hesap dengesindeki açıkları en aza indirmek için bir müdahale politikas yürütme ihtiyacını ortaya koymaktadır.

**Anahtar Kelimeler :** Bütçe açığı, makroekonomik değişkenler, Sıradan En küçük Kare, Malezya , Durağan testler , Granger neden-sonuç ilişkisi testi .

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## LIST OF ABBREVIATIONS

<b>ADF</b>	Augmented Dickey-Fuller test
<b>ADE</b>	Asian Developing Economies
<b>BDF</b>	Budget Deficit
<b>BOPs</b>	Balance Of Payments
<b>BLUE</b>	Best Linear Unbiased Estimators
<b>CAB</b>	Current Account Balance
<b>DUM</b>	Dummy Variable
<b>ECM</b>	Error Correction Model
<b>EXPT</b>	Exports
<b>FDI</b>	Foreign Direct Investment
<b>FD</b>	Fiscal Deficit
<b>GDP</b>	Gross Domestic Product
<b>GNI</b>	Gross National Income
<b>GNP</b>	Gross National Product
<b>GR</b>	Growth Rate
<b>IMF</b>	International Monetary Fund
<b>INF</b>	Inflation Current Prices
<b>IMPT</b>	Imports
<b>INR</b>	Interest Rate
<b>INV</b>	Total Investment
<b>IFS</b>	International Financial Statistics
<b>MCB</b>	Malaysia Central Bank
<b>MOF</b>	Ministry Of Finance

<b>NCT</b>	Net Current Transfers
<b>NEP</b>	National Economic Policy
<b>NI</b>	Net Income
<b>OLS</b>	Ordinary Least Square
<b>PP Test</b>	Phillips-Peron test
<b>REH</b>	Ricardian Equivalence Hypothesis
<b>RIR</b>	Real Interest Rate
<b>RSSR</b>	Residual Sum of Squares Restricted
<b>RSSUR</b>	Residual Sum of Squares Unrestricted
<b>SLS</b>	Stage Least Squares
<b>UNCTAD</b>	United Nation Cooperation for Trade and Development
<b>VAR</b>	Vector Autoregressive
<b>VECM</b>	Vector Error Correction Model

# **CHAPTER ONE**

## **GENERAL INTRODUCTION**

### **1.1 Introduction**

This chapter focused on the background of the study, Malaysia for long periods has experienced detrimental effects in balancing its budget. The “twin deficits” are of paramount importance for contemporary governments. Privatisation was sought as a key policy to promote growth and reduce public debt. Statement of the problem, some have argued that Malaysia budget deficit is not only structural in nature but also an apparent lack of fiscal discipline. Objectives of the study, to determine the causal relationship between macroeconomic variables and the budget deficit. Research questions, research hypothesis, and significance of the study will also be discussed under this section. This study concentrated on the impact of four macroeconomic variables namely, Current Account Balance(CAB), Interest rate(INR), Total Investment(INV), Gross National Saving(GNS) on the budget deficit in Malaysia over the period from 1980 to 2013. More specifically, this study examines the impact of macroeconomic variables for different sub-categories of the budget deficit in Malaysia. The previous studies mainly focused on the effect of macroeconomic variables on the budget deficit in Malaysia.

### **1.2 Background of the Study**

Malaysia’s economy has performed well in recent years with output growth averaging over 5 % since 2010, and the government has taken steps to consolidate its fiscal position after an increase in public debt following the global financial crisis (Kim et al. 2014, p40). The country has a stable financial system that has provided a conducive environment for economic growth. In addition, the economy of Malaysia has experienced long term current account surplus that is closer to a more sustainable balance with higher investment growth (Economic Planning Unit, 2012, p30).

In the 1970s, the Malaysian government played a key role in the economy by directly and actively participated in the country's overall social, economic development process and the establishment of large commercial enterprises (Narayan, 2004, p63). Government participation in the economy expanded further in 1980-82 as it pursued an expansionary countercyclical fiscal policy aimed at stimulating economic activity and sustaining growth against the effects of the global recession. The countercyclical policy led to "twin deficits" in the government's fiscal position and the balance of payments (Narayan, 2008, p52).

Malaysia has experienced difficulties in balancing its budget. Budget deficits in Malaysia became commonplace with the advent of the National Economic Policy (NEP) in 1970, whereby fiscal spending was actively used as a policy tool (Economic Planning Unit, 2012, p30). However, in 1986 it was clear that budget deficits could no longer be sustainable and thus the need to promote a private sector driven the economy (Narayan, 2008, p30).

A new public policy direction was sought to promote the private sector as the main engine of growth for the economy against the public sector. The most significant development was the reduction of the public sector's commercial activities, implemented through the privatisation programme. Subsequently, government intervention was largely to support private sector initiatives towards overall development of the country. The tax structure was also reformed to increase international competitiveness as well as promote national savings to meet future levels of growth and investment requirements. This contributed to a marked improvement in the government's financial position as well as a reduction in its borrowing requirements. With a strengthened fiscal position in the late 1980s, the government achieved fiscal surpluses for five years running 1993-1997 (Bank of Negara Malaysia, 2013, p23).

Malaysia keeps all policies under constant review, to respond to changing circumstances. The implementation of fiscal stimulus packages in Malaysia, over the years increased government spending from an average of 22% of GDP in 1995-97 to



30% in 2005, or an average of nearly 25% of GDP during 1998-2005 (Economic Planning Unit, 2012, p32). On the revenue side, receipts have remained robust, providing flexibility for increases in development expenditure without exceeding the size of the overall deficit. In 2005, revenue collected recovered to the pre-crisis level of 24% of GDP, averaged 19% of GDP during 1998-2005 and 23% during 2009-2013. The overall fiscal deficit as a percentage of the gross domestic product, (GDP) remained below 6% during 2000-2013. For instance, the overall deficit which was 5.5% and 5.3% in 2001 and 2003 respectively, declined to 3.6% and 3.2% in 2005 and 2007 respectively. However, it increased marginally to 5.4%, 4.5% and 4.0% in 2010, 2012 and 2013 respectively (Bank of Negara Malaysia, 2013, p23). Similarly, the balance of payments (BOPs) as percentage of gross national income (GNI) in recent time shows that in 2009, 2010, 2011, 2012 and 2013 the BOP amount to 20.1%, 17.5%, 17.2%, 14.2% and 12.9% respectively (Bank of Negara Malaysia, 2013, p23). The BOP trend between 2009 and 2013 shows a marginal and gradual decline.

Malaysian economy highly depends on commodity and dividends from the state oil company which make up a significant share of state revenues (Nelson, 2012, p10 Piersanti, 2000, p15). The drop in the current account of the balance of payments in addition to continued fiscal deficits poses medium-term risks to the economy. IMF (2013) argued that a strong commitment to fiscal sustainability is critical for macroeconomic stability as well as to ensure sustainable long-term growth. Ball (2013) observed that Malaysia continues to enjoy flexibility in expanding its fiscal position, which remains sustainable given the government's fiscal prudence and discipline.

### **1.3 Statement of the Problem**

Malaysia has experienced difficulties in balancing its budget. Since 1970, the deficits have accumulated in periods of economic upturns and downturns, alike except the period 1993-1997. Furthermore, since 1999, the deficits have consistently exceeded the figures forecast (Kim et al. 2014, p40). Some have argued that Malaysia budget deficit is not only structural in nature but also an apparent lack of fiscal discipline (IMF, 2013, p23; Ahmad Saifuddin, 2008, p11).

The Malaysian government are able to manage their budget deficits because of substantial oil revenues and high domestic savings (Bank Negara Malaysia, 2013, p12). Despite the fact that expenditure growth has outpaced tax revenue growth, past deficits have been managed by resorting to substantial oil revenues and large domestic savings. In recent past, periodic downswings have forced the government to intervene with anti-cyclical fiscal policies, where expenditures often overshoot revenues according to Ariff (2012, p12).

The resultant effect of increasing government deficit financing can be seen from Malaysia's government debt-to-GDP ratio that has increased significantly since the global financial crisis, as the government undertook substantial discretionary fiscal stimulus during the crisis and economic growth moderated after the initial recovery (Bank of Negara Malaysia, 2013, p16). Given that Malaysia is a highly commodity dependent economy and dividends from the state oil company make up a significant share of state revenues, part of the increase in debt-to-GDP can be attributed to lower oil prices after the boom that culminated in 2008 (Kim et al. 2014, p40).

#### **1.4 Objectives of the Study**

The main objective of the study is to research the impact of four macroeconomic variables namely, Current Account Balance(CAB), Interest rate(INR), Total Investment(INV), Gross National Saving(GNS) on the budget deficit in Malaysia (1980-2013).

The specific objectives are:

- (i) To determine the effect of a current account balance on the budget deficit in Malaysia.
- (ii) To determine the effect of Interest rate on the budget deficit in Malaysia.
- (iii) To determine the effect of total Investment on the budget deficit in Malaysia.
- (iv) To determine the effect of gross national saving on the budget deficit in Malaysia.

#### **1.5 Research Questions**

From the foregoing, some research can be deduced and also from the basic research questions that this study seeks to address. These include:

- (i) What is the impact of macroeconomic variables on the budget deficit in Malaysia?
- (ii) Is there a causal relationship between macroeconomic variables on the budget deficit in Malaysia?

#### **1.6 Research Hypothesis**

The hypothesis that the study seek to test in its null form is as follows:

H0a: There is no significant impact of macroeconomic variables on budget deficit.

H1a: There is significant impact of macroeconomic variables on budget deficit.

H0b: There is no causal relationship between macroeconomic variables and budget deficit.

H1b: There is causal relationship between macroeconomic variables and budget deficit.

### **1.7 Scope of the study**

The focus of the study is to investigate the impact of macroeconomic variables on the budget deficit in Malaysia covering the period (1980-2013). The study will, however, be limited to investigate the impact and causal effect of macroeconomic variables on the budget deficit.

### **1.8 Significance of the Study**

This study recognizes the ensuing importance of budget deficit in a competitive and globalized economy. Sustainable economic development requires the strong commitment to fiscal sustainability through fiscal prudence and discipline that is critical for macroeconomic stability. A continued shrinking of the public sector is most desirable to promote private sector driven growth. However, given the intertemporal economic crisis that usually affects private and public expenditure and in most cases is supported by public sector stimulus, a study of this nature is important not only to researchers but also to policy makers who are responsible for formulating public policies to draw lessons from their actions and/or inactions over time. This study seeks to provide empirical findings which can serve as basis for policy formulation.

### **1.9 Structure of the Study**

The study is organized into six chapters. Chapter one is the introduction. In this chapter, the statement of problem and objectives are presented. Chapter two is empirical literature review and theoretical framework. This section review, theoretical and empirical literature. Chapter three is an Overview of Malaysian Economic. Chapter four is the methodology and variables descriptions. This section presents data and methods of data analysis. Chapter five is empirical analysis and discussion of findings. Chapter six is a conclusion and recommendations.

## **CHAPTER TWO**

### **LITERATURE REVIEW AND THEORETICAL FRAMEWORK**

#### **2.1 Introduction**

Chapter two is the literature and theoretical framework. This section review conceptual, theoretical and empirical literature. It highlights the prior empirical literature that has been conducted under this subject and, in addition, the theoretical framework will discuss the concepts of the budget deficit and current account balance in relation to the study. A historical perspective will be determined and draws up the conclusion regarding how strong or weak the relationship between the budget deficit and current account balance. In each scenario, developed economies will be given preferential deliberations due to the volume of empirical studies conducted in these countries and where available developing economies past studies will be acclaimed.

#### **2.2 Empirical Literature Review**

The relationship between current account and budget deficit has been a subject of investigation since 1980s because of the external balance crisis that many economies both developed and developing countries were subjected to. This has come to be referred to as twin deficits hypothesis which asserts that an increase in the budget deficit will cause a similar increase in the current account deficit. Empirical Studies on the subject matter centred predominantly on two major theoretical hypotheses of a Keynesian proposition and the Ricardian Equivalence.

For instance, Adam and Bevan (2004, p23) investigated the relationship between fiscal deficits and economic growth using a panel of 45 developing countries. The study found evidence of a threshold effect at a level of the deficit around 1.5% of the gross domestic product. The threshold involved not only a change of slope but also a change of sign in the relation. This indicates that for an economy that is not on its steady-state growth path, there is a range of which deficit-financing may be growth-enhancing.

Brauninger (2002, p58) examined the relationship between budget deficit, public debt and endogenous growth. The findings showed that the deficit ratio fixed by the government stays below a critical level, there are two steady states where capital and public debt grow at the same constant rate, and an increase in the deficit ratio reduces the growth rates. He concluded that if the deficit ratio exceeds the critical level, there is the tendency for no steady state. Capital growth declines continuously and capital is driven down to zero in finite time.

Akbostancı and Tunç (2002, p68) investigated the twin hypotheses of the budget deficit and trade deficit in Turkey. The study used time series data that spanned 1987–2001. They employed Error Correction Model (ECM) approach for empirical analysis. Their findings showed that there is a long-run relationship between the two deficits. Also, the short-run model indicated that worsening of the budget balance will worsen the trade balance.

Yanik (2006, p45) investigated the validity of the twin deficits hypothesis of current account deficit and budget deficit in Turkey. The data used covered the period 1988:1-2005:2. The estimation approach used in the study is Vector Autoregressive (VAR) model and Granger causality test. The results indicated that current account and budget deficits, in the long run, move together and the causality runs from current account deficit to budget deficit.

Aisen and Hauner (2008, p15) examined the effect of budget deficit on the interest rate in 60 advanced and emerging countries. The data used covered the period 1970-2006. The approach adopted was reduced from the equation. The results of baseline showed that the coefficient is highly significant, as 1% increase in deficit increase the interest rate by 44 points. The result of overall countries showed that budget deficit have negative effect on interest rate during 1985-1994, but the effect was the positive after 1995. Their findings showed that budget deficit positively affect the interest rate, the effect varied across countries, and the impact depend on interaction terms. Similarly, Anusic (1993, p10) examined the impact of budget deficit on Republic of Croatia. The data used spanned the period 1991-1992. Using Keynesian proposition, the increase in

budget deficit will cause the increase in real interest rate which will cause decrease in real investment. The impact of budget deficit on the overall economy and for its smoothness is harmful though it depends on the internal condition and way of financing in the economy.

Al-Kheddar (1996, p14) examined the relationship between budget deficit and interest rate in some selected G-7 Countries. He used VAR model and data that spanned the period 1964-1993. He found that interest rates increase in the short run due to budget deficit, but in a long run there is no impact. Also, the deficits negatively affect the trade balance. The indication is that budget deficit has a positive and significant impact on economic growth.

Paul et al (1999, p75) tested Barro's tax-smoothing model (which assumes inter-temporal optimization by government seeking to minimize distortionary costs of taxation) sustainability in South Asia using Pakistan and Sri Lanka as case study. The study used time series data covering the period 1956-1995 and 1964-1997 for the two countries respectively. They found that Pakistan's fiscal behaviour is consistent with tax-smoothing but not so in Sri Lanka. Also, fiscal behaviour in both countries was dominated by a stagnation of revenue, large tax-tilting induced deficits and excessive public liabilities. The tax-tilting behaviour indicated that for both countries the stock of public utilities was unsustainable under unchanged fiscal policies.

Glannaros and Kolluri (2010, p78) investigated the relationship between budget deficit and macroeconomic variables in five selected industrialized countries. The study applied ordinary least squares (OLS) technique on different models which include Fisher equations and the IS-LM general equilibrium model. The data covered the period 1965 - 1985. The results showed that there is an indirect significant relationship between budget deficit and interest rate, and there is a negative relation between interest rate and inflation.

Ashok (2004, p36) examined the impact of liberalisation on trade deficits and current accounts while controlling for factors like income and terms of trade in 42 selected developing countries. The study used panel data (both time-series and cross-section dimension). The findings of the study showed that trade liberalisation promotes growth in most cases; the growth itself has a negative impact on trade balance and this in turn could have negative impacts on growth through deterioration in trade balance and adverse terms of trade. Overall, the results of the study showed that trade liberalisation could constrain growth through adverse impact on the balance of payments.

Gulcan and Bilman (2005, p56) examined the relationship between budget deficit and exchange rate in Turkey. The data covered the period 1960-2003. The study used co-integration and causality test approach to determine the statistical properties the individual time series. The found a strong impact of budget deficit on the real exchange rate. The study shows that the role of the budget deficit to maintain the real exchange rate is very crucial. Similarly, Huynh (2007, p98) examined the impact of budget deficit from selected Asian Countries. The data used for the study covered the period 1990 to 2006. He found that there is a negative impact of the budget deficit on the GDP growth.

Mehrara and Zaman zadeh (2011, p12) examined the relationship between government current budget deficit and non-oil current account deficit in Iranian economy. The data used spanned 1959-2007 and the approach for data analysis was based on cointegration and vector error correction model (VECM). The results showed that a positive relationship exists between government current budget deficit and non-oil current account deficit. On the Pairwise Granger causality tests, there was a bi-directional relationship between government current budget deficit and non-oil current account deficit.

Goher et al. (2011, p23) investigated the impact of government fiscal deficit on investment and economic growth in Pakistan. The study used time series which spanned the period 1980 to 2009. Two-stage least squares method (2-SLS) was used to estimate the specified simultaneous equation models. The study found that fiscal recklessness has



seriously undermined the growth objectives of the Pakistan economy which has adversely impacted negatively on physical and social infrastructure. The persistence of macroeconomic imbalances, which is the hallmark of Pakistan's economy, posed the serious threat to economic growth and development.

Aviral (2012, p56) examined the long-run relationship between oil and non-oil exports and imports with a view to establishing whether the current account deficit in India is sustainable. He employed cointegration analysis with structural breaks for the analysis. He found a strong evidence of a long-run relationship between non-oil exports and imports and no evidence in the case of oil exports and imports. This implies that a foreign trade deficit is sustainable in the Indian context for non-oil commodities but not for oil commodities.

Medee and Nenbee (2012, p54) investigated the impact of fiscal policy variables including budget deficit on economic growth between 1970 and 2009. They used time series data and Vector Autoregression (VAR) and error correction mechanism techniques. The result revealed that there exist a long-run equilibrium relationship between economic growth and fiscal policy variables in Nigeria. Also, own shocks constituted a significant source of variations in economic growth, the forecasted errors in the short-run, range from 76% to 100% over a 10 years horizon while the response of the GDP to one standard innovation in government expenditure is negative in the short-run except in period two (2). The response of GDP to one standard innovation in the capital inflow is a positive in the short-run.

Ebrahim et al. (2012, p69) analysed the twin deficits (current account deficit and budget deficit) hypothesis in Kuwait. The study covered the quarterly period covering 1993:4 - 2010:4. The study employed cointegration, Vector Autoregressive (VAR) model, Impulse Response Function and Granger causality. The causality test showed that the direction of causality goes from the current account to budget balance. The result showed a negative long-run relationship between current account and budget balance that is an increase in current account causes a decrease in the government budget surplus

or an increase in budget deficit. Thus, study could not establish twin deficit hypothesis in the Kuwaiti economy.

Nathan (2012, p6) investigated the causal relationship between fiscal deficits, money supply and exports as a means of analysing the impact of policy on the growth of the Nigerian economy between 1970 and 2010. He employed the Co-integration Error Correction Mechanism (ECM), a Two Band Recursive Least Square to test for the stability of the Nigerian economy as well as determine the effect of money supply, fiscal deficits, and exports on the relative effectiveness of fiscal policies in the Nigerian economy. The study revealed that there is a significant causal relationship between gross domestic product (GDP), and exports and fiscal policies.

Vincent N. Ezeabasili (2012, p14) examined the relationship between fiscal deficits and economic growth using data over the period 1970 – 2006. They adopted a modelling technique that incorporates cointegration and structural analysis. The results indicated that (i) fiscal deficit affects economic growth negatively, with an adjustment lag in the system; (ii) a one percent increase in fiscal deficit is capable of diminishing economic growth by about 0.023%; and (iii) there is a strong negative association between government consumption expenditure and economic growth.

Wosowei (2013, p75) examined the relationship between fiscal deficit and macroeconomic performance. The study covered the period 1980 to 2010, with a view to determine the impact of fiscal deficit on macroeconomic aggregate in Nigeria and whether fiscal deficit had led to economic growth in Nigeria. The study employed the Ordinary Least Square (OLS) in estimating the model. The findings showed that fiscal deficits even though that it met the economic a prior in terms of its negative coefficients yet, did not significantly affect macroeconomic output. The result also showed a bi-causal relationship between government deficit and gross domestic product, government tax, and unemployment, while there is a uni-causal relationship between government deficit and government expenditure and inflation. This study used a static model and

requires some form of verification using a dynamic model approach including the causal relationship.

Allam (2014, p59) analysed the impact of fiscal deficit on the balance of payments in India. The study employed ordinary least square technique and Granger causality test for analysis. The Granger causality test showed that exports and import, US dollar VS Indian rupee is causing the fiscal deficit. Regression weight estimation found that fiscal deficit is impacting on planned budget expenditure. T-test hypothesis analysis established significant impact of imports, foreign reserves, and trade balance of payments.

Oyeleke and Ajilore (2014, p42) investigated the sustainability of fiscal policy in Nigeria over the period of 1980-2010. This was to determine whether or not the government has violated intertemporal government budget constraint. Using error correction method of analysis, the study revealed that fiscal policy sustainability was weak.

On studies that focussed on causality between current account and budget deficit, the findings seems largely mixed and inconclusive. For example, Laney (1984) investigated the causal relationship between budget deficit and current account in United State, and selected industrialized and developing countries. The results showed that a unidirectional causal relationship running from budget deficit to current account deficit exist between exchange rate, budget deficit and current account deficits. Further analysis using ordinary least squares (OLS) estimation technique results showed that the fiscal balance as a determinant of external balance is statistically significant in developing countries as compared to industrial countries.

Similarly, Darrat (1988, p15) examined the causal relationship between budget deficit and current account deficits in United State. The data for the study spanned the period 1960:1 to 1984:4. He employed Granger-type multivariate causality tests and Akaike's final prediction error criterion for empirical analysis. The results showed that a bi-directional link exists between budget deficit and current account deficits. Islam (1998)

analysed the twin deficits (budget deficit and current account deficits) hypothesis in Brazil. The study data spanned the period 1973 to 1991. The findings of the study showed that a bi-directional relationship exist between budget deficit and trade imbalances. Also, Normadin (1999) found a bi-directional causal relationship between the budget deficit and current account deficit in Canada.

Alkswani (2000, p23) analysed the relationship between budget deficits and trade deficits in Saudi Arabia taking as an open petroleum economy. The data used covered the period 1970-1999. The study tested the Ricardian equivalence and the Keynesian hypothesis by employing Pairwise Granger causality tests. The results of the study showed that budget deficit Granger causes trade deficit. Mansouri (1998, p36) employed cointegration tests and error correction models to determine the causal relationship between the external deficit and budget deficit. He found a bi-directional short- and long-run causality between fiscal deficit and external deficits in Morocco.

Kulkarni and Erickson (2001, p15) examined the causal relationship between current account balance and budget deficit in 3 selected countries which include India, Pakistan and Mexico. The study used data that spanned the period 1969-1997. The results showed no evidence of causality running in either direction in the case of Mexico. In case of India, there was a strong evidence of twin deficits. In Pakistan, there is evidence of trade deficits creating budget deficits.

The results from causality test showed mixed results some of which are inconclusive. The implication is that the causal relationship between current account and fiscal deficit is still a subject of controversy among researchers.

On studies that specifically focussed on the Malaysian economy, Lau and Baharumshah (2004, p46) examined the causal relationship between current account and deficit financing in Malaysia. The data used for the study spanned the period 1975-2000 by using the techniques of Toda and Yamamoto (1995) for analysis. The results revealed

the presence of a bi-directional causality between current account deficit and budget deficit.

Chin-Hong et al. (2012, p21) examined the twin deficits (current account deficit and budget deficit) hypotheses in developing and emerging economies. The data used spanned a period of four decades and Malaysia was used as a case study. The result obtained from the Johansen-Juselius (1990) cointegration test indicates that budget deficit and current account deficit do not have a long run relationship. The result from the Granger non-causality test by Toda-Yamamoto (1995) support the Summer"s (1988) reverse causation proposition. This showed a unidirectional causality running from current account to the budgetary variable where the deterioration in the current account deficit negatively impacts on budgetary position.

The empirical studies reviewed shows that the relationship between the fiscal deficit and current account balance is largely inconclusive. This may relate to the level of economic development of the country, fiscal management and discipline, macroeconomic stability and source of income.

## **2.3 Theoretical Review**

### **2.3.1 Keynesian and Ricardian Equivalence**

The Keynesian revolution changed the meaning of fiscal management moving it away from the tax or revenue side of the budget to include both revenue and spending. For the Keynesians, fiscal policy refers to the manipulation of taxes and public spending to influence aggregate demand which also include its stabilization role. There are two theoretical hypothesis that can be used to analyse the effect of the budget deficit on the balance of payments. These are Keynesian and Ricardian Equivalence hypothesis.

The mechanism for the deficits can be explained through the Keynesian income-expenditure approach. An increase in the budget deficit will cause an increase in domestic absorption and, therefore, the domestic income. When the domestic income increases, it will encourage imports and eventually reduce the surplus in the trade

balance. Also, the Keynesian open economy model asserts that an increase in the budget deficit causes an increase in the aggregate demand and domestic real interest rates. High-interest rates lead to net capital inflow and result in appreciation of domestic currency. A higher value of the domestic currency adversely affects net exports, and thus there will be worsening the balance of payments (BOP) through its impact on current account (Barro, 1989, p46).

A country with a balance of payment deficit will borrow resources from the rest of the world and a sign of negative phenomenon for a country's economic development. The reason behind is that, if the country is investing the borrowed resources into more productive investment available in the rest of the world, paying back loans to foreigners pose no problem because a profitable investment will generate a high return to cover the interest and principal on those loans. As a result, the country will grow out of its debt in the future. On the other hand, if the balance of payment is run for the purpose of increasing share of consumption and no improvement in capital stock or exports, it will cause the country to have less capacity to repay its debt in the future as related to Ricardian equivalence(Enders and Lee, 1990, p15).

According to Keynesian view an increase in the budget deficit will cause a similar increase in the balance of payments through current account deficit, only if private saving and investment do not change much or held constant. On contrary, Summers (1988) argues that a reverse causality may run from current account to budgetary variable when the deterioration in current account deficit leads to slower pace of economic growth and subsequently increases the budget deficit. On the other hand, the Ricardian Equivalence Hypothesis argued that when the government cuts taxes and raise its deficit, citizens anticipate that they will face higher taxes in the future and later they have to pay back the government debt. Therefore, citizens reduce their consumption spending and raise their own (private) saving to offset the fall in government saving. Thus, the budget deficit has no effect on the current account deficit.

The Keynesian theory advocates the use of fiscal policy to offset imbalances in the economy. According to Keynes, a government should use fiscal policy to stimulate an

economy slowed down by the recession through deficit, that is, by spending more than it collect taxes. On the other hand, to slow down an economy that is threatened by inflationary pressures, there should be increase in taxes or cutting spending to create a budget surplus that would act as a drag on the economy (Grossman 1987, 23). Stabilization policy requires that policymakers can determine feasible targets, have a reasonable knowledge of the workings of instrumental variables and can effectively control the instrumental variables, the targets of those variable for which the government seeks desirable values.

The continual inclusive opinions regarding the role of government in managing the economy using fiscal policy lie in two dominant theoretical perspectives. The first is the Keynesian view, which makes the case that governments can play a major role in determining the level of national income. The alternative is the Ricardian view, which argues that the level of aggregate demand is essentially neutral to government policy. The effectiveness of the fiscal policy will, therefore, depend very much on which view persists (Chamberlin and Yueh, 2006, p11). The difference between the Keynesian and the Ricardian view of the world comes down to the type of consumption function that is used, while the Keynesian model states that expansion of government expenditure (expansionary fiscal policy) accelerates economic growth, endogenous growth models do not assign any important role to government in the growth process, but Barro and Sala-Martin (1992); Easterly and Rebelo (1993, p11) emphasized the importance of government intervention in economic activities to enhance economic growth.

Fiscal policies that increase the deficit will result in future taxes being higher than they otherwise would have been, but, depending on the policies that yield effects on incentives for investing in human or physical capital, they might also raise future living standards. Policies that absorb slack resources or foster investment might reduce government saving, as reflected in the greater budget deficit, while they increase total saving, as reflected in the greater rate of capital formation (Horton and El-Ganainy, 2009, p13).

### 2.3.2 Theoretical Framework

In the economic literature, two main approaches are known to explore the relationship between current account and budget deficit also known as twin deficit. We can deduce a theoretical model from the Ricardian Equivalence and the Keynesian Proposition on the relationship between budget deficit and current account balance from the national income identity:

$$Y = C + I + G + (X - M) \quad (1)$$

Where Y is national income, C is private consumption, I is real investment spending in the economy in structures and equipment, G is government expenditure on final goods and services, X is exports of goods and services, and M is imports of goods and services. We can define our current account (CA) as:

$$CA = (X - M) + F \quad (2)$$

Where F is net income and transfer flows. In addition to goods and services balance, the current account also includes net income received from or paid abroad. The current account shows the size and direction of international borrowing. When a country imports more than exports, it has a deficit in CA, which is financed by borrowing from foreigners. Such borrowing may be done by the government or by the private sector. Private firms may borrow by selling equity, land or physical assets. So, a country with current account deficit must be increasing its net foreign debt or running down its net foreign wealth by the amount of the deficit.

A country with a deficit in CA is importing present consumption and/or investment and exporting future consumption and/or investment spending (Mukhtar et. al, 2007, p13). According to the national income identity, national saving in the open economy equals:

$$S = I + CA \quad (3)$$



We can distinguish between saving decisions by the private sector and public sector. Where we have:

$$\mathbf{S} = \mathbf{S}_p + \mathbf{S}_g \quad (4)$$

Where  $S_p$  is defined as the part of disposable income ( $Y_d$ ), which is saved rather than consumed. In general we have:

$$\mathbf{S}_p = \mathbf{Y}_d - \mathbf{C} = (\mathbf{Y} - \mathbf{T}) - \mathbf{C} \quad (5)$$

Where  $T$  stands for taxes collected by the government, Government saving is defined as difference between government revenue from tax ( $T$ ) and government expenditures which consists of government purchases,  $G$ , and government transfers,  $Tr$ . Mathematically;

$$\mathbf{S}_g = \mathbf{T} - \mathbf{G} - \mathbf{Tr} \quad (6)$$

By using the definition of national saving and using equation (3), we have:

$$\mathbf{S} = \mathbf{S}_p + \mathbf{S}_g = (\mathbf{Y} - \mathbf{T} - \mathbf{C}) + (\mathbf{T} - \mathbf{G} - \mathbf{Tr}) = \mathbf{I} + \mathbf{CA} \quad (7)$$

We can rewrite equation (7) in the form that is useful for analysing the effects of government saving decisions on an open economy:

$$\mathbf{S}_p = \mathbf{I} + \mathbf{CA} - \mathbf{S}_g = \mathbf{I} + \mathbf{CA} - (\mathbf{T} - \mathbf{G} - \mathbf{Tr}) \quad (8)$$

Equation (8) states that a country's private saving can take three forms: investment in domestic capital, purchases of wealth from foreigners ( $CA$ ), and purchases of the domestic government's newly issued debt ( $G + Tr - T$ ).

## **2.4 Theories of Budget Deficit and Current Account**

The macroeconomic analysis of fiscal management is based on two major schools of thoughts. These are the Keynesian proposition and Ricardian Equivalence theories. The Keynesian mechanism can be explained through the Keynesian income-expenditure approach. The fiscal policy according to Keynesians has the significant effect on income, employment, and output in the short run even without the increase in money supply. Keynes used aggregate demand as a fundamental determinant of national output. An increase in government expenditure will cause an increase in domestic absorption, and hence, the domestic income. When the domestic income increases, it will encourage imports and eventually reduce the surplus in the trade balance. Also, in an open economy, Keynesian observed that an increase in the budget deficit causes an increase in the aggregate demand and domestic real interest rates. Barro (1989, 15) asserts that high-interest rates lead to net capital inflow and result in appreciation of domestic currency. The Keynesian Proposition confirms the existence of the positive relationship between budget deficit and current account deficit. Particularly, the twin deficits hypothesis states that a budget deficit leads to a current account deficit. By implication, a budget surplus will improve the current account deficit while a budget deficit makes the government as a net borrower (Alkswani, 2000, p25)

In contrast, The Ricardian Equivalence proposition opined that individuals are rational, know that any reduction in taxes is temporal and will be willing to save the extra money to pay for the future higher taxes. The national savings will not be affected. Therefore, the budget deficit has no effect on the current account deficit (Thomas and Abderrezak, 1988, p23). The Ricardian Equivalence theory argued that when the government cuts taxes and raise its deficit, citizens anticipate that they will face higher taxes in the future and later they have to pay back the government debt. Therefore, citizens reduce their consumption spending and raise their own saving to offset the fall in government saving. Thus, the budget deficit has no effect.

However, Enders and Lee (1990, p13) opined that public debt is as crucial as the stock of money. A country with a balance of payments deficit will borrow resources from the rest of the world and a sign of negative phenomenon for a country's economic development. The reason behind is that, if the country investing the borrowed resources into more productive investment available in the rest of the world, paying back loans to foreigners pose no problem because a profitable investment will generate a high return to cover the interest and principal on those loans. As a result, the country will grow out of its debt in the future. On the other hand, if the balance of payment is run for the purpose of increasing share of consumption and no improvement in capital stock or exports, it will cause the country to have less capacity to repay its debt in the future as related to Ricardian equivalence.

The Fiscal deficit could be seen from many angles. It is the gap between the government's total spending and the sum of its revenue receipts and non-debts capital receipts, (Buhari 1994, p35). It represents the total amount of borrowed funds required by the government to completely meet its expenditure. It could also be defined as the excess of total expenditure including loans net of payments over revenue receipts and non-debt capital receipts. It also indicates the total borrowing of the government and the increment to its outstanding debt. A nation's balance of payments is a system that accounts for flows of income, expenditures as well as the flow of financial assets. It consists of a number of different accounts, mainly three accounts: the current account, the private capital account and the official settlements balance. While current account covers income earning and spending in the course of the year with the balance of trade as part of it, the capital account shows the movement of capital in and out of the country. It tabulates the flows of financial assets between domestic private residents and foreign private residents. The final account, the official settlements balance, measures the transaction of financial assets and deposits by official government agencies, which typically conducted by the central banks and finance ministries or treasuries of national governments.

## CHAPTER THREE

### AN OVERVIEW OF MALAYSIAN ECONOMY

#### 3.1 Introduction

This chapter focused on the general overview of the Malaysian Economy, the Basic Theory of Twin Deficits, and discussion of the trade Sector in Malaysia. This section will shed some light on the general features of the Malaysian Economy. The Malaysian government shifted their macroeconomic policies to a more industry based policy in which motivates and promotes the heavy industry. Therefore the Malaysian government itself funded large investments both directly and through state-owned enterprises.

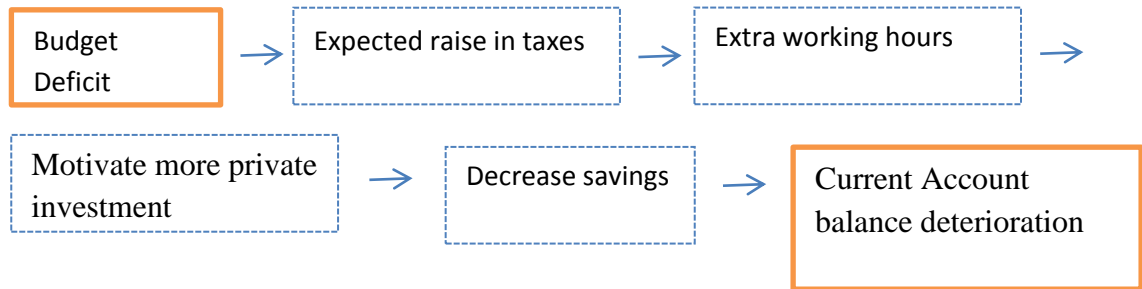
#### 3.2 The Basic Theory of Twin Deficits

A good illustration to define the twin- ness between the budget deficit and the current account deficit can be given by the study done by Baxter, (1995, p5). Her study investigates this twin- ness by observing the reaction of a model economy under the exposition of two different fiscal policies in which may lead a worse budget deficit. The first fiscal policy is implemented by an increase in government expenditures along with an un-equivalent increase in tax revenues. The second is a decline in the labour and tax capital accompanied by a non-attached reduction in expenditure. Her results show that under the fiscal policies an increase in the budget deficit by 1% of GDP in the short run, an increase in the current account deficit is observed by 0.5% of GDP. How do both policies end up with deterioration in the current account balance from a budget deficit? First let's explain the policy using the increase in government spending.

In cases where budget deficit arises, the people of this government expect taxes to rise as a solution for the government to make funds and decrease the gap in its budget. People start to save money and accumulate wealth in order to meet this future raise in taxes or they spend less. Most of the time, people increase the amount of working hours. By increasing the productivity outcome, they make the capital stock more productive, which

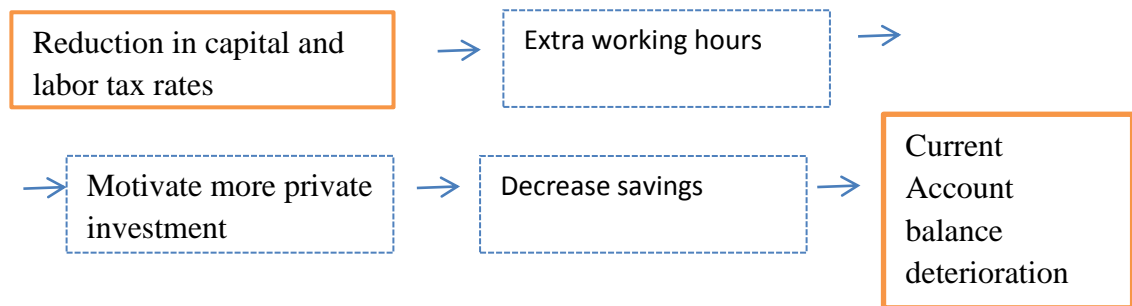
fosters more private investment. This increase in investments is of course funded by the savings which leads to a decrease in savings and a current account balance deterioration in response to the deterioration of the government fiscal balance.

**Figure 3.1: Savings and a Current Account Balance**



Next, consider the policy based on a persistent reduction in capital and labour tax rates. Assuming that a decline in the tax rate will motivate people to work harder to an advantage and opportunity to increase wealth with fewer reductions, both output and productivity of capital increases. Same as the first policy, this increase in output will motivate rise in investments and moreover decline in the tax rate gives a better motive of fewer costs. Altogether this increases the demand for the savings and ends up with a Current Account deficit.

**Figure3.2: Current Account Balance Deterioration**

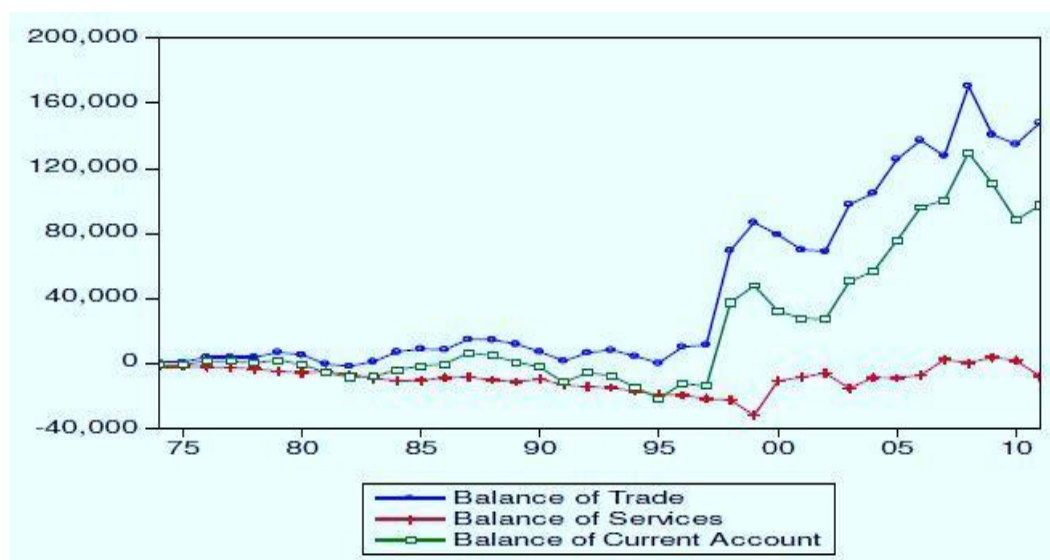


### **3.3 The Trade Sector in Malaysia**

Around 1980 Malaysia began to diversify its industrial and exports sectors. Mainly its production of commodities changed from primary commodities towards manufactured goods and textiles. Moreover, the Malaysian government shifted their macroeconomic policies to a more industry based policy in which motivates and promotes the heavy industry. Therefore the Malaysian government itself funded large investments both directly and through state-owned enterprises. This funding led to a rapid increase in the share of public investments in Malaysia's gross domestic product (GDP) and it expanded the government's budget deficit from 6.6 % of GDP in 1980 to over 17 % in 1982. The Malaysian reacted with external borrowing in order to meet this deficit. Later on at that period of time, the world's economy witnessed a slowdown which raised the real interest rates and caused the appreciation of the Malaysian local currency leading to deterioration in Malaysia's trade. This was Malaysia's first twin deficit crisis.

At the beginning of the twentieth century, Malaysia again has encountered a twin deficit despite the fact that the Malaysian economy was in different circumstances than the first deficit. Particularly in the 1990s Malaysia endorsed a high growth due to the boom in the private investments. This boom was forced by short-term capital (intermediate and capital goods) and encouraged a rapid growth in Malaysia's imports. By 1992, and 1993 this significant increase in the short-term capital inflows caused an appreciation of the foreign exchange rates leading to a new current account deficit for Malaysia in 1994. Unfortunately this high growth in investment, forced by short-term capital, continued until 1995 suffering Malaysia from the twin deficit.

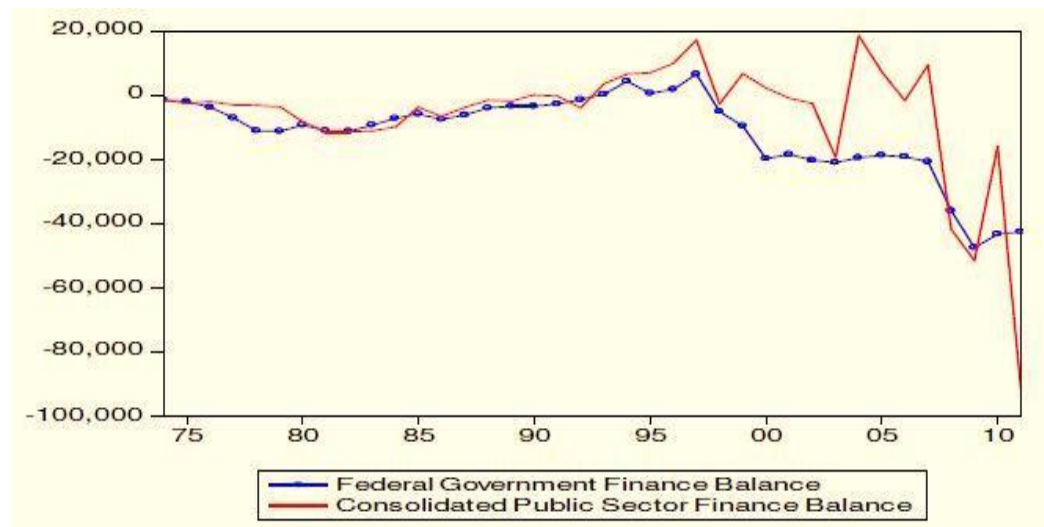
**Figure 3.3: Trade Balance and Current Account from 1974 to 2011 (RM million).**



Source: Economic Report, Ministry of Finance Malaysia.

Malaysia's economy usually characterizes with a current account surplus. Meaning that Malaysia's net exports of goods and services is more than its net imports of goods and services. This is true except in the years of 1974 to 1975, 1980 to 1986 and 1990 to 1997. Malaysia's current account, particularly exports, is very influential to the global market because Malaysia is a small open economy. The period from 1998 to 2011 Malaysia experienced a surplus in its current account balance due to the variety of its products and the diversification of its trade in markets. In addition, the net exports increased significantly around 2000 due to the rise in the general price of commodities around the world. On the contrary, the 2007-2008 global crises marked the turning point for Malaysia current account surplus (see Figure 3.3). The global crisis resulted in weaker demand and decline in the commodities price levels ending with a decrease in Malaysia's net exports. Moreover, imports increased to offset domestic demand. This process contributed to the savings-investment surplus theory (MOF, 2010, p25; 2011, p36; 2012, p42).

**Figure 3.4: Government Balance in Malaysia, from 1974 to 2011 (RM million).**



Source: Economic Report, Ministry of Finance Malaysia.

The current account balance reflects the balance between the savings and investments in a certain economy. The savings are funds for investments and can be allocated domestically and/or globally. In the case of a current account surplus, the saving amount of this economy is higher than its investments. This surplus leads to a buffer in the national reserves and eliminates risks of the future currency crisis. On the other hand, if there is a deficit in the current account balance, the investments would be higher than the savings and external funds are significant. According to Obstfeld and Rogoff, (1994, p10) the Current account balance is an identical reflection of the inter-temporal investment and consumption of an economy. According to the report by MOF, (2011, p36: 2012, p42) Malaysia experienced a gap in its savings-investments public sector in 2011 and 2012.

According to the twin deficit hypothesis which states that there is a probability that a budget deficit will lead to a current account deficit (Theofilakou and Stournaras, 2012, p719-734). This was experienced and gained a lot of interests regarding the United States around the 1980s when the US witnessed a significant external and budget deficit together.



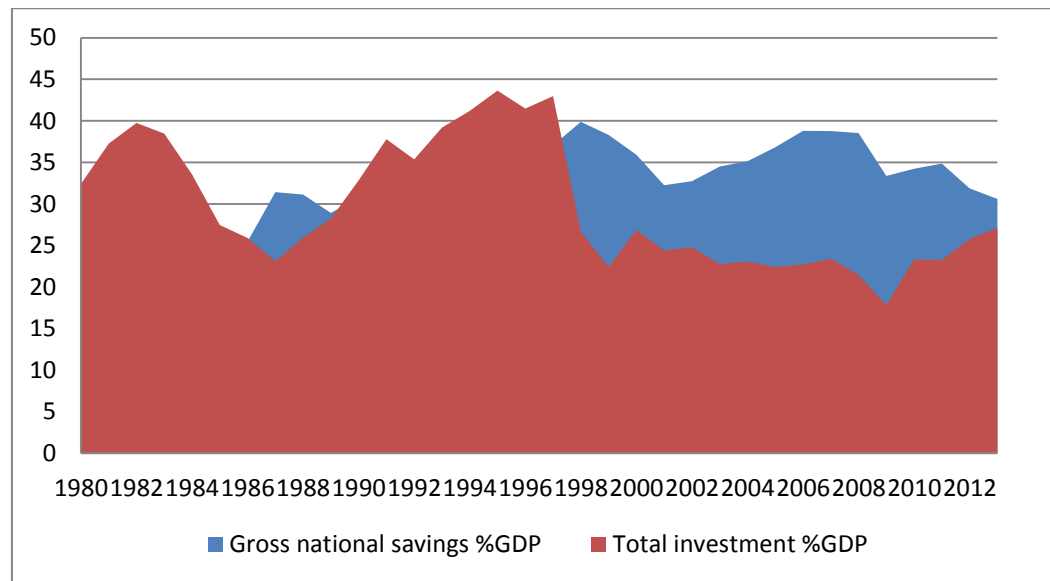
In the economic theory, two main pillars debate the budget/current account deficit. The first side is the Mundell and Fleming theory. Mundell and Fleming expect that an increase in the budget deficit will increase the real interest rates in the domestic country, as a compensation of fund, which will motivate capital inflows from abroad. This increase in domestic interest rates will appreciate in the exchange rate of the local currency making it harder to export and easier to import goods and services. At the end of this process, a current account deficit is expected to rise.

On the other hand the Keynesian theory says that an increase in the local imports will be a result of an increase in the budget deficit, therefore leading to a current account deficit (Algieri, 2013, p3). Other studies on this topic gave other explanations like the study done by Chihi and Normandin, (2013, p77-98).

We can expect some differences in the macroeconomic dynamics governing budget and current account deficits between developing and developed economies. Therefore, lessons from the industrialized countries may not apply to the emerging economies because the circumstances may differ. In addition, the discussion is also especially relevant given the backdrop of the financial crisis that engulfed Malaysia. Malaysia and most of the crisis-affected Asian countries recorded large current (and budget) deficits. Indeed, due to the size of the external deficit, some economists have questioned the sustainability of the deficit in periods prior to the 1997 crisis (Lau and Baharumshah 2003, p454-475).

In the 19th century, the gap between savings and investments in the Malaysian economy could not be filled by domestic funds. In other words due to the increase in the marginal propensity to invest, Malaysia domestic savings could not match up and, therefore, a current account deficit appeared. From the figure 3.3 we can conclude that the twin deficit phenomena were evident in Malaysia as it was experienced in the industrialized countries in that period of time.

**Figure 3.5: Gross national savings, Total investment %GDP from 1980 to 2013.**



Source: CEIC Latest actual data.

Malaysia now belongs to the upper middle-income developing country with per capita GNP of USD 3,640 in 2001. Following the recent Asian financial crisis, the ringgit was pegged to the US dollar on September 1, 1998. Prior to the financial crisis, the economy recorded persistent current account deficits going as far back as 1989. The current account deficit grew from 5% of GDP in 1993 to 8% in 1994 and increased to 10.5% in 1995. Although the current account deficits have alternated in the past two decades or so with some years of surpluses it had, on average, a larger deficit (5%) compared to its neighbouring countries like Thailand (2%) and Indonesia (2.5%) over the same period. Malaysia's current account deficits in the last decade reflected the movements of foreign capital inflow, mainly foreign direct investment (FDI) from the US, Japan and the Newly Industrialized Countries ( IEs). FDI accounted more than 60% of the capital inflows in the 1990s. The FDI boom provides the needed capital for investment, employment, managerial skills as well as technology and, therefore, accelerates growth and development (DeMello 1997, p1-34).

### **3.4 Budget Deficit and Current Account Balance**

In Malaysia Since 1980, the trading pattern in commodity had changed from primary commodities toward manufactured goods and textiles. The Malaysian economy was able to diversify its production and exports sector. At the same time, the government shifted their macroeconomic policy which began to promote a drive toward heavy industry. To achieve this drive, Malaysian economy practically undertook large investment both directly and through state-owned enterprises that led to rapid increase in the share or public investment in gross domestic product (GDP). This widened the federal budget deficit from 6.6 percent of GDP in 1980 to over 17 percent in 1982.

The government undertook external borrowing in order to finance the deficit. In addition, the slowdown in the world economy increased in world real interest rates and caused the appreciation of the real exchange rate. This led to progressive deterioration in the terms of trade. Thus, the twin deficits problem window was opened in Malaysia in the year 1982.

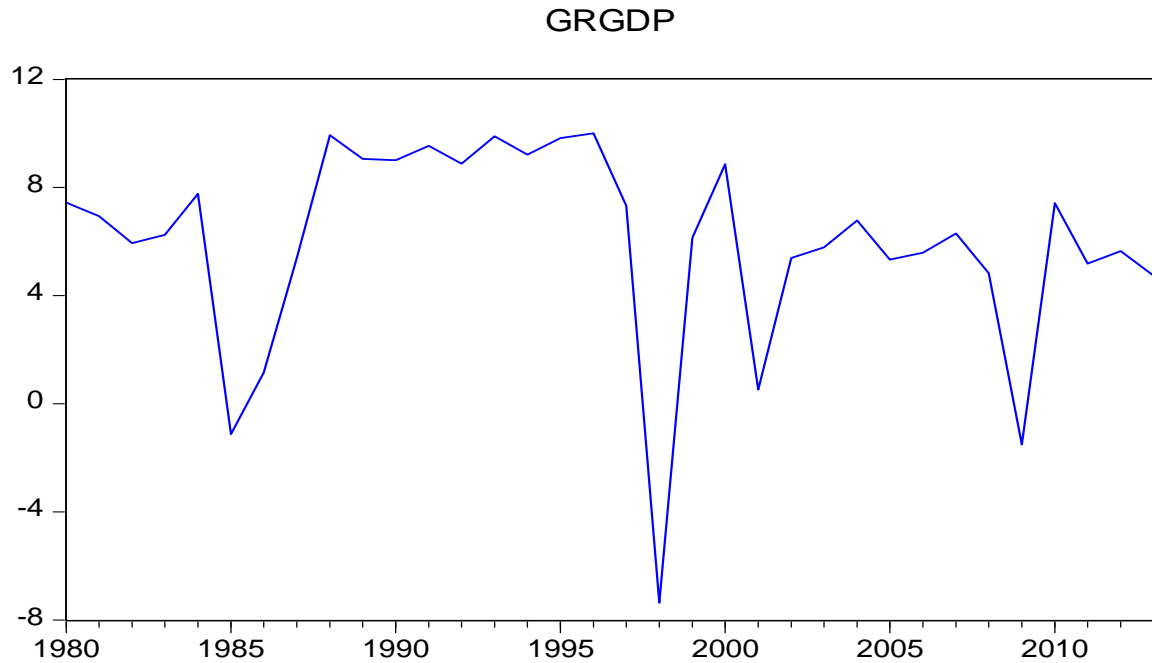
Malaysia experienced the second episode of current account deficits in early 1990s, but the macroeconomic environment was different from the previous one. There was a high growth due to the booming private investment and that circumstance had encouraged rapid growth in imports, particularly of intermediate and capital goods and thus caused a narrowing term of trade. Malaysia had the large current account and budget deficits in the year 1991. The short-term capital inflows increased significantly in 1992 and 1993 which caused the appreciation of the foreign exchange rates and then current account deficit reoccur in 1994. A continued rapid growth and booming investment in 1995 widened the current account imbalances which resulted in large deficits.

Over time, sustainable twin deficits led to the massive distortion of financial resources, accumulation of debt and constraint. These inconsistent trends of the budget and current account deficits generated new policy tensions and posed challenges to macroeconomic decision making in Malaysia.

The GDP growth rate has been outstanding since 1980s. For instance, the real GDP growth that stood at 7.4% in 1980 increased marginally to 7.8% in 1984 but declined to -1.1% in 1985. Between 1988 and 1997 the Malaysian economy witness a robust GDP growth averaging 8.6%. However, between 2005 and 2013 the GDP growth average

5.4% which by all standards is significant (Figure 3.6). Worthy of note is the fact that most of the years under review GDP growth were positive except 1985, 1998 and 2009 (Figure 3.6). These years coincided with some form of economic crisis that were either regionally or globally motivated.

**Figure 3.6: Gross Domestic Product Growth Rate (% of Annual)**



Source: WDI, 2013

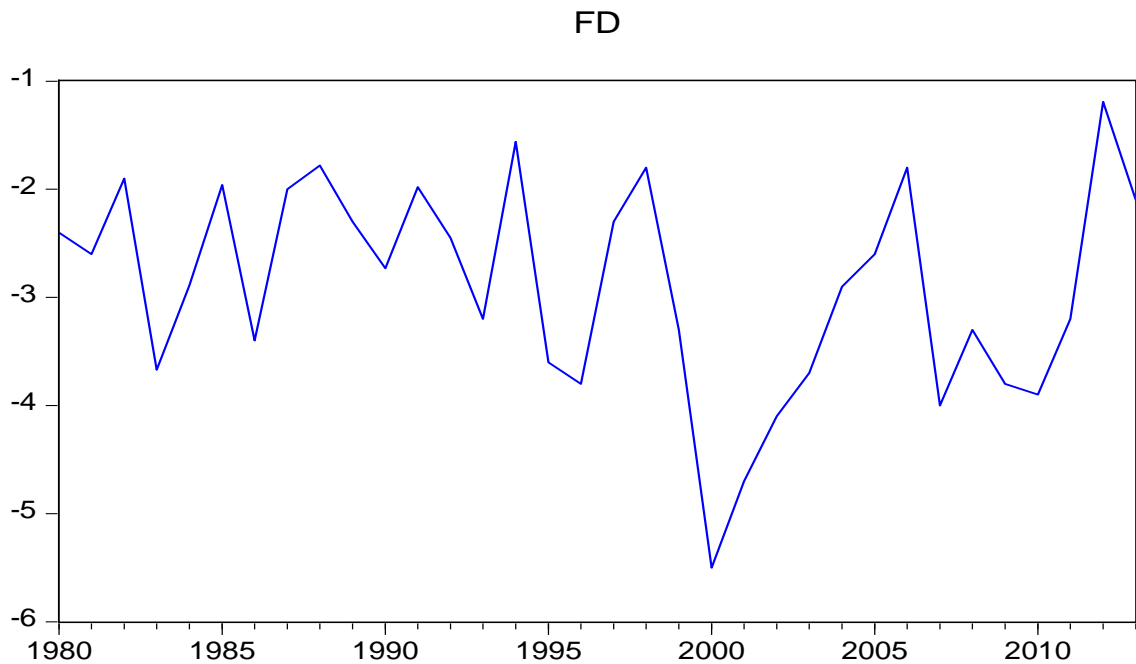
The implementation of fiscal stimulus packages through government spending led to its increased from an average of 22% of GDP in 1995-97 to 30% in 2001, or an average of nearly 25% of GDP during 1998-2001, and average of 24% of GDP during 2009-2012. On the revenue side, receipts have remained robust, providing flexibility for increases in development expenditure without exceeding the size of the overall deficit. The improvement was due to an on-going tax reform program aimed at improving tax buoyancy and tax receipts, as well as increases in petroleum-based revenue, arising from higher oil prices. Petroleum-based revenue accounts for about one-fifth of total revenue.

During the 34-year period from 1980 to 2013, the federal government budget was in surplus for only 5 years: from 1993 to 1997. For the other 42 years, the budget was in deficit, regardless of whether the economic cycle was good or bad. This suggests that the Malaysian deficit is of a structural nature. Beginning in the 1970s and up until 1986, the

government played an active role in the economy, undertaking massive expenditures in support of the country's new economic policy. This was particularly evident in the period spanning the Third Malaysia Plan, 1976–1980. By the end of 1982, the federal budget deficit had peaked at 16.6% of the GDP. The government downsized its role only in the aftermath of the major recession, which lasted from 1983–1986. This enabled the accumulation of surpluses in the early 1990s. Subsequently, the economic crisis triggered by the financial meltdown in 1997 induced the government to increase spending again, this time in a countercyclical effort.

The overall fiscal deficit as the percentage of the gross domestic product (GDP) remained below 6.0% during the period under review. -2013. For instance, the overall deficit which was -2.4% and -1.9% in 1980 and 1985 respectively, increased to -3.8% and -5.5% in 1996 and 2000 respectively. However, it declined further to -3.3%, -3.2% and -2.1% in 2008, 2011 and 2013 respectively (Figure 3.7).

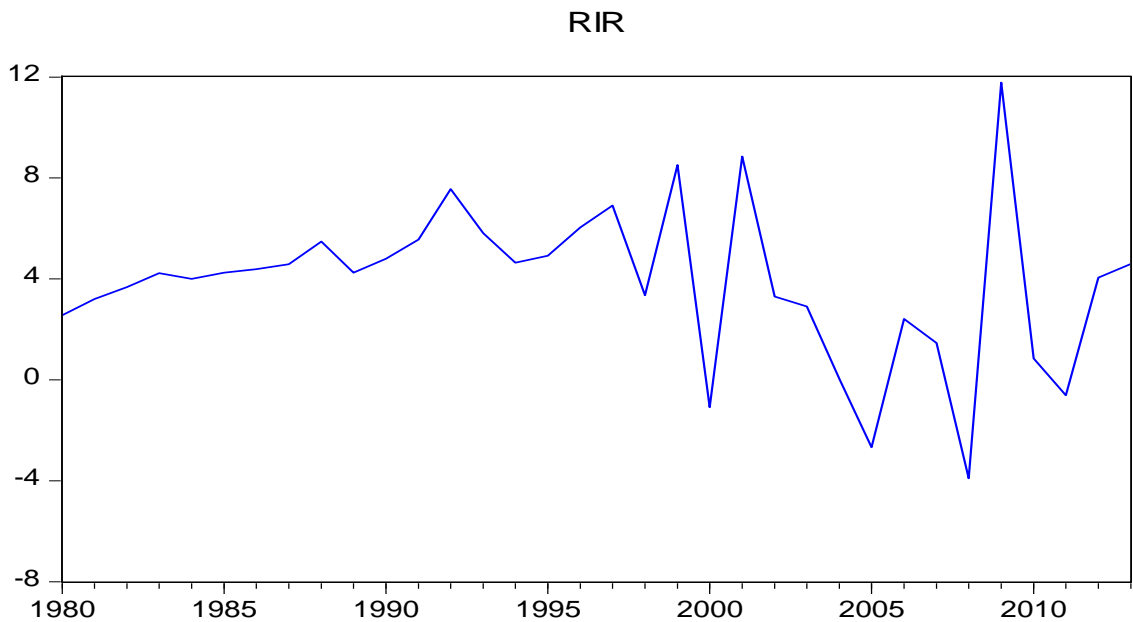
**Figure 3.7: Fiscal Deficit**



Source: WDI, 2013

The real interest rate remained below 9% in the period under review. The real interest which was 2.5% in 1980 increased to 4.2% in 1985. The rate increased substantially to 6.9% in 1998 and 8.8% in 2001. However, it declined to 2.9% in 2003, 1.4% in 2007 but increased again to 4.5% in 2013 (Figure 3.8).

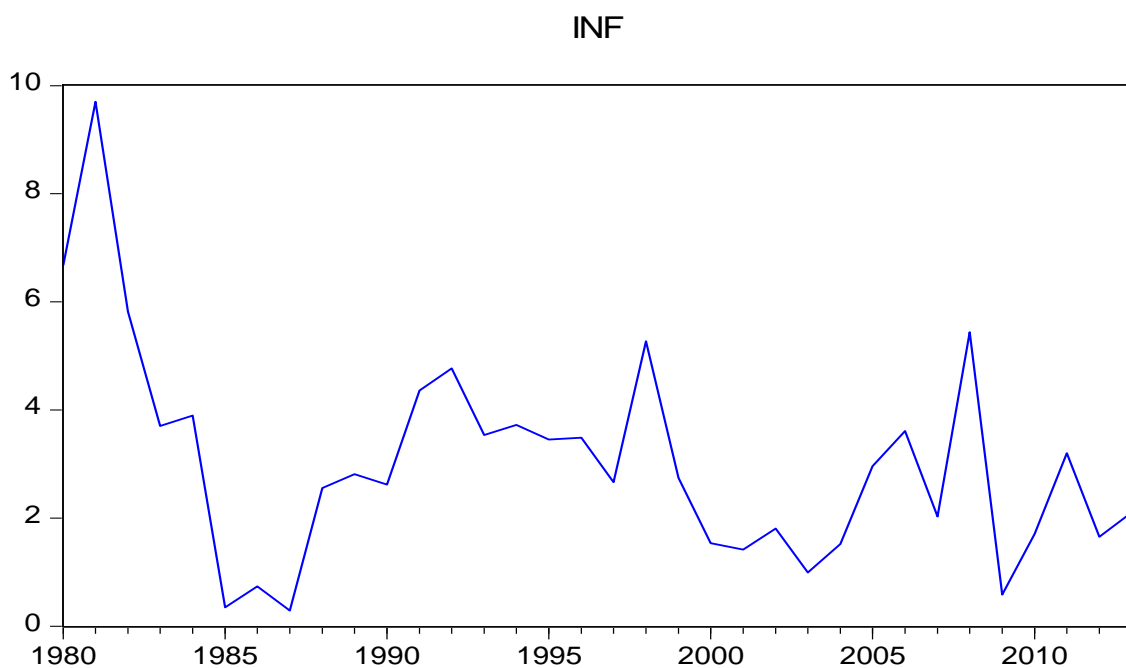
**Figure 3.8: Real Interest Rate (%)**



Source: WDI, 2013

The inflation rate defined by consumer prices has been moderate over the years. From an inflation rate of 6.6% in 1980, it decreased to 2.5% in 1988. Ten years after (1998), inflation rate increase to 5.2%. Between 2000 and 2013 inflation rate averaged 2.1% (Figure 3.9). The inflation rate in Malaysia has remained within the limits that are not detrimental to the level of economic activities especially investments and consumption. The rate can also be the relationship between the level of real interest rate and fiscal deficits.

**Figure 3.9: Inflation, Current Prices (% Annual)**

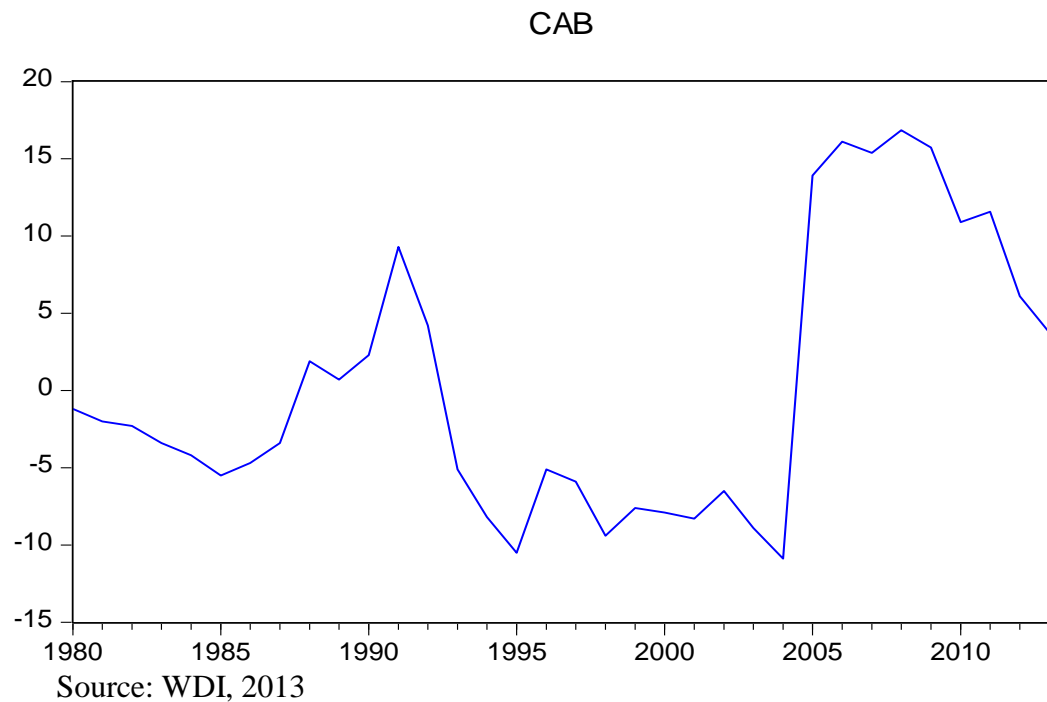


Source: WDI, 2013

Malaysia keeps all policies under constant review, to respond to changing circumstances. On the revenue side, receipts have remained robust, providing flexibility for increases in development expenditure without exceeding the size of the overall deficit. In 2005, revenue collected recovered averaged 19% of GDP during 1998-2005 and 23% during 2009-2013. Similarly, the balance of payments (BOPs) as percentage of gross national income (GNI) in recent time shows that in 2009, 2010, 2011, 2012 and 2013 the BOP amount to 20.1%, 17.5%, 17.2%, 14.2% and 12.9% respectively (Bank of Negara Malaysia, 2013, p23). The BOP trend between 2009 and 2013 shows a marginal and gradual decline.

The current account balance which stood at -1.2% in 1980 increased to -5.5% in 1985. It increased to -10.5% in 1995. By 2002, the current account balance stood at -6.5% and increased to -10.8% in 2004. The current account balance remained positive between 2005 and 2013. For Example it was 13.9%, 15.7% and 3.7% in 2005, 2009 and 2013 (Figure 3.10).

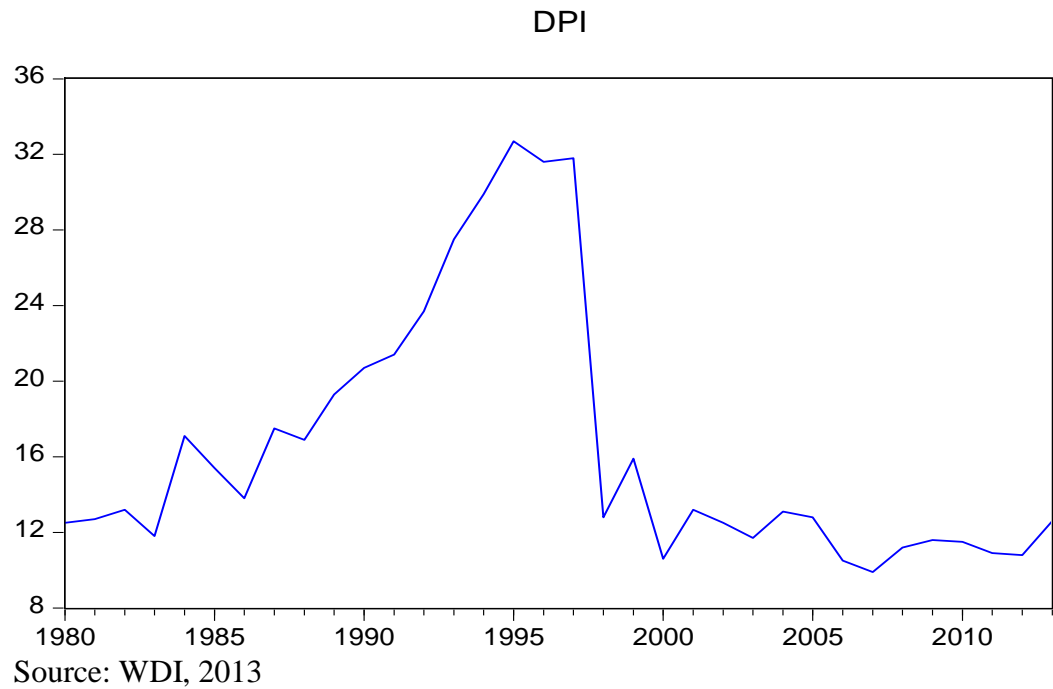
**Figure 3.10: Current Account Balance (% of GDP)**



The domestic private investment has been tremendous and remained above two digits. The domestic private investment as the ratio of GDP was 12.5% in 1980, increased to 20.7% in 1990. The rate climaxed in 1995 by reaching 32.7%. the rate reduced to 13.2% in 2001. The rate stood at 11.6% in 2009 and 12.6% in 2013 (Figure 3.11). The domestic private investment has significantly complemented public investment in the Malaysian economy. However, this may not be unconnected with friendly private investment initiative implemented by the government of Malaysia.



**Figure 3.11: Domestic Private Investment (% of GDP)**



Overall, the economic indicators in Malaysia has shown that the economic performance has been tremendous in recent years rating among the fast growing economies of the world with high potential as an emerging economy or newly industrialized nations of the world.

## CHAPTER FOUR

### METHODOLOGY AND VARIABLES DESCRIPTIONS

#### 4.1 Introduction

The objective of this chapter is to express the selected variables that are studied in this study along with clarifying its reliable source and also explain the applied econometric techniques that were used in the analysis. This chapter explains the methods in which the research was carried out and the tools employed. It centres on the research methodology used in the study, this is considered a very important chapter due to the fact that it makes a huge difference in the quality of any research work. It is also seen as the background through which the findings of a research work is deregulated and it concludes the content of any reader in understanding the analysis carried out in the course of the study, moreover it also will aid help to clarify the procedures used for the research.

#### 4.2 Research Tools

There are many econometrics techniques at our disposal for analysing data. This present thesis will employ the Ordinary Least Square. The most fundamental benefit of this technique is that it shows the best linear unbiased estimator. Under certain hypothesis the method of least squares has some very attractive statistical properties that have made it one of the most powerful and popular methods of regression analysis. (Gujarati, 1998, 55). The E-views program will be applied to arrange and calculate the relevant data to obtain the objectives of the study and answer the research questions. It is also important to ascertain the interrelationships between the variables and as such the Granger causality test will be applied to determine the casual association between the variables.

### **4.3 Variables Descriptions**

These variables and terms will be used in this part to examine our study, they are four macroeconomic variables namely, Current Account Balance(CAB), Interest rate(INR), Total Investment(INV), Gross National Saving(GNS) and the budget deficit in Malaysia. explained as follows:

#### **4.3.1 Current Account Balance (CAB)**

One of the two Balance of Payments components is the Current Account. Literally speaking it is a measurement of a country's inflows/outflows of goods, services, and investment incomes. Its main components are:

1. Trade in goods
2. Trade in services
3. Investment incomes
4. Net transfers

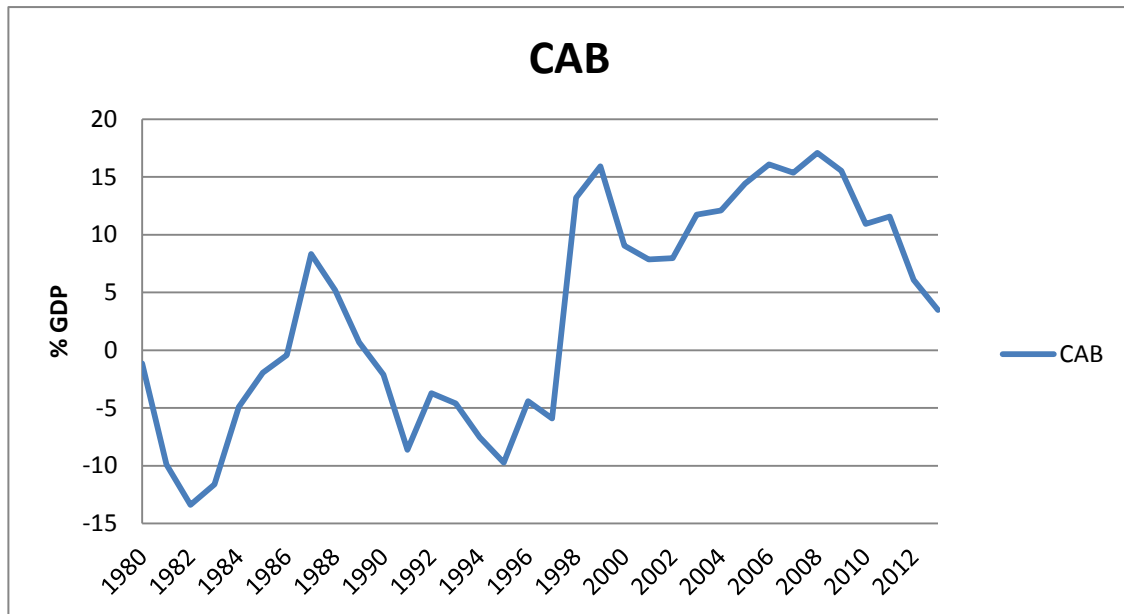
A current account surplus exists when the exports (inflows) of a country are higher than its imports (cash outflows); On the contrary if the amount of imports is more than exports, a current account deficit is the case. Mathematically the current account components are as follows:

$$CA = (EX - IM) + NI + NCT$$

Where CA denotes the current account, EX denotes export of goods and services and IM denotes import of goods and services, NI represents the net income from abroad, and NCT represents net current transfers like International Aid.

The current account of Malaysia in the last decade witnessed notable movements of FDI, foreign capital inflows, mainly from USA, Japan, and the recently industrialized countries. More than 90% of the capital inflows in 1990s were FDI. These capital Inflows enhanced growth and development (DeMello, 1997, p21).

**Figure 4.1: Current Account Balance of Malaysia 1980-2013.**

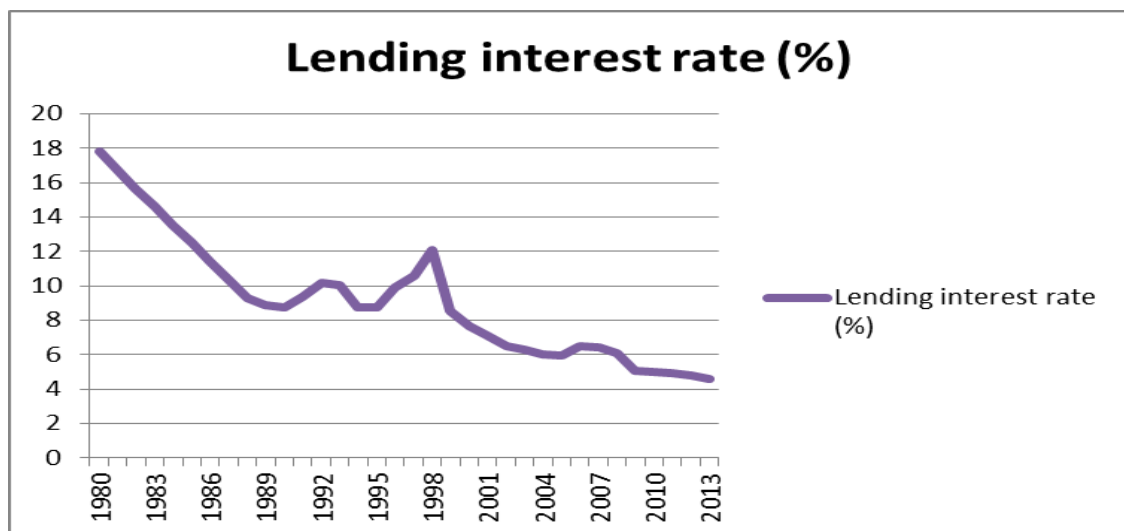


Source: CEIC Latest actual data: 2013.

#### 4.3.2 Interest Rate (INR)

In this study, we use also the Interest rate as a major variable which affects the budget of the government. Since the interest rate represents the cost of borrowings between financial institutions and also it represents the cost at which the government papers are issued and traded in the market.

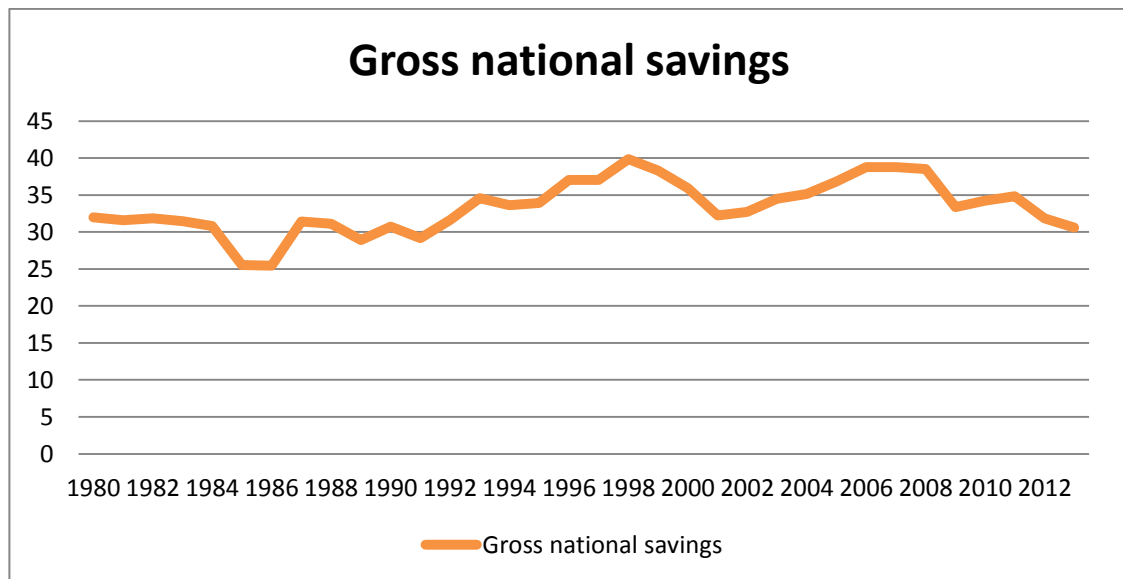
**Figure 4.2: Interest rate 1980-2013.**



### 4.3.3 Gross National Savings (GNS)

It represents the gross disposable income minus final consumption expenditure. All personal, business and government savings less the total consumption expenditures. Only foreign saving is excluded from GNS. It is presented as a percent of GDP. A positive figure indicates that the economy as a whole is spending less income than it produces, thus drawing up national wealth (saving) and vice versa. Figure 4.3 shows GNS.

**Figure 4.3: Gross National Savings 1980-2013.**



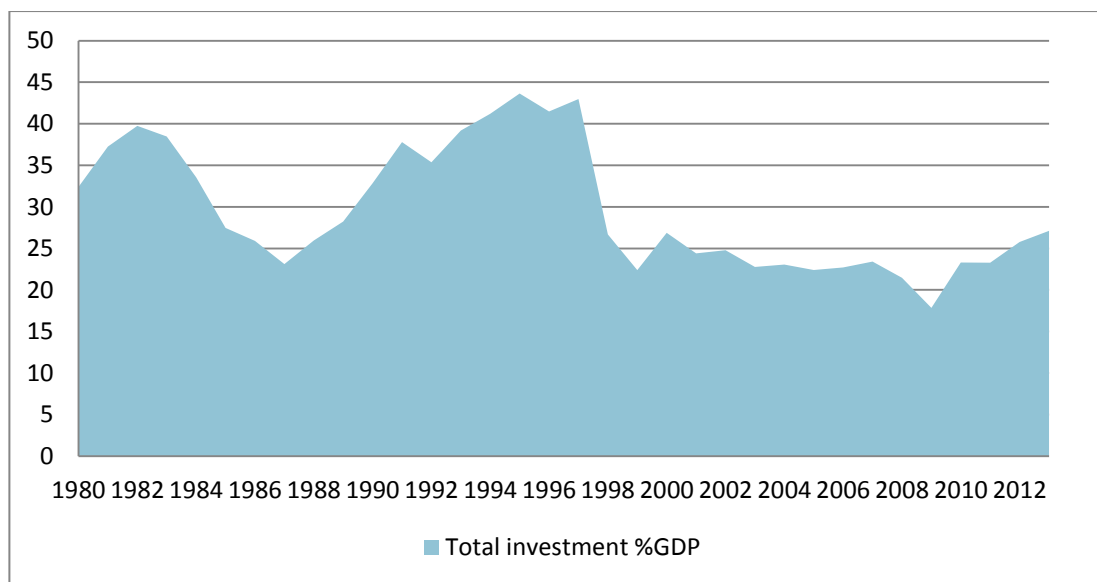
Source: IFS

#### 4.3.4. Total investment (INV)

Gross fixed capital formation (Total Investment) represents the total value of a particular producer's total acquisitions, minus his disposals, both fixed assets and certain additions to the value of not-produced assets throughout the accounting period (SNA 10.33).

We can see from the Illustration (Figure 4.4) that the gross fixed capital of Malaysia began to decrease sharply after 1997.

**Figure 4.4: Total investment in current local currency % GDP 1980-2013.**

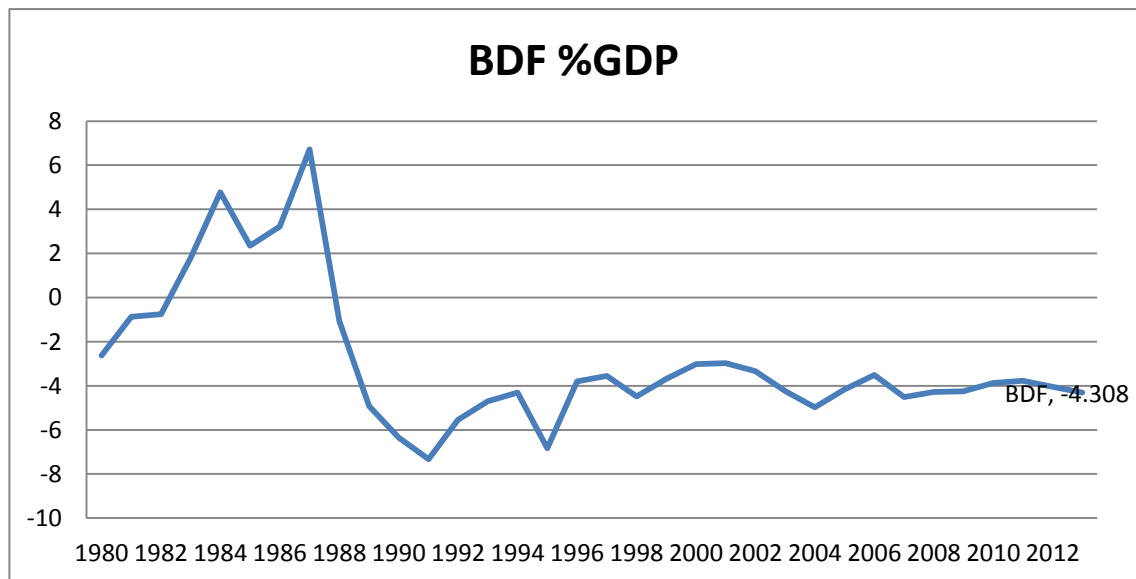


Source: IFS Data

### 4.3.5 Budget Deficit (BDF)

A Government's Budget deficit is the case when the government lacks funds to cover its operations. Budget deficits are represented as a percentage of the country's GDP as a better and accurate measurement. In times of economic prosperity, it is expected for a country to have the surplus in its budget or at least a decline in its compiled deficit. Unfortunately, in most cases countries witness a budget deficit. Governments react to encounter or circumvent their budget deficits by promoting economic growth, reducing government spending and increasing taxes. Moreover, governments ease their trade and commercial regulations by reducing heavy regulations and simplifying tax regimes, therefore increasing investor's confidence. Foreign and domestic investors start pushing capital into the economy and tax revenues start coming in the government's treasury.

**Figure 4.5: The Budget deficit in Malaysia 1980-2013.**



Source: IFS Data.

## **4.4 The Methods Used For Evaluation**

### **4.4.1 Ordinary Least Square (OLS) Multiple Regression**

An Ordinary Least Square will be used for predicting the significance of the dependent variable which is the Malaysian Budget Deficit from the values of the independent variables they are four macroeconomic variables namely, Current Account Balance (CAB), Interest rate (INR), Total Investment (INV), Gross National Saving (GNS). This technique will highlight if they are a correlation between these variables and determine the significant level. This technique is widely used due to its understand ability and simplicity in application.

## **4.5 Econometrics**

Econometrics is the economic measurement through the analysis of economic and business affiliation by applying both mathematics and statistics. The predicted model will be evaluated based on the economic scale. It is important to have a model that is well supported by economic theories. Most conspicuously on the variables are with the expectations of being positive or negative, depending on how it compare to the Malaysian federal Government budget.

### **4.5.1 The Stationary Test**

The Augmented Dickey-Fuller ADF tests, (1979) and Phillips and Perron (1988) tests of unit root were conducted in this empirical study in order to investigate whether unit root (non-Stationarity) exist or not for each variable which takes into consideration the natural logarithms both at levels and first differences. Adapting time series analysis is very sensitive to Stationarity property of the data because ordinary least squares estimators of results might provide a spurious regression like very high level of ( $R^2$ ) coefficient of determination also high level of significance (T and F) test meaning that the variance and covariance of estimated coefficients are biased not constant through



time. Unit root test was modified and applied by (Dickey and Fuller, 1981) in order to investigate the null hypothesis of Stationarity of the data. In order to satisfy the property of Stationarity of the data all variables that included in this model tested at levels and tested in first difference in case unit root exist by using the Augmented Dickey-Fuller (ADF) tests which include constant with trend. Similarly, Philip-Perron (PP) test is also employed. Comparing between these two methodologies to testify for Stationarity of data, (PP) test is more distinguished or special compared to (ADF) test because PP test can detect and remediate for autocorrelation using covariance matrix.

Assume X can be any variable and the augmented Dickey-Fuller (ADF) model can be defined as follows:

$$\Delta X_t = \beta_1 + \beta_2 t + \delta X_{t-1} + \sum_{i=1}^m \alpha_i \Delta X_{t-i} + \varepsilon_t$$

Where:

$\varepsilon_t$  Is a pure white noise error term  $\Delta X_{t-1} = (X_{t-1} - X_{t-2})$ ,  $\Delta X_{t-2} = (X_{t-2} - X_{t-3})$   
 $\Delta X_{t-i} = (X_{t-i} - X_{t-j})$ , I is represents the number of recent time and j is the number of previous times or years. The hypothesis of Augmented Dickey-Fuller ADF is

$$H_0 : \delta = 0, X_t \text{ Is non-stationary}$$

$$H_0 : \delta \neq 0, X_t \text{ Is stationary}$$

Using differenced data, the computed (ADF) and PP tests suggest that the null hypothesis is rejected for the individual series at conventional (1%, 5%) and (10%) level of significance at which the variables will be said to be integrated of that order, that is I(d). And asserted that augmented Stationarity test of Dickey and Fuller are sensitive to lag length structures.

### **4.5.2 Autocorrelation Test**

One reason we use the AR (1) process is not only because of its simplicity compared to higher-order AR schemes, but also because in many applications it has proved to be quite useful (Gujarati, 2008, 420). Autocorrelation is the measure of familiarity between given time series and a lagged version of itself over successive time intervals. The principal typically used test for first-order autocorrelation is the Durbin-Watson “d” test. It’s important to notice that this check will solely be used to check for first-order autocorrelation, it can also be used to check for higher-order autocorrelation. Also, this check can't be used if the lagged price of the variable is enclosed as a right-hand facet variable. This test will adopt the conventional Durbin-Watson test at 5% level of significance to check for the presence of autocorrelation.

### **4.5.3 Heteroscedasticity**

In statistics, when the standard deviations of a variable, monitored above a specific amount of time, are non-constant. Heteroscedasticity can be in conditional or unconditional form. Conditional heteroscedasticity reviews the presents of non-constant volatility when future periods of high and low volatility cannot be identified. Unconditional heteroscedasticity is applied when futures periods of high and low volatility can be easily identified. An empirical analysis and observation of homoscedasticity of error terms determine whether or not a regression model's ability to predict a depended variable is consistent across all values of that depended on the variable. Heteroscedasticity, within the context of regression and different constant analyses, is specifically associated with error terms. In this study, the White test is adopted to test for heteroscedasticity.

#### **4.5.4 Dummy Variables**

Macroeconomic movements are characterised with fluctuations. One serious characteristic in their movements is the presents of a structural break. A key determination of structural break is the presents of a dummy variable. In an econometric model, a dummy variable is a variable that marks or encodes a particular attribute. Variables that assume 0 and 1 values are called dummy variables (Gujarati, 2008, 278).

In this study, a dummy variable is given to take into consideration the changes in the Malaysian economy after 1997. It was a structural break in economic activity.

#### **4.5.5 Causality testing**

The previous discussion shows the significance of the variables in the model and whether they affect BDF at a 5% level. It is essential to consider the relationship among the variables of interest in the short-run. Accordingly, the analysis will proceed to investigate the short-run relationship between the variables by performing a causality test.

#### **4.5.6 Granger causality**

Granger Causality is a test intended to check for the relationship between time series variables. Specifically, this test it is heavily employed in economic literature to test the direction and magnitude of the relationship between two variables. The Granger test examines whether including lags of one variable have predictive power for another variable. This test implies that  $X$  causes  $Y$  if  $Y$  can be better forecast by including past values of  $X$  in the model rather than using only  $Y$ 's past values. It should be noted that the concept of causality in the Granger test does not mean that changes in one variable cause changes in another variable, as the term is used in the context of policy discussions. For instance, the Granger causality test can be used to determine if shocks to the money supply lead movements in stock market prices, or vice versa. The Granger test based on a VAR model in differences is appropriate when the long-run analysis indicates there is no long-run relationship between variables that are integrated of the same order, i.e.,  $X$  and  $Y$  are  $I(1)$ . As in Enders (2004, 46), the Granger test begins with the estimation of a VAR model in differences:

$$\Delta X_t = \delta_i + \sum_{i=1}^{\rho} a_i \Delta X_{t-i} + \sum_{i=1}^{\rho} \beta_j \Delta Y_{t-j} + \gamma_1 \varepsilon_{1t-1} + \mu_{1t}$$

$$\Delta Y_t = \partial_i + \sum_{i=1}^{\rho} c_i \Delta Y_{t-i} + \sum_{j=1}^{\rho} d_j \Delta X_{t-j} + \gamma_2 \varepsilon_{2t-1} + \mu_{2t}$$

Where  $\Delta X_t$  and  $\Delta Y_t$  are the first difference of the time series under investigation,  $\delta_i$  and  $\gamma_i$  are constants, and  $\mu_{1t}$  and  $\mu_{2t}$  are white noise error terms. Furthermore, the subscripts  $t$  and  $\rho$  denote time periods and the number of lags used in the model. Based on the OLS coefficient estimates, four different null hypotheses can be tested to determine the direction of the relationship between  $X$  and  $Y$ . If  $\sum_{j=1}^{\rho} d_j = 0$  and  $\sum_{i=1}^{\rho} \beta_i = 0$ , it can be concluded that  $X$  and  $Y$  do not help to predict one another. If a feedback relationship exists between the two variables  $X$  and  $Y$ , which we call bidirectional Granger causality,  $\sum_{j=1}^{\rho} d_j$  and  $\sum_{i=1}^{\rho} \beta_i$  are both significantly different from zero. In the case where  $\sum_{i=1}^{\rho} \beta_i = 0$  but  $\sum_{j=1}^{\rho} d_j \neq 0$ , unidirectional Granger causality exists from  $X$  to  $Y$ , but not vice versa. In other words, changes in  $X$  can help to predict future values of  $Y$ , but  $Y$  cannot help to predict future values of  $X$ . Finally, the converse relationship is true when  $\sum_{i=1}^{\rho} \beta_i \neq 0$  and  $\sum_{j=1}^{\rho} d_j = 0$ , where changes in  $Y$  can help to predict future values of  $X$  but not the other way around

#### 4.6 Data Required and Source

The data used for the study is a secondary data sourced mainly from the World Bank statistical data base available on line and International Financial Statistics as well as Malaysia's Central Bank. Annual time series data for the variables included in the study will be used for the period 1980 to 2013.

## **CHAPTER FIVE**

### **DATA ANALYSIS**

#### **5.1 Introduction**

This chapter focused on the empirical analysis and discussion of findings. This section was a practical implementation of the methodology discussed in previous chapter four. The chapter looked at the empirical analysis of results and discussion of findings. The nature of time series data was reviewed to detect the long run relationship between macroeconomic variables and budget deficit.

#### **5.2 Results from the Stationary Tests**

Unit root tests were applied on all the four variables using both the (ADF) and (PP) statistical tests. The null hypothesis of a unit root was not rejected at the (1%) percentage significance level for all variables at the levels because probability value of each variable was more than (5%) and the results are depicted in Table (5.1). Meaning that we cannot reject the null hypothesis that variables have unit root and variables are not stationary, each variable became stationary at the first order I(1) after differencing, that means the series has a finite variance and it isn't based on time.

**Table 5.1: ADF and PP Tests for Stationarity**

Variable		ADF(t-stat)	Prob.	PP(t-stat)	Prob.	Decision
CAB	Level	-2.7386	-2.2196	-2.443444	0.3521	I(1)
	Difference	-5.262237	0.0009 *	-5.268175	0.0008 *	
GNS	Level	-1.915706	0.6238	-1.915706	0.6238	I(1)
	Difference	-5.169469	0.0011*	-5.176552	0.0011*	
INR	Level	-2.647085	0.2635	-2.625802	0.2721	I(1)
	Difference	-4.671424	0.0038*	-4.586454	0.0047*	
INV	Level	-1.951942	0.6050	-2.229870	0.4584	I(1)
	Difference	-4.838023	0.0025*	-4.838023	0.0025*	

\* denotes Significance at 1% level based on critical values. All test at constant and trend.

From the unit root tests, we conclude that all the variables are stationary at first difference. Although it's better to continue the Ordinary least square regression on stationary data, the study implements the regression on non-stationary data because the inconvenient results (irrelevant) given when transforming the data to stationary data.

### 5.2.1 Presentation of Results

The table below shows the empirical results of the estimated parameters and its t-statistics with other diagnostic tests of the equation. The result gotten from the estimation technique is presented in the table below:

**Table 5.2: Stationary Test (Model 1)**

<b>Independent Variable</b>	<b>Coefficient</b>	<b>t-statistics</b>	<b>Probability</b>
<b>Constant</b>	7.14879	1.435568	0.1618
<b>CAB</b>	-0.378356	-0.94378	0.3531
<b>INV</b>	-0.593648	-1.449589	0.1579
<b>INR</b>	0.508715	2.740693	0.0104*
<b>GNS</b>	0.123876	0.297513	0.7682
<b>R<sup>2</sup> = 0.486621</b> <b>Adjusted R<sup>2</sup> = 0.41581</b> <b>F-value = 6.872113</b>	Probability = 0.00051 Number of observation = 34 Durbin-Watson =1.02971		

We can see that the first model is not a good model to study since autocorrelation is present and R-square is only 48%. Moreover, only Interest rate shows a significant influence on the budget deficit BDF of Malaysia during the period of study.

**Table 5.3: Stationary Test (Model 2)**

<b>Independent Variable</b>	<b>Coefficient</b>	<b>t-statistics</b>	<b>Probability</b>
Constant	9.292044	1.80463	0.0815
CAB	-0.302992	-2.444077	0.0208**
INV	-0.546088	-3.696206	0.0009****
INR	0.535341	3.326704	0.0024****
D_1997	3.130838	1.166825	0.2528
R <sup>2</sup> = 0.508145 Adjusted R <sup>2</sup> = 0.440303 F-value = 7.490123	Probability = 0.000285 Number of observation = 34 Durbin-Watson =2.079974		

Note:

\*\*\* = 1% level of significance

\*\* = 5% level of significance

\* = 10% level of significance.

The foregoing therefore, suggests that a general empirical model for testing the relationship between four macroeconomic variables namely, Current Account Balance (CAB), Interest rate (INR), Total Investment (INV), Gross National Saving (GNS) and the budget deficit in Malaysia under the OLS framework, can be put as:

BDF = (CAB, INR, INV and GNS)

Linear specification of equation will, therefore, become;

$$BDF = \beta_0 + \beta_1 CAB + \beta_2 INR_t + \beta_3 INV_t + \beta_4 GNS_t + \beta_5 Dum_{1997} + \varepsilon_t$$

Whereby BDF – represents Malaysian Budget Deficit/Surplus as % GDP

CAB- Represents Malaysian Current Account Deficit/Surplus as % GDP

INR- Represents the Lending Interest Rate

INV- Represents Malaysia's Total Investments as % GDP

GNS- Represents Malaysia's Gross National Savings as % GDP

DUM- Represents Dummy Variable after 1997

Whereby  $\varepsilon$  = the error term

$\beta_0, \beta_1, \beta_2, \beta_3, \beta_4,$  and  $\beta_5$  are the parameters to be measured and estimated.



## 5.3 Calculations for the Selected Methods

### 5.3.1 Analysis of Results Based on Economic Criteria

- **Interest Rate:** The **INR** contains a positive and statistically significant influence with a t-value of 3.326704 at 1% level of significance. In effect, with a coefficient of 0.535341 that interprets a unit increase in the interest rate will increase the budget deficit by 53.53%. A rise in the interest rate means a rise in the costs of borrowing for the government so this may prevent the possibility of finding sufficient funds. This result can be supported by the empirical study of AL-Kheddar (1996), Aisen and Hauner (2008).
- **Current Account Balance:** The result of the **CAB** is negatively significant with a coefficient of -0.302992 and a  $t = -2.444077$  at 5% level of significance. This explained that during the period under study increase the current account balance will decrease the budget deficit by 0.30%. This result is also observed in previous studies like Kulkarni and Erickson (2001), Toda-Yamamoto (1995).
- **National Investments:** With the result for coefficient for **INV** which is -0.546088, this result shows that there is a negative relationship with BDF and also this shows that there is a significant relationship between BDF and INV. It is expected that an increase in the capital inflows to the Malaysian economy will increase the government's earnings from the taxes. Therefore, a surplus is expected in the government's budget or at least a decrease in its deficit. (Anusic, 1993)
- **Gross National Savings:** In the first model **GNS** with a coefficient of 0.123876, but is not significant. This result shows there is a positive and insignificant relationship with BDF. As seen from model 2 the variable GNS was removed due to its insignificance non-affection on the dependent variable.

## **5.4 Analysis Based on Statistical Criteria**

### **5.4.1 Autocorrelation**

The Durbin-Watson statistical test shows whether autocorrelation exists or not within the residuals from a simple regression analysis. The Durbin-Watson data point is usually between zero and four. A statistic above 2 implies that there's no autocorrelation within the sample. Values approaching zero indicate positive autocorrelation and values towards four indicate negative autocorrelation. From the final result obtained in model 2, the Durbin-Watson statistic of 2.079974, which is higher than 2, is additionally suggestive that there's a no presence of serial auto correlation within the error terms from the equation.

### **5.4.2 Justification of the Model:**

The results of the OLS regression analysis reviewed that model 2 was significant and can explain the variations on the dependent variable (BDF). The coefficient of multiple determinations ( $R^2$ ): is used in determining the goodness of fit from the regression results ( how changes on the dependent variable are explained by the independent indicators), the value of  $R^2$  was 0.508145 whereby the predictor variable explains 50.81% of change in BDF. This percentage means that on the long run 50.81% of the variations in the Malaysian Government Budget are explained by the independent variables that is the CAB, INR and INV. Therefore, the remaining 42.2% left can be related to the effect of other variables that have impact on the budget deficit which are not included in the model.

### 5.4.3 Heteroscedasticity

Based on the White test result below Table 5.4, we cannot reject the null hypothesis (homoscedasticity) at 5%, 10% significance level. So we accept the null hypothesis and assure that the model is unbiased at 5% and clear from any heteroscedasticity.

**Table 5.4: Heteroscedasticity Test**

Heteroscedasticity Test: The White Test			
F-statistic	1.781555	Prob. F(10,23)	0.1218
Obs*R-squared	14.84063	Prob. Chi-Square(10)	0.1380
Scaled explained SS	20.60150	Prob. Chi-Square(10)	0.1241

### 5.4.4 Granger Causality testing

In this section, the study will proceed to investigate the short-run relationships among the variables by performing a Granger causality test.

The results of our Granger causality test are shown in the table below. As table 5.5 illustrates, a Uni-directional Granger causality has been witnessed in the period under study regards CAB and INR. The causality is running from the CAB to INR. In every economy, it is of paramount importance to optimize the cost of borrowing to attract more foreign portfolios in the country. Also a uni-directional causality between INV and INR. There was a uni-directional causality between INR and BDF. INR granger causes BDF. AL-Kheddar (1996, p14) found that interest rates increases in short-run due to budget deficits, but in long run there is no impact. CAB and BDF the results show no causality between the variables and this can be supported by the empirical study of Kul Kami and Erickson (2001,p15),they examined the causal relationship between current account balance and budget deficit in 3 selected countries namely India, Pakistan and Mexico. The results showed no evidence of causality running in either direction in case of Mexico. The implication is that the causal relationship between current account and fiscal deficit is still a subject of controversy among researchers.

**Table 5.5: Pairwise Granger Causality Tests**

Null Hypothesis:	Obs	F-Statistic	Prob.
CAB does not Granger Cause BDF	33	3.25331	0.0813
BDF does not Granger Cause CAB		0.15872	0.6932
INR does not Granger Cause BDF	33	6.05763	0.0198*
BDF does not Granger Cause INR		2.70829	0.1103
INV does not Granger Cause BDF	33	1.61624	0.2134
BDF does not Granger Cause INV		1.19891	0.2823
GNS does not Granger Cause BDF	33	1.33777	0.2566
BDF does not Granger Cause GNS		3.99533	0.0548
INR does not Granger Cause CAB	33	0.79638	0.3793
CAB does not Granger Cause INR		23.2843	4.E-05***
INV does not Granger Cause CAB	33	0.96583	0.3336
CAB does not Granger Cause INV		1.08478	0.3060
GNS does not Granger Cause CAB	33	0.74751	0.3941
CAB does not Granger Cause GNS		0.28395	0.5980
INV does not Granger Cause INR	33	21.0766	7.E-05***
INR does not Granger Cause INV		0.05444	0.8171
GNS does not Granger Cause INR	33	1.04000	0.3160
INR does not Granger Cause GNS		0.56031	0.4600
GNS does not Granger Cause INV	33	1.51442	0.2280
INV does not Granger Cause GNS		0.65546	0.4245

\*,\*\*\* are significant levels at 5% and 10% respectively.

## CHAPTER SIX

### CONCLUSION AND RECOMMENDATIONS

#### 6.1 Introduction

This chapter focused on the concluding remarks; discussion of major findings and, in addition, the recommendations.

#### 6.2 Conclusions

The main econometric technique applied by the present study to ascertain the objectives of the study was the OLS model. To predict the worth of dependent variable (BDF) against independent variables they are four macroeconomic variables namely, Current Account Balance (CAB), Interest rate (INR), Total Investment (INV), Gross National Saving (GNS) in Malaysia. Stationary test results showed that all the variables in the study have a unit root thus are non-stationary. To render the variables, free unit root the ADF and PP test were employed. The variables were stationary after first difference. Analysis of results based on economic criteria showed that INR has a significantly positive influence on the BDF and the similar relationship with INV and CAB. This result can be supported by the empirical study of AL-Kheddar (1996), Aisen and Hauner (2008). The current account balance has the inverse association with the BDF in Malaysia. This result is also observed in previous studies like Lau and Baharumshah (2004), Kulkarni and Erickson (2001). GNS was found to be insignificant and irrelevant variable in the present study as it had no impact on the BDF. From the analysis, we found sufficient evidence to show that the causal relationships between budget and current account deficits are transmitted through interest rate (BDF~INR~CAD). The results of Granger Causality test showed a uni-directional Granger causality has been witnessed in the period under study regards CAB and INR. The causality is running from the CAB to INR. It is of paramount importance to optimize the cost of borrowing to attract more foreign portfolios in the country. Also a uni-directional causality between INV and INR. There was a uni-directional causality between INR and BDF. INR granger causes BDF.

Finally, our study focuses on Malaysia and hence the results may not be generalized to the other developing countries. Further examination using data from other countries may be required to understand the twin deficit phenomena in developing economies particularly the Asian Developing Economies (ADE). We realize the need for more empirical work in this area of academic interest and it is in our next research agenda.

In conclusion, these results supported by (The Keynesian Proposition theory) who attributed that they are a relationship between macroeconomic variables and the budget deficit.

### **6.3 Recommendations**

1. From the findings of this study, we can derive several policy recommendations. Specifically, the result shows the need for policy intervention from the part of Malaysian government in terms of its fiscal operations and its external sector performance as the historical data on these variables indicates the existence of frequent deficits in both budget and current account balances.
2. The empirical result from our finding suggests that budget deficit affect current account balance in Malaysia. Therefore, Malaysian authorities should embark on fiscal discipline in order to bring the ever increasing deficit to a minimal level.
3. There is also the need for the government to further diversify its sources of revenue in order to maximize revenue and to reduce the need for deficit financing and reduce the vulnerability of the Malaysian economy to the external shocks.
4. The existence of a long-run stable relationship between budget deficit and current account balance in Malaysia suggests the need for a strong financial sector that will help to finance the rising deficit.
5. We can also further recommend that the government should also diversify its export sector in order to generate more foreign exchange that will help in financing the deficit in both the external and internal sectors of the Malaysian economy.

## References

- Adam, C.S., and D.L. Bevan, 2004 “Fiscal Deficits and Growth in Developing Countries,” *Journal of Public Economics* 89, 571–597.
- Aisen, A., and D. Hauner, 2008, Budget Deficits and Interest Rates: A Fresh Perspective, IMF working paper 08/42, p 15.
- Akbostancı, Elif and Tunç, Gül (2002) —Turkish Twin Deficits: an Error Correction Model of Trade Balance. Economic Research Center Working Paper, Middle East Technical University, 68.
- Algieri, B. 2013. An empirical analysis of the nexus between external balance and government budget balance: The case of the GIIPS countries, *Economic Systems*, p3.
- Al-Khedair, S. I. (1996). *The Impact of the Budget Defecit on Key Macroeconomic variables in the Major Industrial Countries*. Florida: Florida Atlantic University Press.
- Alkswani, Mamdouh Alkhatib (2000). *The Twin Deficits Phenomenon in Petroleum Economy: Evidence from Saudi Arabia*, Economic Research Forum, Conference Paper, 23-25.
- Allam (2014). *An Emperical Study Of India’s Fiscal Deficit*. *Indian Research Journal*, Volume: 1, Series: 7. Issue: December, 2014.
- Anusic, Z., Z. Rohatinski and V. Sonje, eds., 1993, *A Road to Low Inflation: Croatia, 1993- 1994*, Zagreb: Government of the Republic of Croatia.



- Ariff, M. (2012). Preface. Malaysia's Development Challenges: Graduating from the Middle, xix.
- Ashok Parikh (2004). "the impact of liberalisation on trade deficit and current account", Hamburgisches Welt-Wirtschafts-Archiv (HWWA) Hamburg Institute of International Economics
- Aviral Kumar Tiwari (2012), the long-run relationship between oil and non-oil exports and imports in India. South-Eastern Europe Journal of Economics 1(2012) 67-79
- Ball, L., Furceri, D., Leigh, D. and Loungani, P. (2013) "The Distributional Effects of Fiscal Consolidation", IMF Working Paper Series, II, 4.
- Bank Negara Malaysia (2013), Annual Report 2013, Kuala Lumpur: Bank Negara Malaysia. P 12-23.
- Barro, R., Sala-I-Martin, X., 1992. Public finance in models of economic growth. Review of Economic Studies, P 11.
- Barro, R.J. (1989). The Ricardian approach to budget deficits. Journal of Economic Perspectives, p 46.
- Baxter, M. (1995). Business cycles, stylized facts, and the exchange rate regime: evidence from the United States. Journal of international money and finance, 10(1), 71-88.
- Brauninger, M. (2002). The Budget Deficit, Public Debt and Endogenous Growth. Journal of Economics, Vol.63, No.41, pp.58.
- Buhari, Shuaibu (1994). "Macroeconomics". Kano: Northern Publishers' Limited.

Chamberlin, G and Yueh, L (2006). *Macroeconomics*. London: Thomson Publishers.

Chihi, F. and Normandin, M. 2013. External and budget deficits in some developing countries, *Journal of International Money and Finance*, 32, 77-98.

Chi-Hong, P., Evan, L. and Kim-Lee, T. (2012) "Budget-Current Account Deficits Nexus in Malaysia" *Southern Economic Journal*, 56.

Darrat, A.F. (1988). Have large budget deficits caused rising trade deficits? *Southern Economic Journal*, 15.

De Mello Jr, L. R. (1997). Foreign direct investment in developing countries and growth: A selective survey. *The Journal of Development Studies*, 34(1), 1-34.

Ebrahim Merza, Mohammad Alawin, and Ala' Bashayreh (2012), " The Relationship between Current Account and Government Budget Balance: The Case of Kuwait ", *International Journal of Humanities and Social Science*, USA, Volume: 2, Number: 7, P. 69.  
[http://www.ijhssnet.com/journals/Vol\\_2\\_No\\_7\\_April\\_2015/19.pdf](http://www.ijhssnet.com/journals/Vol_2_No_7_April_2015/19.pdf).

Economic planning Unit (2012) "The Malaysian Economy on Figures" Prime Minister's Department, Kuala Lumpur, Malaysia.

Enders, W. and Lee, B. S. (1990). Current account and budget deficits: Twin or distant cousins? *The Review of Economics and Statistics*, 72, 373-381.

Giannaros D. Kolluri B.(2010) “the relationship between budget deficit and macroeconomic variables”.International Economic Journal, (2010), 3(2): 17 -25.

Goher Fatima, Mehboob Ahmed and Wali ur Rehman (2011) “Consequential Effects of Budget Deficit on Economic Growth of Pakistan. International Journal of Business and Social Science. Vol. 3 No. 7.

Grossman, P. J. (1987). Fiscal Decentralization and Public Sector Size in Australia. The Economic Record, 68(202), 240 – 246

Gujarati, D. (1998). Essentials of econometrics (2nd ed.). Boston: Irwin McGraw-Hill. P 23.

Gujarati, D. N. & D.C. Porter, (2008). Basic Econometrics Fifth Edition. Mc Graw – Hill International Edition. P 278, 420.

Gulcan, Y. & Bilman, M. E. (2005). The effects of budget deficit reduction on exchange rate: evidence from Turkey. Dokuz Eylül University DP Series, 05/07.

Horton, Mark, and Asmaa El-Ganainy, 2009, “Back to Basics: What Is Fiscal Policy?” Finance & Development, Vol. 46,  
<http://www.imf.org/external/pubs/ft/fandd/2009/06/basics.htm>

Huynh, N. D. (2007). Budget Deficit and Economic Growth in Developing Countries: The case of Vietnam. Kansai Institute for Social and Economic Research (KISER) .

International Monetary Fund. (2013). "Malaysia: Article IV Consultation." IMF Country Report No. 13/51. Washington, D.C.

Kim, A., Brendan, D., Changhoon, H., George, E. E., Seyron, F. and Zara, Q. (2014) "Economic Planning in Malaysia: Path to Growth" The Woodrow Wilson School's Graduate Policy Workshop, Woodrow Wilson School of Public and International Affairs, Princeton University.

Kulkarni, Kishore and Erickson, Erick (2001). Twin Deficit Revisited: Evidence from India, Pakistan and Mexico. *The Journal of Applied Business Research*, Vol. 17, No. 2, pp. 15.

Lau Evan, Baharumshah Zubaidi (2004), On the Twin Deficits Hypothesis: Is Malaysia Different? *Pertanika Journal of Social Sciences & Humanities*, University of Putra Malaysia, Vol. 12, No. 2, pp. 46.

Lau Evan, Baharumshah (2003). Dynamics of fiscal and current account deficits in Thailand: An empirical investigation, *Journal of Economic Studies*, 34(6), 454-475.

Medee, P. N., & Nenbee, S. G. (2012). Econometric analysis of the impact of fiscal policy variables on Nigeria's economic growth (1970–2009). *International Journal of Economic Development, Research and Investment*, 2(1), 171–183.

Mehrara, Mohsen and Zamanzadeh, Akbar (2011), Testing Twin Deficits Hypothesis in Iran. *Interdisciplinary Journal of Research in Business*, Vol. 1, Issue. 9, pp. 7-12.

Ministry of Finance Malaysia (MOF). 2010. Economic report 2010/2011, Kuala Lumpur, Malaysia: Percetakan National Malaysia Berhad.

Ministry of Finance Malaysia (MOF). 2011. Economic report 2011/2012, Kuala Lumpur, Malaysia: Percetakan National Malaysia Berhad.

Ministry of Finance Malaysia (MOF). 2012. Economic report 2012/2013, Kuala Lumpur, Malaysia: Percetakan National Malaysia Berhad.

Mukhtar, Tahir; Zakaria, Muhammad; and Ahmad, Mehboob (2007) . An Empirical Investigation for the Twin Deficits Hypothesis in Pakistan. *Journal of Economic Cooperation*, Vol. (24), No. (4), pp. 13.

Narayanan, S., (2004), ‘Fiscal deficits in the Pacific region: Malaysia’, in Akira Kohsaka (eds). *Fiscal Deficits in the Pacific Region*, London: Routledge, 228–243.

Narayanan, S., (2008) “The Challenges of Raising Revenue and Restructuring Subsidies in Malaysia” A Paper Presented at the 2009-2010 National Economic Outlook Conference, organized by Malaysian Institute of Economic Research, December 2-3, Kuala Lumpur.

Nathan, P. A. (2012), “The Impact of Fiscal Policy on the Nigerian Economy”, *International Review of Social Sciences and Humanities* 4(1): p 6.

Nelson, J. M. (2012). *Political Challenges in Economic Upgrading: Malaysia Compared with South Korea and Taiwan*. *Malaysia’s Development Challenges: Graduating from the Middle*, 50.

Obstfeld, M. and Rogoff, K. (1994). *The intertemporal approach to the current account*, National Bureau of Economic Research Working Paper No. 4893, Massachusetts Avenue, Cambridge, USA.

Oyeleke O.J; Ajilore O.T (2014); Analysis of fiscal deficit sustainability in Nigerian Economy: An error correction approach; Asian Economic and Financial Review, 4(2): 199- 201.

Paul Cashin (1999). "tax-smoothing model pakistan and sri lanka." Washington, D.C: International Monetary Fund(IMF).

Piersanti, G. (2000). Current account dynamics and expected future budget deficits: Some international evidence. Journal of International Money and Finance, 19(2), 255-271.

Theofilakou, N. and Stournaras, Y. 2012. Current account adjustments in OECD countries revisited: The role of the fiscal stance, Journal of Policy Modeling, 34(5), 719-734.

Thomas, Lloyd and Abderrezak, Ali. (1988) "Anticipated Future Budget Deficits and the Term Structure of Interest Rates," Southern Economic Journal, Vol. 55 Issue 1, pp. 23.

Toda, H.Y. And T. Yamamoto. 1995. Statistical inference in vector autoregressive with possibly integrated processes. Journal of Econometric 66: 225-250.

Vincent N. Ezeabasili (2012). Fiscal Deficits and Growth in Developing Countries. Journal of Public Economics, 2(6) pp. 85 – 96, August, 2012.

Wosowei Elizabeth (2013). The relationship between fiscal deficits and macroeconomic aggregates in nigeria. *Arabian Journal of Business and Management Review* Vol. 2, No.9; May, 2013.

Yanik, Yeldz (2006). The Twin Deficits Hypothesis: an Empirical Investigation, Middle East Technical University. MS thesis, Turkey. P 45.

**APPENDIX**

**APPENDIX I: ORDINARY LEAST SQUARE(OLS) MULTIPLE REGRESSION  
(MODEL 1)**

Dependent Variable: Y				
Method: Least Squares				
Date: 05/21/15 Time: 15:14				
Sample: 1 34				
Included observations: 34				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
Constant	7.146157	4.979117	1.435226	0.1619
CAB	-0.379897	0.401114	-0.947104	0.3514
INR	0.508189	0.185649	2.737358	0.0105
GNS	0.125505	0.416688	0.301195	0.7654
INV	-0.595068	0.409738	-1.452316	0.1571
R-squared	0.486663	Mean dependent var		-2.859177
Adjusted R-squared	0.415858	S.D. dependent var		3.200918
S.E. of regression	2.446437	Akaike info criterion		4.762195
Sum squared resid	173.5665	Schwarz criterion		4.986660
Log likelihood	-75.95732	Hannan-Quinn criter.		4.838744
F-statistic	6.873270	Durbin-Watson stat		1.029463
Prob(F-statistic)	0.000509			



**APPENDIX II: ORDINARY LEAST SQUARE (OLS) MULTIPLE  
REGRESSION (MODEL 2)**

Dependent Variable: Y				
Method: Least Squares				
Date: 05/25/15 Time: 20:48				
Sample: 1 34				
Included observations: 34				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	9.294715	5.148633	1.805278	0.0814
CAB	-0.303130	0.123977	-2.445058	0.0208
INV	-0.546104	0.147719	-3.696908	0.0009
INR	0.535119	0.160921	3.325358	0.0024
D_1997	3.133546	2.683359	1.167770	0.2524
R-squared	0.508184	Mean dependent var		-2.859177
Adjusted R-squared	0.440347	S.D. dependent var		3.200918
S.E. of regression	2.394605	Akaike info criterion		4.719367
Sum squared resid	166.2899	Schwarz criterion		4.943832
Log likelihood	-75.22924	Hannan-Quinn criter.		4.795916
F-statistic	7.491284	Durbin-Watson stat		2.079881
Prob(F-statistic)	0.000284			

**APPENDIX III: HETEROSCEDASTICITY TEST**

Heteroskedasticity Test: White				
F-statistic	1.783256	Prob. F(10,23)	0.1214	
Obs*R-squared	14.84862	Prob. Chi-Square(10)	0.1377	
Scaled explained SS	20.60178	Prob. Chi-Square(10)	0.0240	
Test Equation:				
Dependent Variable: RESID^2				
Method: Least Squares				
Date: 05/25/15 Time: 22:23				
Sample: 1 34				
Included observations: 34				
Collinear test regressors dropped from specification				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-415.2992	231.6663	-1.792661	0.0862
X3	23.01127	12.47173	1.845075	0.0779
X3^2	-0.336560	0.172305	-1.953285	0.0631
X3*X2	-0.220611	0.348992	-0.632137	0.5335
X3*X1	-0.707535	0.289336	-2.445372	0.0225
X3*DU	0.059743	0.287020	0.208150	0.8369
X2	11.94641	10.24795	1.165737	0.2557
X2^2	-0.136764	0.190933	-0.716296	0.4810
X2*X1	-0.032026	0.230877	-0.138713	0.8909
X1	22.97323	10.24527	2.242326	0.0349
X1^2	-0.325422	0.127641	-2.549513	0.0179
R-squared	0.436724	Mean dependent var	4.890879	
Adjusted R-squared	0.191821	S.D. dependent var	9.695600	
S.E. of regression	8.716223	Akaike info criterion	7.424442	
Sum squared resid	1747.368	Schwarz criterion	7.918264	
Log likelihood	-115.2155	Hannan-Quinn criter.	7.592849	
F-statistic	1.783256	Durbin-Watson stat	2.421575	
Prob(F-statistic)	0.021410			

**APPENDIX IV: DATA (1980 TO 2013).**

<b>Number</b>	<b>Years</b>	<b>(Y) BDF</b>	<b>CAB</b>	<b>ITR</b>	<b>GNS</b>	<b>INV</b>
<b>1</b>	1980	-2.62319	-1.159	17.8	31.971	32.397
<b>2</b>	1981	-0.87626	-9.911	16.7375	31.599	37.255
<b>3</b>	1982	-0.75173	-13.395	15.675	31.861	39.744
<b>4</b>	1983	1.815515	-11.631	14.6125	31.474	38.464
<b>5</b>	1984	4.776919	-4.908	13.55	30.833	33.56
<b>6</b>	1985	2.347283	-1.958	12.4875	25.535	27.459
<b>7</b>	1986	3.227293	-0.44	11.425	25.463	25.897
<b>8</b>	1987	6.711124	8.315	10.3625	31.419	23.107
<b>9</b>	1988	-1.05402	5.208	9.3	31.126	25.945
<b>10</b>	1989	-4.91525	0.673	8.895833	28.912	28.226
<b>11</b>	1990	-6.3517	-2.117	8.785833	30.732	32.838
<b>12</b>	1991	-7.3325	-8.617	9.3475	29.174	37.79
<b>13</b>	1992	-5.54397	-3.731	10.16167	31.629	35.362
<b>14</b>	1993	-4.70375	-4.603	10.03083	34.582	39.184
<b>15</b>	1994	-4.31078	-7.556	8.764167	33.644	41.202
<b>16</b>	1995	-6.839	-9.73	8.73	33.91	43.64
<b>17</b>	1996	-3.794	-4.424	9.943333	37.054	41.478
<b>18</b>	1997	-3.556	-5.925	10.62833	37.047	42.973
<b>19</b>	1998	-4.49	13.202	12.13417	39.877	26.675
<b>20</b>	1999	-3.68	15.924	8.563333	38.307	22.382
<b>21</b>	2000	-3.024	9.049	7.673333	35.917	26.868
<b>22</b>	2001	-2.974	7.853	7.126667	32.251	24.398

<b>23</b>	2002	-3.333	7.957	6.528333	32.735	24.777
<b>24</b>	2003	-4.241	11.731	6.300833	34.495	22.763
<b>25</b>	2004	-4.974	12.088	6.045833	35.138	23.05
<b>26</b>	2005	-4.168	14.417	5.9525	36.813	22.396
<b>27</b>	2006	-3.517	16.091	6.485833	38.795	22.704
<b>28</b>	2007	-4.512	15.359	6.409167	38.768	23.41
<b>29</b>	2008	-4.274	17.068	6.08	38.526	21.458
<b>30</b>	2009	-4.255	15.533	5.084167	33.368	17.836
<b>31</b>	2010	-3.873	10.934	5	34.231	23.296
<b>32</b>	2011	-3.773	11.581	4.915	34.853	23.273
<b>33</b>	2012	-4.042	6.093	4.785833	31.863	25.77
<b>34</b>	2013	-4.308	3.487	4.6125	30.597	27.11

**BDE** = Malaysian Budget Deficit/Surplus as % GDP

**CAB** = Malaysian Current Account Deficit/Surplus as % GDP

**INR** = Lending Interest Rate

**GNS** = Malaysia's Gross national savings as % GDP

**INV** = Malaysia's Total Investments as % GDP