Labuan Bulletin
OF INTERNATIONAL BUSINESS & FINANCE
Volume 11, 2013 **ISSN 1675-7262**

THE TWIN DEFICITS IN MALAYSIA: EMPIRICAL EVIDENCE

Wong Hock Tsen[1]
School of Business and Economics, Universiti Malaysia Sabah

Abstract

This study examines the twin deficits in Malaysia. The Dickey and Fuller (DF) and Phillips and Perron (PP) unit root test statistics show that all variables examined are non-stationary. The Johansen cointegration test statistics show that there is long-run relationship between external balances and its determinants includes budget balances. Moreover, increases in budget balances will lead to increases in external balances and increase in investment will lead to decreases in external balances. The results of the fully modified ordinary least squares (FMOLS) estimator demonstrate about the same conclusion of the relationship between external balances and budget balances as the conclusion of the Johansen cointegration method. Consolidated budgets will lead to healthy external balances, which are important for achieving sustainable economic growth.

JEL Classification: *F32, E62, H62*
Keywords: *Twin deficits, external balance, budget balance, Malaysia, cointegration*

1. Introduction

Malaysia exports more goods than its imports of goods. The net exports of goods is usually more than the net imports of services and thus results surplus in current account in Malaysia, except in the years 1974-1975, 1980-1986 and 1990-1997. The net imports of services of Malaysia are usually negative, except in the years 2007-2010. Malaysia is a small opened economy and its current account especially exports are strongly influenced by the global factors. The current account surpluses of Malaysia in the years 1998-2011 were mainly due to the broad diversification of products and the expansion of trade in the new

[1] Corresponding author: Locked Bag No. 2073, 88999 Kota Kinabalu, Sabah, Malaysia. E-mail address: htwong@ums.edu.my

markets. Moreover, the rises of commodities prices especially in the global market in the early 2000s had contributed to the significant values of exports of Malaysia. Nonetheless, the global financial crisis in the year 2008 marked the turning point of the upward trend to the downward trend of the current account surplus (Figure 1). The weaker global demand and lower commodity prices result in lower exports for Malaysia. Conversely, imports increase due to stronger domestic demand. This contributes to the narrowing of the savings-investment surplus (MOF, 2010, 2011, 2012).

Current account balance is a reflection of the savings-investment balance in an economy. In an open economy, investment activity can be funded domestically or globally. If an economy is saving more than its investment, the economy would record current account surplus. The excess saving would lead to accumulate in international reserves and would provide a buffer against the external shocks. On the other hand, an economy is consuming more than saving, the economy would record a current account deficit. The economy might need to borrow funds from abroad or to accept inflows of foreign investment to finance its domestic consumption and investment requirements. Current account balance is a mirror of the intertemporal investment and consumption of an economy (Obstfeld and Rogoff, 1994).

The public sector savings-investment gap in Malaysia was widened in 2011 and 2012 (MOF, 2011, 2012). The twin deficits hypothesis states that an increase in budget deficit will lead to an increase in current account deficit (Theofilakou and Stournaras, 2012). This issue gained a lot of attention in the 1980s especially in the United States (US) when the US experienced significant external deficit and budget deficit. The Mundell and Fleming theory predicts an increase in budget deficit will lead to an increase in the real interest rate in the domestic country, which will attract capital inflows. This will appreciate exchange rate and will make exports less competitive in the global market and will lead to more imports. Thus current account will be deficit. Conversely, the Keynesian absorption theory postulates that an increase in budget deficit will lead an increase in the domestic absorption and therefore will induce more imports. Current account will be deficit (Algieri, 2013: 3). Nonetheless, the studies of the twin deficits hypothesis produce different results for different countries and periods (Algieri, 2013: 1; Chihi and Normandin, 2013).

This study investigates the impact of budget balances on external balances in Malaysia over the period from the year 1974 to the year 2011. More specifically, this study examines the impacts of consolidated public sector finance balance and federal government finance balance on balance of trade, balance of services and balance of current account in Malaysia. The impacts of budget balances could be different for

different sub-categories of balance of current account due to different categories of goods and services. There are not many studies that investigate the relationship between balance of trade, balance of services and balance of current account in Malaysia. Moreover, this study considers the structural break, namely, the Asian financial crisis, 1997-1998 in the examination of the relationship between budget balances and external balances.

This study is structured as follows. Section 2 provides a literature review of external balance and budget. Section 3 illustrates the data and methodology and section 4 provides empirical results and discussions. The last section is concluding remarks.

2. Literature Review

There are many studies examine the twin deficits hypothesis (Kouassi, Mougoue and Kymn, 2004; Rafiq, 2010; Campa and Gavilan, 2011; Jinjarak and Sheffrin, 2011; Blanchard and Millesi-Ferretti, 2012; Kalou and Paleologou, 2012; Mussa, 2012; Theofilakou and Stournaras, 2012; Nag and Mukherjee, 2012; Chihi and Normandin, 2013; Hoffmann, 2013; Trachanas and Katrakilidis, 2013). However, there is no consensus on the relationship between external balance and budget deficit. There are studies reported that budget deficit causes external deficit. Baharumshah and Lau (2007) investigate the relationship between current account deficit and budget deficit in Thailand. The results show that there is a long-run relationship among the variables. Budget deficit is found to cause current account deficit and not the reverse. More specifically, an increase in budget deficit will lead to an increase in the nominal interest rate and this will appreciate the nominal exchange rate and thus current account will be deficit. Conversely, Chihi and Normandin (2013) assay the link between external balances and budget deficit balances in twenty-four developing countries from Africa, Americas, Asia and Oceania. The results show twelve out of the countries examined that there is positive relationship between external balance and budget deficit. The domestic resources net of public absorptions are the most important factors explaining the positive relationship between the external deficit and budget deficit for most countries. Budget deficit can influence external deficit and vice versa.

There are studies demonstrate no relationship between external balances and budget balance. Algieri (2013) analyses the relationships between external balances, namely trade balances and current account balances and budget balances in Greece, Ireland, Italy, Portugal and Spain. The results support the Ricardian equivalence hypothesis, namely there is no nexus between current account deficit or trade balance deficit and budget deficit. This implies that reduce in budget

deficit may not help to reduce external deficits. This is because budget deficit will lead to intertemporal reallocation of savings and thus there will be no effect no interest rate and exchange rate and therefore there is no effect on external balance. Rational agents will learn that budget deficit today will lead to increase in tax in the future. Consequently, the rational agents will save more today for more tax in the future (Algieri, 2013).

There are some studies reveal that external deficit causes budget deficit. Kalou and Paleologou (2012) reexamine the twin deficits hypothesis including the endogenous determination of structural breaks to determine the causal relation between budget deficit and current account deficit in Greece. The two deficits are found to be positively related and the direction of causality is running from current account to budget deficit, which supports the current account targeting hypothesis. The hypothesis affirms that current account deficit induces a slower economic growth and subsequently government implements budget deficit to stimulate economic growth with the hope to reduce current account deficit.

4. Data and Methodology

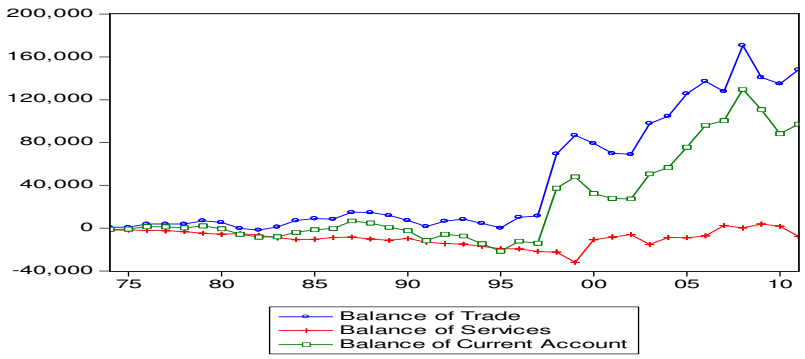
The two budget balances are used namely consolidated public sector finance balance ($bd_{1,t}$) and federal government finance balance ($bd_{2,t}$), which are expressed as the ratio of gross domestic product (GDP), respectively.[2] The use of the two budget balances is to verify the impacts of budget balances on external balances. Balance of trade (bt_t), balance of services (bs_t) and balance of current account (bca_t) are expressed as the ratio of GDP, respectively. The investment (i_t) is the gross fixed capital formation as the ratio of GDP. The sample of this study is yearly from the year 1974 to the year 2011. The data are obtained from various issues of *Economic Report*, published by Ministry of Finance Malaysia, except the gross fixed capital formation, which is obtained from *International Financial Statistics*, the International Monetary Fund.

Figure 1 displays the plots of external balances and figure 2 displays the plots of budget balances. Generally, balance of trade, balance of services and balance of current account were fluctuated closely before the Asian financial crisis, 1997-1998. However, those series were highly fluctuated after the crisis. The means of those series from the year 1974 to the year 2011 were 44,709.7, -9,285.1 and 22,986.7, respectively. The standard deviations of those series at the same period were 55,475.7, 7,479.2 and 41,818.1, respectively (Table 1). The coefficients of correlation between balance of trade and balance of services, between balance of trade and

[2]Consolidated public sector finance includes federal government finance, state government's finances, local authorities' finances and statutory bodies' finances (MOF, 2012: 741).

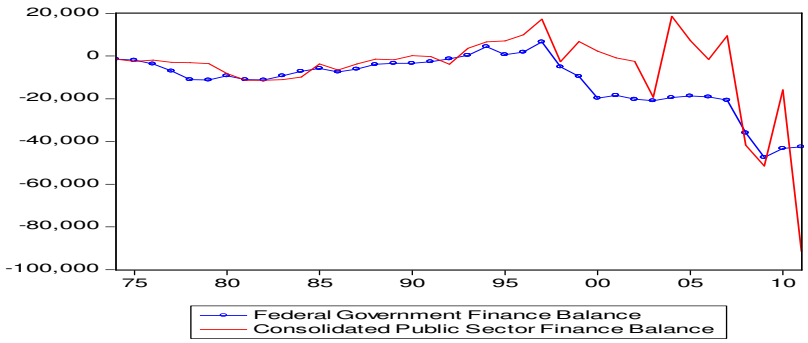
balance of current account and between balance of services and balance of current account were 0.22, 0.98 and 0.35, respectively. On the whole, all the coefficients of correlation were statistically significant at the 1 percent level. Consolidated public sector finance balance and federal government finance balance were fluctuated closely with an upward trend towards zero before the Asian financial crisis. Those series were highly fluctuated after the crisis. Consolidated public sector finance balance and federal government finance balance were strongly positively correlated over the period from the year 1974 to the year 2011, that is, the coefficient of correlation was 0.7, which is significant at the 1 percent level.The means of those series from 1974 to 2011 were -5,954.2 and -11,707.2, respectively (Table 1).

Figure 1
The Plots of Balance of Trade, Balance of Services and Balance of Current Account in Malaysia, 1974-2011 (RM million)



Source: *Economic Report*, Ministry of Finance Malaysia.

Figure 2
The Plots of Consolidated Public Sector Finance Balance and Federal Government Finance Balance in Malaysia, 1974-2011 (RM million)



Source: *Economic Report*, Ministry of Finance Malaysia.

Table 1
The Descriptive Statistics of Consolidated Public Sector Finance Balance, Federal Government Finance Balance, Balance of Trade, Balance of Services and Balance of Current Account in Malaysia, 1974-2011 (RM million)

	bt_t	bs_t	bca_t	$bd_{1,t}$	$bd_{2,t}$
Mean	44,709.7	-9,285.1	22,986.7	-5,954.2	-11,707.2
Median	9,518.5	-8,785.0	886.0	-2,473.5	-8,344.0
Maximum	170552.0	3804.0	129,512.0	18,544.0	6,626.0
Minimum	-1,758.0	-32,134.0	-21,647.0	-91,555	-47,424
Std. Dev.	55,475.7	7,479.2	41,818.1	19,300.0	12,991.0
Skewness	0.9066	-0.7348	1.1473	-2.7620	-1.2636
Kurtosis	2.2422	3.8773	2.9903	12.1190	4.1131
Jarque-Bera	6.1145	4.6381	8.3365	179.9785	12.0735

Notes: bt_t denotes balance of trade. bs_t denotes balance of services. bca_t denotes balance of current account. $bd_{1,t}$ denotes consolidated public sector finance balance. $bd_{2,t}$ denotes federal government finance balance.
Source: *Economic Report*, Ministry of Finance Malaysia.

The relationship between current account deficit and budget deficit can be shown using the national account identity. If the private saving and investment is about the same or constant then external balance (x_t - m_t) and budget balance (bd_t) and will move closely together, namely they are twins (Kalou and Paleologou, 2012). The model estimated in this study is as follows:

$$(x_t - m_t) = \beta_1 + \beta_2 bd_t + \beta_3 i_t + u_t \quad (1)$$

where (x_t - m_t) denotes external balance, that is, x_t is exports and m_t is imports (balance of trade (bt_t), balance of services (bs_t) or balance of current account (bca_t)), bd_t denotes budget balance, namely consolidated public sector finance balance ($bd_{1,t}$) or federal government finance balance ($bd_{2,t}$), i_t is the investment and u_t is the disturbance term (Fidrmuc, 2002). Moreover, a dummy variable, that is, one for the years from 1997 to 1998 and the rest are zero (D_t), is included as the exogenous variable to capture the influence of the Asian financial crisis, 1997-1998 in the estimation using the Johansen cointegration method. The coefficient of budget balance is expected to be positive, which implies that an increase in budget deficit will lead to an increase in external deficit and the coefficient of the investment is expected to be negative. An increase in investment will lead to a decrease in external deficit. The model (1) is also estimated using the fully modified ordinary least squares (FMOLS) estimator. The Dickey and Fuller (DF) and Phillips and Perron (PP) unit root tests are used to examine the stationary of the data.

5. Empirical Results and Discussions

The results of the DF and PP unit root test statistics are reported in Table 2. The lag length used to compute the DF unit root test statistics is based on the Akaike information criterion. The lag length used to compute the PP unit root test statistics is based on Newey-West Bandwidth, with the maximum lag length is set to three. The results of the DF and PP unit root test statistics show that all variables are non-stationary in level but becoming stationary after taking the first difference or they are all said to be integrated of order one, except federal government finance balance, which the DF unit root test statistic (No Trend) shows no evidence of a unit root whilst the DF unit root test statistic (Trend) shows that it is integrated of order one, balance of trade, which the DF unit root test statistic (Trend) shows that it is a stationary variable whilst the rest of the unit root test statistics show that it is integrated of order one, consolidated public sector finance balance, which the DF unit root test statistic (No Trend) shows that it is a stationary variable whilst the rest of the unit root test statistics show that it is integrated of order one. On the whole, all the variables examined are said to be integrated of order one or I(1) variable.

Table 2
The Results of the Dickey and Fuller (DF) and Phillips and Perron (PP) Unit Root Test Statistics, 1974-2011

	DF - No Trend	DF - Trend	PP - No Trend	PP - Trend
bt_t	-2.0524(0)	-3.0690(1)*	-2.1978(1)	-2.6473(2)
Δbt_t	-5.0921(0)***	-5.0252(0)***	-5.0321(3)***	-4.9601(3)***
bs_t	-0.8039(0)	-2.5103(0)	-0.5536(3)	-2.3634(3)
Δbs_t	-7.0293(0)***	-7.1622(0)***	-7.2043(3)***	-7.5771(3)***
bca_t	-1.7193(0)	-2.7914(1)	-1.7193(0)	-2.3532(0)
Δbca_t	-5.3143(0)***	-5.2355(0)***	-5.2828(3)***	-5.1984(3)***
bd_{1t}	-1.8056(3)	-0.9090(2)	-1.7952(3)	-1.8528(3)
Δbd_{1t}	-2.6228(2)*	-2.7320(4)	-7.5167(3)***	-7.5546(3)***
bd_{2t}	-3.3052(9)**	-2.9821(9)	-1.4878(1)	-2.1586(2)
Δbd_{2t}	-3.9769(0)***	-3.9138(0)**	-3.7702(3)***	-3.6939(3)**
i_t	-2.2218(1)	-2.4362(1)	-1.8335(2)	-1.9014(1)
Δi_t	-4.1555(0)***	-4.1407(0)**	-4.1572(2)***	-4.1358(2)**

Notes: No Trend denotes the DF or PP t-statistic is estimated based on the model including an intercept. Trend denotes the DF or PP t-statistic is estimated based on the model including an intercept and a time trend. Values in parentheses are the lag length used in the estimation of the DF or PP unit root test statistic. *** (**, *) denotes significance at the 1% (5%, 10%) level.

The results of the Johansen cointegration method are reported in Table 3. The results of the λ_{Max} and λ_{Trace} test statistics are computed with restricted intercepts and no trends in the vector autoregressive model. For consolidated public sector finance balance and federal government finance balance, the results of the λ_{Max} test statistics show that the null hypothesis (H_o), that is, H_o: $r = 0$ is rejected at the 5 or 10 percent level whilst the rest are not rejected at the 5 or 10 percent level. On the other

hand, the results of the λ_{Trace} test statistic show that H_0: $r = 0$ are not rejected at the 10 percent level, except for balance of trade, which it is rejected at the 5 percent level. There is one cointegrating vector among external balances, budget balances and investment.

Table 3
The Results of the Johansen Likelihood Ratio Test Statistics

	λ_{Max}Test Statistic			λ_{Trace}Test Statistic		
H_0:	$r = 0$	$r \leq 1$	$r \leq 2$	$r = 0$	$r \leq 1$	$r \leq 2$
H_a:	$r = 1$	$r = 2$	$r = 3$	$r = 1$	$r = 2$	$r = 3$
			$bd_{1,t}$			
bt_t	30.11**	5.28	0.45	35.19**	5.73	0.45
bs_t	21.72*	4.11	0.26	26.09	4.37	0.26
bca_t	21.82*	6.09	0.45	28.35	6.53	0.45
			$bd_{2,t}$			
bt_t	27.92**	5.81	1.31	35.04**	7.12	1.31
bs_t	24.25**	2.39	0.49	27.14	2.89	0.49
bca_t	20.36*	3.98	1.39	25.73	5.37	1.39
c.v. (1)	22.04	15.87	9.16	34.87	20.18	9.16
c.v. (2)	19.86	13.81	7.53	31.93	17.88	7.53

Notes: The VAR = 2 is used in all the estimation. c.v. (1) and c.v. (2) denote the 95% and 90% critical values, respectively. Critical values can are given in Pesaran, Shin and Smith (2000). ** (*) denotes significance at the 5% (10%) level.

The results of the normalised cointegrating vector are reported in Table 4. The results of the likelihood ratio test, which tests an explanatory variable is zero, are all rejected at the 1 percent level. Thus, all explanatory variables are significant in the model. All explanatory variables are found to have the expected signs. Increases in budget balances, namely consolidated public sector finance balance and federal government finance balance will lead to increases in external balances, namely balance of trade, balance of services and balance of current account. In other words, budget deficits would lead to external deficits. On the other hand, increase in investment will lead to decreases in external balances. The impacts of consolidated public sector finance balance on balance of trade and balance of services are larger than the impacts of federal government finance balance on balance of trade and balance of services. However, the impact of consolidated public sector finance balance on balance of current account is marginally smaller than the impact of federal government finance balance on balance of current account.

Table 4
The Results of the Normalised Cointegrating Vector

bt_t = 0.3888 + 0.3925 $bd_{1,t}$ - 0.8533 i_t (19.05)***(9.36)***(16.29)***	bt_t = 0.4417 + 0.3507 $bd_{2,t}$ -1.0154 i_t (19.02)*** (9.28)***(16.99)***
bs_t = 0.1588 + 0.7511 $bd_{1,t}$ - 0.6658 i_t (11.18)*** (15.48)***(11.72)***	bs_t = 0.1865 + 0.6233 $bd_{2,t}$ - 0.7259 i_t (16.99)*** (18.03)*** (16.15)***
bca_t = 0.3366 + 0.5409 $bd_{1,t}$ - 0.9816 i_t (13.06)*** (9.25)*** (12.43)***	bca_t = 0.4131 + 0.5456 $bd_{2,t}$ - 1.2019 i_t (15.54)*** (11.68)*** (14.80)***

Notes: The VAR = 2 is used in the estimations. Values in the parentheses are the likelihood ratio test statistic to test the explanatory variable is zero. *** (**, *) denotes significance at the 1% (5%, 10%) level.

The results of the FMOLS estimator are reported in Table 5. The results are provided based on two sub-samples, that is, before the Asian financial crisis,1997-1998, namely the period from 1974 to 1996 and the period from the crisis onwards, namely the period from the year 1997 to the year 2011. The results of the two sub-samples are used to verify the estimates before the crisis and after the crisis and also to avoid the structural break in the estimation. The FMOLS estimator provides estimates of the long-run coefficients from the long-run static regression. The estimator assumes all variables are integrated of order one. This estimator is shown super-consistent and performed well in the small sample. Generally, all explanatory variables are found to have the expected signs. Increases in budget balances will lead to increases in external balances. Increase in investment will lead to decreases in external balances. Thus the results obtained from the FMOLS estimator are about the same as those obtained from the Johansen cointegration method. Generally, the estimated coefficients before the crisis are mostly found to be statistically significant than the estimated coefficients after the crisis. This may imply that the relationship between external balances and budget balances become more uncertainty after the crisis.

The results of the cointegration test show that there is long-run relationship between external balance, budget balance and investment. Fidrmuc (2002) and Chihi and Normandin (2013), amongst others, report the positive relationship between the external deficit and budget deficit. Budget balances are found to have significant impacts on external balances. Thus the government can reduce budget deficit to improve external deficit. In the short run, a small open economy like Malaysia shall consolidate its fiscal via expenditure rationalisation and improvements in revenue collection and savings of the government. Moreover, cutting public spending to reduce budget deficit is also important (Kalou and Paleologou, 2012: 239). However, the operating surpluses of the public enterprises depend strongly on the global economy and the domestic demand. In addition, the government should consider other measures such as controlling inflation. In the long run, the structural changes in the economy will be a factor in determining

external balances of Malaysia. The focuses shall be given to transform its economy successfully. Also, it is important to improve productivity and quality through technological advancement in order to enhance the exports competitiveness of Malaysia. Malaysia aims to achieve a high-income economy by the year 2020. In the 10th Malaysia Plan (2011-2015), strategies have been proposed for transforming the Malaysian economy, maintaining full employment, pursuing productivity-led economic growth, increasing dynamism of the private sector, promoting growth in private consumption, diversifying export markets, sustaining balance of payments surplus and improving efficiency of fiscal policy. However, the improvement of external balances depend strongly how successfulness and effectiveness of those strategies have been implemented.

Table 5
The Results of the Fully Modified Ordinary Least Squares (FMOLS) Estimator

1974-1996	
$bt_t = 0.3204 + 0.2480\ bd_{1,t} - 0.7342\ i_t$ (8.62)*** (2.43)** (-6.80)***	$bt_t = 0.3360 + 0.1434\ bd_{2,t} - 0.7908\ i_t$ (7.13)*** (1.47) (-6.10)***
$bs_t = - 0.0776 + 0.1446\ bd_{1,t} - 0.0376\ i_t$ (-3.63)*** (2.47)** (-0.64)	$bs_t = - 0.1018 + 0.0492\ bd_{2,t} - 0.0179\ i_t$ (-5.14)*** (1.20) (0.33)
$bca_t = 0.2504 + 0.3835\ bd_{1,t} - 0.8044\ i_t$ (9.30)*** (5.19)*** (-10.29)***	$bca_t = 0.2492 + 0.2033\ bd_{2,t} - 0.8219\ i_t$ (5.30)*** (2.08)* (-6.35)***
1997-2011	
$bt_t = 0.4143 + 0.3527\ bd_{1,t} - 0.8816\ i_t$ (12.81)*** (2.14)* (-6.79)***	$bt_t = 0.4216 + 0.5954\ bd_{2,t} - 0.8330\ i_t$ (9.11)*** (1.64) (-5.87)***
$bs_t = 0.0265 - 0.2857\ bd_{1,t} - 0.2193\ i_t$ (1.02) (-2.16)* (-2.10)*	$bs_t = 0.0220 - 0.3766\ bd_{2,t} - 0.2483\ i_t$ (0.37) (0.80) (-1.36)
$bca_t = 0.3042 - 0.0510\ bd_{1,t} - 0.8027\ i_t$ (6.58)*** (-0.22) (-4.32)***	$bca_t = 0.3596 + 0.6872\ bd_{2,t} - 0.9153\ i_t$ (4.95)*** (1.20) (-4.11)***

Notes: Values in the parentheses are the t-statistics. *** (**, *) denotes significance at the 1% (5%, 10%) level.

Consolidated public sector finance is found to have more impact on external balances than the impacts of federal government finance on external balances, especially before the Asian financial crisis. Generally, the estimated coefficients after the crisis are relatively larger than the estimated coefficients before the crisis. This implies that the relationship between external balances and budget balances are larger after the crisis then before the crisis. The relationship between external balance and budget balance becomes stronger when the world becomes more uncertainty. This might due to the government uses strongly budget deficit to stimulate economic growth and therefore increase external deficit.

Increase in investment is found would lead to decrease in external balances. Thus private investment should play a major role in contributing economic growth especially in the oil and gas, infrastructure, manufacturing and services sectors. Private investment

is needed to implement the economic transformation programme, especially in new growth areas, high value-added industries and infrastructure. The continued investments in new economic growth areas and high value-added industries are important to further diversify Malaysian economy and its exports and enhance its areas of comparative advantage, which would promote export growth and the sustainability of current account balance.

6. Conclusion and Suggestions

This study has examined the link between external balances and budget balances in Malaysia. There is long-run relationship between external balances and budget balances. In the short run, it is crucial for the government to control inflation in the country. Cutting public spending and the effectively use of the public spending are important to maintain external balance. In the long-run, focuses shall be given to improve productivity and quality of products and services through technological advancement in order to enhance the exports competitiveness of Malaysia. Successfully and effectively transformed its economy to a higher level is crucial. Healthy external balances are important for achieving sustainable economic growth.

References:

Algieri, B. 2013. An empirical analysis of the nexus between external balance and government budget balance: The case of the GIIPS countries, *Economic Systems*, http://dx.doi.org/10.1016/j.ecosys.2012.11.002

Baharumshah, A.Z. and Lau, E. 2007. Dynamics of fiscal and current account deficits in Thailand: An empirical investigation, *Journal of Economic Studies*, 34(6), 454-475.

Blanchard, O. and Milesi-Ferretti, G.M. 2012. (Why) Should current account balances be reduced? *IMF Economic Review*, 60(1), 139-150.

Campa, J.M. and Gavilan, A. 2011. Current accounts in the euro area: An intertemporal approach, *Journal of International Money and Finance*, 30(1), 205-228.

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

Fidrmuc, J. 2002. Twin deficits: Implications of current account and fiscal imbalances for the accession countries, *Focus on Transition 2/2002*, Vienna: Oesterreichische Nationalbank, 72-83.

Hoffmann, M. 2013. What drives China's current account? *Journal of International Money and Finance*, 32(C), 856-883.

Jinjarak, Y. and Sheffrin, S.M. 2011. Causality, real estate prices, and the current account, *Journal of Macroeconomics*, 33(2), 233-246.

Kalou, S. and Paleologou, S.M. 2012. The twin deficits hypothesis: Revisiting an EMU country, *Journal of Policy Modeling*, 34(2), 230-241.

Kouassi, E., Mougoue, M. and Kymn, K.O. 2004. Causality tests of the relationship between the twin deficits. *Empirical Economics*, 29(3), 503-525.

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.

Mussa, M. 2012. Reprint of: The dollar and the current account deficit: How much should we worry? *Journal of Policy Modeling*, 34(4), 579-584.

Nag, B. and Mukherjee, J. 2012. The sustainability of trade deficits in the presence of endogenous structural breaks: Evidence from the Indian economy, *Journal of Asian Economics*, 23(5), 519-526.

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.

Pesaran, M.H., Shin, Y. and Smith, R.J. 2000. Structural analysis of vector error correction model with exogenous I(1) variables, *Journal of Econometrics*, 97(2), 293-343.

Rafiq, S. 2010. Fiscal stance, the current account and the real exchange rate: Some empirical estimates from a time-varying framework, *Structural Change and Economic Dynamics*, 21(4), 276-290.

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.

Trachanas, E. and Katrakilidis, C. 2013. The dynamic linkages of fiscal and current account deficits: New evidence from five highly indebted European countries accounting for regime shifts and asymmetries, *Economic Modelling*, 31, 502-510.