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Macroeconomic Effects of Fiscal Policy in Malaysia: Real or Inflationary?

Zunairah Bukhari and Zarinah Yusof

***Abstract*—The aim of this study is to provide empirical evidence on the dynamic relationship between fiscal policy and macroeconomic variables in Malaysia particularly on the impacts of fiscal policy on growth and inflation by applying the cointegration analysis and error correction model on data spanning from 1970 to 2012.**

***Keywords*—fiscal policy, inflation, growth, macroeconomic varibales**

I. Introduction

Since the 1970s, Malaysian government has used its fiscal policy to regulate the business environment by transforming the economy from agricultural sector to manufacturing sector. The effort was intensified in the early 1980s. As a result fiscal deficit increased from 8.5% of GDP in 1975 to 13.5% in 1980 and expanded further to 19.6% of GDP in 1981. The transition has stimulated Malaysia's economic growth. However, many economists are skeptical about the government role in regulating and developing the economy to achieve higher growth rate. This is because higher commitment from the government has increased fiscal deficit and raised inflationary problem. This situation is reflected when inflation increased from 4.5% in 1975 to 9.7% in 1981. However, the deficits were managed wisely through comprehensive structural programs and prices remain stable since 1982.

Uncertainties in the global economic environment and its highly dependence on external sector, has posed a big challenge for Malaysia to sustain its growth. To rectify the situation, the government is trying to strengthening the domestic economy particularly domestic spending and private domestic investment as part of the main driver of economic growth. In tandem with this move, it is imperative to the government to focus on developing local markets, providing better infrastructure, improving wage scheme, offering more employment via public works or partnership with private companies and increasing the standard of living of the people. On the contrary, high fiscal deficit could distort the role of fiscal policy to achieve a better economic growth rate. Statistics shows that the federal government debt has increased from 51% of GDP in 2011 to 53.7% of GDP in 2012. This study attempts to provide some evidence on how far accelerating fiscal deficit could hinder economic growth and increase inflation. Although inflation is said to be a monetary phenomenon, some economists argue that the fiscal policy is able to influence the inflation level. Given the large effects of fiscal policy on macroeconomy, it is important to find out whether the effect is more on output or the price level. In other words, does the macroeconomic effect of fiscal policy is real or inflationary? The findings would provide more information to the policy makers in designing and implementing a better fiscal policy.

Zunairah Bukhari
Faculty of Economics and Administration, University Malaya
Malaysia

Zarinah Yusof
Faculty of Economics and Administration, University Malaya
Malaysia

II. Literature Review

One of the studies that discussed the relationship between budget deficit and economic growth from the Malaysia's perspective is a study by Nur Hayati (2012). Adopting the ARDL approach, she analyzes real GDP, federal government debt, productive and unproductive expenditures using the quarterly data from 2000 to 2011. The results show a significant long-run relationship between productive expenditures and economic growth. However there is evidence of a neutral relationship between the budget deficit and economic growth. This could result from the small size of the budget deficit relative to the size of GDP.

Jaka Sriyana (2002), also arrived at the same conclusion. Using cointegration analysis and error correction model he analyzes the long-run relationship between fiscal policy and economic growth by comparing Malaysia (1966-2001) and Indonesia (1969-2001). There exist a long-run relationship between the fiscal variables and the economic growth. Similarly, Babalola and Aminu (2013) find that productive government expenditure as well as direct income tax contributes to a positive impact on economic growth in Nigeria. Hussin Abdullah et al. (2009) in their study on the effect of fiscal variables on economic growth based on the Asian economies from 1985 to 2001, adopting a dynamic panel data analysis with generalized method of moments (GMM) find that there was a positive effect of government spending such as health, education, government expenditure aggregate and other fiscal variables aggregate on the GDP. However, government expenditure on defense, budget balance

and taxation were negatively related to the GDP per capita. Nikos Benos (2009) finds that government expenditure and taxation have an impact on the economic growth such as infrastructure and property rights protection where it contributes to positive impact on the economic growth. Unlike others, government spending on other variables such as education, health, housing-communities amenities, environment protection, recreational-culture religion and social protection do not contribute any effects on the growth rate. Government revenues; distortionary taxation exerts negative impact and depressed the economic growth. C. Colombier (2009) applying the robust modified M-estimator (MME) on 21 OECD countries' fiscal data from 1970 to 2001 explains that there was a positive growth effect of government size compared to the previous studies that suggested there was no correlation between government size and growth and other studies conclude that there was a negative growth effect of government size. This study also found out that taxes do not affect growth significantly and fiscal variables such as transport infrastructure, water and sewer systems and education help promoting the economic growth. Lastly the author includes that if the government plans to reform the policy by reducing taxes in order to enhance their economic growth; it might fail and eventually distort the economy.

One of the studies that suggested there is no link between deficits and inflation is Abizadeh and Yousefi (1998). They finds that budget deficit has no significant effect on inflation level in the US and inflation in US is influenced by supply shock. Habibullah et al. (2011), in their study on the budget deficits and inflation in the Asian developing countries from period 1950 to 1999, provide evidence that budget deficits tend to be inflationary in all Asian developing countries. Domaç and Yücel (2005) in their study on 15 emerging's countries between the periods of 1980 to 2001 employ pooled probit analysis. They find that there is a positive relationship between the output gap and inflation where a rise in the output above trend of real activity would induce the inflation to start. While the change in food production index and budget surplus present a negative correlation where the rise in both variables reduce the chances of inflation to start. Ekanayake (2012) explains that in the long run, increase in the fiscal deficit will induce inflation level increase as well. However, if there is an absence of public expenditure, the relationship is weak. Monetary phenomenon is not the only contributing factor that influences the inflation and in the case of Sri Lanka, the public sector expenditure would be the main factor that explained the deficit-inflation relationship. Wijnbergen and Budina (2001) find that, in Poland, in the medium term, there is a consistency between inflation targets and fiscal policy especially in 1992; however by redoing the analysis for a long-run markets on the public debt showed that the latter result were opposite. Exchange rate recorded a negative relationship with a deficit, as the exchange rate depreciate it raises the deficits. However, according to the author, as the Poland exchange rate appreciated around 6 per cent per annum between the periods of 1992 to 1998, thus it does not exacerbate any impact of fiscal consistency. Financial restructure has an impact on fiscal sustainability of low inflation targets where a reduction in the debt has influenced the Poland economic growth restoration and it is the key channel that leads to Poland anti-inflation drive sustainability.

III. Methodology

The analysis uses cointegration techniques, vector autoregressive (VAR) and error correction model (ECM). Regression involving non-stationary time series is meaningless although the good-of-fit of the model is very high. However, if the non-stationary series are cointegrated the estimates are not dubious. Cointegration implies that there always exists a linear combination of these variables that is stationary. Therefore, it is important to examine first the time series properties of the data and only when each of the series is integrated the same order, cointegration is possible. The Augmented Dickey-Fuller (ADF) and Phillips Perron (PP) tests are used to test the order of integration of the series. The cointegration follows Johansen and Juselius (JJ) (1992) method.

An error correction model can be written as

$$\Delta y_t = A_o + \sum_{i=1}^{p-1} \Gamma_i \Delta y_{t-i} + \alpha\beta' y_{t-p} + u_t$$

where $\Gamma = \alpha\beta'$, matrices α and β are (n x r) dimension, r is the rank of matrix Γ as before. The matrix β is the long-run coefficients (cointegrating parameters) and the matrix α represents speed of adjustments to disequilibrium. The Granger-causality is explained through i) the short-run causality relationship in the differenced variables, Δy_{t-i} and ii) the long-run dynamic causal link in the long-run co-movements (error correction term) of the variables, y_{t-p} .

Estimating Model:

$$\Delta LGDP_{t=} \propto + \sum_{i=1}^{p_i} \delta_{1i} \Delta TR_{t-1} + \sum_{i=1}^{p_i} \partial_{1i} \Delta TE_{t-1} + \sum_{i=1}^{p_i} \sigma_{1i} \Delta OPEXEP_{t-1} + \sum_{i=1}^{p_i} \tau_{1i} \Delta DEVEXP_{t-1} + \sum_{i=1}^{p_i} \omega_{1i} \Delta SOC_{t-1} + \sum_{i=1}^{p_i} \mu_{1i} \Delta ECON_{t-1}$$

$$\Delta INF_{t=} \propto + \sum_{i=1}^{p_i} \delta_{1i} \Delta TR_{t-1} + \sum_{i=1}^{p_i} \partial_{1i} \Delta TE_{t-1} + \sum_{i=1}^{p_i} \sigma_{1i} \Delta OPEXEP_{t-1} + \sum_{i=1}^{p_i} \tau_{1i} \Delta DEVEXP_{t-1} + \sum_{i=1}^{p_i} \omega_{1i} \Delta SOC_{t-1} + \sum_{i=1}^{p_i} \mu_{1i} \Delta ECON_{t-1} + \sum_{i=1}^{p_i} \theta_{1i} \Delta DEF_{t-1} + \varphi DUMMY + \gamma ECT + \varepsilon_t$$

GDP is real gross domestic product (constant prices 2000), TR is total revenue, TE is total expenditure, Opexp is operating expenditure, Devexp is development expenditure, Soc is government expenditure on social sector, Econ is government expenditure on economic sector, Def is government expenditure on security/defense sector, Crisis is a dummy for financial crisis, 1 and otherwise = 0, ECT is the error correction term, and INF is the inflation rate. The series data

cover the period from 1970 to 2012 for Malaysia. Data such as gross domestic product (GDP) and inflation rate were extracted from the Malaysia Department of Statistics, Malaysia. Meanwhile data on government revenue, government operating spending, government development expenditure, government expenditure on sub-sectors such as social sector, economics sector and security or defense sector were extracted from various issues of Malaysia Economic Report.

IV. Findings

ADF test indicates that all series are stationary in first difference, therefore these results suggest that these variables are integrated at order I(1). The PP test indicates that all the series are integrated at order I(1). This result shows that all variables are in a stationary order at first difference level. The Johansen-Juselius cointegration test rejects the null hypothesis of no cointegration. Overall, the results suggest that there exist a long-run relationship between fiscal policy and economic growth and between fiscal policy and inflation. Next the model is regressed by applying the error correction modeling technique. Interestingly, finding shows that the coefficient of ECT shows a negative sign and statistically significant. It indicates that the GDP and inflation adjusts to bring the long run equilibrium by closing the gap. However, the speed of adjustment is very slow. This is reflect the pubic spending is not an immediate action but instead involve great. Both government's revenue and total expenditure do have a significant impact on the economic growth rate whether in the short run or the long run.

Table 1: Error Correction Model

MODEL 1
LGDP| TR TE DUMMY
Sample 1976-2012 (k =5; r= 2)

	Coefficient		t-Statistics
C	0.129221	0.041553	3.109818*
D(LGDP(-1))	-0.265124	0.268834	-0.986198
D(LGDP(-2))	-0.425867	0.323106	-1.318042
D(LGDP(-3))	-0.253204	0.317031	-0.798672
D(LGDP(-4))	-0.410241	0.194363	-2.110694*
D(LGDP(-5))	-0.205240	0.221992	-0.924537
D(TR(-1))	-0.000838	0.000334	-2.511711*
D(TR(-2))	-0.000104	0.000334	-0.312260
D(TR(-3))	-0.000136	0.000359	-0.377349
D(TR(-4))	-0.000379	0.000447	-0.846831
D(TR(-5))	-6.31E-05	0.000352	-0.179077
D(TE(-1))	0.000739	0.000266	2.780352*
D(TE(-2))	7.16E-05	0.000270	0.264853
D(TE(-3))	0.000631	0.000359	1.758373*
D(TE(-4))	0.000523	0.000326	1.602441
D(TE(-5))	-0.000262	0.000227	-1.150666
D(DUMMY(-1))	0.234094	0.192690	1.214877
D(DUMMY(-2))	0.194810	0.159581	1.220765
D(DUMMY(-3))	0.159754	0.134741	1.185635
D(DUMMY(-4))	0.132994	0.118492	1.122382
D(DUMMY(-5))	0.077685	0.068206	1.138977
ECT (-1)	-0.023887	0.018341	-1.302343*
ECT (-2)	0.000731	0.000314	2.328495*
R-squared	0.827998	Mean dependent var	0.059839
Adjusted R-squared	0.557709	S.D. dependent var	0.036906
S.E. of regression	0.024544	Sum squared resid	0.008434
Durbin-Watson stat	1.774996		

* indicates that the variables are significant at 5% confidence level.

Findings in Tables 1 shows that total revenues link negatively with economic growth with shorter lag while total expenditure has positive effect on economic growth and the effect is longer. Looking closely at the role of public expenditure it is development expediture (Devexp) that has more part to play (Table 2).

Table 2: Error Correction Model

MODEL 2
LGDP| TR OPEXP DEVEXP DUMMY
Sample 1970-2012 (k =3; r= 2)

	Coefficient		t-Statistics
C	0.071658	0.021984	3.259605*
D(LGDP(-1))	-0.045727	0.241322	-0.189484
D(LGDP(-2))	-0.060603	0.182448	-0.332168
D(LGDP(-3))	-0.084595	0.192215	-0.440107
D(TR(-1))	-0.000353	0.000199	-1.775993*
D(TR(-2))	-0.000316	0.000242	-1.306654
D(TR(-3))	-8.22E-05	0.000212	-0.387328
D(OPEXP (-1))	0.000253	0.000385	0.657846
D(OPEXP (-2))	0.000123	0.000350	0.350759
D(OPEXP (-3))	0.000488	0.000333	1.465243
D(DEVEXP (-1))	0.000339	0.000200	1.690287
D(DEVEXP (-2))	0.000423	0.000189	2.241540*
D(DEVEXP (-3))	0.000151	0.000190	0.791514
D(DUMMY(-1))	0.075844	0.059855	1.267134
D(DUMMY(-2))	0.093904	0.047589	1.973206*
D(DUMMY(-3))	0.014966	0.039994	0.374221
ECT (-1)	-0.04234	0.001466	-2.888006*
R-squared	0.650079	Mean dependent var	0.059024
Adjusted R-squared	0.395591	S.D. dependent var	0.037027
S.E. of regression	0.028786	Sum squared resid	0.018230
Durbin-Watson stat	2.149494		

* indicates that the variables are significant at 5% confidence level.

Table 3: Error Correction Model

MODEL 2
INF| TR OPEXP DEVEXP DUMMY
Sample 1974-2012 (k =3; r= 2)

	Coefficient		t-Statistics
C	2.708152	0.680570	3.979242*
D(INF (-1))	0.385886	0.191017	2.020167*
D(INF (-2))	-0.310680	0.199265	-1.559130
D(INF (-3))	-0.067596	0.180247	-0.375016
D(TR(-1))	-0.015049	0.008826	-1.705007*
D(TR(-2))	-0.022749	0.008091	-2.811632*
D(TR(-3))	-0.021300	0.006830	-3.118700*
D(OPEXP (-1))	0.012335	0.013874	0.889098
D(OPEXP (-2))	0.044593	0.011573	3.853392*
D(OPEXP (-3))	0.015279	0.012850	1.189020
D(DEVEXP (-1))	0.007715	0.006307	1.223365
D(DEVEXP (-2))	0.003443	0.005847	0.588908
D(DEVEXP (-3))	0.007434	0.005778	1.286676
D(DUMMY(-1))	2.138515	1.580316	1.353220
D(DUMMY(-2))	2.326455	1.469764	1.582877
D(DUMMY(-3))	2.353075	0.974216	2.415353*
ECT (-1)	-0.184210	0.065321	-2.820093*
ECT (-2)	0.031328	0.009568	3.274219*
R-squared	0.717598	Mean dependent var	2.277820
Adjusted R-squared	0.488988	S.D. dependent var	1.275780
S.E. of regression	0.911993	Sum squared resid	17.46635
Durbin-Watson stat	1.971134		

* indicates that the variables are significant at 5% confidence level.

Table 4: Error correction Model

MODEL 3
LINF| TR SOC ECON DEF DUMMY
Sample 1970-2012 (k =2; r= 2)

	Coefficient		t-Statistics
C	1.965890	0.392029	5.014654*
D(INF (-1))	0.434349	0.148764	2.919718*
D(INF (-2))	-0.581651	0.147658	-3.939171*
D(TR(-1))	0.001799	0.004142	0.434264
D(TR(-2))	0.003978	0.04778	0.832576
D(SOC(-1))	0.007814	0.015904	0.491334
D(SOC(-2))	0.018876	0.014435	1.307668
D(ECON(-1))	0.044072	0.032395	1.360488
D(ECON(-2))	0.083531	0.023013	3.629698*
D(DEF(-1))	-0.121155	0.055253	-2.192727*
D(DEF(-2))	0.040702	0.047476	0.857317
D(DUMMY(-1))	-6.212802	1.758522	-3.532969*
D(DUMMY(-2))	-4.537470	1.091737	-4.156194*
ECT (-1)	-0.155342	0.037061	-4.191483*
ECT (-2)	0.019686	0.004157	4.736127*
R-squared	0.725575	Mean dependent var	2.294576
Adjusted R-squared	0.571898	S.D. dependent var	1.263769
S.E. of regression	0.826878	Sum squared resid	17.09319
Durbin-Watson stat	2.437211		

* indicates that the variables are significant at 5% confidence level.

Interestingly, findings in Tables 3 and 4, show that the speed of adjustment that measures inflation adjusting to the disequilibrium long-run relationship is greater compared to economic growth. This suggests that fiscal spending has more

inflationary effect than real effect. Total spending has positive effect on inflation while revenue-constrained public spending drives upward pressure on price. It is found that development spending on economic type that gives more pressure on prices.

v. Conclusion

Generally, this study finds that fiscal policy has a long-run relationship with economic growth and inflation. Total revenue has negative relationship with both economic growth and inflation from the short-run relationship. This suggests that the reduction in tax revenue would improve the performance of the growth and also exert upward pressure on prices. Interesting to note, this findings suggest that fiscal policy has more inflationary effect than real. This means that policymakers should be more cautions and moderate when designing and planning its budget.

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