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FISCAL DEFICITS, INFLATION AND ECONOMIC GROWTH IN A SUCCESSFUL OPEN DEVELOPING ECONOMY

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This paper primarily seeks to establish whether long- and short-run relationships prevail between fiscal deficits on one hand and inflation and economic growth on the other in a developing economy such as Malaysia. The Malaysian economy has gained international acclaim as one of the successfully managed. Econometric methodology involving the Johansen cointegration and Granger causality techniques and annual data spanning generally from 1966 through 2003 have been mobilized for the purpose. The empirical results suggest that fiscal deficits could have an inflationary impact on the Malaysian economy as they are being monetized though no long run relationship exists amongst fiscal deficits, money supply and the price level. Fiscal deficits also appear to have neither long- nor short-run links with income.

JEL Classification: E60 H30 H61 H62

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INTRODUCTION

The primary objective of this paper is to establish whether long- and short-run relationships exist between fiscal deficits on one hand and inflation and economic growth on the other in a successfully managed country such as Malaysia. Fiscal policy is generally perceived as integral to the growth and development of the Malaysian economy. Hence, understanding the effects of fiscal deficits on inflation and economic growth in what is acknowledged as one of the well-managed developing economies in the world could contribute to the macroeconomics literature on developing countries.

Indeed, the importance of understanding the macroeconomic implications of fiscal deficits can never be over-emphasized. With its potential downside, developing countries in general have since the 1990s been very cautious about maintenance of fiscal deficits. Across the developing world, the overall fiscal deficit declined from a median value of 6-7% of GDP in the early 1980s to about 3% by the end of the 1990s (Montiel & Servén, 2004). Seigniorage collection

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has also displayed a downward trend since the early 1990s amongst middle-income and to a lesser extent low-income economies. Fiscal consolidation was particularly pronounced amongst middle-income countries. In addition, there was interest in the establishment of independent domestic central banks as it was perceived that central bank independence would imply greater price stability, given that fiscal dominance would then be precluded. There were also calls for the formation of independent national “fiscal policy councils” for the setting of annual deficit limits. In fact, greater fiscal discipline would have otherwise been observed amongst these countries had there been no hikes in interest rates on public debt and no need for bailing out banking systems following the 1997 East Asian financial crisis.

There exists one notable past study by Tan (2002) that deals specifically with fiscal deficits and macroeconomic performance in Malaysia. It attempts to link fiscal deficits to inflation, real interest rates, private consumption, private investment, external balance and the real exchange rate. However, it was based merely on casual simple correlation analyses without any formal econometric framework or treatment. Thus the present study though inevitably narrower in scope would constitute a proper approach for understanding the macroeconomic implications of fiscal deficits.

In this paper, fiscal deficits are defined as deficits of the federal government which is responsible for the active conduct of fiscal policy in the country. As money supply is also accounted for in the analyses, it is approximated by monetary aggregates, M0 and M1. The econometric estimations generally involve annual data spanning from 1966 through 2003 as dictated by data availability. All data are drawn from quarterly and monthly bulletins of the Central Bank of Malaysia.

In order to explore for long run relationships, the Johansen maximum likelihood approach is relied upon. As for short run relationships, the Granger causality technique is employed. The error correction version of the latter or what is referred to as the Vector Error Correction Model (VECM) has to be deployed in the presence of cointegration while its original version based upon unrestricted vector autoregression is appropriate if otherwise. As these econometric techniques are well known, they would not be described for economy of space.

The rest of this paper is configured as follows. Section 2 provides a brief review of the literature while Section 3 presents and discusses the empirical results. Concluding remarks are made in Section 4.

LITERATURE REVIEW

In monetary economics, interrelationships amongst fiscal or budget deficits, money growth and inflation are an integral issue. Monetization of fiscal deficits by a government in order to satisfy its inter-temporal budget constraint (Sargent & Wallace, 1981) is perceived as the major cause of inflation in developing countries. Thus money supply may be responding endogenously to government fiscal deficits with inflation being a fiscal-driven monetary phenomenon.

The fiscal theory of the price level (FTPL) however contends that money has virtually no role to play in the determination of price level in a non-Ricardian world (Woodford, 1995 & 2001; Tekin-Koru and Ozmen, 2003). Prices instead respond to increases in nominal private

sector wealth emanating from bond-financed deficits. Inflation is thus a phenomenon of too much nominal wealth chasing too few goods. However, the theory does not completely rule out the possibility of fiscal shocks having money supply ramifications. In fact, monetary accommodation of budget deficit-induced inflation would still be quite consistent with the theory (Woodford, 2001).

A highly inflationary condition arising from huge fiscal deficits could threaten economic growth if it introduces inflation uncertainty, distorts relative prices, jeopardizes private investment and distorts resource allocation (Easterly, et.al, 1994). The relationship between fiscal deficits and inflation may however be marred by governments financing their deficits via borrowing rather than printing money, widespread practice of indexation and by wage and price inertias (Easterly, et.al, 1994). However, Eisner (1989) argues that the notion of budget deficits contributing to inflation is simply based upon the assumption that the economy is at its “natural” or “non-accelerating inflation rate of unemployment” (NAIRU). But inflation in the U.S. economy in the 1970s and early 1980s was precipitated rather by supply shocks in petroleum and world markets for agricultural products and not fiscal deficits.

Empirical evidence on the links amongst fiscal deficits, money growth and inflation is mixed (Tekin-Koru and Ozmen, 2003). King and Plosser (1985), Joines (1985), Karras (1994) and Sikken and Haan (1996) conclude that fiscal deficits are not a significant contributor to money growth or inflation. However, Edwards and Tabellini (1991), Metin (1998) and Ozatay (2000) do find deficits as a significant determinant of inflation in some developing countries. Tekin-Koru and Ozmen (2003) find no support for the fiscal theory of price level though fiscal deficits would exogenously determine the growth of money in particular inside money in Turkey.

Large budget deficits financed particularly by the sale of bonds could potentially contribute to higher interest rates and limit private sector's access to credit, thus crowding out efficient private investment and undermining economic growth. However this conventional view has been challenged by Bailey (1972) and Barro (1974) based on the “Ricardian Equivalence” proposition. If the proposition is valid, rational economic agents may view government deficits as a prelude to a future hike in their tax liabilities and hence, the deficit may not yield any impact on private wealth. As such, the conventional crowding-out effect of fiscal deficits may be of no significance. However, the Ricardian equivalence hypothesis rests on two assumptions namely, consumers are mindful about their and their descendants' future welfare and there is scope for inter temporal substitution in consumption due to absence of borrowing and lending constraints.

Lower fiscal deficits maintained through a cut in real public investment however may also undermine economic growth if both real public and private investments are complements (Easterly et.al, 1994). Eisner (1984) maintains that deficits are not invariably bad as the opposite could at times be worse. Fiscal deficits arising mainly from capital as opposed to current expenditure should be viewed positively as it contributes to the future productive capacity of an economy (Eisner, 1984 & 1989; and Eisner & Pieper, 1984). In this respect, fiscal deficits could be growth-promoting. Thus the composition of a budget deficit matters too when it comes to its impact on economic performance. The degree of substitutability or complementarity between public and private capital expenditures would determine the growth consequences of a deficit fiscal policy (Blejer & Khan, 1984; and Khan & Reinhart, 1990).

Moreover, an increase in fiscal deficits arising from a tax cut may boost private consumption via an increase in disposable income of consumers especially if the tax cut is permanent (Easterly et.al, 1994) particularly in the absence of Ricardian equivalence. In fact, Eisner (1989) opines that real world economic agents have no basis to expect heavier tax burden in the future especially with the existence of unemployed resources. Greater current consumption could entail more investments, placing the economy on a higher growth path. This would imply a larger tax base in the future, thus yielding more tax revenue for the government. Eisner (1984 & 1989) and Eisner and Pieper (1984) contend that it was actually a relatively tight fiscal policy rather than fiscal deficits that contributed to the sluggishness of the U.S. economy in the 1970s and early 1980s. To them, the observed U.S. fiscal deficit figures were exaggerated by non provisions for interest rate and price effects.

Fiscal deficits financed by domestic borrowings may also fail to exert an upward pressure on interest rates amid financial repression (Easterly, 1989; and Giovannini & de Melo, 1993) and when public debt and other assets are close substitutes in the private sector portfolio. Furthermore, an increase in domestic real interest rates may not follow if domestic financial markets are open to foreign capital inflows.

The empirical evidence on the links between fiscal deficits and interest rates that could impinge on economic growth is also mixed (Darrat, 1989 & 2002). Studies that find significant positive links between these variables include those by Makin (1983), Hoelscher (1986), and Zahid (1988). Whilst, studies that do not provide such empirical support include those by Darrat (1989 & 2002), Evans (1985), and Ibrahim and Kumah (1996).

It is also probable that higher interest rates could lead to larger fiscal deficits. Darrat (1989 & 2002) for example find a reverse causality running from interest rates to budget deficits instead. Concerns about high interest rates thwarting capital formation and economic growth may prompt governments to increase their spending and thus deficits so as to aid the private sector in areas responsive to interest rate movements. Moreover, higher interest rates could imply greater debt servicing for the government causing further escalation in the deficit (Easterly, et.al, 1994). Finally, larger budget deficits could also be sustained through reduced government revenue collection owing to depressed business conditions. A negative output shock could imply wider fiscal deficits if it involves erosion of tax base.

EMPIRICAL ESTIMATES AND ANALYSES

Fiscal Deficits and Inflation

Table 1 presents two sets of unit root test statistics viz. the Dickey-Fuller/Augmented Dickey-Fuller (ADF) and the Phillips-Perron (PP). Both tests yield consistent results on the order of integration of the data. The fiscal deficit (FD), M0, M1 and the price level (P) appear to be difference-stationary, i.e. integrated of order one, I(1).

The trace statistics of the Johansen test for cointegration amongst FGD, M0 (M1) and P under two varying assumptions about intercepts and trends are furnished in Table 2. Based on these statistics, the null hypothesis of non cointegration amongst the variables cannot be dismissed at the 5% significance level. This implies an absence of any long run relationship amongst fiscal

deficits, money supply and price level. In fact, a bivariate analysis of FGD and P would also rule out any long run relationship between deficits and the price level.

Table 1
Unit Root Tests¹
Fiscal Deficits and Inflation

	<i>Levels</i>	<i>1st Difference</i>	<i>2nd Difference</i>
DF/ADF²			
FD	-1.473	-5.762*	-6.619*
M0	-2.567	-6.232*	-5.888*
M1	-2.218	-5.774*	-4.273*
P	-1.760	-5.315*	-5.974*
Phillips-Perron³			
FD	-1.352	-6.358*	-15.221*
M0	-1.670	-3.547*	-8.800*
M1	-2.664	-5.044*	-12.230*
P	-1.706	-8.295*	-18.531*

* Null hypothesis of a unit root can be rejected at the 5% significance level

¹ All variables are natural log transformed

² Optimal order of lag augmentation determined based upon Akaike Information Criterion (AIC)

³ Truncation lag set at 4

Table 2
Johansen Tests (Trace Statistics)
Fiscal Deficits, Money Supply and Price Level

<i>Variables</i>	<i>Order of VAR¹</i>	<i>Null Hypothesis</i>	<i>Unrestricted Intercepts and No Trends</i>	<i>Unrestricted Intercepts and Restricted Trends</i>
FD, M0, P	4	R=0	42.195 (48.74)	63.166 (65.44)
FD, M1, P	1	R=0	14.654 (34.32)	30.914 (46.08)
FD, P	1	R=0	4.093 (18.88)	6.597 (27.24)

() – The 95% critical value adjusted for finite sample bias according to Cheung & Lai (1993).

¹ Based upon AIC.

Table 3 provides a summary of the Granger causality test results based upon unrestricted VARs given the absence of cointegration. Only results pertaining to the hypothesized relationships amongst fiscal deficits, money supply and prices and other lead-lag relationships that appear statistically significant are highlighted. Though the table distinctly indicates the absence of any Granger causal relationship between fiscal deficits and prices, this could not constitute a basis for ruling out the inflationary impact of a fiscal deficit. The results do in fact suggest that deficits would Granger cause both M0 and M1 which in turn Granger cause prices given their highly significant test statistics. Hence, the outcome of the short run analysis would allude to the possibility that deficits are being monetized and such monetization could exert pressure on prices.

Fiscal Deficits and Economic Growth

The unit root test results for examining the relationship between fiscal deficits and economic growth are given in Table 4. All in real terms, interest rates as represented by 3-month and 12-

Table 3
Granger Causality Tests¹
Fiscal Deficits and Inflation

	<i>Order of VAR²</i>	<i>F-/t-statistic³</i>
DFD, DM0, DP	4	
DFD→DP		1.007 [0.427]
DFD→DM0		7.020 [0.001]
DM0→DP		4.518 [0.009]
DM0→DFD		4.304 [0.011]
DP→DM0		4.625 [0.008]
DFD, DM1, DP	1	
DFD→DP		-0.178 [0.860]
DFD→DM1		2.618 [0.013]
DM1→DP		3.239 [0.003]
DFD, DP	1	
DFD→DP		-1.017 [0.317]

¹ The prefix D to a variable indicates its first log difference

² Based upon AIC

³ t-statistic when the VAR order is 1

[] refers to the marginal significance level

Table 4
Unit Root Tests¹
Fiscal Deficits and Economic Growth

	<i>Levels</i>	<i>1st Difference</i>	<i>2nd Difference</i>
DF/ADF²			
RFD	-1.319	-5.374*	-6.697*
RM0	-0.975	-8.958*	-6.215*
RM1	-3.507	-7.583*	-6.955*
RR3TB	-5.141*	-6.153*	-6.330*
RR12TB	-5.104*	-6.046*	-6.255*
RY	-1.289	-5.193*	-7.924*
Phillips-Perron³			
RFD	-1.479	-6.705*	-12.920*
RM0	-2.353	-6.538*	-13.747*
RM1	-3.336	-8.114*	-19.830*
RR3TB	-8.158*	-17.893*	-21.300*
RR12TB	-7.830*	-17.530*	-20.778*
RY	-1.457	-7.391*	-14.471*

* Null hypothesis of unit root can be rejected at the 5% significance level

¹ All variables except RR3TB and RR12TB are natural log transformed

² Optimal order of lag augmentation determined based upon AIC

³ Truncation lag is set at 4

month Treasury Bill rates (RR3TB and RR12TB) seem to be I(0) while income (RY) as represented by the real gross domestic product, fiscal deficits (RFD), M0 (RM0) and M1 (RM1) appear I(1). In the light of these results, no long run relationships may be expected to exist amongst budget deficits, interest rates and income and hence the analysis has to be essentially confined to the short run.

Table 5.1 offers a summary of the results of the Granger causality tests on the relationships amongst fiscal deficits, interest rates and income. As in the previous section, only results related to the hypothesized relationships amongst fiscal deficits, interest rates and income are included

in the table. Other lead-lag relationships that do not emerge as statistically significant are excluded. It distinctly suggests no causal links at all amongst these three variables.

Table 5.1
Granger Causality Tests¹
Fiscal Deficits and Economic Growth

	<i>Order of VAR²</i>	<i>t-statistic³</i>
DRFD, RR3TB, DRY	1	
DRFD→RR3TB		-0.066 [0.948]
RR3TB→DRY		0.081 [0.936]
DRFD→DRY		0.983 [0.333]
RR3TB→DRFD		-0.046 [0.964]
DRY→DRFD		-1.699 [0.099]
DRFD, RR12TB, DRY	1	
DRFD→RR12TB		-0.108 [0.915]
RR12TB→DRY		0.105 [0.917]
DRFD→DRY		0.972 [0.338]
RR12TB→DRFD		0.001 [0.999]
DRY→DRFD		-1.697 [0.099]

¹ The prefix **D** to a variable denotes its first log difference

² Based upon AIC

³ The t-statistic rather than the F-statistic can be relied upon when the VAR order is 1

[] refers to the marginal significance level

To acknowledge the possibility that monetization of deficits and inflows of foreign capital could potentially dampen the rise in interest rates following an increase in deficits, the trivariate VAR system is then augmented with the money supply (RM0/RM1) variable to see whether the conclusion would be altered. The results of the augmented system are presented in Table 5.2 and

Table 5.2
Granger Causality Tests¹
Fiscal Deficits and Economic Growth

	<i>Order of VAR²</i>	<i>t-statistic³</i>
DRFD, DRM0, RR3TB, DRY	1	
DRFD→RR3TB		-0.606 [0.549]
RR3TB→DRY		-0.395 [0.696]
DRFD→DRY		1.215 [0.234]
DRFD→DRM0		1.924 [0.064]
DRM0→RR3TB		-2.967 [0.006]
RR3TB→DRFD		-0.179 [0.859]
DRY→DRFD		-1.698 [0.100]
DRFD, DRM0, RR12TB, DRY	1	
DRFD→RR12TB		-0.705 [0.486]
RR12TB→DRY		-0.406 [0.688]
DRFD→DRY		1.219 [0.232]
DRFD→DRM0		1.866 [0.072]
DRM0→RR12TB		-3.055 [0.005]
RR12TB→DRFD		-0.139 [0.890]
DRY→DRFD		-1.691 [0.101]

contd.

DRFD, DRM1, RR3TB, DRY	1	
DRFD→RR3TB		0.122 [0.904]
RR3TB→DRY		-0.680 [0.501]
DRFD→DRY		0.915 [0.368]
DRFD→DRM1		2.661 [0.012]
DRM1→RR3TB		-3.586 [0.001]
RR3TB→DRFD		0.474 [0.639]
DRY→DRFD		-0.645 [0.524]
DRFD, DRM1, RR12TB, DRY	1	
DRFD→RR12TB		0.051 [0.960]
RR12TB→DRY		-0.662 [0.513]
DRFD→DRY		0.916 [0.367]
DRFD→DRM1		2.651 [0.013]
DRM1→RR12TB		-3.584 [0.001]
RR12TB→DRFD		0.532 [0.599]
DRY→DRFD		-0.638 [0.528]
DRFD, DRY	1	
DRFD→DRY		1.053 [0.300]
DRY→DRFD		-1.726 [0.094]

1 The prefix D to a variable denotes its first log difference

2 Based upon AIC

3 The t-statistic rather than the F-statistic can be relied upon when the VAR order is 1

[] refers to the marginal significance level

they consistently suggest no causality in either direction between fiscal deficits and income. Interestingly, the results do also invariably suggest the possible monetization of deficits as budget deficits seem to Granger cause both RM0 and RM1. Moreover, movements in both RM0 and RM1 do seem to precede those in interest rates, RR3TB and RR12TB.

To further verify the point that fiscal deficits do not Granger cause income, a bivariate Granger causality analysis has also been performed. The results of the test indeed uphold the point. Finally, as fiscal deficits, money supply and income are I(1) variables, a Johansen test is conducted to establish whether any cointegration exists amongst these variables. The results of the test are tabulated in Table 6 and they indicate no cointegration even when money supply is excluded.

Table 6
Johansen Tests (Trace Statistics)
Fiscal Deficits, Money Supply and Income

<i>Variables</i>	<i>Order of VAR¹</i>	<i>Null Hypothesis</i>	<i>Unrestricted Intercepts and No Trends</i>	<i>Unrestricted Intercepts and Restricted Trends</i>
RFD, RM0, RY	2	R = 0	22.533 (37.85)	31.444 (50.81)
RFD, RM1, RY	1	R = 0	32.593 (34.32)	37.788 (46.08)
RFD, RY	1	R = 0	4.372 (18.88)	9.142 (27.24)
	2			15.120 (28.99)

() – The 95% critical value adjusted for finite sample bias according to Cheung & Lai (1993)

¹ Based upon AIC

CONCLUDING REMARKS

The paper has explored for long- and short-run relationships between fiscal deficits on the one hand and inflation and economic growth on the other in Malaysia using time series econometric techniques. Thus this paper may serve some academic interest especially in the area of development economics by shedding some light on the likely impact of fiscal deficits on inflation and economic growth in a developing country such as Malaysia.

On the whole, the empirical findings do suggest that fiscal deficits could have an inflationary impact on the economy via the practice of monetization of deficits though there is an absence of a long run relationship amongst fiscal deficits, money supply and the price level. This is based on the observation of a unidirectional Granger causality running from fiscal deficits to money supply and from money supply to prices. Hence, there is some trace of endogenous response of money supply to fiscal deficits with inflationary consequences. This probably explains why the government also resorts to more direct price control mechanisms apart from the use of other monetary policy instruments to keep inflation in the economy in check.

With respect to fiscal deficits and economic growth, the empirical results generally suggest no long run relationships amongst fiscal deficits, money supply, interest rates and income. Short run causal relationships between fiscal deficits and income are completely ruled out. The possibility that a larger fiscal deficit could result from a hike in interest rates does not show up in the results.

The absence of any causal link between fiscal deficits and income thus economic growth may be attributed to the prudent fiscal policy management of the government. Fiscal deficits have always been contained to a manageable level. Moreover the openness of the Malaysian economy with foreign trade averaging more than 100% of GDP annually could imply that external influences overwhelm the influence of domestic factors on the growth prospect of the economy.

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