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Budget deficits and U.S. economic growth

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Abstract

This paper explores how the U.S. budget deficit affects U.S. economic growth. Time-series data for the 1973-2004 period is applied to a simultaneous equation model to estimate the various direct and indirect effects of budget deficits on growth. The results indicate that, ceteris paribus, an increase in budget deficits slows growth. However, the "twin" current account deficits, which our model shows tend to accompany budget deficits, increase growth. Hence, the overall relationship between budget deficits and economic growth is ambiguous.

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1. Introduction

Reminiscent of the discussion about U.S. government budget deficits associated with President Reagan's tax cuts in the early 1980s, economists are again focusing on the growth of the U.S. government budget deficit after President Bush's tax cuts in the early 2000s. At the heart of the debate is the question of whether large government budget deficits are detrimental to long-run economic growth.

Traditional theory suggests that, *ceteris paribus*, a reduction in government saving causes interest rates to rise, investment to fall, and economic growth to slow down. The relationship between budget deficits and growth is more complex, however. In recent years, government budget deficits have been offset by inflows of foreign saving, and U.S. interest rate increases have been modest. This has led some to question whether budget deficits are really damaging to economic growth. On the other hand, Gale and Orszag (2002) argue that, despite global capital flows, government budget deficits are still likely to slow economic growth because "the capital inflows represent a reduction in net national foreign investment and therefore a reduction in the capital owned by Americans and a reduction in future national income." In other words, because capital inflows imply rising future obligations to foreigners, foreign capital inflows may not be able to avoid a decline in the long-run growth of U.S. income. Rubin, Orszag, and Sinai (2004) hypothesize several additional negative growth effects of a rising government budget deficits, including declining asset prices, reduced national wealth, fear of inflation, reduced fiscal flexibility for dealing with macroeconomic shocks, and declining investor confidence. Borcherding, Ferris and Garzoni (2004) have found a negative growth effect of government size for 20 OECD countries over the period 1970-1997. Ghosh Roy (2009) also has discovered that government size has a significant negative effect on economic growth in the United States using time-series data for the 1950-1998 period. All in all, there are many reasons why government budget deficits cause economic growth to slow down, both in the short run and the long run.

Economic growth also affects the budget deficit, however. Ball and Mankiw (1995) argue that "….as long as the rate of GDP growth is higher than the interest rate, the ratio of debt to GDP falls over time. With the debt shrinking relative to the size of the economy, the government can roll over the debt forever even as its absolute size grows. That is, the economy can grow its way out of the debt." That is, the growth of public debt relative to GDP will be slower the faster is future U.S. economic growth. Hence, there may be a bi-directional relationship between budget deficits and economic growth.

There have been many studies [e.g. Kraay, and Ventura (2005), Rubin, Orszag, and Allen Sinai (2004), Ball, Elmendorf, and Mankiw (1995), Ball and Mankiw (1995), Bohn (1991) to cite just a few)] that have analyzed various economic consequences of U.S. budget deficits. However, only a few have focused specifically on how budget deficits affect economic growth. This paper seeks to fill that void by empirically analyzing how budget deficits affect U.S. economic growth over the period 1973-2004.

Using time-series data this paper develops a simultaneous-equation model (SEM) to examine the effect of budget deficits on U.S. economic growth. Not only can a SEM address the problem of simultaneity between economic growth and budget deficits by explicitly quantifying the direct and reverse relationships, but it also permits us to estimate several potential intermediate channels linking budget deficits and economic growth.

2. Building the Regression Model

In specifying our model of how the government budget deficit affects economic growth, we begin with the well-known *sources of growth* equation that is derived from the neoclassical production function. Suppose, for example, that Y, A, K, and L are real GDP, total factor productivity, capital stock, and labor stock, respectively, and the neoclassical production function takes on the familiar Cobb-Douglas form

$$Y = AK^{\alpha}L^{1-\alpha}. \tag{1}$$

Converting equation (1) into natural logs and differentiating with respect to time, yields

$$\dot{Y} = \dot{A} + \alpha\dot{K} + (1-\alpha)\dot{L}, \tag{2}$$

where $\dot{Y}$, $\dot{A}$, $\dot{K}$ and $\dot{L}$ are the growth rates of real GDP, total factor productivity, capital, and labor, respectively.

We could test the effect of the budget balance in a single regression equation based on equation (2), the basic sources of growth equation, by adding the budget balance to equation (2). Specifically, we could specify

$$Gr(Y) = a_o + a_1 Gr(K) + a_2 Gr(L) + a_3 (BB/Y), \tag{3}$$

in which Gr(Y), Gr(K), Gr(L), and (BB/Y) are the growth rates of real GDP, the capital stock, the labor force, and the share of budget balance in GDP, respectively.

To minimize omitted variable bias, we can add additional variables to equation (3). For example, to capture the growth effect of international trade we add the growth rate of real volume of trade, $Gr(V_T)$, and terms of trade growth, Gr(TOT). The vast empirical literature that widely supports the hypothesis that, all other things equal, international trade enhances a country's economic growth is summarized by Edward (1998) and Baldwin (2004), among others. In addition, a number of empirical studies (Easterly et al 1993; Fischer 1993; Mendoza 1997; Bleaney and Greenway 2001; Blattman, Hwang and Williamson 2003) have showed a strong and statistically significant relationship between economic growth and terms of trade growth. In order to capture the impact of international capital flows on economic growth, we also include the share of current account balance in GDP, CA/Y, in equation (3). Adding these variables gives us:

$$Gr(Y) = a_o + a_1 (I/Y) + a_2 Gr(L) + a_3 (BB/Y) + a_4 Gr(V_T) + a_5 Gr(TOT) + a_6 (CA/Y). \tag{4}$$

Note that in equation (4) we follow the common practice in the growth literature of replacing the growth rate of capital from equation (3) by the ratio of investment to GDP, I/Y. This substitution is often made because researchers do not have actual capital stock data, only annual investment data. Actually, even the data on the U.S. capital stock from the U.S. Department of Commerce are estimated using the perpetual inventory method, which simply sums annual investment and applies an assumed rate of depreciation to adjust the accumulated investment over time. This means that year-to-year variations in the time-series of capital stocks is effectively driven by annual investment from the national accounts, precisely the same investment that appears in the numerator of I/Y. Econometrically, therefore, the use of I/Y in place of Gr(K) implies little if any loss of information or distortion of the significance of the relationships between the other variables.

3. Dealing with Simultaneity and Estimating the Complex Relationships

As mentioned earlier, the literature suggests that there are likely simultaneous or bi-directional relationships between economic growth and budget balance and other variables in equation (4). Ordinary least squares coefficient estimates will be biased and inconsistent in the presence of bi-directional relationships between dependent and independent variables. The problem of simultaneity is, of course, best addressed using a simultaneous-equation model (SEM).

We, therefore, construct a SEM that explicitly specifies several hypothesized simultaneous relationships. The SEM can, when properly specified, correct for the simultaneity bias *and* estimate the relationships between economic growth, and budget deficits, and other important economic variables. Equation (4) thus becomes the first equation in our SEM, and other equations are introduced to estimate other relationships between variables that are part of the simultaneous relationships that influence the overall relationships between the government budget balance and economic growth.

First of all, in order to capture the reverse influence of economic growth on the government budget balance, we follow Lowery (1985) and specify the following equation for the share of budget balance in GDP:

$$\begin{aligned} BB/Y = b_o + b_1 Gr(Y) + b_2 Gr(U) + b_3 Gr(T_r) + b_4 (BB/Y)_{t-1} + b_5 (Eyr) \\ + b_6 (PreEyr) + b_7 (PostEyr) + b_8 (Govtype) + b_9 (CA/Y) \end{aligned} \tag{5}$$

In addition to the variables that have already been defined, in this equation, Gr(U) is the growth rate of unemployment, Gr(Tr) is the growth rate of government transfers, Eyr, PreEyr, and PostEyr are election year, pre-election year, and post-election year dummies, respectively. Govtype is a dummy variable that equals to one when a Democratic president is in office (versus zero for when a Republican holds the Presidency). Effectively, equation (5) specifies that the budget balance depends on the performance of the economy, political conditions, and external capital flows.

Next, we add an equation to address the issue of simultaneity between international trade and economic growth. Note that in line with most previous studies we assume that terms of trade shocks are exogenous. This equation thus estimates a potential reverse relationship between GDP growth and growth of trade. A number of authors have argued that international trade will increase as an economy grows since economic growth expands the economy's export capacity and import demand. Thus, growth may influence trade as much as trade influences growth. Following Sprout and Weaver (1993) and Esfahani (1991), we specify the following equation:

$$Gr(V_T) = c_o + c_1 Gr(Y) + c_2 RER + c_3 Gr(Y_F) + c_4 Gr(TOT) . \tag{6}$$

All variables in equation (6) have already been defined except for the real effective exchange rate, RER and the growth rate of trade-weighted average real per capita GDP of major U.S. trading partners, $Gr(Y_F)$.

Third, we specify an equation to explain the share of current account in GDP. All other things equal, a fast-growing economy will tend to have a larger current account deficit than a slow-growing economy. Hence, we need this equation to deal with the potential reverse relationship in the basic growth equation that now is the first equation of our model. Specifically, we follow Dibooglu (1997) and explain the size of the current account balance relative to GDP as follows:

$$CA/Y = d_o + d_1 Gr(Y) + d_2 Gr(TOT) + d_3 Gr(Y_F) + d_4 RER + d_5 (BB/Y) + d_6 RLR \quad (7)$$

In addition to the variables that have already been introduced, this equation includes the real long-run interest rate, RLR. Note that this equation tests the validity of the well-known "twin deficits" hypothesis, which is that budget deficits fuel current account deficits.

Chinn and Ito (2007) estimate that, on average, a one percentage-point improvement in the budget balance improves the current account balance by 0.10-0.5 percentage-points in a sample of industrialized countries. But, the "twin deficits" will not grow in tandem if investment rises in response to technological breakthroughs, institutional changes, or simple investor exuberance (Keynes' infamous "animal spirits"). However, Martin Wolf of the *Financial Times* recently observed for the U.S., "net investment has declined over the last four or five years in the U.S., suggesting that all of the deterioration of the current account deficit can be attributed to reduced savings and increased consumption rather than to increased investment.[1]"

There is also likely to be a reverse relationship between the rate of economic growth and investment. Following Sprout and Weaver (1993), we therefore specify a fifth equation in our SEM to explain the share of investment in GDP, I/Y. Specifically, we specify I/Y as a function of the growth rate of per capita income, Gr(Y/N), the inflow of real foreign capital, K_F, and the real long-run interest rate, RLR,

$$I/Y = f_o + f_1 Gr(Y/N) + f_2 K_F + f_3 RLR \quad (8)$$

Equations (4) through (8) comprise our full simultaneous-equation model:

$$\begin{aligned}
&Gr(Y) = a_o + a_1(I/Y) + a_2 Gr(L) + a_3(BB/Y) + a_4 Gr(V_T) + a_5 Gr(TOT) + a_6(CA/Y) + t \\
&BB/Y = b_o + b_1 Gr(Y) + b_2 Gr(U) + b_3 Gr(Tr) + b_4 (BB/Y)_{t-1} + b_5(Eyr) + b_6(PreEyr) \\
&+ b_7(PostEyr) + b_8(Govtype) + b_9(CA/Y) + t \\
&Gr(V_T) = c_o + c_1 Gr(Y) + c_2 RER + c_3 Gr(Y_F) + c_4 Gr(TOT) + t \\
&CA/Y = d_o + d_1 Gr(Y) + d_2 Gr(TOT) + d_3 Gr(Y_F) + d_4 RER + d_5(BB/Y) + d_6 RLR + t \\
&I/Y = f_o + f_1 Gr(Y/N) + f_2 K_F + f_3 RLR + t.
\end{aligned} \quad (9)$$

We use this model to estimate how a change in the U.S. government budget balance directly and indirectly affects the rate of economic growth in the U.S.

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[1] Martin Wolf (2006), "The world must adjust to the dollar's inevitable fall," *Financial Times,* November 24.

4. Data

We estimate model (9) using annual data covering the 1973-2004 span. A detailed description of variables and data sources are available in the Appendix. Some of the time-series variables in model (9) may be non-stationary. The standard method for testing the stationarity of a time-series is to test for the presence or absence of a unit root prior to estimation of the model. We choose two types of tests from opposing perspective, one based upon the prospect of a stochastic trend and the other based upon the prospect of a deterministic trend. The tests of Phillips and Perron (1988) and Kwiatkowski, et. al. (1992), designated here as PP and KPSS, respectively, are used to detect the existence of unit roots in variables. The former test assumes the null hypothesis of a unit root while the latter test assumes the null hypothesis of no unit root. Both tests are applied so that our model specification is not biased by which null hypothesis we choose.

Table 1 reports our unit root test results. KPSS and PP test results conform for all variables except for I/Y, CA/Y, K_F, and RER. The PP test detects unit roots in variables I/Y, RER, $K_{F,}$ and CA/Y while the KPSS test results indicate no unit roots. We first-differenced all variables that are detected to have unit roots by either the PP or the KPSS test. All first-differenced variables are analyzed with the PP and KPSS tests and they are stationary. Therefore, all variables that are found to be non-stationary in levels will enter the model in their first differenced form. A time trend, t, is added in each equation to capture the effect of a potential deterministic trend in the variables estimated in levels.

5. Results

We have estimated model (9) by three stage least squares (3SLS). Table 2 reports the results. In economic growth equation, the first equation of the SEM, the coefficient on BB/Y is positive and significant at the 5 percent level. The positive coefficient indicates that an improvement in the budget balance /or a decrease in budget deficits is associated with an increase in economic growth. This result confirms that growing budget deficits reduce economic growth, all other things equal.

Also in the first equation, the coefficient on $Gr(V_T)$ is positive and significant, which supports many empirical studies that have concluded that international trade enhances economic growth. Gr(TOT) has a positive and significant coefficient. Our result is consistent with a number of previous studies which indicate a positive relationship between an improvement in terms of trade and economic growth especially for developed countries. Mendoza (1997) contends in his paper that "Growth is slower in economies in which terms of trade grow at slower rate, on average, because slow terms-of-trade growth reduces the expected real rate of return on savings – in units of imported goods – and this affects savings." In other words, terms of trade changes affect growth through changes in savings and investment rates. CA/Y has a negative and significant effect on economic growth. Hence, the growing current account deficits appear to not be incompatible with U.S. economic growth.

In the second equation, which explains BB/Y, the coefficient on Gr(Y) is positive and significant. This confirms a bi-directional relationship between Gr(Y) and BB/Y, and our use of a simultaneous-equation model is therefore justified. Among the remaining variables in the equation, Gr(U) has a negative and significant coefficient. This result was expected, since unemployment tends to increase government expenditure, all other things equal. The coefficient on CA/Y is positive but not statistically significant. None of the political variables in the second equation of the SEM are significant.

In the third equation, which explains Gr(V_T), the coefficient on Gr(Y) is positive and significant, as expected. This result confirms that simultaneity issues also bias simple regression models of international trade and economic growth. The coefficient estimate for RER is positive and significant. Note that RER is stated in U.S. dollars, and an increase in RER indicates a depreciation of dollar. Hence, the result shows that a depreciation of dollar indeed increases export and/or decreases imports, in agreement with the Marshall-Lerner condition from standard trade theory. The coefficient on Gr(TOT) is negative and significant.

In the fourth equation, which explains CA/Y, the coefficient on Gr(Y) is negative and significant. Again, this finding of a reverse relationship between Gr(Y) and CA/Y supports our use of a SEM. The coefficients on Gr(TOT), Gr(Y_F), and RER are all positive and significant. Of particular importance is the positive and significant coefficient estimate for BB/Y; this result supports the "twin deficits" hypothesis.

In the fifth equation, which explains I/Y, Gr(Y/N) has a positive and significant coefficient. This captures the reverse relationship between growth and investment. The coefficient estimate for K_F is negative and significant. The coefficient on RLR is not significant.

Although the 3SLS method yields smaller estimated standard errors of coefficients than do the two stage least squares (2SLS) method, the 3SLS coefficient estimates of a SEM are more sensitive to the specification of the entire model, i.e. a misspecification in one equation can adversely affect the coefficient estimates of other equations in the system. This problem can be addressed by using both methods to estimate a SEM and then comparing the 3SLS estimates with the 2SLS estimates. We thus estimate model (9) also by the 2SLS method. Table 3 reports the results of 2SLS estimation of the model. The results indicate that the 3SLS and 2SLS estimates are similar. The signs of the 3SLS and 2SLS estimated coefficients are the same and those that were expected while the t-ratios for the 3SLS estimates are larger than those for the 2SLS estimates as shown in Table 2 and Table 3, respectively. In other words, estimated standard errors for the 3SLS estimates are smaller than those of the 2SLS estimates reflecting the fact that the 3SLS estimator here is indeed asymptotically more efficient than the 2SLS estimator.

6. Summary and Conclusions

Our paper has applied annual time-series data for the 1973-2004 period to a simultaneous-equation model for the United States in order to estimate the relationship between government budget deficits and economic growth. First and foremost, our analysis and results confirm that the relationship between budget deficits and economic growth is complex. The real world cannot be modeled with a single equation. More specifically, our results show that, *ceteris paribus*, an improvement in the government budget balance enhances U.S. economic growth. We also find that economic growth has a positive effect on the budget balance. There is thus a complex bi-directional relationship between budget deficits and economic growth.

Our results from estimating the simultaneous-equation model also reveal other interesting relationships. Notably, our regression results show that budget deficits increase current account deficits. This result confirms the so-called "twin deficits" hypothesis. Our results show that U.S. economic growth is faster, all other things equal, the smaller is the government budget deficit and the larger is the current account deficit. This latter result reflects the positive influence of foreign capital inflows, which are the flip side of the current account, on U.S. economic growth. Hence, since the budget deficit per se has a negative effect on growth but the accompanying "twin" current account deficit has a positive effect on growth, we must conclude that the budget deficit has an ambiguous net overall effect on economic growth.

On the positive side, the ambiguity of the twin deficits' effect on growth could be interpreted as suggesting that the inevitable corrections of both the U.S. budget deficit and the current account deficit will not necessarily cause a "hard landing" in the form of a large decline in economic growth. However, the results also suggest that, in the long run, an improved budget balance may not increase economic growth, especially if foreigners become unwilling to continue accumulating American assets. Nor do our results rule out the possibility that the U.S. is facing a long period of near zero economic growth. U.S. policymakers, therefore, face the difficult challenge of finding the combination of budget and current account deficits ("twin") that avoids a "hard landing" in the short run and slow economic growth in the long run.

Appendix: Variable List and Data Sources

Y	Real GDP - Bureau of the Economic Analysis (BEA).
Gr(Y)	Growth rate of real GDP – derived.
I	Investment - International Monetary Fund, *International Financial Statistics*, CD-ROM version, February 2007 (series code for I: 11193EECZF).
I/Y	Ratio of investment to GDP – derived.
L	Labor force - *Economic Report of the President*.
Gr(L)	Growth rate of labor – derived.
N	Population - International Monetary Fund, *International Financial Statistics*, CD-ROM version, February 2007 (series code for N: 11199Z..ZF).
Y/N	Per capita income – derived.
Gr(Y/N)	Growth rate of per capita income – derived.
BB	Budget Balance - calculated by subtracting total current government expenditure from total current government tax receipt. The Bureau of the Economic Analysis (BEA) is the data source for total current government expenditure and total current government tax receipts.
BB/Y	Share of budget balance in GDP – derived.

V_T Real Volume of trade measured by the sum of real volume of export and that of Import. The sum of nominal export and nominal import is divided by GDP deflator to compute real volume of trade - International Monetary Fund, *International Financial statistics,* CD-ROM version, January 2008 (series code for nominal import: 11190C.CZF, (series code for nominal export: 11198C.CZF).

$Gr(V_T)$ Growth rate of real volume of trade – derived.

U Unemployment - *Economic Report of the President*.

Gr(U) Growth rate of unemployment – derived.

Tr Real Transfer Payment – calculated by dividing current transfer by GDP deflator. The BEA is the data source for nominal transfer payment and GDP deflator.

Gr(Tr) Growth rate of real transfer payment – derived.

RER Trade weighted real effective exchange rate. Exchange rates of major trading partners (Canada, France, Italy, United Kingdom, Japan and Mexico) are from the Center for International Comparisons at the University of Pennsylvania, Alan Heston, Robert Summers, and Bettina Aten *Penn World Table version 6.2*, September 2006, and United Nations Economic Commission for Europe UNECE), *UNECE StatisticalDatabase*, 2005. Trade weights are from the U.S. Bureau of the Census. Consumer Price Indices (CPI) of the United States and major trading partners are from the International Monetary Fund, *International Financial Statistics*, CD-ROM version, February, 2007 (CPI series codes for U.S. and major trading partners: 11164…ZF (U.S.), 15664…ZF (Canada), 13264..ZF (France), 13664..ZF (Italy), 15864..ZF (Japan), 11264..ZF (United Kingdom), 27364..ZF (Mexico)).

Y_F Trade weighted average per capita GDP of major trading partners (Canada, France, Italy, United Kingdom, Japan and Mexico) computed by calculating trade weighted average real GDP of major trading partners (Canada, France, Italy, United Kingdom, Japan and Mexico). The data source of real per capita GDP of trading partners is the Center for International Comparisons at the University of Pennsylvania, Alan Heston, Robert Summers, and Bettina Aten *Penn World Table version 6.2*, September 2006.

$Gr(Y_F)$ Growth rate of trade weighted real average GDP of major trading partners - derived.

TOT Terms of trade - calculated by the ratio of export price index to import price index. Export and import price indices are from the International Monetary Fund, *International Financial Statistics*, CD-ROM version, January 2008 (series code for export price index: 11176…ZF and series code for import price index: 11176.X.ZF).

Gr(TOT) Terms of trade growth - derived

CA Current account balance - International Monetary Fund, *International Financial Statistics*, CD-ROM version, January 2008 (series code for CA: 11178ALDZF).

CA/Y Share of current account balance in GDP – derived.

RLR Real long run interest rate (nominal interest rate minus inflation rate) - calculated by subtracting the inflation rate from the nominal interest rate. Nominal interest rate is measured by the 3 year government bond rate and inflation rates are based on the GDP deflator computed by dividing nominal GDP by real GDP. The data source for nominal and real GDP is the BEA. The data source for the 3 year government bond rate is the International Monetary Fund, *International Financial Statistics*, CD-ROM version, January 2008 (series code for 3 year government bond rate: 11161A..ZF).

K_F Inflow of real foreign capital - calculated by subtracting import from export and adding net foreign factor income from abroad. The data source for net foreign factor income abroad, export and import is the International Monetary Fund, *International Financial Statistics*, CD-ROM version, February 2007 (series code for net foreign factor income: 11198.NCZF, series code for nominal import: 11198C.CZF, series code for nominal export: 11190C.CZF). The inflow of real foreign capital is derived by dividing inflow of nominal foreign capital by the GDP deflator.

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Table 1
Stationarity Tests

Variables	**PP Test**	**KPSS Test**
Gr(Y)	-4.3527*	.4125731E-01
I/Y	-2.1364	.9617642E-01
BB/Y	-1.8359	.1568323*
Gr(V_T)	-4.4007*	.7841952E-01
Gr(U)	-4.3479*	.7479905E-01
Gr(Y/N)	-4.4453*	.4128549E-01
Gr(Tr)	-4.4908*	.1112793
Gr(Y_F)	-4.1179*	.7126999E-01
RER	-2.2319	.6714015E-01
K_F	-1.5953	.6642931E-01
Gr(TOT)	-5.8831*	.8744272E-01
CA/Y	-2.1347	.6060120E-01
RLR	-1.8422	.1493643*
Gr(L)	-4.2528*	.9048625E-01

Notes: [a] * - significant at the 10 percent level; E indicates scientific notation.
[b] The critical value for the PP test with constant and trend at the 10 percent significance level is -3.132. The presence of a unit root is the null hypothesis in the PP test. The critical value for the KPSS test with constant and trend is .119. The absence of a unit root is the null hypothesis in the KPSS test.

Table 2
Estimated Equations
(3SLS Method)

Equation 1	Equation 2	Equation 3	Equation 4	Equation 5
Gr(Y)	**BB/Y**	**$Gr(V_T)$**	**CA/Y**	**I/Y**
1.24(I/Y) (5.65)**	.14Gr(Y) (1.86)*	1.54Gr(Y) (3.17)**	-.47Gr(Y) (-5.61)**	.28Gr(Y/N) (7.41)**
.91E-01Gr(L) (.41)	-.55E-01Gr(U) (-3.94)**	.28RER (2.21)**	.11Gr(TOT) (4.22)**	-.42E-13K_F (-2.18)**
.42(BB/Y) (2.66)**	-.29E-01Gr(Tr) (-1.02)	.68$Gr(Y_F)$ (1.06)	.28$Gr(Y_F)$ (3.27)**	**-.20**E-01RLR (-.46)
.15$Gr(V_T)$ (6.19)**	.13E-01$(BB/Y)_{t-1}$ (.27)	-1.23Gr(TOT) (-6.45)**	.60E-01RER (3.40)**	-.93E-04t (-1.04)
.27Gr(TOT) (6.11)**	.11E-02Eyr (.53)	0.22E-03t (.28)	.28(BB/Y) (2.44)**	-.41E-02 (-1.90)
-.47CA/Y (-2.37)**	-.11E-02PreEyr (-.48)	-.18E-01 (-.88)	-.69E-01RLR (-1. 32)	
-.14E-03t (-.69)	-.15E-03PostEyr (-.72E-01)		-.19E-03t (-1.76)**	
.24E-01 (3.29)**	.27E-02Govtype (1.46)		.11E-01 (2.95)**	
	.18(CA/Y) (1.43)			
	-.63E-04t (-.60)			
	-.14E-02 (-.37)			

Notes: [a] t-ratios are in parentheses; E indicates scientific notation;
[b] ** - significant at the 5 percent level; * - significant at the 10 percent level.

Table 3
Estimated Equations
(2SLS Method)

Equation 1	Equation 2	Equation 3	Equation 4	Equation 5
Gr(Y)	**BB/Y**	**Gr(V_T)**	**CA/Y**	**I/Y**
1.02(I/Y) (1.90)**	.93E-01Gr(Y) (.93)	1.58Gr(Y) (2.59)**	-.48Gr(Y) (-4.05)**	.26Gr(Y/N) (5.81)**
.14Gr(L) (.28)	-.58E-01Gr(U) (-3.25)**	.20RER (1.18)	.11Gr(TOT) (3.37)**	-.33E-13K_F (-1.41)
.42(BB/Y) (1.05)	-.33E-01Gr(Tr) (-.90)	.31Gr(Y_F) (.37)	.30Gr(Y_F) (2.80)**	**-.55**E-02RLR (-.92E-01)
.18Gr(V_T) (2.26)**	.13E-01$(BB/Y)_{t-1}$ (.22)	-1.29Gr(TOT) (-5.93)**	.53E-01RER (2.37)**	-.81E-04t (-.81)
.34Gr(TOT) (3.33)**	.32E-03Eyr (.12)	0.11E-03t (.13)	.30(BB/Y) (1.54)	-.38E-02 (-1.58)
-.38CA/Y (-1.12)	-.17E-02PreEyr (-.58)	-.94E-02 (-.39)	-.96E-01RLR (-1. 45)	
-.16E-03t (-.46)	-.42E-03PostEyr (-.15)		-.20E-03t (-1.45)	
.23E-01 (1.52)	.34E-02Govtype (1.43)		.12E-01 (2.02)**	
	.73E-01(CA/Y) (.45)			
	-.99E-04t (-.75)			
	.10E-02 (..21)			

Notes: [a] t-ratios are in parentheses; E indicates scientific notation;
[b] ** - significant at the 5 percent level; * - significant at the 10 percent level.