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ABSTRACT

The question of fiscal sustainability is very important for adequate macroeconomic management. This paper analyses the sustainability of the government of South Africa's fiscal policies during the period 1990-2005 using quarterly data. It is found that government revenue, government spending on goods and services, and interest payment are non-stationary but cointegrated. A standard three-variable framework of Vector Error Correction (VEC) model is used to test whether data from the historical process in South Africa are consistent with the intertemporal government budget constraint. The *present value constraint (PVC) approach* was the main tool used in the empirical analysis. The findings suggest that the PVC hold over the sample period and point to the sustainability of the historical fiscal process.

INTRODUCTION

The issue of budget deficits appears to be one of the most important themes at the core of actual macroeconomic policymaking. Since the 1980s the negative effects of budget deficits on the economy have motivated a number of studies aimed at shaping many macroeconomic adjustment and/or stabilization policies worldwide (Jacobs *et al*., 2002; Easterly and Schmidt-Hebbel, 1994). Not withstanding the merit that budget deficits could have in stimulating economic growth in small open economies (Mankiw, 2000), experiences show that widening deficits have been accompanied by spiralling debt and inflation in some developing countries particularly in Latin America and Sub-Saharan Africa. Moreover, in recent years, accumulated budget deficits over time have led to public debt reaching its highest level ever even in developed countries. This makes spiralling public debt a worldwide issue that puts national economies under pressure, given the relationships that exist between the level of public debt and some macroeconomic aggregates (such as national income, inflation, the foreign exchange rate, investment, and national saving); and prompts the question of fiscal sustainability (Archibald and Greenidge, 2003).

Fiscal sustainability is related to the issue of whether the government is capable of maintaining a given spending, taxation, and borrowing pattern indefinitely, or whether it will be ultimately constrained to alter those policy settings to satisfy its long-run budget constraint (Abdulnasser, 2002). In other words fiscal sustainability refers to the ability of the government to maintain a given policy stance in the future in spite of any shocks to the system which may arise. A sustainable fiscal policy is believed to contribute to the stability of the macroeconomic environment that fosters sustainable economic growth and strengthen fiscal discipline to avoid populist fiscal policies that lead to unsustainable levels of debt and seignorage (Archibald and Greenidge, 2003).

Since the mid 1990s, South Africa has adopted two important public finance management tools to ensure that current budget deficits are in accord with the twofold objective of sustainable fiscal policy and economic growth: the Growth, Equity and Redistribution (GEAR) strategy in 1996; and the

Medium Term Expenditure Framework (MTEF) in 1997. The use of the two instruments suggests that over the past few years, policy makers in South Africa have been favouring a limited role of the government in the economy and low budget deficits as intermediate objectives to attain fiscal sustainability and sustainable economic growth. Furthermore, there are some evidence that government in South Africa has actually adopted a relatively conservative fiscal policy stance since the early 1990s, which culminated into a significant primary surplus in the mid-nineties (Fourie and Burger, 2000). Was that enough to attain fiscal sustainability? Has the government kept the same stance up until now?

This paper seeks to evaluate the sustainability of the fiscal policy in South Africa during the period 1990-2004. The next section traces the trends in fiscal policy in South Africa since 1990. The following section reviews the literature on fiscal sustainability, focusing on two popular empirical approaches to the evaluation of fiscal sustainability: the "*accounting*" approach and the *Present Value Constraint* (PVC) or econometric approach. The fourth section will discuss the situation in South Africa with reference to the theories espoused in the previous section and present the results of the empirical analysis. Coming out of these discussions will be a number of policy recommendations to ensure the future sustainability of debt and fiscal policies.

FISCAL POLICY IN SOUTH AFRICA

There are several indicators used to measure a government's fiscal stance. The evolution of fiscal policy in South Africa is analysed below using the conventional and the primary balances.

The Conventional Fiscal Deficit

The *conventional fiscal deficit* is the difference between government's current revenues and current expenditures. In other words, the conventional fiscal deficit is the resources utilized by the government in a fiscal year that need to be financed after revenues were deducted from total expenditure. The Government of South Africa has consistently recorded a conventional fiscal deficit since 1990. However the evolution of the fiscal deficit between 1990 and 2004 can be divided roughly into two phases: 1990-1993 and 1994-2004.

The period 1990-1993 is characterised by a widening budget deficit. This expansionary fiscal policy was a response to a need to increase capital expenditure to fund social-upliftment initiatives and to alleviate the backlog in public investment. The nominal deficit increased as a percentage of GDP from an average of 1.39 per cent in 1990 to an average of 7.27 per cent at the end of that period. Whereas the period 1994 - 2004 is characterized by an increasingly restrictive fiscal policy broadly in line with the prescriptions of the South African government's Growth, Employment, and Redistribution (GEAR) macroeconomic strategy. Supported by the optimistic revenue outcomes recorded over the past years and the declining expenditure on fixed capital by the Government, the nominal deficit as percentage of GDP has declined since 1994. The nominal deficit as a percentage of GDP even hit the minimum average of 1.1 per cent of the GDP in 2003 thanks to the relatively high output growth of about 3.6 per cent in 2002. However, it appeared that the turnaround in public sector investment that started slowly in 2002 coupled with a rather low growth rate of

just fewer than 2 per cent in 2003 ultimately increased the nominal deficit at 2.34 per cent of the GDP in the year 2004.

The Primary Balance

The *conventional deficit* may be a misleading index of discretionary policy, since it includes interest payments which are an important non-discretionary component. Unlike the conventional deficit, the *primary balance* is the non-interest component of the conventional fiscal deficit. This index is of greater policy relevance since it measures the real resources absorbed by the government sector and how the government's current fiscal policies impact on net indebtedness. Interest payments reflect past deficits, excluding them from the fiscal balance provides a clearer picture of current behaviour. As such the primary balance is a useful indicator of the sustainability of the current fiscal stance of the Government (Archibald and Greenidge, 2003).

It is estimated that during the period 1988-1991 the Government of South Africa recorded primary surplus. For the same reasons explained above, that is increasing capital expenditure to fund social-upliftment initiatives and to alleviate the backlog in public investment, the period 1992-1993 is characterized by primary deficits. However, since 1994, primary surpluses have been recorded consistently. These findings suggest that, with the exception of the period 1992-1993, the Government has committed itself towards a more sustainable fiscal policy stance.

However, Fourie and Burger (2002) argue that since 1980 the world has entered a high-interest rate era, frequently accompanied by growth rates below interest rates. This situation is not in favour of the attainment of fiscal sustainability in a majority of countries, as it is shown by the strong upward trend in debt ratios worldwide. Specially for South Africa, despite the fact that from the mid-nineties the government has run significant primary surpluses, the government's conventional deficit target is still significantly above the maximum allowable to attain fiscal sustainability. This situation is likely to persist given the negative impact government primary surpluses would have on the provision of public services and infrastructures, and growth, employment and development that could lead to political unrest, that could decide the government to loosen its fiscal policy stance.

EVALUATING FISCAL SUSTAINABILITY

Cunddington (1996) considers two commonly used approaches to evaluating fiscal sustainability: accounting approach and the econometric approach, also termed the present value constraint (PVC) approach. The starting point of both approaches is the balance sheet of the consolidated public sector or the government budget constraint as shown in Equation 1. This is a one-period budget identity that presents the sources and uses of funds of the consolidated public sector (central government, public enterprises and the central Bank).

Equation 1

$$G_t - R_t + i_{t-1}B_{t-1} \equiv B_t - B_{t-1} + M_t - M_{t-1}$$

Where G_t, R_t, B_t, M_t and i_t are respectively government expenditure, government revenue, government debt, money supply, and the interest rate, all in nominal terms at time *t.*

Let the primary balance (*S*) be equal to government revenue less expenditure (*R-G*), and substitute for *S=R-G* to get:

Equation 2

$$-S_t + i_{t-1}B_{t-1} \equiv B_t - B_{t-1} + M_t - M_{t-1}$$

The Accounting Approach

The *accounting approach* attempts to determine the sustainable fiscal deficit by making assumptions that liabilities can continue to grow at the growth rate of the economy's GDP, so that debt/GDP ratios remain constant. The indicators of fiscal sustainability based on the government budget constraint that are quite often used in this approach include the *Net worth Indicator*, the *Tax Gap indicator* and the *Primary Gap Indicator*.

The interpretation of these indicators is quite straightforward and simple. However, Chalk and Hemming (2000) argue that despite the simplicity and ease of interpretation associated with this approach, these indicators do not distinguish between countries with varying degrees of indebtedness and fiscal imbalance and are therefore more useful in the case of countries characterised by high debt and primary deficits. Furthermore, unlike the econometric approach, the exclusive emphasis that this approach put on the relationship between GDP growth and increases in debt do not capture the important role that lenders ultimately play in determining what debt strategies are sustainable and which are not Cuddington (1996).

The Econometric Approach

The *econometric/PVC approach* to evaluating fiscal sustainability assumes that the sustainability of fiscal policy depends on what level of deficit can financed, and that the level of deficit depends on the behaviour of lenders. Empirical implementations of this approach involves econometric testing of a set of times series data for the violation or not of the No Ponzi Game (NPG) condition.

Assume seignorage is negligible and no default from the government, such that government's budget deficit has to be financed only by new debt creation. The government budget constraint at constant prices for period t is given by:

Equation 3

$$B_t = (1 + i_{t-1})B_{t-1} + G_t - T_t$$

For fiscal policy to be sustainable in the future, the corresponding expression *N* period forward must hold. That is the intertemporal budget constraint. Solving forwardly in a stochastic environment, the

intertemporal government budget constraint in expected value terms is of the form (Ahmed and Rogers, 1995; Bohn1995):

Equation 4

$$E_t \sum_{j=0}^{\infty} \left(q_{t,j} G_{t+j}\right) - E_t \sum_{j=0}^{\infty} \left(q_{t,j} R_{t+j}\right) + (1 + i_{t-1}) B_{t-1} = \lim_{N \to \infty} E_t \left(q_{t,N} B_{t+N}\right)$$

where

$$q_{t,N} = \prod_{s=1}^{N} \left(1 + i_{t+s}\right)^{-1} \text{is the time - varying real discount factor } N \text{ period ahead.}$$

The testable implications of the sustainability of fiscal policy are given by the first difference of the intertemporal budget constraint in Equation 4. (Krusec, 2003):

Equation 5

$$\Delta E_t \sum_{j=0}^{\infty} \left(q_{t,j} G_{t+j}\right) - \Delta E_t \sum_{j=0}^{\infty} \left(q_{t,j} R_{t+j}\right) + (G_t + i_{t-1} B_{t-1} - R_t)$$
$$= \lim_{N \to \infty} E_t \left(q_{t,N} B_{t+N}\right) - \lim_{N \to \infty} E_{t-1} \left(q_{t-1,N-1} B_{t+N-1}\right)$$

This equation forms the basis for testing the sustainability hypothesis where G_t, $i_t B_{t-1}$ and R_t must be cointegrated variables of order one. But first it is important to consider how a couple of theoretical considerations would brake down this equation to some even simpler testable relation.

Placing the emphasis on the role of lenders in shaping debt dynamics, McCallum (1984) argued that if lenders behave optimally and rationally, the government couldn't be allowed to leave a debt that has a positive expected present value. At some point in time, it would be supposed to pay off its debt. Further, the NPG condition implies that the government also cannot asymptotically leave a debt with a negative expected value. In other words, intertemporal sustainability requires that the expected limit terms in Equation 4 are zero. That is, the present discounted value of all future public debt balances must be zero; and the intertemporal budget constraint breaks down to become

Equation 6

$$\Delta E_t \sum_{j=0}^{\infty} \left(q_{t,j} G_{t+j}\right) - \Delta E_t \sum_{j=0}^{\infty} \left(q_{t,j} R_{t+j}\right) = (R_t - G_t - i_{t-1} B_{t-1})$$

Furthermore, suppose government expenditures (G_t), and revenues (R_t) are non-stationary in levels so that their first difference is stationary; then, for Equation 5 to hold, the right-hand side of the equation must also be stationary. That is, the term ($R_t - G_t - i_{t-1}B_{t-1}$) must be stationary. This latter condition is satisfied if and only if (R_t, G_t, $i_{t-1}B_{t-1}$) are cointegrated with the cointegrating vector being (1, -1, -1). The

intuition behind this is that although these three variables may grow over time, a stable equilibrium (cointegrating) relationship should exist between them. If there is no long-term or equilibrium relation between them, the government is violating its intertemporal budget constraint.

The econometric/PVC approach has a number of implications for fiscal sustainability. Firstly, the expected present value of the resources available to the public sector for the servicing of its debt (including seignorage) must be at least equal to the initial stock of the debt. Secondly, public sector debt cannot be continuously rolled over, that is, repayment of the principal must take place at some point; and thirdly, while the PVBC does not rule out large fiscal deficits or debt ratios, government is required to run some primary surpluses in the future. The government may bring about these surpluses through a combination of some or all of the following policy options: reducing expenditure; increasing revenue through taxes, grants or privatisation proceeds; monetising the debt, defaulting on some or all of the public debt, effectively taxing holders of Government debt; or, finally, shifting between debt sources to take advantage of lower interest rates (Archibald and Greenidge, 2003).

DATA AND EMPIRICAL RESULTS

Stationarity tests

This paper adopts the Johansen multivariate cointegration methodology (Johansen, 1985; Johansen and Juselius, 1990). The VEC model includes the following variables:

- the logarithm of real net taxes (l_rev)
- the logarithm of real government spending on goods and services (l_ g) and
- the logarithm of real interest payments (l_intp)

The two fiscal variables are defined as in Perotti (2002, 13). So:

1. Net taxes =Revenues –Transfers

Revenues = Tax revenues + Non-tax revenues

Tax revenues = Direct taxes + Social security taxes + Indirect taxes

Non-tax revenues = Current transfers received by the general government + Net capital transfers received by the general government

Transfers = Social security transfers to households + other transfers to households + Subsidies to firms + Transfers abroad

2. Government spending on goods and services = Government consumption + Government gross capital formation

Government gross capital formation = Gross fixed capital formation by the government + Net acquisition of non produced no financial assets + Change in inventories

Data were obtained from the Quarterly Bulletins by the South African Reserve Bank (SARB), and span the period 1990q1 to 2004q4; and seasonally adjusted with the X12 multiplicative procedure in Eviews.

One of the conditions to apply the Johansen procedure is that the variables entering the cointegrating equation should be integrated of the same order. Then a preliminary step in this sort of analysis consists in pre-testing all the variables to assess their order of integration. The results of the ADF tests suggest that *l_ g*, *l_rev*, and *l_intp* are non-stationary in levels and integrated of order one, *I (1).* The details of the results of the ADF tests for the variables in levels and first differences are presented in Table 1.

Table 1: ADF test statistics (No intercept, No trend)

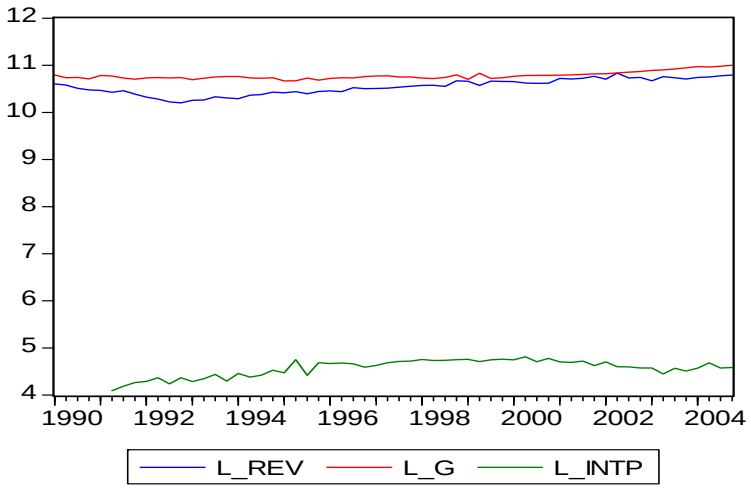
Series	*Levels*		*First differences*	
	ADF-test statistic	*1% critical value*	*ADF-test statistic*	*1% critical value*
l_rev	0.698495 (1)	-2.605442	-10.00402 (0)***	-2.605442
l_ g	1.438083 (1)	-2.605442	-12.63389 (0)***	-2.605442
l_intp	1.20300 (1)	-2.609324	-15.96793 (0)***	-2.609324

*** reject the null of unit root at 1% level
(The numbers in parentheses are the lag lengths)

Model specification

As it can be seen in Figure 4.1, the variables *l_rev*, *l_ g*, and *l_intp* seem to share the same stochastic trend suggesting the existence of a stable relation between the variables keeping them from drifting too far apart. In this case the variables are said to be cointegrated.

Figure 4.1 Time plot of the variables: l_rev, l_ g, and l_intp



After it has been established that all the variables are integrated of order one, the next step is to specify the model. As stated above, this paper uses the Vector Error Correction (VEC) approach to test for the sustainability of fiscal policy in South Africa during the period 1990-2004. The sample period within

which sustainability of fiscal policy is tested was firstly dictated by the availability of data and secondly by the need to test the belief that fiscal policy in South Africa has been sustainable since the early 90s. The VEC analysis starts from a reduced form standard VEC (*p*) model

Equation 6

$$\Delta y_t = \alpha\beta' y_{t-1} + \sum_{i=1}^{p} \pi_i \Delta y_{t-1} + \varepsilon_t$$

where:

- β is the matrix of the cointegrating parameters and
- α is the matrix of the speed of adjustment parameters, also known as the loading matrix.
- $y_t = [l\_rev_t \;\; l\_g_t \;\; l\_intp_t]$

Lag-length tests using an unrestricted VAR with data in levels indicate setting the lag length *p=2* (see *Appendix A*); so that the estimated form of the VEC is of lag length *p'= (p-1) =1*. **Trace** unrestricted cointegration rank test indicates three cointegrating vectors at 5% level. Cointegrating and adjustment coefficients of interest for this study from the *unrestricted* VEC estimation are presented in Table 2.

Table 2: Unrestricted VEC estimates

Normalized cointegrating coefficients (standard error in parentheses)				
L_REV	*L_G*	*L_INTP*		
1	**-0.43**	**-1.30**		
	(0.11)	(0.26)		
Adjustment coefficients (standard error in parentheses)				
D(L_REV)	**-0.11**			
	(0.04)			
D(L_G)	**0.01**			
	(0.03)			
D(L_INTP)	**0.13**			
	(0.07)			

The estimated *unrestricted* VEC is stable and produces white noise errors. Tests of the residuals show no residual autocorrelation left in the residuals; no serial correlation; no no-normality of residuals; and finally no Heteroskedasticity. Cointegrating coefficients are of the expected signs and statistically significant. However, adjustment coefficients suggest that spending on goods and services does not respond to the deviation from the long run equilibrium.

On the other hand, test of the cointegration restrictions $\beta = [1 \quad -1 \quad -1]$, shows that the restrictions are binding, suggesting that sustainability of fiscal policies in South Africa during the sample period.

Table 3: Restricted VEC estimates

Restrictions:				
b(1,1)=1, b(1,2)=-1, b(1,3)=-1				
Tests of cointegration restrictions:				
Hypothesized	Restricted	LR	Degrees of	
No. of CE(s)	Log-likehood	Statistic	Freedom	Probability
1	266.5717	2.452110	2	**0.293448**
1 Cointegrating Equation(s): Convergence achieved after 1 iterations.				
Restricted cointegrating coefficients (standard error in parentheses)				
L_REV	L_G	L_INTP		
1	**-1**	**-1**		
(0.0)	(0.0)	(0.0)		
Adjustment coefficients (standard error in parentheses)				
D(L_REV)	-0.001437			
	(0.00140)			
D(L_G)	-0.001657			
	(0.00091)			
D(L_INTP)	-0.003378			
	(0.00219)			

CONCLUSION

This study tests whether fiscal policy is sustainable in South Africa using the econometric framework based on the government's intertemporal budget constraint. The hypothesis of interest is the no violation of the NPG condition, which implies that for the fiscal policy to be sustainable government revenue, government spending on goods and services and interest payment must be cointegrated with cointegrating vector (1, -1, -1).

The findings in this report are that tests of cointegration restrictions fail to reject that *government revenue*, *government spending on goods and services*, *and interest payment* in South Africa are cointegrated with cointegrating vector (1, -1, -1). This suggests that fiscal policy in South Africa has been sustainable during the period 1990-2004.

LIMITATION OF THE STUDY AND FUTURE STUDIES

The VEC model used in this study can be considered as a fixed coefficient model. In order to take into account the Lucas critique, one would have to test a random coefficient model against and a fixed parameter model to provide further evidence to whether government in South Africa follows its intertemporal budget restriction. Furthermore, it is common belief that attaining and preserving fiscal sustainability would help secure the full benefits of automatic fiscal stabilisers in the economy. Future research on fiscal sustainability in South Africa will be improved if the issue of whether fiscal stabilisation and sustainability are fully compatible is thoroughly investigated.

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APPENDIX

1. *Lag length criteria*

VAR Lag Order Selection Criteria						
Endogenous variables: L_REV L_G L_INTP						
Exogenous variables: C						
Sample: 1990Q1 2004Q4						
Included observations: 50						
Lag	LogL	LR	FPE	AIC	SC	HQ
0	137.6904	NA	9.18e-07	-5.387617	-5.272895	-5.343930
1	241.1363	190.3405	2.10e-08	-9.165453	-8.706568	-8.990707
2	265.0755	**41.17531***	**1.16e-08***	**-9.763018***	**-8.959969***	**-9.457212***
3	273.5079	13.49196	1.20e-08	-9.740317	-8.593104	-9.303452
4	278.2592	7.031942	1.45e-08	-9.570370	-8.078992	-9.002445
5	285.6147	10.00347	1.60e-08	-9.504590	-7.669048	-8.805605
* indicates lag order selected by the criterion						
LR: sequential modified LR test statistic (each test at 5% level)						
FPE: Final prediction error						
AIC: Akaike information criterion						
SC: Schwarz information criterion						
HQ: Hannan-Quinn information criterion						

1. *Unrestricted cointegration test*

Sample (adjusted): 1991Q4 2004Q4
Included observations: 53 after adjustments
Trend assumption: No deterministic trend
Series: L_REV L_G L_INTP
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (**Trace**)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.207222	28.97543	24.27596	0.0119
At most 1 *	0.171164	16.66817	12.32090	0.0088
At most 2 *	0.119055	6.718303	4.129906	0.0113

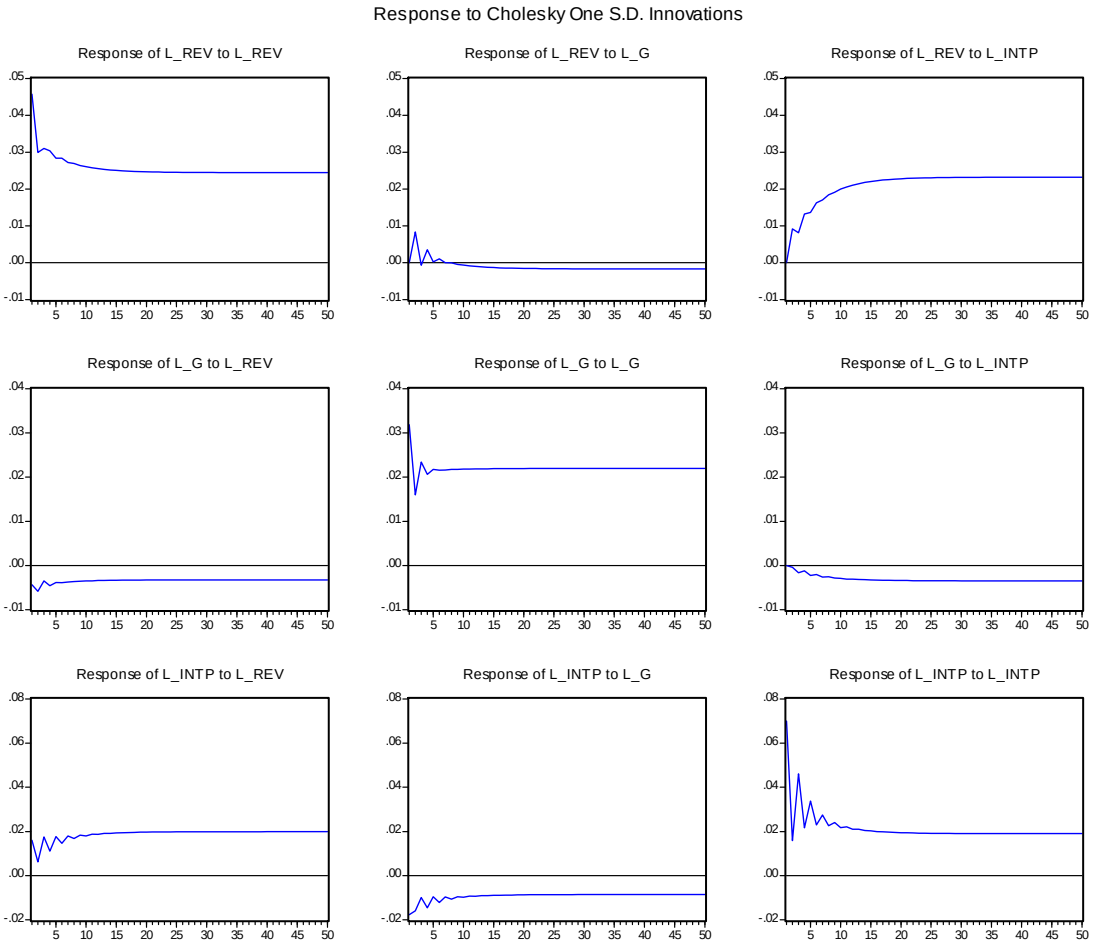
Trace test indicates **3 cointegrating eqn(s)** at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

2. *Stability tests*

A. *R roots Table*

Roots of Characteristic Polynomial	
Endogenous variables: L_REV L_G L_INTP	
Exogenous variables:	
Lag specification: 1 1	
Root	Modulus
1.000000	1.000000
1.000000	1.000000
0.816234	0.816234
-0.640874	0.640874
-0.405062 - 0.118271i	0.421975
-0.405062 + 0.118271i	0.421975
VEC specification imposes 2 unit root(s).	

B. *Impulse responses*



3. Residual tests

A. Portmanteau Autocorrelation test

VEC Residual **Portmanteau Tests** for Autocorrelations					
H0: no residual autocorrelations up to lag h					
Sample: 1990Q1 2004Q4					
Included observations: 53					
Lags	Q-Stat	Prob.	Adj Q-Stat	Prob.	df
1	4.226508	NA*	4.307787	NA*	NA*
2	9.065085	0.4313	9.336112	0.4068	9
3	12.69507	0.8094	13.18390	0.7805	18
*The test is valid only for lags larger than the VAR lag order.					
df is degrees of freedom for (approximate) chi-square distribution					

B. Autocorrelation LM test

VEC Residual **Serial Correlation LM** Tests		
H0: no serial correlation at lag order h		
Sample: 1990Q1 2004Q4		
Included observations: 53		
Lags	LM-Stat	Prob
1	13.49803	0.1413
2	7.381509	0.5975
3	4.737177	0.8566
Probs from chi-square with 9 df.		

C. Normality Test

VEC Residual **Normality** Tests				
Orthogonalization: Cholesky (Lutkepohl)				
H0: residuals are multivariate normal				
Sample: 1990Q1 2004Q4				
Included observations: 53				
Component	Skewness	Chi-sq	df	Prob.
1	0.154008	0.209514	1	0.6471
2	-0.302189	0.806642	1	0.3691
3	0.349661	1.079989	1	0.2987
Joint		2.096144	3	0.5527
Component	Kurtosis	Chi-sq	df	Prob.
1	2.030919	2.073886	1	0.1498
2	2.765254	0.121691	1	0.7272
3	2.819447	0.071990	1	0.7885
Joint		2.267568	3	0.5188
Component	Jarque-Bera	df	Prob.	
1	2.283400	2	0.3193	
2	0.928333	2	0.6287	
3	1.151979	2	0.5621	
Joint	4.363712	6	0.6276	

5. *Restricted cointegration test*

Sample (adjusted): 1991Q4 2004Q4				
Included observations: 53 after adjustments				
Trend assumption: No deterministic trend				
Series: L_REV L_G L_INTP				
Lags interval (in first differences): 1 to 1				
Unrestricted Cointegration Rank Test (Trace)				
Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.207222	28.97543	24.27596	0.0119
At most 1 *	0.171164	16.66817	12.32090	0.0088
At most 2 *	0.119055	6.718303	4.129906	0.0113
Trace test indicates 3 cointegrating eqn(s) at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values				
Restrictions:				
b(1,1)=1, b(1,2)=-1, b(1,3)=-1				
Tests of cointegration restrictions:				
Hypothesized	Restricted	LR	Degrees of	
No. of CE(s)	Log-likehood	Statistic	Freedom	Probability
1	266.5717	2.452110	2	**0.293448**
1 Cointegrating Equation(s): Convergence achieved after 1 iterations.				
Restricted cointegrating coefficients (standard error in parentheses)				
L_REV	L_G	L_INTP		
1	**-1**	**-1**		
(0.0)	(0.0)	(0.0)		
Adjustment coefficients (standard error in parentheses)				
D(L_REV)	-0.001437			
	(0.00140)			
D(L_G)	-0.001657			
	(0.00091)			
D(L_INTP)	-0.003378			
	(0.00219)			