DEREGULATION, SAVINGS, CREDIT TO PRIVATE SECTOR AND ECONOMIC GROWTH IN NIGERIA: AN ARDL-BOUND TESTING APPROACH

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Abstract

The objective of the study was to assess the impact of financial sector deregulation reforms on savings, credit to private sector, and the economic growth of Nigeria from 1970 to 2009. Upon investigation of the long run and short run impact of financial deregulation on the selected macroeconomic variables, using the ARDL-bound test approach, it was discovered, that in both long and short run, financial deregulation had no significant impact on the real interest rate, and if any, its effect suggest a negative; therefore not in conformity with the McKinnon-Shaw hypothesis, that suggest that deregulation of the financial system enhances competition in the system and therein causes interest rate to be positive. However, increases in savings and the credit to private sector observed in the study, can hardly be attributed to financial deregulation (or the real interest rate) as its effect in the short run were minimally positive, and utterly negative in the long-run. The same effect was evidence in the economic growth variable. The study therefore concluded that the shifting effects from positive in the short run to negative in the long run, is attributable to lack of continuity in the implementation of financial deregulation reforms and absence of competition in the industry. All in all, financial deregulation did not induce positive real interest rate (to encourage savings). Suggesting that, interest rate on deposit has not been the major factor that propelled

depositors to save in Nigeria, but rather the lack of investment alternatives outside financial assets.

Keywords: Financial Deregulation, Savings, Credit to Private Sector, Interest Rate and Economic Growth, Complementarity Hypothesis, and the ARDL-Bound Testing

Introduction

Financial Deregulation/ liberalization is a matter of degree, and does not imply a shift to total laissez-faire. It entails the removal or relaxation of regulations affecting the type of business financial firms may undertake, the type of firms permitted to deal in the particular markets, or the terms on which dealing is allowed. Regulations which have been relaxed include controls on interest rates at which banks can lend or borrow, controls on operations by banks outside their country of registration and restrictions on the types of business particular financial institutions can transact, direct credit abolition and exchange rate deregulation. Deregulation has been favoured as it leads to more competition and efficiency gains, causing both developed and developing economies to incorporate such policies into their Structural Adjustment Programs (SAP, 1986 for Nigeria) as opposed to its opposite; financial regulation or repression. Although financial deregulation reform can increase the efficiency by channelling resources into productive use, its impact on the quantity of savings, credit and economic growth is theoretically ambiguous. In as much as the ambiguility can be as a result of country specific factors, it however, can be traced to empirical measuration of financial deregulation and method of estimation. On the former (measuration of financial deregulation), a good number of research, have settled for partial measures of financial deregulation via the adoption of partial proxies (on account that proxies need not be actual estimates); proxies like the real interest rate (Oshikoya, 1992; Seck and El-nil, 1993; Matsheka, 1998), M2/GDP (Reinhart et al, 2005; Odhiambo, 2006; Nwazeaku and Okpara, 2010), credit to the private sector/GDP (Baliamoune-Lutz, 2007; Shohnoushi, 2008) , liquidity ratio (Allen and NdiKumana, 2000; Aziakpono, 2004), total liabilities/GDP (Achy, 2003). Others simply measure financial deregulation/deregulation using traditional dummies of 0 – No deregulation/deregulation and 1- liberalized (Okpara, 2010), while others, having observed the partiality in financial deregulation measures above resolve to constructing index, the index in some cases, are not comprehensive to capture deregulation as they structure are limited to deregulation in the money market (Fowowe, 2008). True as claim that proxies need

not be actual, economics and econometrics does not limit optimization to end but extends it to means. Deregulation is a matter of degree (arising from adoption, changes or combinations of reforms) that reflects the gradual changes in the entire financial system. It far exceed measuring with a single indicator that only reflects a fraction effect, or using dummy extremes of 0 and 1 that ignore the gradual progression, or an index limited to a fraction of the financial market, ignoring the inter-relationships of between markets. Since poor, partial, extreme and wrong measurement, would imply poor, partial, extreme and wrong conclusions and recommendations, this study, has an objective of measuring financial deregulation, testing its effect on domestic savings, credit to the private sector, real interest rate and economic growth in Nigeria using time series data soured from the Central Bank of Nigeria and the World Bank Development Indicator spanning 1970-2009, to confirm the truth in McKinnon's Hypothesis when regressed for long and short run effect using an ARDL model.

Methodology, Estimation and Results

To estimate the long run and short run relationships among the running variables, we employ the ARDL Bound test approach as presented by Pesaran et al (2001), as it test for both long and short run simultaneously, and absorbs the problems of regressing at different levels of integration I(0) or I(1), thus requiring no pretest like the ADF, DF-GLS, PP test and other stationarity test. However, to satisfy the curiosity of no second differences I(2), we conduct a DF-GLS unit root test for caution (see appendix table 2). The model for the study drawn from a dual complementarity hypothesis augmented with financial development index (measurement, table 1 in appendix) and represented below;

$$\mathbf{L(SavGdp) = \alpha_0 + \alpha_1 LGDP + \alpha_2 L(Crpvt/Gdp) + \alpha_3 RINTr + \alpha_4 FinLB + \mu_t} \quad \text{..... (8)}$$

Where; LSavGdp = log of savings as a percent of GDP, LGDP = log of real GDP,

LCrpvt/Gdp = log of credit to the private sector/GDP, RINTr = Real Interest Rate, FinLB= Financial Deregulation Index.

The ARDL approach involves estimating the conditional error correction version of the ARDL model for variables under estimation. The Augmented ARDL is given by the following (Pesaran and Pesaran 1997: Pesaran and Shin, 2001):

$$\Delta Y_t = \alpha_0 + \alpha_1 Y_{t-1} + \alpha_2 X_{t-1} + \sum_{i=1}^{k} \alpha_3 \Delta Y_{t-i} + \sum_{i=1}^{k} \alpha_4 \Delta X_{t-i} + \varepsilon_t \text{ ..... (9)}$$

Equation 8, when specified for Total Domestic Financial Savings to GDP ratio, in the form of a conditional ARDL (Autoregressive Distributed Lag) model in such a general form becomes:

$$\Delta LSavGdp_t = \alpha_0 + \sum_{i=1}^{k1} \alpha_1 \Delta SavGdp_{t-i} + \sum_{i=1}^{k2} \alpha_2 \Delta LGdp_{t-i} + \sum_{i=1}^{k3} \alpha_3 \Delta LCrpvt/Gdp_{t-i} + \sum_{i=1}^{k4} \alpha_4 \Delta RINTr_{t-i} + \sum_{i=1}^{k5} \alpha_5 \Delta FinLB_{t-i}$$
$$+\lambda_1 LSavgdp_{t-1} + \lambda_2 LGdp_{t-1} + \lambda_3 LCrpvt/Gdp_{t-1} + \lambda_4 RINTr_{t-1} + \lambda_5 FinLB_{t-1} + \varepsilon_t \text{ ..... (10)}$$

Considering the other endogenous variables in the base model; Growth of Credit to Private Sector per GDP, Real Interest Rate, and Economic Growth Variables- GDP, we can therefore hypothetically specify from equation (10), a Conditional ARDL for Credit to Private Sector to GDP ratio:

$$\Delta LCrpvt/Gdp_t = \alpha_0 + \sum_{i=1}^{k1} \alpha_1 \Delta SavGdp_{t-i} + \sum_{i=1}^{k2} \alpha_2 \Delta LGdp_{t-i} + \sum_{i=1}^{k3} \alpha_3 \Delta LCrpvt/Gdp_{t-i} + \sum_{i=1}^{k4} \alpha_4 \Delta RINTr_{t-i} + \sum_{i=1}^{k5} \alpha_5 \Delta FinLB_{t-i}$$
$$+\lambda_1 LSavgdp_{t-1} + \lambda_2 LGdp_{t-1} + \lambda_3 LCrpvt/Gdp_{t-1} + \lambda_4 RINTr_{t-1} + \lambda_5 FinLB_{t-1} + \varepsilon_t \text{ ..... (11)}$$

Also, specifying for Economic Growth proxied by the GDP in ARGL form becomes:

$$\Delta LGdp_t = \alpha_0 + \sum_{i=1}^{k1} \alpha_1 \Delta SavGdp_{t-i} + \sum_{i=1}^{k2} \alpha_2 \Delta LGdp_{t-i} + \sum_{i=1}^{k3} \alpha_3 \Delta LCrpvt/Gdp_{t-i} + \sum_{i=1}^{k4} \alpha_4 \Delta RINTr_{t-i} + \sum_{i=1}^{k5} \alpha_5 \Delta FinLB_{t-i}$$
$$+\lambda_1 LSavgdp_{t-1} + \lambda_2 LGdp_{t-1} + \lambda_3 LCrpvt/Gdp_{t-1} + \lambda_4 RINTr_{t-1} + \lambda_5 FinLB_{t-1} + \varepsilon_t \text{ ..... (12)}$$

Also, specifying for Real Interest Rate in ARGL form becomes:

$$\Delta RINTr_t = \alpha_0 + \sum_{i=1}^{k1} \alpha_1 \Delta SavGdp_{t-i} + \sum_{i=1}^{k2} \alpha_2 \Delta LGdp_{t-i} + \sum_{i=1}^{k3} \alpha_3 \Delta LCrpvt/Gdp_{t-i} + \sum_{i=1}^{k4} \alpha_4 \Delta RINTr_{t-i} + \sum_{i=1}^{k5} \alpha_5 \Delta FinLB_{t-i}$$
$$+\lambda_1 LSavgdp_{t-1} + \lambda_2 LGdp_{t-1} + \lambda_3 LCrpvt/Gdp_{t-1} + \lambda_4 RINTr_{t-1} + \lambda_5 FinLB_{t-1} + \varepsilon_t \text{ ..... (13)}$$

In the above equations, the terms $\boldsymbol{\alpha}_1$-$\boldsymbol{\alpha}_5$ with the summation signs represents the error correction or short run dynamic, while the terms with **λ**s represent the long run relationship, $\boldsymbol{\varepsilon}_t$ is the error correction term or white noise, $\boldsymbol{\alpha}_0$ is the intercept or drift, the **L**s in front of specific variables as in equation 8, are Log indicators, **Δ**s are the first differences, and **k**s are the respective specific optimum lag orders of the variables entering the ARDL-ECM. The

financial deregulation index/ measure, is majorly regarded as a policy dependent variables thus we consider it to be exogenous variables in the study.

The implementation of the ARDL approach estimation is as follows; Regress selected equation (10-13) using OLS, choosing the optimal lag combination (k_s) in the short run dynamics that minimizes the Schwarz Information Criterion (SIC) (R-squared increases). At these optimum lag combination, test if the lagged (one) variables- long run parameters, are jointly significant, i.e., if the null hypothesis of no cointegration, against the alternative hypothesis of the existence of a long run-cointegrated relationship using F-test such as;

$\mathbf{H_o: \lambda_1 = \lambda_2 = \ldots = \lambda_n = 0}$

$\mathbf{H_1: \lambda_1 = \lambda_2 = \ldots = \lambda_n \neq 0}$

The asymptotic distribution of critical values is obtained for cases in which all regressors are purely I(1) as well as when the regressors are purely I(0) or mutually cointegrated. These hypotheses can be examined using the standard Wald or F-statics. The F-test has a non-standard distribution which depends upon; (i) whether variables included in the ARDL model are I(1) or I(0), (ii) the number of regressors, (iii) whether the ARDL contains an intercept and/or a trend and (iv) the sample size (Narayan, 2005). The F-Statistic has two sets of critical values (compiled by Pesaran et al. (2001)). One set assumes that all variables are of order I(0) and the other set assumes that they are all of order I(1). If the calculated F-statistics **"**falls Above the Upper Bound Critical Value**"** (corresponding to all I(1) variables) of F-Tabulated developed by Pesaran, then **"**the null of no co-integration can be rejected**"**. This implies that co-integration or long run relationship exists. If the computed F-statistics **"**falls Below the Lower Bound Critical Value**"**, then **"**the null hypothesis of no co-integration cannot be rejected**"**: this implies that all variables are I(0), the variables are deemed not to be co-integrated. If it **"**lies between the two Bounds**"**, the **"**result seems inconclusive**".** And an alternative test required. (Pesaran, et al. 2001: Narayan, 2005: Rahila et al, 2010). Next, we create a lagged error-correction term (ECM_{t-1}) out of the fitted values of the lagged long-run variables (the λ terms), and replace the individual lagged terms with the ECM_{t-1}. If, when the equation is re-estimated at the SIC-minimized lags, if the coefficient on the ECM_{t-1} is negative and significant, we can say that there is a long-run relationship among the variables. If cointegration is established, we can form long-run coefficient estimates from Equation (1) by normalizing the estimates for λ_2, λ_3, λ_4, λ_5, on the estimate for λ_1. In the third step, once cointegration is established, the conditional ARDL (k_1, k_2, k_3, k_4, k_5) long-run model for the

dependent variable(s) can be estimated. This involves employing the optimal lag orders of the ARDL (k_1, k_2, k_3, k_4, k_5) model in the five variables using Schwarz Information Criteria (SIC). In the fourth and final step, we obtain the short-run dynamic parameters by estimating an error correction model associated with the long-run estimated (ECM_{t-1}). Then we test for stability; CUSUM and CUSUMSQ.

The Results

The calculated F-statistics is computed for the joint significance of variables with λs signs in the above equation. When one lag is imposed, there is a strong evidence of existence of cointegration among the variables. The F-value, expressed as $F_{SAV/GDP}$ (LSAV/GDP| LRGDP, LCrPVT/GDP, RINTr, FinLB) is 5.2025 given the optimal lag combination of the ARDL (1, 1, 0, 1, 1), is higher than the upper bound critical Value 4.01 at 5% significance level (see table 2 in appendix), Thus the existence of a co-integrating long-run relationship among the variables.

Long-run Parameter Estimates and Tests for Model 10. (1, 1, 0, 1, 1)

This is long run model 10: OLS, using observations 1970-2009 (T = 40)

Dependent variable: LSAVGDP

	Coefficient	*Std. Error*	*t-ratio*	*p-value*	
Const	-0.203992	0.293521	-0.6950	0.49165	
LGdp	0.0173049	0.038712	0.4470	0.65762	
LCrpvt/Gdp	0.923443	0.0964826	9.5711	$2.64e^{-011}$	***
RINTr	-0.00459464	0.00213909	-2.1479	0.03872	**
FinLB	-0.0554189	0.0183448	-3.0210	0.00469	***

Note: ***, ** and * Indicates significant at 1%, 5% and 10% respectively.

R-squared	**0.8572**		**Adjusted R-squared**	**0.8409**
Durbin's h	**1.0939**		P-value(F)	$2.57e^{-14}$
Schwarz criterion	**-19.8618**		Hannan-Quinn	-25.25294

Short-run Parameter Estimates and Tests for Model 10. (1, 1, 0, 1, 1)

This is short-run model 10: OLS, using observations 1972-2009 (T = 38)

Dependent variable: ΔLSavGdp

	Coefficient	*Std. Error*	*t-ratio*	*p-value*	
Const	-0.0137	0.02338	-0.5899	0.5600	
$\Delta LSavGdp_{t-1}$	0.1982	0.1088	1.8215	0.0792	*
$\Delta LGdp_{t}$	0.03268	0.0549	0.5950	0.5566	
$\Delta LGdp_{t-1}$	-0.0110	0.05578	-0.1977	0.8447	
$\Delta LCrpvtGdp_{t}$	0.6974	0.1070	6.5196	<0.00001	***
$\Delta RINTr_{t}$	-0.0011	0.0017	-0.6207	0.5398	
$\Delta RINTr_{t-1}$	-0.0012	0.0014	-0.8613	0.3964	
$\Delta FinLB_{t}$	-0.0169	0.0282	-0.6001	0.5532	
$\Delta FinLB_{t-1}$	0.08966	0.0265	3.3858	0.0021	***
$ECML_{t-1}$	-0.4973	0.1253	-3.9690	0.0005	***

Note: ***, ** and * Indicates significant at 1%, 5% and 10% respectively.

R-squared	0.7845		Adjusted R-squared	0.7152
F(9, 28)	11.3252		P-value(F)	$3.14e^{-07}$

Author's Analysis.

Extracted Results for Long and Short Run ARDL Equations (11-13)

Table A:

Long Run Effects: Regressors							
	LGdp	**LSavGdp**	**LCrpvt/Gdp**	**RINTr**	**FinLB**	**R^2**	**DW**
Equation11: LCrpvt/Gdp	0.0656*	0.7835***	-	0.0057***	+ve Insignificant	0.89	1.52
Equation12: LGDP	-	+ve Insignificant	1.4061*	-ve Insignificant	-0.0675**	0.81	1.84
Equation 13: RINTr	-ve Insignificant	-25.3482***	37.1321***	-	-ve Insignificant	0.27	1.93

Note: ***, **,*Indicates critical values; 1%, 5%, and 10% respectively.

F-Test Values for H_0 or H_1:

Equation 11: The $F_{Crpvt/Gdp}$ (LCrpvt/Gdp| LSavGdp, LGDP, RINTr, FinLB) = 4.43382 for ARDL (1, 0, 0, 0, 1) > 4.01 @ 5%

Equation 12: The F_{Gdp} (LGDP | LSav/Gdp, LCrpvt/Gdp, RINTr, FinLB) = 4.19436 for ARDL (3, 2, 2, 1, 0) > 4.01 @ 5%

Equation 13: The F_{RINTr} (RINTr | LSavGdp, LGDP, LCrpvt/Gdp, FinLB) = 6.14291 for ARDL (3, 2, 0, 0, 1) > 4.01 @ 5%

Table B:

Short Run ARDL Effects: Regressors (and Relevant Lag)									
	$\Delta LGDP_t$	**$\Delta LSavGdp_t$**	**$\Delta LCrpvt/Gdp_t$**	**$\Delta RINTr_t$**	**$\Delta FinLB_t$**	**ECM**	**R^2**	**Adj R^2**	**Lag of Dependent Variable**
Equation11: $\Delta LCrpvt/Gdp_t$	Insignificant	0.7611***	-	0.0054***	Lag (1) = - 0.0691**	-0.6038***	0.78	0.73	Lag one significant and Positive (0.2021)
Equation12: $\Delta LGDP_t$	-	0.8517*	Lag (2) = -1.0024**	Insignificant	Insignificant	-0.4866***	0.45	0.12	Insignificant
Equation 13: $\Delta RINTr_t$	Insignificant	Insignificant	Insignificant	-	-0.108**	-0.765***	0.77	0.67	Lag one significant and negative (-0.2826)

Note: ***, **,*Indicates critical values; 1%, 5%, and 10% respectively.

Source: Authors' Estimation.

{See CUSUM and CUSUMSQ stability test in appendix}

Discussion and Conclusion

The Autoregressive Distributed Lagged (ARDL) analysis and the McKinnon Complimentary Hypothesis (a dual model of the demand for Real money balance and investment model), were used to analyze how financial deregulation relates to savings, credit to private sector and economic growth in the long and short run. The results reveal that:

- In both the long run and the short run, financial deregulation had no significant impact on the real interest rate, and if any, its effect suggest a negative effect on the real interest rate and therefore not in conformity with the McKinnon-Shaw hypothesis, that suggest that financial deregulation of the financial system enhances competition in the system and therein causes interest rate to be positive.
- With respect to total domestic financial savings, immediate past financial deregulation (that is financial deregulation lag one) displayed a minimal positive effect, though significant, this effect was not long lived as it turns to a significant negative effect in the long run. A similar fashion is observed in the credit to the private sector (significantly negative effect in the short run and insignificant in the long run) and the Gross Domestic Product (GDP) (its effect is significantly positive to the immediate past reform in the short run and insignificant in the long run). The trend in shifting effects (in the short run to long run) is attributed majorly to inconsistency or (lack of continuity) in the implementation of financial deregulation reforms and the unhealthy state of the financial sector.
- Just like the financial deregulation effect, real interest rate acted as predicted when its response to reform is negative and insignificant. Firstly, insignificant in the short run and significantly negative in the long run when in respect to domestic financial savings. As for the Credit to Private Sector, it showed positive effects which where however relatively too small in both long and short run. On the Gross Domestic Product, real interest rate is insignificantly negative in both short and long run.
- On the link between the variables, financial deregulation did not bring about positive real interest rate which is supposed to encourage savings. Therefore we conclude that interest on deposit has not been the major determining or encouraging factor that propelled depositor to save or increase savings, (but rather the lack of investment alternatives outside financial assets). However, increases in current savings in the short and long run, increased the credit to private sector, which in turn does not translate to economic growth in immediate short run, but significantly positive in the long run, especially when the immediate lag is considered.

A battery of explanations has been advanced for the obvious failure of financial deregulation programmes to address the problems of Nigeria's financial system. The recurrent rationalization is the incompleteness of the reform and lack of competition in the financial sector especially at commercial banking level. Hence, the recommendation of a stable macro economy, commitment in financial deregulation policy implementation and central bank involvement in commercial banking to operate at low interest level, thereby inducing competition.

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Appendix

Table 1: Financial Deregulation Index: Deregulation Variables and Years

Year	BPDR	IRL	PRIDC	DSCA	FEB-DBL	EXCL-DFEM	CAPML-EDH	**Degree Of Deregulation**
1970	0	0	0	0	0	0	0	**0**
1971	0	0	0	0	0	0	0	**0**
1972	0	0	0	0	0	0	0	**0**
1973	0	0	0	0	0	0	0	**0**
1974	0	0	0	0	0	0	0	**0**
1975	0	0	0	0	0	0	0	**0**
1976	0	0	0	0	0	0	0	**0**
1977	0	0	0	0	0	0	0	**0**
1978	0	0	0	0	0	0	0	**0**
1979	0	0	0	0	0	0	0	**0**
1980	0	0	0	0	0	0	0	**0**
1981	0	0	0	0	0	0	0	**0**
1982	0	0	0	0	0	0	0	**0**
1983	0	0	0	0	0	0	0	**0**
1984	0	0	0	0	0	0	0	**0**
1985	0	0	0	0	0	0	0	**0**

1986	0	0	0	0	0	1	0	**1**
1987	**0**	**1**	**0**	**0**	**1**	**1**	**0**	**3**
1988	0	1	0	0	1	1	0	**3**
1989	0	1	0	0	1	1	0	**3**
1990	1	1	0	0	1	1	0	**4**
1991	1	0	0	0	0	1	0	**2**
1992	1	1	0	1	0	1	1	**5**
1993	1	1	1	1	0	1	1	**6**
1994	1	0	1	1	0	0	1	**4**
1995	1	0	1	1	0	1	1	**5**
1996	1	0	1	1	0	1	1	**5**
1997	1	0	1	1	0	1	1	**5**
1998	1	0	1	1	0	1	1	**5**
1999	1	0	1	1	0	1	1	**5**
2000	1	0	1	1	0	1	1	**5**
2001	1	0	1	1	0	1	1	**5**
2002	1	0	1	1	0	1	1	**5**
2003	1	0	1	1	0	1	1	**5**
2004	1	0	1	1	0	1	1	**5**
2005	1	0	1	1	0	1	1	**5**
2006	1	1	1	1	0	1	1	**6**
2007	1	1	1	1	0	1	1	**6**
2008	1	1	1	1	0	1	1	**6**
2009	1	1	1	1	0	1	1	**6**

Note: The table shows a summary of financial deregulation policy index edged from the idea of the principal component analysis. Each cell gives the presence or absence of deregulation in that variable. 0 indicating no deregulation and 1 indicating deregulation. The last column is the summation of the total presence of deregulation among the seven variables; the study uses this as a proxy to measure the degree of financial deregulation.

BPDR= Bank Privatization/Denationalization and Restructuring. **IRL=** Interest Rate Deregulation/Deregulation. **PRIDC**= Prudential Regulation and Introduction of Indirect Policy Controls. **DSCA**= Direct/Selective Credit Abolition. **FEB-DBL**= Free Entry into

Bank-Deregulation of Bank Licensing. **EXCL-DFEM**= Exchange Rate Deregulation-Deregulation of Foreign Exchange Market (introduction of autonomous exchange market and bureaux de change). **CAPML-EDH=** Capital Market Deregulation- Establishment of Discount Houses.

Table 2: DF-GLS Unit Root Test (Optimal Lag Length Selection: SIC)

Variables	At Level (with intercept, no trend)				
	Lag Length	DF-GLS t-statistic	1%	5%	10%
L(SAV/GDP)	1	-1.059173	-2.627238	-1.949856	-1.611469
L(CrPVT/GDP)	0	0.628132	-2.625606	-1.949609	-1.611593
LGDP	0	2.25067	-2.625606	-1.949609	-1.611593
RINTr	0	-3.809840***	-2.625606	-1.949609	-1.611593
FinLB	0	-0.502907	-2.625606	-1.949609	-1.611593
Variables	At First Difference (with intercept, no trend)				
	Lag length	DF-GLS t-statistics	1%	5%	10%	Order Of Integration
L(SAV/GDP)	0	-3.956053***	-2.627238	-1.949856	-1.611469	I(1)
L(CrPVT/GDP)	0	-4.258340***	-2.627238	-1.949856	-1.611459	I(1)
LGDP	0	-5.358386***	-2.627238	-1.949856	-1.611469	I(1)
RINTr	3	-1.253165***	-2.632688	-1.950687	-1.611059	I(0) and I(1)
FinLB	1	-6.613282***	-2.628961	-1.950117	-1.611339	I(1)

*Source: Author's Computation. Note: ***, **,*Indicates critical values; 1%, 5%, and 10% respectively.*

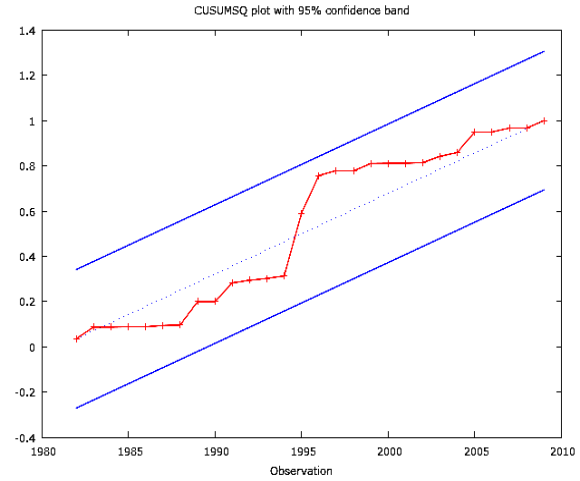
Table 3: Extracted from Pesaran et al (2010), Case III: Unrestricted Intercept, With No Trend

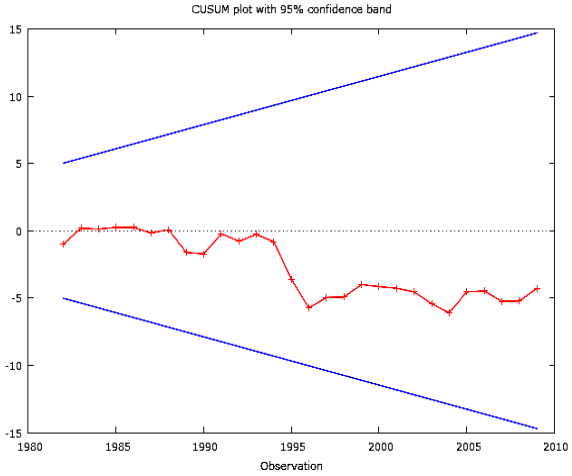
	0.100 (10%)		**0.050 (5%)**		**0.025 (2.5%)**		**0.010 (1%)**	
K	**I(0)**	**I(1)**	**I(0)**	**I(1)**	**I(0)**	**I(1)**	**I(0)**	**I(1)**
3	2.72	3.77	3.23	4.35	3.69	4.89	4.29	5.61
4	2.45	3.52	2.86	4.01	3.25	4.49	3.74	5.06
5	2.26	3.35	2.62	3.79	2.96	4.18	3.41	4.68
6	2.12	3.23	2.45	3.61	2.75	3.99	3.51	4.43

Notes: Asymptotic critical value bounds are obtained from Table CI (iii) case III: unrestricted intercept and no trend for k = 4 (Pesaran et al, 2001).

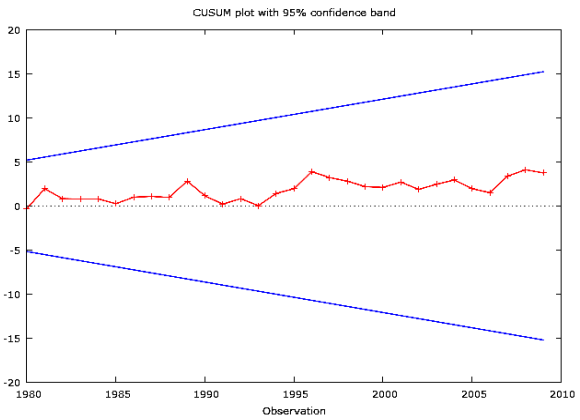
Cusum And Cusumsq Test For Stability

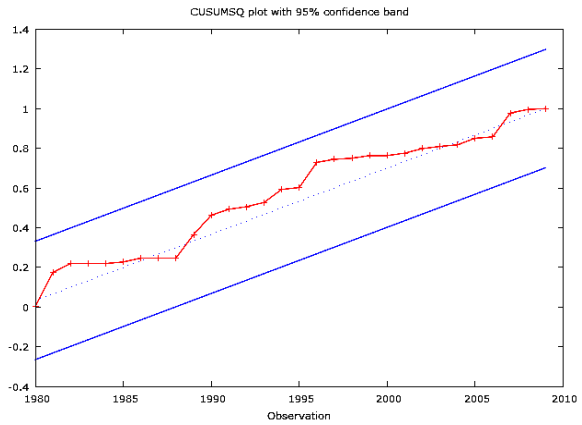
For Equation 10:



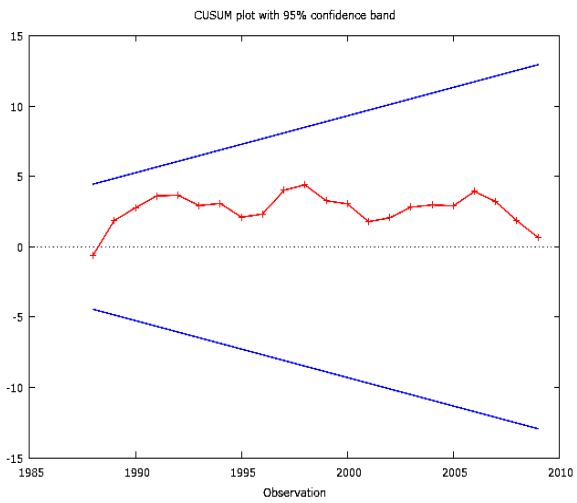


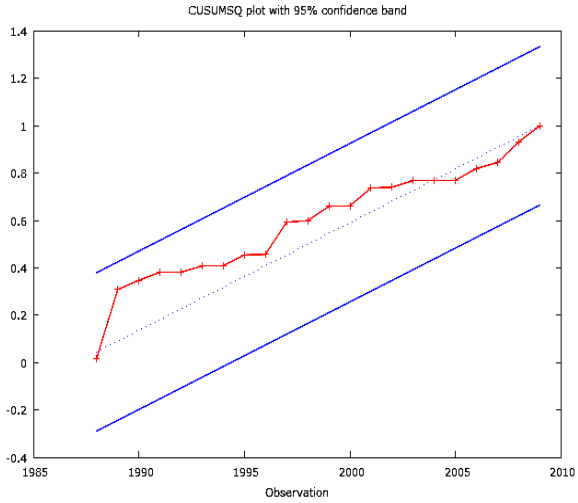
For Equation 11:





For Equation 12:





For Equation 13: