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Fiscal Performance, Liberalization and External Debt in Ghana –
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Fiscal Performance, Liberalization and External Debt in Ghana

William Gabriel Brafu-Insaidoo[1*]

Abstract

This study investigates the effects of fiscal performance, overseas borrowing regulations and political institution on Ghana's external debt stock. The main working hypotheses tested in this study are as follows: First, fiscal deterioration causes an increase in a country's external debt stock. Second, liberalization of foreign borrowing regulations leads to an increase in external debt stock. Third, institutionalized democracy contributes significantly to external debt accumulation in developing countries. To achieve the stated objectives, an autoregressive distributed lag model has been used to analyze the secondary data obtained from the Ministry of Finance and Economic Planning and World Development Indicator database. It is established that fiscal deterioration contributes significantly to the build-up of Ghana's external debt stock. However, the study does not support the hypothesis that liberalization of external borrowing regulations causes an increase in the external debt stock. Similarly, the analysis fails to confirm the hypothesis that institutionalized democracy leads to external debt accumulation.

Keywords: liberalization, external debt, fiscal performance

JEL classification: F2, F3, F20, F21, F32, F34

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1 – Introduction

The rapid rise in the level of Ghana's external debt stock over the past three decades have raised concerns about the detrimental effect of the observed and attracted the attention of policymakers, researchers and academics interested in the country's international finance. The growth of the country's external debt stock increased from an average of 10.4 percent between 1970 and 1980 to about 22 percent between 2010 and 2014. When expressed as a percent of GDP, Ghana's external debt stock increased from 26 percent in 1970 to an all-time high of 126 percent in 2000. In spite of the decline to eighteen percent in 2006, the external debt stock has risen to thirty-seven percent in 2014. The rapid accumulation of external debt has implications for the economy. First, it has the tendency of increasing risks related to debt accumulation which could become unsustainable in the very long run and increase the possibility of plunging the economy into another debt crisis. The ultimate outcome may possibly be that the country may no longer be credit worthy.

Aside the rising trend, the country's debt stock has fluctuated significantly (as the data quoted above suggests) overtime which begs the question of factors that may have brought about the observed changes in the stock. Hence, a study that investigates the causes of changes in Ghana's external debt stock offers essential information to the country's policymakers on the most effective ways to reduce the level of, and fluctuations in, the country's external debt stock. The dynamics of the country's external debt stock have been closely linked to the dynamics of her fiscal performance, her regulations on international capital movements, particularly regulations on overseas borrowing and type of political institution. The contribution of fiscal performance to the accumulation of external debt stock in a country has also been explained in the extended version of the two-gap models pioneered by Chenery and Strout (1966) and the tax smoothing and tilting models. These models suggest that by operating budget deficits, governments normally contribute significantly to the accumulation of the external debt in their countries by borrowing from overseas to finance existing fiscal deficits. Also, the easing of restrictions on foreign borrowing is normally expected to directly increase the volume of international loans inflow and lead to the accumulation of the debt stock [Akita et al. (2000); Kose and Prasad (2010); and Qian and Steiner (2015)]. On the empirical front however, the impact of liberalization of overseas borrowing regulations on external debt stock is ambiguous and may also depend on a number of conditions including the type

of liberalization or nature of regulations that existed before the liberalization, the adequacy of information available to creditors and borrowers and the attitude of lenders towards risks [Schmukler and Vesperoni (2006)]. In addition, the impact of political institution on the external debt stock of a country has been explained by the strategic debt accumulation model which explains that democratically elected governments contribute significantly to a rise in the external debt stock of a country because they borrow more to overspend for strategic reasons than do autocratic regimes [Alesina and Perotti (1995); Easterly (2002)].

Most of the identified empirical studies are panel and cross-country studies using different analytical approaches and covering different number of countries which account for the differences in factors identified as important determinants of external debt stock. Studies on causes of changes in Ghana's external debt stock are yet to be identified. This study fills the research gap by investigating the long-and-short-run determinants of Ghana's external debt. It focuses on examining the effects of fiscal performance, changes in overseas borrowing regulations and political institution on Ghana's external debt stock. The contributions of other important domestic macroeconomic and financial conditions to the dynamics of a country's external debt stock that have been mentioned in the international financed literature have also been analyzed. The key potential factors considered in the analysis are international trade openness, domestic financial depth and per capita income growth.

In line with the focus of the study, the main working hypotheses tested in this study are as follows: First, deterioration in the fiscal balance (or recording of fiscal deficits) is a major cause of an increase in a country's external debt stock. Second, liberalization of regulations on foreign borrowing leads to an increase in external debt stock. Third, institutionalized democracy contributes significantly to the accumulation of external debt stock of developing countries. An autoregressive Distributed lag model approach has been used to achieve the objectives of the study.

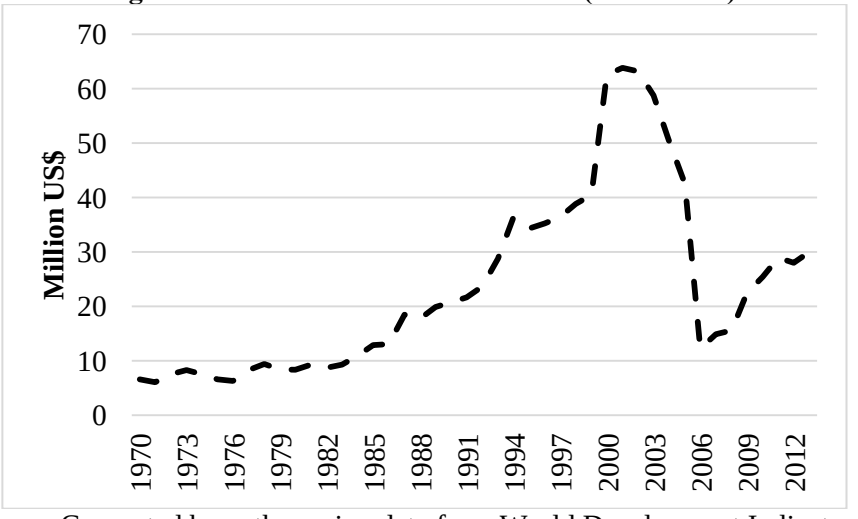
1.1 Stylized facts about the Ghanaian economy

This section takes a cursory look at trends and patterns in the dynamics of external debt stock and the key potential determinants of interest, namely fiscal performance, changes to overseas borrowing regulations and political institution.

1.2 Trends in Ghana's foreign debt stock

Figure 1 shows that the country's external debt stock increased from US$ 6.6 million in 1970 to US$ 63.9 million in 2001, and although declined to US$ 12.2 million in 2006, it has increased steadily to US$ 30.01 million in 2013 [sourced from World Development Indicator (2015)].

Figure 1: Ghana's external debt stock (real values)[2]



Source: Computed by author using data from World Development Indicator

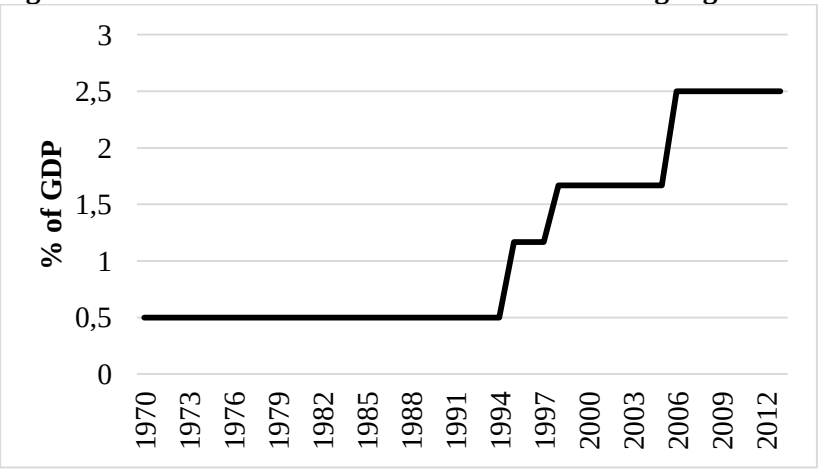
The abrupt decline in the debt stock in 2005 and 2006 can be explained by the full debt relief and forgiveness granted to Ghana under the international debt relief initiatives by the World Bank's International Development Agency (IDA), the International Monetary Fund (IMF), and African Development Bank. The first was the Enhanced Highly-Indebted Poor Countries (HIPC) Initiative in 2002 and the Multilateral Debt Relief Initiative (MDRI) in 2006 [International Monetary Fund (2013)].

Figure 2 also shows trends in the partial liberalization of overseas borrowing of the country which started in 1994 (see Appendix Table A4 for details on chronology). Figure 2 shows an increase in intensity of

[2] Real stock of external debt is computed by deflating nominal values with GDP deflator index (2000=100; US$ series

liberalization of external borrowing regulations overtime since 1994. The liberalization of regulations on overseas borrowing is an integral part of the process of liberalizing the external capital account transactions in Ghana. The liberalization process of the capital account transactions started in the 1990s.

Figure 2: Liberalization index for external borrowing regulations



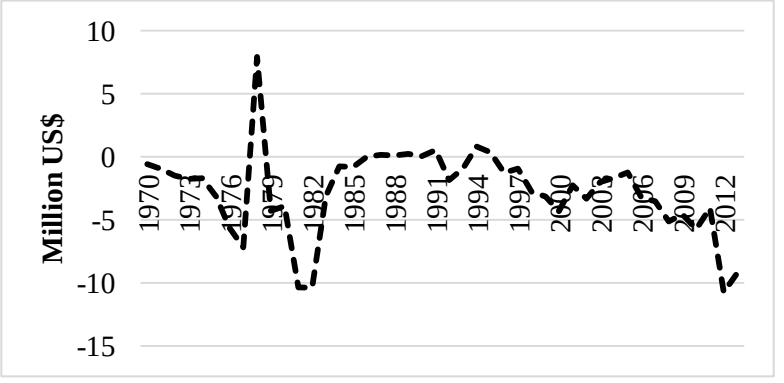
Source: Computed by author using data from World Development Indicator

As part of the process of liberalizing overseas borrowing regulations, non-residents had the option to purchase corporate bonds and shares in the Ghana Stock Exchange but only up to a maximum of 10% of any one share or bond. The aggregate of non-residents' total holdings in any one company was not to exceed 74%. They were however, prohibited from purchasing government securities. Also, foreign residents holding domestic currencies had the freedom to invest in the local money market instruments with maturity of not less than three years [Ishii and Habermeier (2002)]. The second phase of the liberalization included the passing of the new Foreign Exchange Act of 2006 in December of 2006. Under this act, non-residents are now permitted to buy government securities for the first time. Restrictions on the issuance and transfer of securities as well as loans contracted between residents and non-residents have been relaxed [International Monetary Fund (2008)]. In addition, loans contracted by residents no longer require Bank of Ghana's approval and foreign residents are now allowed to invest in money market instruments. Liberalization of foreign borrowing also covered commercial and financial credits and overseas borrowing by commercial banks and other

institutions. However, due to concerns for vulnerability to shocks, foreign residents' purchases are limited to securities with minimum maturity of three years and a minimum holding period of one year. Foreign residents are also prohibited from investing in the short-term money market instruments with a maturity of less than three years (see Appendix, Table A4).

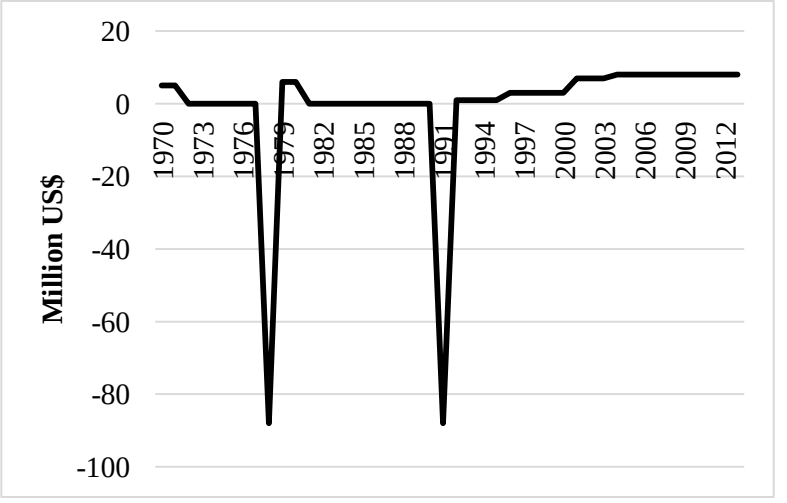
Figure 3 shows Ghana's fiscal performance since 1970 and the extent to which democracy has been institutionalized in the country. Figure 3 shows that, with the exceptions of the period from 1986 to 1991 and the period from 1994 to 1995, the government budget has been in persistent deficits with notable deterioration in the fiscal balance between 2006 and 2013. In particular, the country has experienced persistent fiscal deficits since 1994, the same period as the country was ushered into a democratic dispensation with political pluralism and has remained so since (see Figures 3 and 4).

Figure 3: Trends in real fiscal balance



Source: Computed by author using data from World Development Indicator

Figure 4: Institutionalized democracy index



Source: Computed by author using data from World Development Indicator

The observed trend appears to confirm the political economy theories that state that democratically elected regimes borrow more to finance current excessive spending as a way to constrain future spending by the next government. After alternating periods of constitutional and autocratic regimes, Ghana has since 1992 had democratically elected governments which also coincides with the experience of persistent fiscal deficits (see Figures 3 and 4).

2 - Theoretical consideration

In this section, the theoretical underpinnings of the mentioned key potential determinants (drivers) of external debt stock are discussed. The study focuses on the effects of fiscal performance, liberalization of overseas borrowing regulations and political institution on external debt stock with emphasis on the Ghanaian economy. From a survey of existing theoretical and empirical literature, the following are the broad working hypotheses: (a) Deterioration in the fiscal balance (or recording of fiscal deficits) is a major cause of an increase in a country's external debt stock; (b) Liberalization of

external borrowing regulations leads to an increase in the external debt stock; (c) Institutionalized democracy contributes significantly to the accumulation of external debt stock of developing countries.

The theoretical explanations consistent with the stated working hypotheses are presented following.

Hypothesis 1: *Deterioration in the fiscal balance (or recording of fiscal deficits) is a major cause of an increase in a country's external debt stock*

Explanation of the contribution of fiscal account balance to external debt for a given country is derived from the gap models, pioneered by Chenery and Strout (1966), and which includes the fiscal constraint gap. The gap models suggest that one way by which Government finances her fiscal deficits is by borrowing from external sources. Fiscal deficits can also be financed by printing money, running down of international reserves and borrowing domestically. However, if alternative sources of financing fiscal deficits (i.e. printing money, running down of international reserves and domestic borrowing) are held constant, the current period's external debt will be used to finance the current fiscal/budget deficit and to service previous period's debt (principal plus interest payable on the principal). Consequently, the running of fiscal deficits contributes to the accumulation of external debt [Bacha (1990)]. This expression can be represented as follows:

$$Debt_t = R_t - G_t + (1 + ir)Debt_{t-1}$$

Where: $Debt_t$ denotes external debt in the current period, R_t denotes government receipts (tax receipts, non-tax revenues and grants), G_t denotes government expenditure (net of debt servicing), ir denotes rate of interest, and $Debt_{t-1}$ denotes current period's debt stock.

Another model used in explaining the relationship between fiscal deficits and external debt is the tax smoothing model which suggests that government should either borrow or lend to smooth the path of its consumption expenditures under conditions that changes in future tax income can be predicted. Government's choice of a tax rate is subject to an inter-temporal budget constraint which necessitates that all present and future government expenditures and the initial levels of public debt should be

sufficiently covered by the present value of tax receipts [Cashin et al. (1999)]. The understanding is that government should borrow to finance temporary shocks (unanticipated increases in her expenditures) and raise tax in future to finance permanent shocks (including increased levels of public debt). Alternatively, government may engage in tax tilting which implies that if her discount rate is less than the effective interest rate, she would be motivated to shift taxes into the future by operating budget deficits, increasing the current level of borrowing and eventually raising taxes overtime. The implication is that government would choose a lower tax rate (and higher deficits) in the present period, and increase taxes (reduce budget deficits) overtime to enable her service her accumulating debt stock through time.

Hypothesis 2: *Liberalizing external borrowing regulations leads to an increase in the external debt stock*

There are basically two types of capital accounts regulations (or restrictions). These are direct "administrative" controls and indirect "market-based" restrictions. Direct restrictions usually entail either outright prohibitions and explicit quantitative limits on or an approval procedure for international capital transactions. Direct restrictions normally seek to directly influence the volume of the appropriate cross-border financial transactions. One of the notable features of direct regulations is the imposition of administrative responsibilities on the banking system to regulate capital flows.

Indirect measures, on the other hand, seek to discourage specific capital flows by raising their transaction costs and may assume different forms; consisting of either explicit or implicit taxation of cross-border capital accounts transactions and multiple exchange rate systems. Indirect "market-based" measures tend to influence the price or both the price and the volume of a given capital transaction, depending on the specific type of market-based regulations in force. In dual or multiple exchange rate systems, different exchange rates apply to different types of transactions. Explicit taxation of cross border flows involves imposition of taxes or levies on external financial transactions, thus limiting their attractiveness, or income resulting from the holding by residents of foreign financial assets or the holding by non-residents of domestic financial assets thereby discouraging such investments by reducing their rate of return or raising their cost. Tax rates can be differentiated to discourage certain transaction types or maturities [Akita et al. (2000)].

Indirect taxation of cross-border flows, in the form of non-interest bearing compulsory reserve/ is one of the most frequently used market-based controls. Under this scheme, a proportion of the inflows or net positions in foreign currency held by banks and non-banks are to be deposited with the central bank at zero interest. The amount to be deposited with the central bank could be in the form of domestic or foreign currency equivalent to the proportion of the inflows required to be deposited. Such a scheme limits capital inflows by reducing their effective return, and they may be differentiated to discourage particular types of transactions. Other indirect regulatory controls bear the features of both price- and quantity-based measures and involve discrimination between different types of transactions or investors. Such controls include certain rating requirements to borrow abroad and reporting requirements for specific transactions [Akita et al. (2000); Kose and Prasad (2010)].

However, the effectiveness of capital accounts regulations depends on the incentives for circumvention relative to the costs of the evasion. If the regulatory restrictions on cross-border financial transactions create a significant wedge between interest rates in the domestic market and interest rates in the international market, the incentive for circumvention will increase and may reduce the effectiveness of the regulations.

In Ghana, the liberalization of direct restrictions on foreign borrowing by residents and non-residents' purchase and holdings of government securities and money market instruments have been selective or discriminatory in nature. Regulatory restrictions on long term foreign debt inflows have been liberalized whilst some form of direct quantitative restrictions on short-term foreign debt inflows have been maintained. Since long term debt constitutes a larger proportion of the total external debt stock in Ghana, liberalization of cross-border financial transactions of the type implemented in Ghana is expected to increase the external debt stock of the country [Kose and Prasad (2010)].

Hypothesis 3: *Institutionalized democracy contributes more significantly to the accumulation of external debt stock of developing countries*

Explanation of the relationship between political institution and external debt is also derived from political economy theories such as strategic debt accumulation which states that democratically elected governments

borrow more for strategic reasons, particularly when the next election is drawing closer. Strategic accumulation of debt has the tendency of producing high fiscal deficits. If current policy makers disagree with the views of future policy makers concerning a future policy option, they may accumulate debt by excessively borrowing and overspend today in order to constrain future spending by the next government. Current policy makers may borrow to overspend today if they believe that high levels of public debt today can reduce future government spending [Alesina and Perotti (1995)]. Another explanation provided in literature, such as Easterly (2002), is that democratically elected governments borrow to fortify their leadership position against future elections. Hence, most of theory suggests that democratic regimes accumulate more external debt compared to autocratic regimes. The only exception is the study by Oatley (2010) who counter argues that this cannot apply to two-thirds of developing country governments who never became heavily indebted. He states that incentives to borrow may vary according to differences in type of political institution and that democracy usually allows society to impose restrictions on the behavior of governments whilst autocracy constrain public participation in politics.

2.1 Other potential determinants

Other factors mentioned in the international finance literature as potential causes of changes in the level and maturity of a country's external debt stock are external trade openness of the country, domestic financial depth, income growth of the country and interest rate differentials. The effects of a country's openness to international trade and the depth of her domestic financial system on the level and maturity of her external debt stock are ambiguous. Although increased trade activities are normally associated with increased short term foreign debt due to the short term nature of trade finance, increased trade earnings could reduce the exporting country's overall debt stock due to her improved debt servicing capacity. Hence the relationship between trade openness and the level and maturity of a country's external debt stock is ambiguous [Zafar and Butt (2008); Tambunan and Kadin (2006); Buch and Lusinyan (2003)]. Also, domestic financial deepening may contribute to a rise in the stock of both short- and long-term debt because it is associated with increased financial sophistication and better institutions which in turn increase the demand and supply for maturity-transformation services. Additionally, increased domestic financial depth may simply be a reflection of an increase in the volume of trade (in financial assets) and financial

institutions that deal mainly with short term assets in the domestic financial market thereby leading to more short term borrowing from overseas. However, where domestic agents perceive domestic debt as substitute for external debt, domestic financial deepening could lead to reduction in external debt. [Buch and Lusinyan (2003); Schmukler and Vesperoni (2006)]. Furthermore, literature explains that slow growth rates causes high external debts, but the impact of high growth rates on the level of debt stock of a country is indeterminate. Additionally, increased output growth rates may provide a signal to resident institutions about possible future growth opportunities and may consequently decide to take advantage of such opportunities by embarking on short term borrowing to steer clear of passing the proceeds of future projects to bondholders [Iyoha (2001); Mama (2007)]. Lastly, the disparity between domestic interest rate and the international rate is also mentioned in the literature as one of the causes of changes in a country's short term foreign debt stock. Domestic interest rates in small open economies are usually higher than international rates due to uncertainties and country risk factors in the domestic economy, leading to an increase in external debt [Makin (2004)]. Changes to the composition of external debt maturity in favor of short term debt could also be explained by the higher risk premium charged on long term debt [Broner et al. (2013 & 2004)].

3 - The model

Functional form specification, variable definitions and measurements

A functional form specification drawn from the theoretical discussions is presented as follows.

$$Debt_t^t = f(lib_t, rfisb_t, dem_t, qpcg_t, m2q_t, tq_t) \qquad (1)$$

where:

$Debt_t^t$= logarithm of the real stock of total foreign debt (measured in US$ million). Real stock of foreign debt is calculated by deflating the nominal values with GDP deflator index (2000=100; US$ series).

lib_t = an index for intensity of restrictions on overseas borrowing is used as a proxy measure of external financial liberalization. The value ranges from '0' to '4'; with '0' denoting outright prohibition, '1' representing existence of

quantitative restrictions and requirement of official approval from relevant authority, '2' signifying the elimination of some quantitative restrictions but the requirement of official approval is maintained, '3' indicating no requirement of official approval but authorities must be notified and some quantitative restrictions are maintained, and '4' representing no requirement of official approval and no quantitative restrictions apply (see Appendix, Table A2 for information on chronology). The expected sign of its estimated coefficient is negative.

$rfisb_t$ = broad fiscal balance (in US$ million, deflated by GDP deflator index 2000=100; US$ series)

dem_t= institutionalized democracy index (an additive eleven-point scale measure constructed by the World Bank and obtainable from the World Development Indicator database)

$Qpcg_t$ = GDP per capita growth (%)

$m2q_t$= domestic financial sector development / depth measured as broad money supply expressed as a share of GDP

tq_t= international trade openness, measured as the sum of imports and exports expressed as a share of GDP.

The subscript 't' = 1,2, …….T, where T = 44 years, spanning the sample period 1970 to 2013. The autoregressive distributed lag model approach was used to estimate and analyze empirical versions of specification (1).

3.1 Autoregressive distributed lag (ARDL) model specification

The use of the autoregressive distributed lag (ARDL) model has several small sample econometric advantages over other techniques. One of the key advantages is that the bounds testing procedure does not require the pre-testing of the variables to establish their order of integration. It is applicable and relevant irrespective of whether the series are integrated of order one (that is I(1)), of order zero (that is I(1)) or mutually cointegrated. A second advantage is that it produces more efficient and robust estimation results for small or finite sample data sizes. Another advantage with the use of

the ARDL approach is that the long-run coefficients from the ARDL approach are very consistent. The ARDL approach facilitates simultaneous testing for both short- and long-run relationships.

Following Pesaran et al. (2001), the bounds testing procedure was conducted by re-specifying (1) as follows:

$$\Delta Debt_t^t = \alpha_0 + c_1 Debt_{t-1}^t + c_2 lib_t + c_3 dem_t + c_4 rfisb_{t-1} + c_5 qpcg_{t-1} + c_6 m2q_{t-1} + c_7 tq_{t-1} + \sum_{i=1}^{q} \delta_i \Delta Debt_{t-i}^t + \sum_{i=1}^{q} \eta_i \Delta rfisb_{t-i} + \sum_{i=1}^{q} \theta_i \Delta qpcg_{t-i} + \sum_{i=1}^{q} \Psi_i \Delta m2q_{t-i} + \sum_{i=1}^{q} g_i \Delta tq_{t-i} + u_t \quad (2)$$

The notation Δ denotes the first difference of the variable. Prior to the testing for the existence of a long-run relationship, the unit root test of the series was conducted to determine if they are integrated of order zero or one. The unit root test results indicated that some of the series are I(0) (that is integrated of order zero) whilst other series are I(1) (that is integrated of order one). Detailed results of the unit root tests are presented in Table 1. Consequently, we proceeded to conduct the ARDL bounds testing for the existence of a long-run relationship among the series. The first stage of the bounds testing procedure involved testing for the existence of a long-run relationship in equation (2) using the ordinary least squares (OLS) taking into consideration the optimum-lag-length order of each short-run variable. Given the existence of a long-run relationship, the following conditional ARDL long-run model is estimated using OLS.

$$Debt_t = \alpha_0 + \sum_{i=1}^{p} c_1 Debt_{t-i} + c_2 lib_t + c_3 dem_t + \sum_{i=0}^{q1} c_4 rfisb_{t-i} + \sum_{i=0}^{q2} c_5 qpcg_{t-i} + \sum_{i=0}^{q3} c_6 m2q_{t-i} + \sum_{i=0}^{q4} c_7 tq_{t-i} + u_t \quad (3)$$

Where, all variables are as previously defined. This involved selecting the orders of the ARDL (p, $q1$, $q2$, $q3$, $q4$) model in the six variables using the Akaike information criteria (AIC) and Schwartz-Bayesian criterion.

The third stage involved estimating an error correction model associated with the long-run estimates and based on identification of the optimum lag length of each variable. The estimated error correction model (ECM) is as follows:

$$\Delta Debt_t^t = v + \sum_{i=1}^{q} \delta_i \Delta Debt_{t-i}^t + b_1 lib_t + b_2 dem_t + \sum_{i=1}^{q} \eta_i \Delta rfisb_{t-i} + \sum_{i=1}^{q} \vartheta_i \Delta Qpcg_{t-i} + \sum_{i=1}^{q} \Psi_i \Delta m2q_{t-i} + \sum_{i=1}^{q} g_i \Delta tq_{t-i} + \lambda ecm_{t-1} + u_t \quad (4)$$

Here v is the unrestricted intercept; δ, θ, η, ϑ, Ψ and g are the short-run dynamic coefficients, and λ is the speed of adjustment towards the equilibrium.

The static long-run equations estimated are as follows:

$$Debt_t^t = \beta_0 + \beta_1 lib_t + \beta_2 rfisb_t + \beta_3 dem_t + \beta_4 qpcg_t + \beta_5 m2q_t + \beta_6 tq_t + u_t \quad (5)$$

The intercept β_0 is the intercept and u_t denotes error term indicating the unexplained component of the regression with respect to the real stock of foreign debt. In view of the fact that inflation constitutes one of the reasons for the increase in the nominal values of external debt, the GDP deflator index (2000=100; US$ series) was used to deflate the nominal values of external debt to obtain an indicator for external debt expressed in real terms (refer to Long, 1981 for justification).

3.2 Data sources

Annual time series (secondary) data collected from various sources were used for the study. Data on external debt (aggregated and disaggregated by length of maturity) were obtained from the World Bank's International Debt Statistics database. Institutionalized democracy index, ratio of external trade to GDP, ratio of broad money (M2) to GDP, and GDP per capita growth were gotten from the World Bank's World Development Indicators database. Data on fiscal or government budget balance and GDP were obtained from the External Resource Mobilization Division of the Ministry of Finance and Economic Planning and Bank of Ghana's Quarterly Bulletin (various issues). Qualitative information on overseas borrowing regulations was sourced from various IMF publications including the Annual Reports on Exchange Arrangements and Exchange Restrictions (various issues).The study period is from 1970 to 2013.

4 - Results and interpretation

This section presents and discusses the estimation results. The analysis tests the validity of the hypothesis that fiscal performance, liberalization of regulations on foreign borrowing and changes in political institution are important determinants of foreign debt stock.

4.1 Pre-Estimation test results

This study reports research findings based on the estimation of the equations for total, short-term and long term foreign debt. The analysis begins with an investigation of the time series properties of the data used in the estimation exercise. This is followed by a test for (weak) exogeneity to enable us draw an inference about causality.

4.1.1 Time series properties of data

Table 1 reports the results of the test for a unit root (non-stationary) null hypothesis (H_0) against a stationary alternative (H_1). All the variables are either I(0) or I(1). The series for institutionalized democracy and domestic output growth are I(0) whilst the remaining series are I(1). Consequently, the pretest results support the choice of the ARDL bounds test approach.

Table 1: Unit root test results

Variable	Augmented Dickey-Fuller (ADF)		Phillip-Perron (PP)		Order of integration I(d)
	Level form	First Difference	Level form	First Difference	
$Debt_t^f$	-1.422	-5.061***	-1.644	-5.061***	I(1)
$rfisb_t$	-1.669	-3.618**	-4.629***	-25.379***	I(1)
lib_t	-1.921	-6.963***	-1.855	-6.967***	I(1)
dem_t	-6.317***		-6.316***		I(0)
$qpcg_t$	-4.220***		-4.244***		I(0)
$m2q_t$	-1.357	-6.158***	-1.493	-6.162***	I(1)
tq_t	-2.063	-5.312***	-2.116	-5.476***	I(1)

*Note: The (***), ** and * represent significance at the 1%, 5% and 10% level of significance. The computed test statistics were compared to the respective Mackinnon (1996) one-sided critical values for 1%, 5% and 10%. Assumption was the existence of trend and intercept.*

4.1.2 Weak exogeneity test

The model specification of the estimation equation suggests that all the independent variables are at least weakly exogenous. To test the validity of this assumption, this study used Eviews econometric software to conduct the pairwise Granger causality test on the individual independent variables of the estimation equation at 5 percent significance level [Granger and Hyung (2004)]. This is used in testing for strong exogeneity. We tested for strong exogeneity because the presence of strong exogeneity necessarily implies that weak exogeneity also exists [Johnston and DiNardo (1997)]. The F-statistics and their corresponding probability values shown in Table A1 indicate that the dependent variables do not Granger-cause any of the independent variables. This reveals that Ghana has not experienced strong feedback effects from external debt to liberalization of external borrowing regulations, fiscal performance, institutionalized democracy, output per capita growth, domestic financial depth and external trade openness. Thus, the assumption of strong exogeneity is validated (see Table A1).

4.2 ARDL bounds testing

The next stage involved the times series analysis, comprising the bounds testing for the existence of a long-run relationship between the dependent variables; namely total external debt stock, long term external debt stock and short term external debt on one hand, and the set of independent variables; namely fiscal balance, the liberalization index for external borrowing regulations, institutionalized democracy index, output per capita growth, domestic financial depth indicator and trade openness indicator on the other hand.

Table 2: Results of bound test for total and long-term foreign debt stock functions

Dependent variable	Independent variables	F-Statistic	Probability
$Debt_t^t$	$lib_t, dem_t, rfisb_t, qpcg_t, m2q_t, tq_t$	3.281	0.002
Critical value	**Lower bound**	**Upper bound**	
1 percent	3.29	4.37	
2.5 percent	2.88	3.87	
5 percent	2.56	3.49	
10 percent	2.2	3.09	

Notes: Asymptotic critical values are obtained from Pesaran and Pesaran (2009, pg 564),
Table B1 of case II: Intercept and no trend for K=4 for the external debt function

We estimated the error-correction form of the ARDL model for the relevant equation in two stages. First, using the unrestricted Vector Auto-regression (VAR) approach and the minimum lag order criteria, the Schwarz Bayesian Criteria (SBC) lag order selection process identified the one-period lag as appropriate for variables for each of the equations. Results of the computed Wald's F-test statistics on the null hypothesis of no-cointegration between the lagged level variables ($H_o: c_4 = c_5 = c_6 = c_7 = 0$) were compared to specific asymptotic critical-values bounds as in Table C1(iii) of Pesaran et al. (2001, pp. 303) to determine one of three possible outcomes. The computed F-statistics was found to be above the upper-bound critical values at 10 percent level of significance for the external debt equations. The computed F-test for the joint significance of lagged levels of variables in equation (2) which is recorded in Table 2 suggests the existence of long-run relationships between $Debt_t^t$ on one hand and $rfisb_t$, , $qpcg_t$, $m2q_t$ and tq_t on the other hand with fixed regressors lib_t and dem_t.

4.3 Long-run estimates

Given the existence of a long-run relationship, the ARDL approach was used to compute the long-run estimates. The SBC determined a maximum-order lag length of five for the level variables in the equation for total external debt. Results of the estimated long-run elasticities for equation (5) are reported in Table 3. The external borrowing liberalization index, real fiscal balance and trade openness indicators have statistically significant coefficients in the long run model for external debt stock. The estimated coefficient for the external borrowing liberalization index has a negative sign in the long run model for external debt. The indicator for real fiscal balance has a negative sign whilst the indicator for external trade openness has a positive sign in the long run model.

Table 3: Estimated long-run coefficients for external debt function using the ARDL approach

Dependent variable is $Debt_t^t$

Regressor	Coefficient	Standard error	T-ratio	T-probability
lib_t	-2.257	0.484	-4.665	0.000
$rfisb_t$	-1.482	0.832	-1.783	0.090
dem_t	0.045	0.064	0.702	0.491
$qpcg_t$	0.593	0.355	1.671	0.110
$m2q_t$	-0.116	0.388	-0.3	0.767
tq_t	1.022	0.109	9.393	0.000
β_0	-6.237	6.317	-0.987	0.335

A unit increase in the extent of liberalization in external borrowing regulations reduces total external debt stock by 2.3 units. Its statistical significance of 1 percent in the model suggests that the liberalization of external borrowing regulations significantly reduces external debt stock. This finding contradicts the expectation that liberalizing regulations on external borrowing should lead to an increase in the external debt stock through an increase in external borrowing. The finding is consistent with the results obtained by Qian and Steiner (2015) which suggest that increased liberalization of capital accounts transactions has led to a reduction in long term public debt in 66 emerging and developing economies. The finding could be explained by the difficulty with accurately quantifying regulations.

A unit reduction in the fiscal balance (a unit increase in fiscal deficit) increases the external debt stock by 1.48 units. The results point to the importance of fiscal deficits or fiscal deterioration in the accumulation of external debt stock in the country. It shows that a significant portion of changes in Ghana's overall external debt stock is driven by the public sector.

Increased trade openness is also identified to be an important driver of Ghana's external debt stock. A unit increase in trade openness increases the external debt stock by 1.02. The result is consistent with the argument and findings of the study by Long (1981) that increased trade openness is associated with the accumulation of external debt in most developing economies and could be explained by the rise in current account deficits not matched by the drawdown of international reserves to finance the gap.

Institutionalized democracy, output per capita growth and financial depth were not found to have any statistical significance in influencing the external debt. The coefficients on institutionalized democracy and output per capita growth are positive whilst financial depth is negative in the estimated equation. This suggests that the external debt stock is an increasing function of institutionalized democracy and output growth but a decreasing function of domestic financial deepening.

4.4 Analysis of short-run dynamic model

The estimation results for the error correction representation for the selected ARDL model specified in equation 4 are presented in Table 4. The indicators for liberalization of external borrowing regulations, real fiscal balance, output per capita growth, domestic financial deepening and trade

openness are statistically significant in the short run model for the external debt stock at most at ten percent. The coefficient of the error correction term is negative and significant at one percent level of significance, implying a fairly high speed of adjustment to equilibrium after a shock. About 62 percent of the deviation or disequilibrium from the previous year's shock was corrected in the current year.

Table 4: Error correction representation for the selected ARDL model (for total external debt)

ARDL (3, 1, 0, 3, 2) selected based on AIC. Dependent variable is $\Delta Debt_t^t$				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
$\Delta Debt_{t-1}$	0.741	0.163	4.541	0.000
$\Delta Debt_{t-2}$	0.319	0.094	3.380	0.003
Δlib_t	-11.787	3.531	-3.338	0.003
Δdem_t	0.030	0.024	1.241	0.229
$\Delta rfisb_t$	-0.353	0.186	-1.895	0.073
$\Delta qpcg_t$	0.427	0.132	3.229	0.004
$m2q_t$	-0.390	0.279	-1.394	0.179
$\Delta m2q_{t-1}$	-0.738	0.291	-2.532	0.020
$\Delta m2q_{t-2}$	-0.884	0.258	-3.430	0.003
Δtq_t	0.616	0.072	8.514	0.000
Δtq_{t-1}	-0.479	0.109	-4.377	0.000
$ecm1_{t-1}$	-0.618	0.116	-5.325	0.000

Changes in the debt stock for the past two years tend to have a significant increasing effect on growth of the stock in the current year. The results point to a rapid accumulation of the external debt stock overtime. The two-year lagged dependent variable is statistically significant at one percent level and has a positively signed coefficient in the short run model. The coefficient for change in the liberalization index is also statistically significant at one percent level in the short run model for the external debt stock but the sign of its coefficient is negative in the estimation results. The results indicate that an increase in liberalization of external borrowing regulations is accompanied by a reduction in the extent of increase in the external debt stock overtime. A possible explanation could be international investors' perception of Ghana as a high risk country which discourages them from lending on long term basis [Qian and Steiner (2015)]. In addition, an improvement (or deterioration) in the fiscal balance reduces (or increases) the external debt stock. The coefficient on the indicator for real fiscal balance is statistically significant at the ten percent level and has a negative sign. The results indicate that fiscal deterioration leads to an accumulation of the external debt stock in the short run. The sign of the coefficient on output per capita growth is positive whilst the coefficient on broad money to GDP ratio has a negative positive sign in the short run estimated model. The results point to an increasing effect of economic growth, and a decreasing effect of financial deepening, on the accumulation of external debt in the short run. This may suggest that borrowing from the domestic market is a substitute for external borrowing. Increased trade openness is also found to increase Ghana's external debt stock accumulation in the current year but reduce the debt stock in the subsequent year.

The regressions for the underlying ARDL equations (3a-c) pass the diagnostics tests against serial correlation and functional form misspecification. This suggests that the underlying ARDL equations are good fit. The results of the diagnostic tests for the underlying ARDL equation are presented in Table 5. The cumulative sum (CUSUM) and cumulative sum of squares (CUSUMQ) plots from a recursive estimation of the model, shown as Figures A1 and A2, also indicate stability in the coefficients over the sample period.

Table 5: ARDL- ECM model diagnostic tests for external debt stock

Test statistics	LM version	F version
Serial correlation[a]	prob. χ^2 = 0.142	F-stat = 0.919[0.453]
Normality [b]	Jarque-Bera = 1.837[0.399]	
Heteroscedasticity [c]	prob. χ^2 = 0.998	F-stat = 1.039[0.464]

Note: [a]Breusch-Godfrey LM test. [b] Jarque-Bera normality test [c] Bruesch-Pagan-Godfrey test.

5 - Conclusions and policy recommendations

This study has been motivated by the rise in the level of Ghana's external debt stock over the past three decades and by concerns among stakeholders regarding the possible harmful ramifications of the increase in the debt stock on the economy. It adds value to existing literature on external debt by examining the long and short run determinants of Ghana's external debt, with emphasis on analyzing the effects of fiscal performance, changes in overseas borrowing regulations and political institution.

5.1 Conclusions and implications

In general, findings from the study confirm the hypothesis that fiscal deterioration contributes significantly to the build-up of Ghana's external debt stock. However, the outcomes of the analysis do not support the hypothesis that liberalization of external borrowing regulations leads to an increase in the external debt stock. In similar fashion, the results of the investigation fail to confirm the hypothesis that institutionalized democracy is also responsible for the accumulation of external debt.

Liberalization of overseas borrowing regulations increases the external debt stock in the short run but reduces the debt stock in the long run. The meaning to this finding is that liberalization has an immediate increasing effect, but a long-run reducing effect, on the debt stock. The conclusion is that the country's build-up external debt in the long run cannot be attributed to the liberalization of external borrowing. On the contrary, fiscal deterioration results in a build-up of the external debt in both the short and long run. The

findings confirm the dominance of public sector borrowing in total external borrowing by resident agents of the country. However, the investigation does not corroborate the importance of political institution in influencing the level of external debt stock in the country.

Increased trade openness has an immediate short run increasing effect on the accumulation of external debt but reduces growth in the debt stock after a year. However, in the long run, trade openness leads to increased debt stock due probably to the association of international trade with trade credit. In addition, an accelerated growth in domestic output per capita contributes to the accumulation of external debt stock in the short run whilst financial deepening reduces the external debt stock in three subsequent years suggesting that the domestic debt market possibly substitute for external borrowing in the short run. The short run accumulation of external debt attributed to an accelerated growth in domestic output could reflect the fact that the Ghanaian economy is largely import dependent where imports are significantly financed from external borrowing.

5.2 Recommendations

A key recommendation from the findings of the study is that liberalization of external borrowing regulations should be maintained because it helps to reduce the country's external debt stock in the long run. The influence of liberalization in reducing the external debt stock could be the result of a change in the type of external loans inflow and loans contracts and the pace of debt repayments and servicing. This recommendation should however be treated with caution, since the findings from the analysis could be mainly due to the manner in which liberalization of external borrowing regulation has been measured. A disaggregated measure of liberalization that reflects different aspects of the liberalization with direct impact on different aspects or types of external borrowing could unearth detailed information on how liberalization affects the debt stock and this could be explored in future extensions of the study.

Another important recommendation that can be made from the conclusion of the study is that fiscal discipline is required if the country is to succeed in reducing its stock of external debt. In this case, public expenditure rationalization and improved domestic revenue mobilization through measures that strengthen and reduce inefficiencies in tax collection and administration is needed.

In addition, the positive association of increased trade openness with external debt stock in the country could be purely a structural issue since increased trade openness has also meant an increase in the volume of international trade. It is a known fact that increased trade openness has led to growth in import payments at rates that exceed increases in earnings from exports and trade deficits have largely been financed through external borrowing. Policies and programs that could revive the country's manufacturing sector and make them more export oriented may help to add value to the country's exports in addition to the increase in volume of exports thereby increasing the country's net foreign exchange earnings. This has the effect of reducing the country's international trade deficits and reliance on overseas borrowing, and the tendency for increased international trade to cause a rise in the level of the country's external debt stock.

Since an accelerated output growth of the Ghanaian economy increases the level of external debt stock in the short run, it will be necessary to consider programs for long term restructuring of the national economy to reduce import dependency and focus attention on value additions to the country's exports.

Lastly, a popular recommendation from the conclusion of the study is to consider programs that will encourage greater participation of the investing public in the domestic financial market. This would lead to an increase in financial sophistication which in turn has the potential of increasing demand and supply of financial services with a broader and more varied selection of services which target the large segment of society including the state apparatus. This could be an effective way to reduce the country's external debt stock accumulation by reducing reliance on external borrowing.

Appendix

Table A1: Pairwise granger causality test

Null Hypothesis	Obs	F-Statistic	Prob.
1. lib_t does not granger cause $Debt_t^t$	41	6.342	0.002
$Debt_t^t$ does not granger cause lib_t		2.080	0.121
2. lib_t does not granger cause $Debt_t^t$	41	6.342	0.002
$Debt_t^t$ does not granger cause lib_t		2.080	0.121
3. $rfisb_t$ does not granger cause $Debt_t^t$	41	0.393	0.759
$Debt_t^t$ does not granger cause $rfisb_t$		0.095	0.962
4. dem_t does not granger cause $Debt_t^t$	41	1.155	0.926
$Debt_t^t$ does not granger cause dem_t		0.792	0.507
5. $qpcg_t$ does not granger cause $Debt_t^t$	41	0.397	0.756
$Debt_t^t$ does not granger cause $qpcg_t$		0.536	0.661
6. $m2q_t$ does not granger cause $Debt_t^t$	41	0.364	0.780
$Debt_t^t$ does not granger cause $m2q_t$		0.807	0.499
7. tq_t does not granger cause $Debt_t^t$	41	0.903	0.450
$Debt_t^t$ does not granger cause tq_t		1.937	0.142

Source: Computed by author using Eviews 7.0 econometric software

Table A2: Correlation coefficient estimates

	lib_t	$rfisb_t$	dem_t	$qpcg_t$	$m2q_t$	tq_t
lib_t	1.0					
$rfisb_t$	-0.384 0.010	1.000				
dem_t	0.310 0.040	-0.482 0.001	1.000			
$qpcg_t$	0.476 0.001	0.252 0.099	-0.072 0.642	1.000		
$m2q_t$	0.680 0.000	-0.284 0.062	0.211 0.170	0.225 0.142	1.000	
tq_t	0.745 0.000	-0.074 0.635	0.293 0.054	0.465 0.002	0.727 0.000	1.000

Source: Computed by author using Eviews 7.0 econometric software

Table A3: Variance Inflation Factor for equation 5

Variable	VIF	1/VIF
lib_t	4.00	0.250
tq_t	3.84	0.260
$m2q_t$	2.65	0.377
$rfisb_t$	2.22	0.451
$qpcg_t$	1.89	0.528
dem_t	1.51	0.661

Table A4: Chronology of regulatory restrictions on foreign borrowing

	Before 1994	1994 to 2005	Since 2006
Nonresidents' purchase of domestic bonds or other debt securities domestically	There is prohibition on sale or issue of securities in Ghana or abroad by Ghana residents to nonresidents (Dec. 1970 through Dec. 1994)	a. Nonresidents have the option to purchase corporate bonds but within confined limits. Nonetheless, existing regulations prohibit them from purchasing government securities (Dec. 1995) b. Purchase of bonds or other debt securities domestically by nonresidents require the prior approval of the BOG. (Dec. 1998 through Dec. 2005)	Nonresidents are allowed to purchase bonds or other debt securities domestically or invest in debt securities with maturities of three years or more (Since Dec. 2006)

Table A4: Chronology of regulatory restrictions on foreign borrowing (continued)

	Before 1994	1994 to 2005	Since 2006
Residents' sale or issue of domestic bonds or other debt securities abroad	There is prohibition on sale or issue of securities in Ghana or abroad by Ghana residents to nonresidents (Dec. 1970 through Dec. 1994)	Sale or issue of bonds or other debt securities abroad by residents require the prior approval of the Bank of Ghana (Dec. 1995 through Dec. 2005)	Residents are allowed to sell or issue bonds or other debt securities abroad. However, banks are obliged to report these transactions to the BOG (since Dec. 2006)
Nonresidents' investment in or purchase of domestic money market instruments (BOG and government securities)	There is prohibition on sale or issue of securities in Ghana or abroad by Ghana residents to nonresidents (Dec. 1970 through Dec. 1994)	Existing regulations forbid nonresidents (except those having local currency) from investing in money market instruments (Dec. 1995 through Dec. 2005)	Existing regulations now permit nonresidents to bring in foreign exchange to invest only in debt instruments with maturity of three years or more. (since Dec. 2006)

Table A4: Chronology of regulatory restrictions on foreign borrowing (continued)

	Before 1994	1994 to 2005	Since 2006
Residents' sale or issue of domestic money market instruments	Existing regulations do not allow residents to sell or issue money market instruments abroad (Dec. 1970 through Dec. 2005)		No restrictions apply to the sale or issue of domestic money market instruments by residents. Previously, existing regulations did not allow residents to sell or issue money market instruments abroad (since Dec. 2006)
Overseas borrowing by commercial banks and other credit institutions	Overseas borrowing require the approval of the Bank of Ghana and is subject to established guidelines (Dec. 1970 through Dec. 1995)	Purchase of bonds or other debt securities domestically by nonresidents require the prior approval of the BOG (Dec. 1998 through Dec. 2005)	Require Bank of Ghana notification

Table A4: Chronology of regulatory restrictions on foreign borrowing (continued)

	Before 1994	1994 to 2005	Since 2006
Commercial and financial credits from nonresidents to residents	Private import credits for machinery and equipment valued at US$100,000 and above require the approval of the Bank of Ghana (Dec. 1970 through Dec. 1994)	Commercial and financial credits from nonresidents to residents require the approval of BOG, must be channeled through the banking system and supported by appropriate documents. (Dec. 1995 through Dec. 2006)	

Source: International Monetary Fund's Annual Reports on Exchange Arrangements and Exchange Restrictions, various issues and other IMF databases

Indicators

1. Nonresidents' purchase of domestic bonds or other debt securities domestically
2. Residents' sale or issue of domestic bonds or other debt securities abroad
3. Nonresidents' investment in the domestic money market instruments
4. Residents' sale or issue of domestic money market instruments
5. Overseas borrowing by commercial banks and other institutions
6. Commercial and financial credits from nonresidents to residents

Measures

Scores range from 0 to 4.
0 - if outright prohibition
1 - if quantitative limits are set and requires official approval from relevant authority
2 – if some quantitative limits are eliminated but official approval is required.
3 - if no official approval is required but authorities must be notified and some quantitative limits are maintained.
4 – if no official approval is required and no quantitative limits apply
The average score represents the value for the liberalization index.

Figure A1: Plot of cumulative sum of recursive residuals

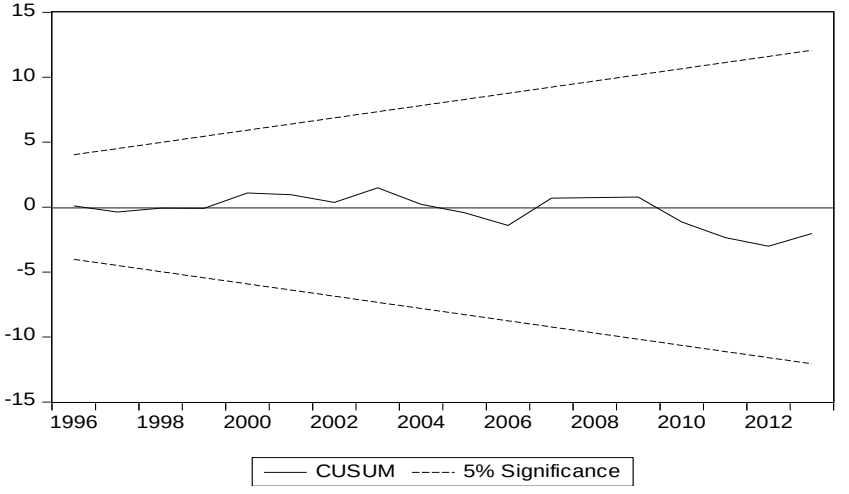
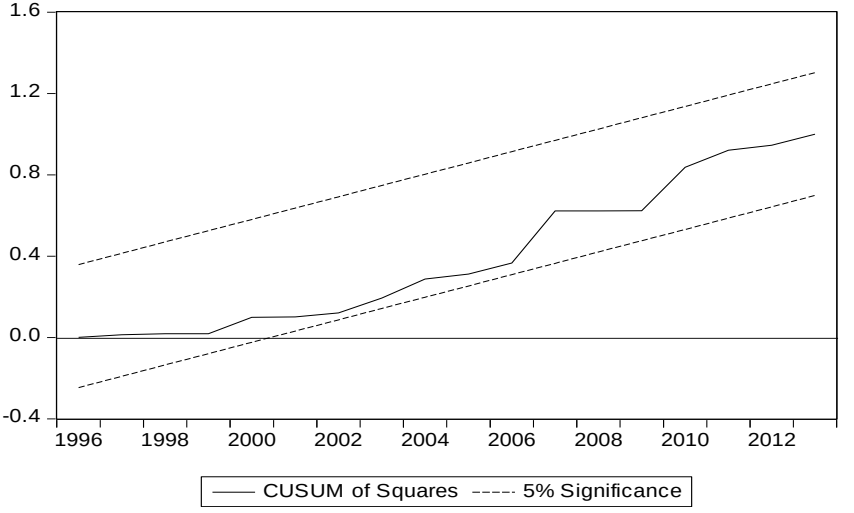


Figure A2: Plot of cumulative sum of squares of recursive residuals



Note: The straight lines represent critical bounds at 5 percent significance level.

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