Volume and Issues Obtainable at Center for Sustainability Research and Consultancy

Journal of Business and Social Review in Emerging Economies

ISSN: 2519-089X (E): 2519-0326

Volume 6: Issue 3 September 2020

Journal homepage: www.publishing.globalcsrc.org/jbsee**Public Debt Composition, Debt Policy Rules and Growth in Selected SADC Countries**¹Richard Makoto, ²Takawira Mumvuma, ³Phineas G. Kadenge¹Department of Economics, University of Zimbabwe, Zimbabwe, richmakoto@gmail.com²Department of Economics, University of Zimbabwe, Zimbabwe, mumvuma@sociol.uz.ac.zw³Department of Economics, University of Zimbabwe, Zimbabwe, p.kadenge@gmail.com**ARTICLE DETAILS****History**

Revised format: August 2020

Available Online: September 2020

KeywordsDebt Composition,
Debt Policy Rule,
Markov Regime Switching
Economic Growth**JEL Classification**

M0, M12

ABSTRACT**Purpose:** This study examined the relative effect of debt composition and debt reduction policy rule on economic growth in selected SADC countries which are Mauritius, Tanzania and Zimbabwe.**Design/Methodology/Approach** The Markov-switching method was used to estimate the debt growth model for the period 1990Q1-2016Q4**Findings:** The effects of debt proved to be regime dependent which supports the time effects of debt in all countries. High external debt relative to domestic debt had positive effect on growth in Tanzania which is a good reforming country and had negative effects in the case of Zimbabwe which is a debt distressed country. In comparison to Mauritius, a domestic debt dependent country, high domestic debt relative to external debt had negative impact on growth. The effects tend to rise with market pressure and government consumption behaviour. A negative real effect of debt reduction policy rule was confirmed for Zimbabwe and irrelevance in countries with less threat of debt distress.**Implications/Originality/Value** Therefore the study found support to the quantity-effect rather than type-effect of debt on growth. We recommended that countries should consider both time and quantity effects of debt in debt management; adopt explicit debt reduction rules which constrain fiscal behaviour and force policy commitment towards debt stabilization.

© 2020 Center for Sustainability Research and Consultancy Pakistan under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0

Corresponding author's email address: richmakoto@gmail.com**Recommended citation:** Makoto, R., Mumvuma, T. & Kadenge, P. G. (2020). Public Debt Composition, Debt Policy Rules and Growth in Selected SADC Countries. *Journal of Business and Social Review in Emerging Economies*, 6(3), 1063-1074**1. Introduction**

The real effects of high debt levels had dominated policy debates for decades. Most studies have probed the external debt overhang hypothesis and results remained inconclusive. Some of the literature claimed that no single relationship between debt and growth exists (IMF, 2012). Countries may issue both external and domestic debt which affect growth through different channels (Afonso and Ibraimo, 2018). Depending on the choice of debt composition, countries may be exposed to external debt or domestic debt. When external debt reaches unsustainable levels, a country can switch to domestic debt. The distinction between domestic and external debt in the debt-growth nexus

should attract attention not due to the overemphasized original sin but domestic market can provide alternative sustainable finance. Countries could also adopt debt reduction policies in face of debt threat; they can implement either explicit or implicit debt reduction rules and the real effects of debt policy activism should be on the frontier of research.

Theoretical literature predicts negative impact of debt policy rule under severe market pressure (Futagami *et al.* 2010) and stimulates growth if the government engages in productive spending (Morimoto *et al.* 2015). Davig, (2004) identified two types of regime switching debt rules; low debt-output regime and high debt-output regime, with different impact on growth which operate through the taxation channel. Low taxation regime is expected under the low debt regime, while high debt regime is usually accompanied with high future taxes, whose real impact depend on the agents' expectation. Countries may implement explicit or implied debt rules that may differ in the degree of strictness. Explicit debt policy rules in resource constrained small open economies under a budget surplus lowers growth for low growth economies and increase growth for the high growth countries (Futagami *et al.* 2010). Strict debt rule constraint excessive public debt accumulation, which might affect economic growth through the public investment ratio (Morimoto *et al.* 2015) or through the expectations channel on the path of government spending following deviations of debt from the target level; elastic government spending behaviour decreases both future household saving and capital accumulation (Hori and Maebayashi (2014).

A combination of debt switch, overhang and debt reduction rule could improve the prediction of the debt–growth relationship. Some SADC countries have switched debt after reaching a completion stage of HIPC initiative; in particular reduced external debt stock and increased domestic debt. Government domestic debt has changed the characteristics and distribution of the macroeconomic burden and risks of debt in the economy (Hansen, 2007). The growing importance of domestic debt puzzles in developing economies which have least diversified investor base of government debt and where external debt possesses several advantages; foreign debt have limited crowding out effects in such economies (Darreau and Pigalle, 2013) whilst the degree of crowding out effect is excessive for domestic debt (Loyaza and Beck, 2000). In countries with policy credibility problem, macroeconomic risks of high domestic debt are fundamentally the same as foreign debt (Presbitero, 2010; Cecchetti *et al.* 2010). In crisis economies external debt burden might reduce growth more than domestic debt through the exchange rate channel, due to the *original sin* – inability of countries to borrow from foreign markets in their local currency (Eichengreen and Hausman, 2004). In comparison domestic debt can be deflated through money creation (Ramsaran, 1994; Hansen, 2007). Other literature claim that public debt regardless of whether issued on domestic or external economy might stimulate growth under the assumption of productive government spending under low steady states growth (Greiner and Semmler, 2000; Futagami *et al.*, 2008) and the Ricardian equivalence for both forms of debt is possible (Mutoh, 1985). Debt composition matters for economic growth.

The earlier studies did not investigate the real effects of debt composition in SSA as emphasis was on either total debt or external debt. It is not appropriate to lump debt with different characteristics as lending purposes differs and hence growth implications. The scope of studies changed following Reinhardt and Rogoff (2010b) influential study that confirmed the non-linear debt–growth relationship with implications on the need to distinguish between time and quantity effect of debt. The new strand of literature has emerged in SADC region, recently Afonso and Ibraimo (2018) disaggregated total debt into domestic and external debt claiming that the two types of debts have different transmission channels. The study used a VAR approach and found that innovations of external debt caused a positive effect while domestic debt had a negative effect in the short run. The effect of external debt was transmitted more effectively through the exchange rate channel and domestic debt dominated the interest rate channel. The confirmation of the crowding out hypothesis was largely explained with underdeveloped domestic debts markets for Mozambique. In contrast Mustapha (2017) investigated both the time effect and non-linearity effect using non-linear panel autoregressive distributed lag (PNARDL) models to analyse the effect of external debt on growth. The results from a large panel of 22 SSA countries showed that external debt has a negative effect in the long run. The negative long run effect operated through channels of capital accumulation, distortionary taxation, and exchange rate. Haron (2018) found a positive long term effect of external debt on growth for Kenya during a period of rising debt. The results contradicted the debt overhang hypothesis and possible reasons include good debt management due to memory effect of the IMF intervention following 1991 debt default.

In a recent study, Mensah *et al.* (2018) confirmed that institutional quality and business cycles amplified the negative

relationship between external debt and economic growth in SSA. However the catalytic effect of institutions was irrelevant in countries with weak institutions. The study supported the nonlinearity hypothesis using the quadratic term which might not explicitly determine the time and quantity effects (debt regimes). The time effect was also investigated in countries with relatively stable and manageable debt. Nair *et al.* (2015) confirmed that external debt increases economic growth using a VAR approach, the effect was must stronger in the long run than short run. Some studies found a positive effect in the short run and negative in the long run during a period of rising external debt for Ghana (Hassan *et al.* 2016). The debt impact was stronger in the short run than long run. Ibrahim and Shazida (2019) tested the time effect of domestic debt for Nigeria using ARDL approach during a period of rising domestic debt, strengthened debt management and deepening of financial markets. A long-run negative effect of domestic debt on growth was confirmed. The finding supported the crowding out hypothesis due to concentration of debt investors towards banking sector. The empirical literature for SADC has not investigated the real effects of debt rules. Existing studies have managed to address the time effect; the quantity effect requires further interrogation either through regime switching.

The study follows country specific studies since the heterogeneity effect of public debt on growth depends on country policies and institutions. Our major innovation is to incorporate both debt stock and debt rule variables. The innovation was motivated with recent debt ceiling literature where countries or regional economic groupings are setting either explicit or implicit debt reduction rules. The use of simple debt policy rules is not a common practise especially for developing countries despite the existence of literature in favour of such rules (Bohn, 1998; Futagami *et al.* 2010; Hori and Maebayashi, 2014). The importance of debt rules has become more apparent given the frequency of debt crisis. This study had two distinct debt-growth objectives; impact of debt levels and debt policy rules on growth. We intend to extend existing studies that concentrated on the impact of debt levels (Rogoff and Reinhardt, 2010; Kumar and Woo, 2010) in the following dimensions; introduce a simple debt reduction rule in the debt-growth nexus and allow the regime to vary overtime. Regime based debt rules are sensitive to both economic and political developments compared to constant regime¹ literature (Bohn, 1998). Adoption of debt regime based analysis, also provide an extension to the nonlinearity literature as regime switching captures the quantity effects of debt. These regimes are endogenously determined using the Markov switching model unlike the exogenous regime literature (Pattillo, *et al.* 2004; Cordella, *et al* 2010). These innovations are expected to extend the debt–growth literature for SSA (Fosu, 1996; Nair *et al.* 2015; Mhlaba and Phiri, 2017; Afonso and Ibraimo, 2018).

Three SADC countries; Mauritius, Tanzania and Zimbabwe are selected for the analysis. These countries possess the most distinct characteristics of debt. Tanzania is a post HIPC country while Zimbabwe is in debt crisis, Mauritius had managed to maintain sustainable debt for long period and is one of domestic debt dependent countries for SADC. The rest of the study is organised as follows section 2 discusses external and domestic debt strategies in these selected SADC countries, section 3 explains the methodology and data sources. The results are discussed in section 4 and section 5 conclude the study and briefly discusses some policy recommendations.

2. External and Domestic Debt Strategies in Practice

The three SADC countries have pursued different debt strategies due to differences in institutional arrangements and the level of economic performances. Past debt crisis and macroeconomic performance have shaped debt strategies in SADC. Debt restructuring and sustainability involves the implementation of either passive or active debt reduction policy. Countries respond appropriately during period of debt explosion; rising external or domestic debt or debt reduction (decreasing external or domestic debt). The three SADC countries debt switch behaviour is assumed to follow a cycle with four regions. The possible debt switch options are presented in the form of a quadrant diagram illustrated in figure 1.

¹ Constant regime literature gave rise to passive fiscal policy all times

Figure 1: Classification of Debt Composition Levels
Source: Author's compilation

Quadrant I is the debt explosion region, both external and domestic debt stock will be rising. The ultimate goal of policy is to ensure debt sustainability through debt restructuring and fiscal consolidation measures. In Quadrant II, the government would embark on debt switch which external to domestic debt usually experienced after external debt crisis. External debt stocks decreases as the country accelerate amortisation and debt service. One of the key distinguishing features is the development of domestic debt markets and widening of investors base. Quadrant III is characterised with debt reduction policy framework, both domestic and external debt decreases. It is a low debt period associated with sustainable primary fiscal balances, debt ceiling and strengthening of debt management institutions. Quadrant IV is also a debt switch region, characterized with rising external debt and falling domestic debt. These features are suitable for a country with several constraints on domestic resource mobilisation; external debt remains the only source of sustainable finance. SADC countries are in different quadrants due to past debt crisis, macroeconomic shocks, and stages of economic development. Zimbabwe which is a debt-distressed country fits in Quadrant I, whilst Mauritius a domestic debt dependent country is appropriate for Quadrant II and Tanzania, a former HIPC qualifies for Quadrant IV. These countries have experienced debt switch and changed quadrants in the past years. The length of each (quadrant) period determine the extent of economic performance. The classification in figure 1, reveals that these three SADC countries might be pursuing different debt reduction policies. Countries in debt distress could be implementing active external or domestic debt reduction policies as compared to those with low sustainable debt.

Tanzania

In the 1980s the country debt strategy was aimed at accelerated external borrowing with little domestic debt which made it suitable for Quadrant I. The country maintained the borrowing strategy up to late 1990s when it experienced an external debt crisis. Tanzania adopted the HIPC initiative and reached completion stage in 2004. In the post HIPC period its debt strategy changed; targeted a reduction of external indebtedness and increase domestic borrowing. The

HIPC programme managed to instil good fiscal discipline, effectiveness in policy reforms and strengthened debt management institutions. Debt management was backed by the Government Loans, Guarantees and Grant Act chapter 134 which give mandate to the debt office to periodically (annual basis) conduct debt sustainability. The debt strategy faced several challenges that include domestic resource constraints and low demand for domestic debt. These problems contributed to shifts in debt strategy towards external borrowing that target concessional loans making the country appropriate for Quadrant IV. According to medium debt strategy (2015), the long term goal was to issue more long maturity domestic debt. The country has less threat of debt and does not have an explicit debt reduction rule. However it is assumed to be implementing an implicit debt reduction rule in line with the regional debt target of 60 percent. The country had maintained an upward growth path in post HIPC period owing to good economic reforms.

Zimbabwe

In the 1980s, the country debt strategy targeted more domestic borrowing and in the late 1990s the country accelerated external borrowing to fund structural reforms under unfavourable terms as it achieved the middle income status. During which time the country was in Quadrant I. In 1999, the country defaulted on external borrowing and the IMF and World Bank imposed stiff financial sanctions. The period marked the turning point in debt choice; the debt strategy switched from targeting external to domestic debt. Fiscal instability, deficit monetization and lack of effective debt management were instrumental in the debt explosions of 2000s. Deep economic recession and inflation contributed to domestic debt deflation in 2008. After full dollarization in 2009, the country made a recourse to domestic debt in 2013 due to unsustainability of cash budgeting which was adopted as a strategy for expenditure refrain. According to Fig. 1, Zimbabwe fits in Quadrant I, as both external and domestic debts are rising. The debt strategy² of 2010 have targeted accelerated external debt arrears clearance and strengthening of debt management. An implied debt reduction rule is assumed in face of growing market pressure as a result of debt overhang and statutory requirement for total debt not to exceed 70% of GDP. The total debt remain unsustainable and the country is in both debt and economic crisis.

Mauritius

The country has successfully maintained stable economic growth underpinned with good fiscal management and strong institutions. The money market is more developed relative to Tanzania and Zimbabwe. For the past two or three decades, the country issued more domestic than external debt. Mauritius have strong debt management institutions with explicit debt limit/ceiling rule which compels debt managers to ensure that debt levels fall within 60 - 50% of GDP (Public Debt Management Act, 2008). When debt exceeds the limit it will trigger active debt reduction policy reaction. The country qualifies for Quadrant II, which is characterised by rising domestic debt and falling external debt. The country's debt strategy targets strengthening domestic market for government debt and the issuance of long average maturity for both domestic and external debt. In comparison to Tanzania and Zimbabwe, Mauritius has managed to achieve and maintain sustainable debt for decades.

3. Methodology and Data

The link between debt and growth will be analysed in an augmented standard neoclassical growth model (Mankiw, *et al.*, 1992; Solow, 1956) in which exogenous factors are assumed to sustain growth. The debt composition literature distinguished the relative real effects of domestic and external debt (Lerner, 1948; Diamond, 1965; Darreau and Pigalle, 2013), whilst the debt policy rule literature provided arguments for debt reduction rules in the debt-growth relationship (Davig, 2004; Futafami, *et al.* 2010; Norimoto *et al.* 2015). The theoretical model is presented as follows

$$Y = (K, L, EXD, DOM, Drule) \dots\dots\dots(1)$$

where Y output, K capital and L labour, external debt (EXD), domestic debt (DOM) and debt reduction rule (Drule).

For empirical analysis the AR (1) –Markov switching (MS) model suggested by Hamilton, (1989) was used. The model has several advantages as compared to the non-linearity threshold and spline regressions which exogenously choose the threshold variable (Pattillo, *et al.* 2002; Cordella, *et al.* 2010). The approach is appropriate given the non-

² See Zimbabwe Accelerated Arrears Clearance Debt and Development Strategy (ZAADDs).

stationary property of growth time series data and the tendency of debt series to exhibit breaks. The literature has used the model in the debt–growth relationships (Dogan and Bilgili, 2014), and we extend the model by including debt reduction rule. Such innovation extends studies which considered changes of debt stock and overlooked the debt policy implementation strategies *i.e.* active or passive policy regime. The following autoregressive multivariate MS model was specified;

$$y_t = \mu_{s(t)} + \alpha y_{t-1} + \beta'_{s(t)}X + \gamma'W + \varepsilon_t.....(2)$$

Where
 y - GDP growth rate
 β - a vector of parameters that are subject to regime changes
 X - regime dependent variables debt stock variables. The include external debt (*exd*) and domestic debt(*dom*) as percentage of GDP.
 γ - a vector of parameters that are not subject to regime changes.
 W - are non-regime dependent variables which include non-core growth variables (debt policy rule (*Drule*) and previous GDP growth rate); and core growth variables (capital stock (*K*) and labour (*L*)) suggested in the literature (Barro and Sala-i-Martin, 2004).

$S_t = 1$ for $t = 1, 2... t_0$ and $S_t = 2$ for $t = t_0 + 1, t_0+2...T$. These are the two states or regimes. The transition from state one to the other, is unobservable and assumed to follow an AR(1) - Markov process with constant transitional probabilities. The equation is estimated by maximum likelihood as proposed by Hamilton (1989). Model evaluation was based on the minimum value of Log-Likelihood ratio (LR) and the usual rule of $P(S=1/S_{t-1}=1) > 0.5$ was used for identifying the regimes.

Modelling Debt Rules

We followed Davig (2004), Favero and Monacelli (2005) specifications who proposed non-linear regime based debt rules which are estimated using Markov Regime Switching (MRS). The debt rule is specified as a function of excess primary deficit, output gap and excess debt. The following four variable reaction function was estimated;

$$b_t = \alpha + s(t)\delta(\bar{D} - d_t) + s(t)\gamma gap_t + s(t)\rho(b_t - b^*) + v_t..... (3)$$

Where $\bar{D}$ -target primary deficit; d_t - primary deficit; b_t - government debt; b^* -target debt; gap_t - output gap. $s(t)$ – state (regime) variable. The usual rule of $P(S = 1/S_{t-1} = 1) > 0.5$ was applied to classify debt rules into active and passive regimes. When the probability of changing the debt ratio was greater than 0.5 the regime was classified as active policy. In the empirical model 2, the debt rule (*Drule*) variable defined as a dummy variable equal to 1 if $P(S=1/S_{t-1}=1) > 0.5$, or 0 otherwise.

Robustness Check

Sala-i- Martin *et al.* (2004) argued that growth parameter estimates are sensitive to other conditional variables. The study controlled for government fiscal stance which was proxied by growth of government expenditure (*fgvtxp*). Government spending influences the macroeconomic environment. The effects of debt tend to intensify with an increase in market pressure (*mpi*). The market pressure variable was estimated as a continuous sovereign debt risk constructed using Boonman, *et.al* (2015) approach; which is a weighted index of debt ratio, external interest rate spread and exports-imports ratio defined as follows;

$$mpi = \frac{X_{1t}}{\delta_{x1}} + \frac{X_{2t}}{\delta_{x2}} + \frac{X_{3t}}{\delta_{x3}} \text{ where } X_{1t} \text{ is the debt to GDP ratio, } X_{2t} \text{ is external interest rate spread benchmarked to US interest rate and } X_{3t} \text{ is the exports-import ratio. } \delta_{x1}, \delta_{x2} \text{ and } \delta_{x3} \text{ are standard deviations of the three variables respectively.}$$

Data Sources

The core growth variables; gross fixed capital formation, labour, GDP, GDP growth rate, imports, exports, and external debt were collected from the World Bank’s *World Development Indicators (WDI)* database. Domestic Debt data was collected from annual and quarterly reports of each country’s Central Banks and supplemented with data

from central statistics published yearly in statistical books. Quarterly data was generated through the HP filter.

3. Empirical Results

The estimated results are reported in tables 1, 2 and 3 for Tanzania, Mauritius and Zimbabwe respectively.

Table 1: Regression results with dependent variable, lnGDP_t for Tanzania

	Model 1		Model 2		Model 3	
	Regime 1	Regime 2	Regime 1	Regime 2	Regime 1	Regime 2
Lndom	-0.062524 (0.103699)	-0.373420** (0.170320)	-0.151401 (0.103580)	-0.469330*** (0.174093)	-0.150813 (0.096785)	0.023693 (0.114600)
Lnexd	0.948951*** (0.152792)	0.923701*** (0.165854)	0.911711*** (0.159709)	1.169718*** (0.211366)	0.098534 (0.179368)	0.675667*** (0.143140)
Lnfgvtexp			-0.119753 (0.0491808)	-599.9924*** (249.4776)		
Lnmpi					20.458885 (0.062475)***	0.107167** (0.049676)
Lnk		0.008001)** (0.019707)		0.010275** (0.024967)		-0.012401** (0.017331)
Lnlabour		-27.65067 (19.95388)		5.163302 (12.17970)		-0.028316 (0.204364)
Drule 1				0.051683 (0.130608)		0.064222 (0.111752)
AR(1)		1.000476 (0.00000289)		1.000317*** (0.000338)		0.995889*** (0.009461)
log(sigma)		-2.095869*** (0.074102)		-2.107817*** (0.075572)		-2.276052*** (0.077636)
Log likelihood		64.61664		64.88940		69.92041

*, **, *** implies significant at 10%, 5% and 1% respectively.

The Markov estimation confirms the existence of two regimes for both debt policy rules and growth series. Regime 1 for growth series was characterized with large scale structural reforms, low growth, external debt crisis and implementation of HIPC programme. In comparison regime 2 was post HIPC period with high growth and small scale structural reforms. Regime 1 debt policy rule extended from 1998Q1 to 2016Q4 whilst regime 2 started from 1990Q1 to 1998Q3. Regime 1 corresponds to high external debt relative to domestic debt. Regime 1 debt policy rule extended from 1998Q1 to 2016Q4 whilst regime 2 was experienced from 1990Q1 to 1998Q3. Regime 1 debt rule corresponds to the period of active policy rule, external debt crisis and HIPC induced debt reduction.

The baseline model (1) shows that external debt has a positive effect on economic growth in both regimes, whilst domestic debt suppressed growth under regime 2. The impact of domestic debt is smaller than external debt which could be explained by quantity effects as Tanzania issued more external debt under regime 1 which was mostly long term and directed towards productive investments during its structural adjustment programme. The country successfully completed economic policy reforms which could have played a catalytic effect between debt and growth which is in line with the literature on productive spending of debt (Futagami, *et al.* 2008; Greiner and Semmler, 2000). The negative effective of domestic debt in regime 2 could be explained by both quantity effects and financial frictions in thin underdeveloped financial markets in which growth might have been depressed through crowding out and credit rationing channels (Christensen, 2005; Venner and Williams, 2009; Darreau and Pigalle, 2013;). During regime 2, which is the post HIPC period, Tanzania experienced a high growth in domestic debt as compared to regime 1. The finding supports other developing country studies that investigated the time effect of external debt on growth (Afonso and Ibraimo; 2018) but contradicts several other studies that found negative effect (Ibrahim and Shazida, 2019; Mensah *et al.* 2018). Debt policy rule variable had no effect on debt although the variable had a positive sign. Good debt management, debt relief through multilateral debt relief initiative (MDRI) and lack of explicit strict debt rules could provide an explanation for the insignificance of debt rule. The results showed that the impact of debt on growth tend to increase with the degree of fiscal stance and decrease with business cycles, and market pressure.

Table 2: Regression results with dependent variable, lnGDP_r for Mauritius

	Model 1		Model 2		Model 3	
	Regime 1	Regime 2	Regime 1	Regime 2	Regime 1	Regime 2
Lndom	-1.097973*** (0.369325)	-0.940823*** (0.351448)	-1.261995*** (0.393914)	-0.990358*** (0.209633)	-4.268979*** (0.565208)	-1.275709*** (0.432632)
Lnexd	-0.990670*** (0.216466)	-0.532838*** (0.205948)	-0.938934*** (0.219231)	-0.542959*** (0.209633)	-2.072110*** (0.309556)	-0.750699*** (0.253895)
Lnfgvtexp			-272.0451 (176.0310)	-1.732603* (1.052804)		
Lnmpi					6.106719*** (1.223343)	1.803987* (1.043555)
Lnk	-0.126294** (0.0.065821)		-0.045262 (0.081429)		-0.155546** (0.068086)	
Lnlabour	0.698833*** (0.190921)		0.566899*** (0.213716)		0.486892** (0.206324)	
Drule1			0.065858 (0.046647)		0.052836 (0.045976)	
AR(1)	0.897247**** (0.049052)		0.896656 (0.047774)***		0.873711*** (0.052871)	
Log(sigma)	-1.628604 (0.072169)***		-1.651123*** (0.073324)		-1.655046*** (0.075402)	
<i>Log likelihood</i>	9.178275		11.37517		11.15516	

*, **, *** implies significant at 10%, 5% and 1% respectively.

The estimated results in table 2 showed that two distinct regimes for both growth [series](#) and debt rule existed during the study period. Period 1 corresponds to moderate growth, large scale structural reforms, high external debt relative to domestic debt issued to fund SAP. Regime 2 is a period of high and stable growth. Regime 1 debt policy rule covered the periods 1999Q3-2000Q1 and 2004Q4-2006Q1 whilst regime 2 covered the periods 1990Q1-1999Q2, 2000Q2-2004Q3 and 2006Q2-2016Q4. Regime 1 debt rule corresponds to the period of active debt reduction policy rule whereas regime 2 was a period of mostly sustainable debt.

The baseline regression model (1) shows that both domestic and external debts have negative impact on growth in both regimes with larger magnitudes under regime 1. However, the impact of domestic debt on growth was much greater than external debt. During period 1 Mauritius implemented massive structural reforms and received both structural adjustments loans and policy reforms loans. Conditionalities on external loans could have impacted negatively on growth, and time effects might also provide an alternative explanation as the benefits of reforms take time. In regime 2, more domestic debt as compared to external debt was issued to sustain economic growth initiated during period 1 and this might have been necessitated with a highly developed financial system. The quantity effect, crowding out hypotheses and the interest rate induced exchange rate channel could provide an explanation. The latter might have led to loss of export competitiveness given the degree of financial integration and the economy's dependence on tourism. The results concur with several studies that found a long run negative effect of external debt ([Hassan et al. 2016](#); [Mhlaba and Phiri, 2017](#)). The debt reduction policy variable is insignificant possible due to long periods of debt sustainability as a result of observing explicit constitutional debt target levels. The results revealed that market pressure and business cycles tend to stimulate the growth effects of both debt especially for regime 1 where the country experienced a rise in the debt ratio.

Table 3: Regression results with dependent variable, ln GDP for Zimbabwe

	Model 1		Model 2		Model 3	
	Regime 1	Regime 2	Regime 1	Regime 2	Regime 1	Regime 2
Lndom	-0.040376	-0.218343	-0.315573	-0.233524	0.231121	-0.510250

Lnexd	(0.551618) -3.322608** (1.573259)	(0.323856) -2.782288* (1.498173)	(0.553192) -2.690713** (1.355488)	(0.324716) -2.335881* (1.326143)	(0.455118) -3.376159*** (1.254350)	(0.346997) -3.477206*** (1.246513)
Lnfgvtexp			153.8556** (63.12194)	-30.03564 (47.29257)		
Lnmpi					0.843173 (1.583370)	2.839103** (1.280966)
Lnk	0.280999 (0.194821)		0.262323 (0.204049)		0.326299* (0.190600)	
Lnlabour	0.444962 (0.499427)		0.397924 (0.452233)		0.327136 (0.462194)	
Drule 1			-0.836197 (0.525679)		-1.396749** (0.554920)	
AR(1)	0.868831*** (0.074707)		0.877464*** (0.072491)		0.868928*** (0.066492)	
log(sigma)	-0.766870*** (0.091827)		-0.808161*** (0.092837)		-0.835164*** (0.099510)	
Log likelihood	-86.25513		-79.32180		-81.74485	

*, **, *** implies significant at 10%, 5% and 1% respectively.

The results confirmed the existence of two regimes; in the case of growth series, regime 1 was mostly low growth period associated with structural reforms (ESAP) and debt default. The regime corresponds to high external debt relative to domestic debt. Regime 2 is a deep recessionary period associated with mostly negative growth rates and debt distress. Regime 1 debt policy rule covered the period 1995Q1-2016Q4 while Regime 2 extended from 1990Q1-1994Q4. Regime 1 debt rule corresponds to the period of active policy rule, debt overhang, debt default and pressure on debt reduction. Regime 2 was a period of passive debt rule where the country experienced relatively stable and sustainable debt.

The results from model 1 (baseline model) indicate that domestic debt was insignificant whilst external debt had a negative effect under both regimes. During regime 1, Zimbabwe received structural adjustment loans from IMF and World Bank. Stringent conditionalities on loans might have disrupted economic activity due to differences in policy reforms and priorities. The incomplete implementation of SAP and debt distress cum-external debt default could have contributed to low growth. Quantity effects could also prove an explanation as the country issued more external debt than domestic debt under regime 2. The results do concur with the debt overhang hypothesis (Krugman, 1999; Singh, 2006) especially under regime 2 which forced the Government to resort to distortionary taxation. The debt default under regime 2 compelled external creditors to impose financial sanctions as a result the Central Bank was forced to monetize deficits during period of economic crisis. The finding give credence to empirical literature that found negative impact in the long run (Adepoju, *et al.* 2007; Razman and Ahmad, 2013; Egert, 2012; Nurazira *et al.* 2012; Kharusi and Ada, 2018) and a study that used the Markov model (Dogan and Bilgili, 2014). Debt reduction policy rule had a negative and significant effect on growth after controlling for market pressure, the impact of debt rule was almost half the size of the external debt. The market pressure associated with debt distress might have contributed to negative effect and the finding gives credence to debt rule theoretical literature (Futagami *et al.*, 2010; Morimoto *et al.* 2015).

4. Conclusion and Policy Recommendation

The effect of debt on growth has been on empirical debate for several decades. Previous studies did not adequately considered the effect of time, debt switch, and comparative effect of debt stock and debt reduction policy rule on growth. The study investigated the quantity and time effect of debt on growth in three SADC countries. A comparative effect of domestic debt, external debt and debt reduction rules was conducted. The results showed that the effects of debt proved to be regime dependent supporting the time effects of debt in all countries namely Tanzania, Mauritius and Zimbabwe. In contrast to the previous literature on SSA (Fosu, 1996; Nair *et al.* 2015; Haron, 2018), the study found support on the quantity-effect rather than type-effect of debt on growth. The comparative real effects of domestic and external debt composition depend on the quantity of each type of debt and the effects varied amongst

the countries; high external debt relative to domestic debt had positive effect on growth in the case of Tanzania, which is a post HIPC, during periods of good economic reforms; while high stock of external debt had negative real effects for Zimbabwe which is a country in debt distressed, with weak policy reforms. In comparison, high domestic debt relative to external debt had a negative impact on growth for Mauritius which is a model country that have successfully implemented structural adjustment programmes funded by IMF and World Bank. Market pressure and fiscal stance (government consumption behaviour) proved to play a catalytic effect of debt on growth which support the argument that the effect of debt on growth depends on certain attributes (Cecchetti *et al.* 2010; Mensah *et al.* 2018). Debt policy rule was significant for Zimbabwe which is a debt distressed country and, no effect was confirmed in countries with less threat of debt distress and market pressure. The study therefore recommended that countries should consider both time and quantity effects of debt; adopt explicit debt rules as these foster policy commitment towards debt stabilization. The study concluded that both debt stocks and debt rules are necessary in the debt-growth nexus, and also supported that debt switch matters for growth. The study has provided an extension in the debt composition literature by confirming that type of debt does not matter for growth as the effect depend on quantity and time. Allowing for debt switching behaviour in debt growth relationship might improve the prediction of the debt–growth relationship and provide regime-based evidence on the real effects of debt.

References

- Abdullahi, N.I., Domeher, H.D., Blay Jr, A.V. K., Yakubu, A.M and Musah, G. (2016). External Debt-Gdp Nexus In Ghana: An Application Of The Autoregressive Distributed Lag(ARDL) Model. *European Journal of Business, Economics and Accountancy*, 4 (6), 106-121.
- Adepoju, A. A., Salau, A. S., Obayelu, A. E. and Ladoke A. (2007). The Effects of External Debt Management on Sustainable Economic Growth and Development: Lessons from Nigeria. working paper, MPRA, 1 March.
- Afonso, A. and Ibraimo, Y. (2018). The Macroeconomic Effects of Public Debt: An Empirical Analysis of Mozambique. Working Paper, REM – Research in Economics and Mathematics, university of Lisbon, 22 February.
- Barro, Robert (1990). Government Spending in a Simple Model of Endogenous Growth. *Journal of Political Economy*, 98 (S5), S103-S125.
- Bohn, H. (1998). The Behavior of U.S. Public Debt and Deficits. *Quarterly Journal of Economics*, 113 (3), 949-963.
- Boonman, Tjeerd M. and Jacobs, Jan P.A.M. and Kuper, Gerard H., (2015). Sovereign Debt Crises in Latin America: A Market Pressure Approach. *Emerging Markets Finance and Trade*, 51:sup6, S80-S93, DOI: 10.1080/1540496X.2015.1080558
- Cai, J. (1994). A Markov Model of Switching-Regime ARCH. *Journal of Business & Economic Statistics*, 12, (3), 309-316.
- Calvo G., Izquierdo A. and Fernando – Mejia, L. (2004). On the empirics of sudden stops: the relevance of balance sheet effects. Working paper, NBER, May.
- Cecchetti S.G., Mohanty M.S. and Zampolli F. (2010). The future of public debt: prospects and implications. working paper, BIS, 26 March.
- Christensen J. (2005). Special data section domestic debt markets in Sub-Sahara Africa. IMF Staff papers, Palgrave Macmillan, 52 (3), 1-7.
- Cordella T., Ricci L.A. and Ruiz-Arraz M. (2010). Debt overhang or Debt Irrelevance: Revisiting the debt growth link. Staff papers, IMF, December.
- Darreau, P. And Pigalle, F. (2013). Equivalence in the internal and external public debt burden. *Economics Bulletin*, 33(4), 2475-2482.
- Davig, T. (2004). Regime-switching debt and taxation. *Journal of Monetary Economics*, 51(4), 837–859.
- Diamond, P. (1965). National Debt in a Neoclassical Growth Model. *American Economic Review*, 55(5), 1126-1150.
- Eichengreen B. and Hausman, R eds. (2004), *Other People's Money: Debt Denomination and financial instability in emerging market economies*. university of Chicago Press.
- Favero, C. and Tommaso Monacelli, T. (2005). Fiscal Policy Rules and Regime (In)Stability: Evidence from the U.S. Working Paper IGIER, Università Bocconi, January.
- Fosu, A.K. (1996). The Impact of External Debt on Economic Growth in Sub-Saharan Africa. *Journal of Economic Development*, 21(1), 93-108.
- Futagami, K., Iwaisako, T., and Ohdoi, R. (2008). Debt policy rule, productive government spending and

- multiple growth paths. *Macroeconomic Dynamics*, 12 (4), 445-462.
- Futagami, K., T. Hori, and R. Ohdoi. (2010). Debt Policy and Economic Growth in a Small Open Economy Model with Productive Government Spending. Working Paper, Asian Development Bank Institute, April.
- Greiner, A. and Semmler, W. (2000). Endogenous growth, government debt and budgetary regimes, *Journal of Macroeconomics*, 22 (3), 363-384. [https://doi.org/10.1016/S0164-0704\(00\)00136-1](https://doi.org/10.1016/S0164-0704(00)00136-1)
- Hamilton, J.D. (1989). A new approach to the economic analysis of nonstationary time series and the business cycle. *Econometrica*, 57(2), 357-384.
- Hanson, J. A. (2007). The growth in government domestic debt : changing burdens and risks. Policy Research Working Paper Series, The World Bank, September.
- Haron, K.N. (2018). The non-linear effect of high and growing external debt on Kenya's economy. *International Journal of Economics, Commerce and Management* , VI (11), 41-57.
- Hori, T. and Maebayashi, N. (2014). Debt policy rule, utility-generating government spending, and equilibrium (in)determinacy: A note. Working Paper Series, The Society for Economic Studies, The University of Kitakyushu, 30 July.
- Ibrahim A. K, Shazida M.K. (2019). Domestic Debt And Economic Growth In Nigeria: An ARDL Bounds Test Approach. *Economics And Business*, 33, 50–68.
- International Monetary Fund and International Development Association (2012). “Revisiting Debt Sustainability Framework for Low Income Countries”, International Monetary Fund Washington DC.
- Johansen, S. and Juselius, K. (1990). Maximum Likelihood Estimation and Inference on Cointegration - With Applications to the Demand for Money. *Oxford Bulletin of Economics and Statistics*, 52 (2), 167-210.
- Kharusi, S.A. and Ada, M.S. (2018). External Debt and Economic Growth : The Case of Emerging Economy. *Journal of Economic Integration*, 33 (1), 1141-1157.
- Kim, C. J. (1994). Dynamic linear models with Markov-switching. *Journal of Econometrics*, vol. 60 (1-2), 1–22.
- Kim, Y. M. and Kang, K.H. (2019). Likelihood inference for dynamic linear models with Markov switching parameters: on the efficiency of the Kim filter. *Econometric Reviews*, 38 (10), 1109-1130.
- Krugman, P. (1988). Financing vs. forgiving a debt overhang. *Journal of Development Economics*, 29(3), 253–268.
- Kumar, M. S. and Woo J. (2010), “Public Debt and Growth”, Working Paper, IMF, 1 July.
- Lerner, A. P. (1948). The burden of national debt in Income, Employment and Public Policy, *Essays in Honor of Alvin Hanson*, Lloyd A. Metzler et al., Eds. W. W. Norton; New York, 255-275.
- Levine R., Loyaza N. and Beck T. (2000). Financial Intermediation and Growth: causality and causes. *Journal of Monetary Economics*, 46 (1), 31-77.
- Mankiw, G. Romer, D And Weil D. N., (1992). A Contribution to the Empirics of Economic Growth. *Quarterly Journal of Economics*, 107(2), 407-437.
- Mauritius Public Debt Management Act No. 5 of 2008 [Amended 14/2009, 10/2010, 36/2011, 38/2011, 26/2012, 9/2015, 18/2016, 10/2017] available at http://mof.govmu.org/English/Legislation/Documents/2017/Public_Debt_Management_Act_2008.pdf
- Mda (2014). Public Debt Management – the South African Perspective. Presentation on World Bank Webinar, Ministry of Finance South Africa 20 November 2014.
- Mhlaba, N. and Phiri, A. (2017), “Is public debt harmful towards economic growth? New evidence from South Africa”, working paper, MPRA, 5 December.
- Morimoto, K., Hori, T., Maebayashi, N. and Futagami, K. (2015). Debt Policy Rules in an Open Economy. Discussion Paper Graduate School of Economics and Osaka School of International Public Policy (OSIPP), 13 July.
- Mustapha, A.A. (2017). Empirical Investigation of External Debt-Growth Nexus in Sub-Saharan Africa. *African Research Review*, 11(3), 142-152.
- Mutoh, T. (1985). The equivalence of the burden of internal and external public debt. *Economics Letters*, 17 (4), 369-372.

- Nair, M.K.S. , Narayana, N AND Modisaemang, G. (2015). The Causality Between External Debt And Economic Growth In Botswana: A Vector Autoregressive (Var) Approach. 13, 3313-3330.
- Patillo, C., Romer D. and Weil D.N. (2002). External debt and growth. Working Paper, IMF, April.
- Pesaran, M. Hasem, Yongcheol Shin and Richard J. Smith. (2001). Bounds Testing Approaches to the Analysis of Level Relationships. Journal of Applied Econometrics, 16 (3), 289-326.
- Presbitero A. (2010). Total Public Debt and Economic Growth in Developing Countries. Working Paper Series, SSRN, 19 October.
- Razman, M. and Ahmad, E. (2013). External debt growth nexus: Role of macroeconomic policies. Economic Modelling, 38 ©, 204-210.
- Reinhart, C. M. and Rogoff K. S. (2010b). Growth in a Time of Debt. American Economic Review, 100 (2), 573–78.
- Sala-I-Martin, X., Doppelhofer, G. and Miller, R.I. (2004). Determinants of Long-Term Growth: A Bayesian Averaging of Classical Estimates (BACE) Approach. The American Economic Review, 94(4) , 813-835.
- Singh A. (2006). Macroeconomic volatility: The policy lessons from Latin America. Working paper , IMF, 08 July.
- Solow, R. M. (1956). A Contribution to the Theory of Economic Growth. The Quarterly Journal of Economics, 70 (1),65–94.