Original Research Article

Does Government Borrowing Crowd Out Private Sector Investment in Zimbabwe?

Abstract

This paper assesses the impact of government borrowing on the private sector credit in Zimbabwe using monthly data from 2012 to 2018. The increase in public debt from 2012 raised concerns over the possible crowding-out effect of government borrowing and spending on domestic investment in Zimbabwe. Using a multivariate regression model and an unrestricted Vector Auto-regression (VAR) model, the paper finds a negative but not significant relationship between credit to government and credit to private sector, implying that credit to government may not have crowded-out private credit. The impulse response functions also indicate that the response of credit to private sector to shocks from government sector was not significant. The results from the variance decomposition analysis, however, indicates that in the sixth period, about 31.2 percent of the variation in credit to private sector was explained by changes in the consumer price index. Other control variables, notably the volume of manufacturing index, interest rates and credit to government did not have a significant influence on the changes in credit to private sector.

Key words: Crowding-out; Crowding-in; Variance Decomposition

1. Introduction

The impact of government spending on private sector investment has been a topical issue in economic literature for a long time. The issue recently re-gained some traction following the global financial crisis experienced in 2007-8, when some countries experienced rising fiscal deficits driven by the need to stimulate economic activity to mitigate the effects of the crisis (Correa-Caro, et al., 2018; Demirel, et al., 2017; Huang, et al., 2018). For instance, Kim & Lee (2014) investigated the existence of the crowding-out effect of US stimulus package on private investment as well as contagion effect on other economies. They found the existence of crowding-out effect in the US economy as well as contagion effect of the US crisis on the Korean and Japanese economies. Similarly, in developing countries, some governments sustained huge fiscal deficits in a bid to stimulate economic activity (Green, et al., 2010).

Zimbabwe recently experienced a surge in public sector borrowing resulting in sharp increase in domestic debt of almost 34 times in just 7 years, from US$276 million in 2012, to US$9,612.2 million in 2018. On the other hand, the economy slowed from a peak growth of 16.3 percent in 2011, to 0.2 percent in 2016, thus sparking debate on the impact of excessive government borrowing on private investment and economy growth.

Existing empirical literature on the relationship between government spending and private investment, however, is still controversial in economic literature as researchers find both complementary and substitutability role of government spending on private investment. Although some economists argue in favour of measures for stimulating government spending to revive the economy, it is still uncertain whether increased government spending can actually boost economic activity. Theoretically, the outcome of increased government spending policy largely depends on a number of factors and economic conditions obtaining in an economy, such as degree of price rigidity, deficit financing method, future tax expectations, liquidity conditions, and consumers' expectations on the economy, among others. In view of this, the issue of whether government spending crowds-out or crowns-in private sector investment has remained an empirical question.

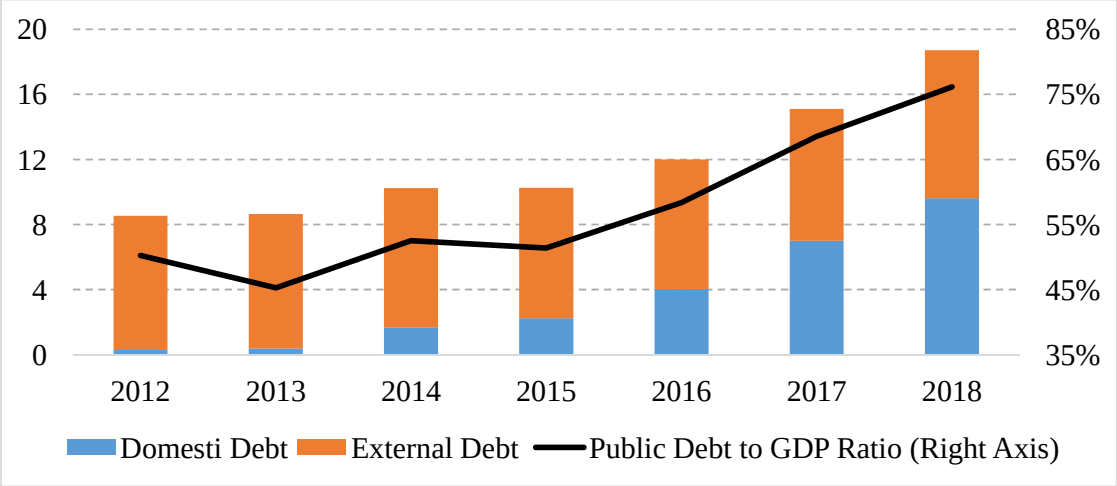
The purpose of this paper, therefore, is to assess whether increased government borrowing witnessed in Zimbabwe since 2012 had a positive effect (complementary hypothesis) or a negative effect (the substitutability hypothesis) on private credit in Zimbabwe. Whilst there are many papers that have looked at the impact of government spending on private investment, to the best of our knowledge no paper has looked at the Zimbabwean scenario particularly from 2009, when the country became dollarised. This issue is particularly important for Zimbabwe because the country went through a crisis period from 2000 to 2008. However, after implementation of reforms and witnessing the first political change since independence, the country is still facing some significant challenges which may derail the recovery process. The paper therefore adds to the body of empirical literature on crowding-out effect by looking at the Zimbabwean scenario from 2012, to 2018.

The rest of the paper is organised as follows: section 2 discusses stylised facts on government spending and private investment, section 3 reviews the theoretical and empirical literature on the impact of government spending on private sector credit and investment, section 4, outlines the methodology used in the study, section 5 looks at empirical analysis and last but not least, is section 6 which concludes the paper.

2. Stylized Facts on Government Spending, Debt and Private Investment

Zimbabwe's domestic public sector debt grew almost 34 times in just 7 years, from US$276 million in 2012, to US$9 612.2 million in 2018. Whilst domestic borrowing was on the rise, the economy slowed from a peak growth of 16.3 percent in 2011, to 0.2 percent in 2016. Public sector debt soared from the year 2012, when government ended its cash budgeting approach which was based on the notion that you eat what you kill. Before 2012, domestic borrowing was mainly restricted to expenditure from utilities such as communication, energy and water bills. However, due to the slowing economic activity from 2012, government relaxed its cash budgeting policy leading to an increase in public sector debt, mainly financed from domestic borrowing as highlighted in Figure 1.

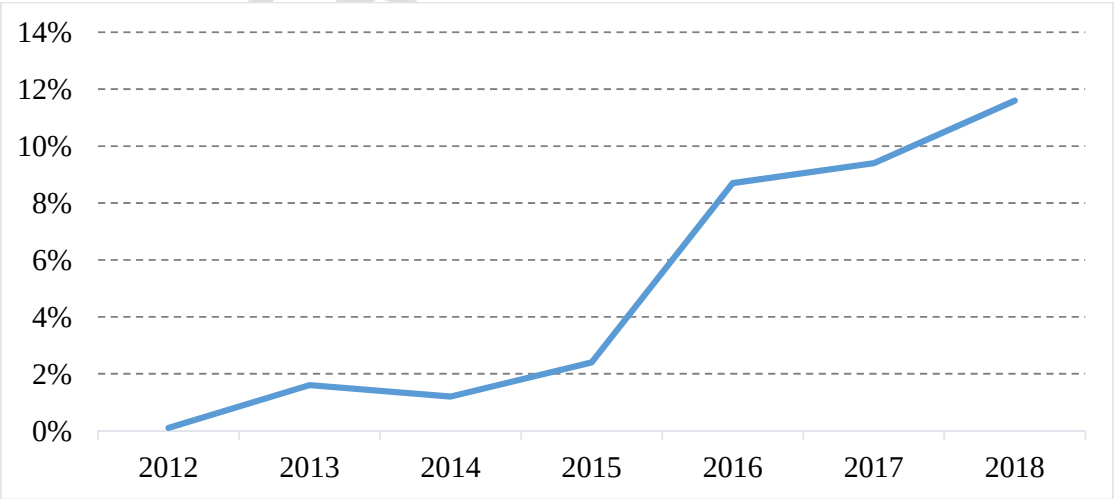
Figure 1: Public Debt Developments (US$ Billion)



Source: Ministry of Finance

The rising domestic public sector debt is mainly due to fiscal slippages as reflected by a rise in budget deficits from about 0.2 percent in 2012, to 9.4 and 11.6 percent in 2017 and 2018, respectively. The increase in fiscal deficit reflects government's appetite to live beyond its means and the absence of reforms needed to contain fiscal profligacy by government. Figure 2 shows the budget deficit to GDP ratio.

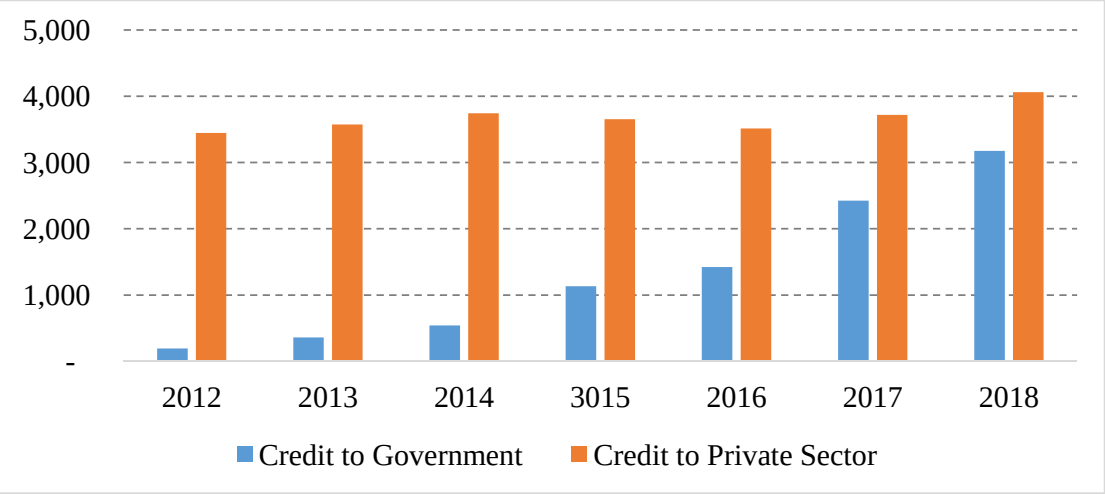
Figure 2: Budget Deficit to GDP Ratio



Source: ZIMSTAT, 2019

Government financed its deficit mainly through issuance of Treasury Bills and Bonds and borrowing from the central bank. Whilst credit to private sector was almost stagnant, credit to government grew exponentially leading to fears that this might have crowded private sector credit. Figure 3 shown the amount of credit to government and private sector.

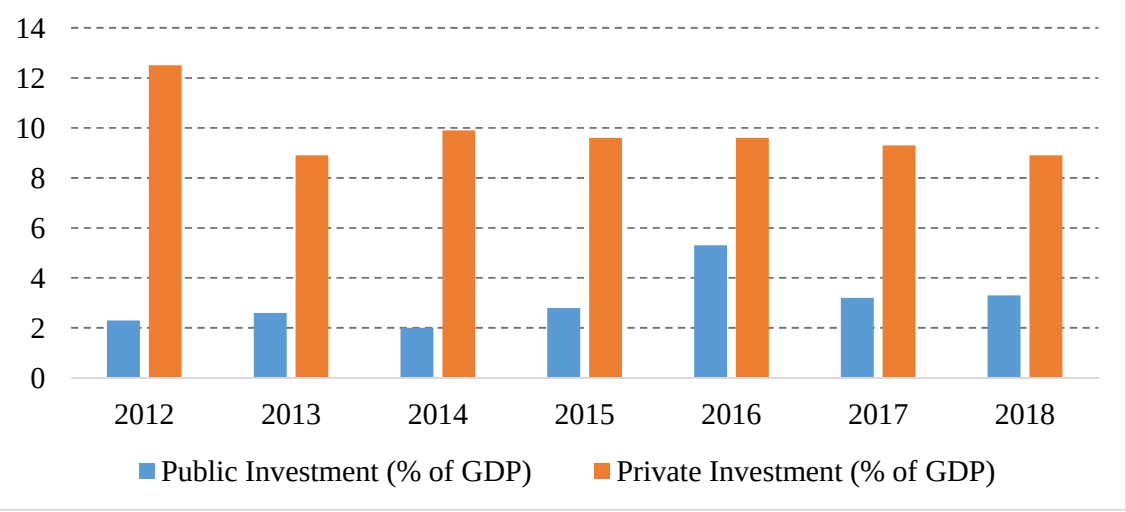
Figure 3: Bank Credit to Government and Private Sector



Reserve Bank of Zimbabwe, 2019

With regard to investment, both private and public sector investments were generally very low. However, private investment declined during the period from 2012 to 2018 whist government investment recorded marginal increases as can be shown in Figure 4.

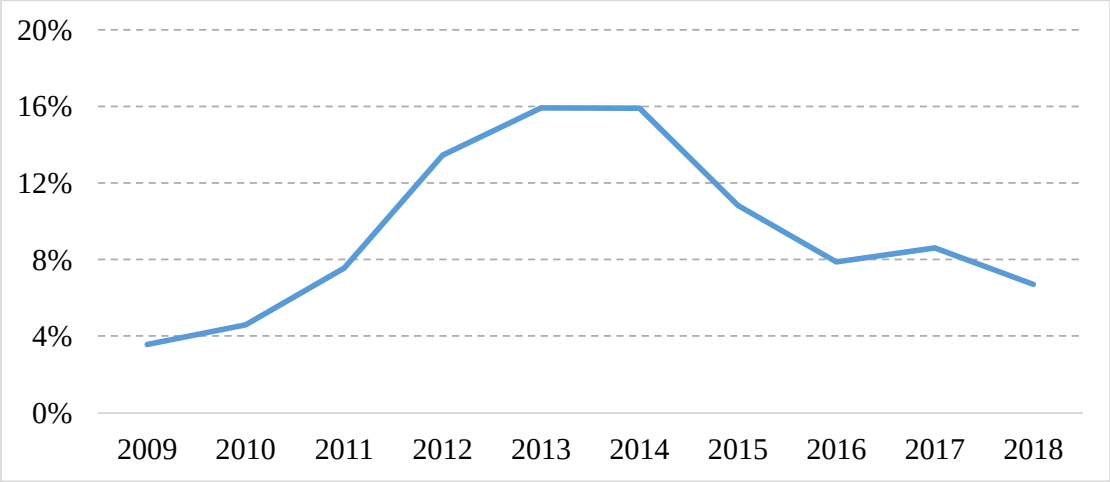
Figure 4: Investment (% of GDP)



Source: Ministry of Finance

The country also witnessed an increase in non-performing loans (NPLs), mainly by private firms and individuals, an issue that might have influenced banks to shun lending to private sector in favour of lending to government. Figure 5, shows the trend in NPLs from 2012, to 2018. The ratio of NPLs to total loans ratio reached a peak of 20.5% in September 2014, before receding to 8.6% to 6.7% as at 30th September 2017 and 2018, respectively (Reserve Bank of Zimbabwe, 2009). Figure 5, shown the average trends in NPLs.

Figure 5: Trends in Non-Performing Loans



Source: RBZ

3. Literature Review

The theoretical strands of literature on the impact of government expenditure on private investment is mainly drawn from two economic theories, namely, the Classical (Neoclassical) and the Keynesian school. The Classical theory is mainly premised on a free market economic system with minimal intervention by government in the economy. The theory argues that an increase in government expenditure increases the demand for loan-able funds thus pushing up interest rates (Atukeren, 2005). The increase in cost of borrowing due to increased interest rates thus discourages private investors from investing into the economy because of a decline in return on investment. This phenomena, is referred to as the "crowding-out" hypothesis. The crowding-out hypothesis depicts a scenario in which expansionary fiscal actions financed by either taxes or debt issuance to the public, fails to

stimulate total economic activity, including private sector. In other words, the steady state government spending multiplier, is approximately zero.

The Keynesian theory, however, postulates that an increase in government expenditures is associated with increased capital expenditure as government invest in infrastructure and social sector investment such as health and education thus stimulating private investment (Hussain, et al., 2009). The increased expenditure for infrastructure and social sector developments has some spillovers effects to the private sector in the form of increased demand for private sector goods and services and reduced costs due to improved infrastructure (Atukeren, 2005). In this context, increased government expenditures may actually stimulate private investment, a phenomena referred to as the "crowding-in" hypothesis.

The Keynesian school believed that government spending was important to stimulate aggregate demand in the economy and in the process promote private sector investment. The Keynesian theory believes in the complementarity hypothesis, implying that public investment leads to an increase in private investment. On the contrary, the classical economists and monetarists believe that government spending or taxation had no effect on the aggregate levels of spending and employment in the economy, arguing that that impact of fiscal policy was mainly on the redistribution of resources from the private to the public sector. Thus the classical and monetarists theory believes in the substitutability hypothesis, which postulates that public spending substitutes (crowds out) private credit or investment.

Empirical literature is replete with studies on the impact of government spending on private investment, although the findings are generally divergent (Choudhary, et al., 2016). For instance, Mahmoudzadeh et al. (2013), evaluated the effect of consumption, capital formation and budget deficit on private investment in both developed and developing countries using a panel data over the period from 2000-09. They found a positive elasticity (crowd in effect) of private investment with respect to government capital formation expenditure in both developed and developing countries. Likewise, the elasticity of private investment with respect to government consumption spending was negative for both group of countries (crowd out effect) although the substitution effect was larger in developed countries.

Bonga-Bonga (2011) investigated the effects of the systematic and surprise changes in budget deficits on the long-term interest rate in South Africa using the vector autoregressive (VAR)

techniques. The results from the study indicated a positive relationship between the budget deficits and long-term interest rate under different assumptions of price expectations by economic agents. Snyder (2004) examined the impacts of deficits on investment, consumption and output in the US economy using an error correction vector auto-regression (VECM) model. The study results showed very little support for any crowding out affect. While interest rates appeared to respond very little to deficits, reductions in taxes or increases in government spending seemed to cause a relatively small increase in private investment, suggesting that the Keynesian multiplier effect outweighs or at least offsets any type of crowding out.

Furthermore, the effect of budget deficit on private investment in developed countries was negative (crowd out effect) and positive in developing countries (crowd in effect). On the contrary, Sen & Kaya (2014), analysed the effects of government spending on private investment from 1975-2011. Their study established that the government's current transfer and interest spending crowd-out private investment, whereas government capital spending crowds-in private investment in Turkey. The findings coming from the empirical studies indicate that the impact of government spending on private investment differs from country to country depending on the conditions obtaining.

4. Methodology

The analysis is conducted using a multivariate regression model involving growth in credit to government and growth in credit to private sector plus an array of supply and demand side control variables, including growth in total bank deposits, inflation, and economic performance index. The model is estimated using the ordinary least squares method and is specified as follows:

$$CRP_t = \beta_0 + \beta_1 CRP_{t-1} + \beta_2 CRG_t + \beta_3 TBD_t + \beta_4 DIS_t + \beta_5 CPI_t + \beta_6 VMI_t + \varepsilon_t \quad (1)$$

Where,

CRP = growth in credit to private sector

CRG = growth in credit to government

TBD = growth in total bank deposits representing the banks capacity to lend

DIS = the discount rate

CPI = the change in consumer price index representing monthly inflation

VMI = the growth in volume of manufacturing index

ε = the error term and *t* is the time factor.

The Vector Autoregressive (VAR) Model

Since the two principal variables of interest, notably credit to private credit sector and credit to government are potentially endogenous variables, there is therefore need for treating each variable symmetrically to allow for feedback mechanism. The study therefore applies an unrestricted Vector Auto-regression (VAR) model to analyse the response of private credit to shocks from public sector borrowing. A non-structural approach is preferred as it allows for the incorporation of the proper lags of each series to avoid the problem of omitted variable bias. To determine the proper lag length of each variable, this study uses the Log Likelihood Ratio, Akaike Information Criteria (AIC) and the Schwarz Information Criterion (SBC). The specification of the VAR follows Sims (1980) and is presented in its general form as:

$$Y_t = C + A_1 Y_{t-1} + \cdots \cdots + A_p Y_{t-p} + \mu_t \quad (2)$$

With Y_t representing a vector of endogenous variables with linear dynamics. The parameter matrices $A_t \cdots A_p$ are vectors of autoregressive coefficients and μ_t is an n-dimensional Gaussian white noise with covariance matrix Σ, C is an n-dimensional vector of constants.

The empirical model is specified as follows:

$$\begin{bmatrix} CRG_t \\ TBD_t \\ CPI_t \\ INTR_t \\ CRP_t \end{bmatrix} + \begin{bmatrix} C_1 \\ C_2 \\ C_3 \\ C_4 \\ C_5 \end{bmatrix} + \begin{bmatrix} 1 & a_{11} & a_{11} & a_{11} & a_{11} \\ a_{21} & 1 & a_{21} & a_{21} & a_{21} \\ a_{31} & a_{31} & 1 & a_{31} & a_{31} \\ a_{41} & a_{41} & a_{41} & 1 & a_{41} \\ a_{51} & a_{51} & a_{51} & a_{51} & 1 \end{bmatrix} \begin{bmatrix} CRG_{t-1} \\ TBD_{t-1} \\ CPI_{t-1} \\ INTR_{t-1} \\ CRP_{t-1} \end{bmatrix} + \cdots\cdots$$

$$\begin{bmatrix} 1 & a_{11} & a_{11} & a_{11} & a_{11} \\ a_{21} & 1 & a_{21} & a_{21} & a_{21} \\ a_{31} & a_{31} & 1 & a_{31} & a_{31} \\ a_{41} & a_{41} & a_{41} & 1 & a_{41} \\ a_{51} & a_{51} & a_{51} & a_{51} & 1 \end{bmatrix} \begin{bmatrix} CRG_{t-p} \\ TBD_{t-p} \\ CPI_{t-p} \\ INTR_{t-p} \\ CRP_{t-p} \end{bmatrix} + \begin{bmatrix} \varepsilon_t \\ \varepsilon_t \\ \varepsilon_t \\ \varepsilon_t \\ \varepsilon_t \end{bmatrix} \quad (3)$$

Data

The study analysed monthly data from 2012 to 2018. The data on credit to government, credit to private sector and interest rate was extracted from the monetary survey numbers published by the Reserve Bank of Zimbabwe on their official website. The data on the consumer price index and volume of manufacturing index was obtained from the Zimbabwe Statistics Agency (ZIMSTAT).

In estimating the VAR model, all the variables were tested for stationarity using the Augmented Dickey-Fuller test and the optimal lag lengths in the tests were based on the Final Prediction Error (FPE), Schwartz Bayesian criterion (BIC) and Hannan-Quinn criterion (HQC).

5. Empirical Analysis

Before estimation of the results, the variables were first tested for stationarity using the Augmented Dicky-Fuller (ADF) test. The results in Table 1 indicates that all variables appear to be stationary after first differencing. This is expected given that the variables are absolute values.

Table 1: Results of ADF Unit Root Tests

Variable	Level	1st Difference
CRG	-1.387165	-7.647063
	(0.8566)	(0.0000)
CRP	-1.350215	-8.465760
	(0.8670)	(0.0000)
TBD	0.840761	-5.652015
	(0.9997)	(0.0001)
INTR	-1.466672	-5.414866
	(0.8320)	(0.0002)
VMI	-2.734195	-17.27449
	(0.2266)	(0.0001)
CPI	9.374486	-12.27866
	(1.0000)	(0.0001)

The optimal lag criteria were also determined using the Final Prediction Error (FPE), Schwartz Bayesian criterion (BIC) and Hannan-Quinn criterion (HQC) which all indicated an optimal lag of 2.

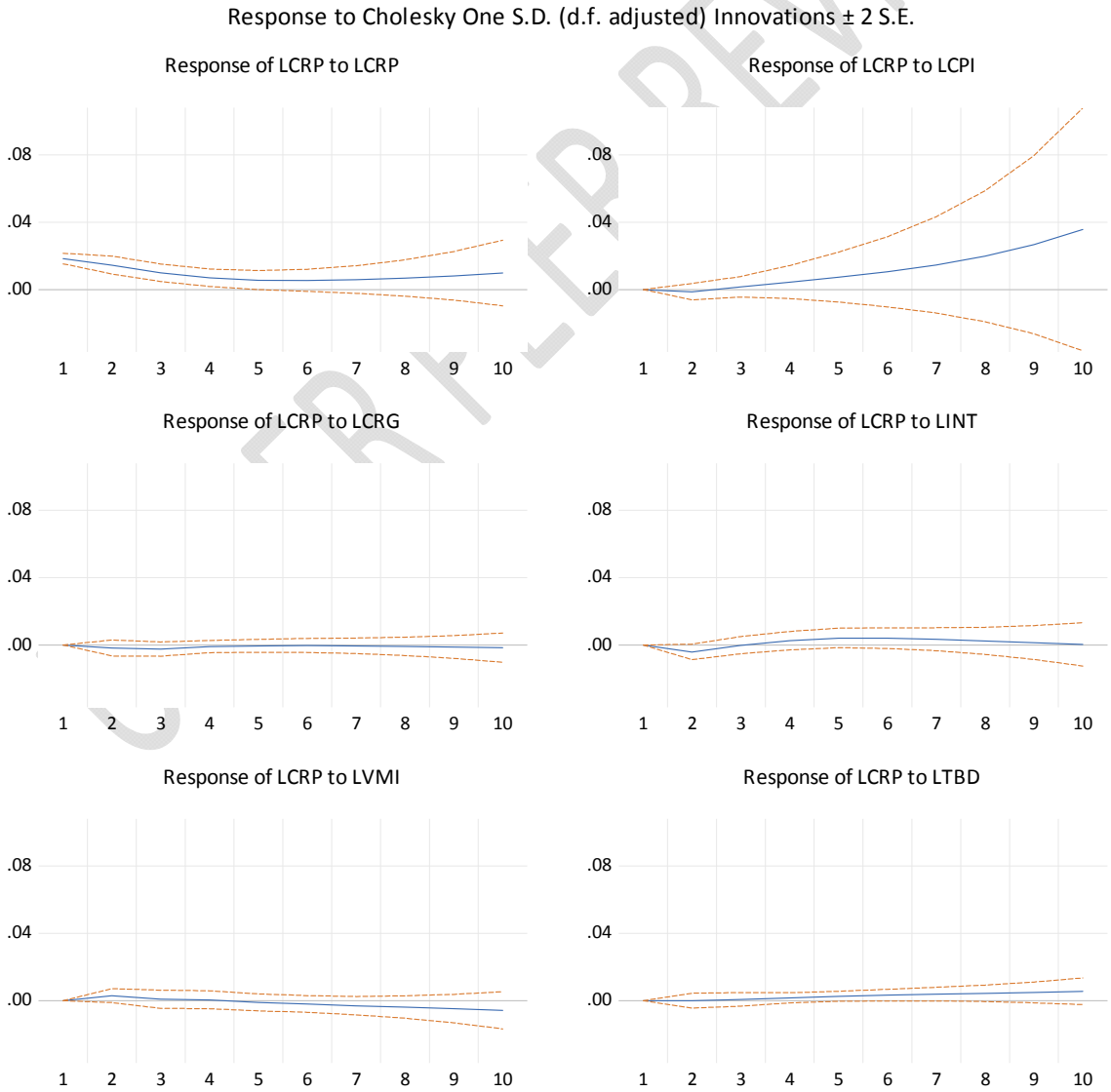
Table 2: Lag Length Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	369.0456	NA	7.92e-13	-10.83718	-10.63975	-10.75906
1	797.1786	766.8052	6.56e-18	-22.54264	-21.16060	-21.99576
2	825.0858	44.98487	8.57e-18*	-22.30107	-19.73441*	-21.28544*
3	848.8269	34.01698	1.32e-17	-21.93513	-18.18386	-20.45074
4	894.4753	57.23093*	1.13e-17	-22.22314	-17.28727	-20.27000
5	939.3052	48.17537	1.09e-17	-22.48672	-16.36623	-20.06483
6	990.4079	45.76358	1.01e-17	-22.93755*	-15.63245	-20.04690

Turning to the estimated coefficients, the sign of the credit to government is negative, although not statistically significant. The negative sign implies that credit to Government may have a substitution effect on credit to private sector.

The results of the impulse response functions show that the response of credit to private sector to shocks from credit to government are negative but very insignificant. This can be explained by the fact that whilst banks have been lending to government, this did not necessarily crowd-out private investment as banks still had liquidity to lend to private sector. However, due to the increase in non-performing loans, banks have generally been unwilling to lend to private sector.

Figure 6: Impulse Response Functions



Variance Decomposition

Results from the variance decomposition analysis indicates that about 31.2 percent of the variation in credit to private sector is explained by movements in the consumer price index in the sixth period or in six months. Other variables such as volume of manufacturing index, interest rates and credit to government have limited influence on the changes in credit to private sector.

Table 3: Variance Decomposition Results

PERIOD	S.E.	LCRP	LCPI	LCRG	LINT	LVMI
1	0.018779	100.0000	0.000000	0.000000	0.000000	0.000000
2	0.025038	96.60528	0.211267	0.354663	2.585472	0.243314
3	0.027937	95.34436	0.981572	0.510767	2.176887	0.986411
4	0.030332	90.18018	5.665866	0.490327	1.942446	1.721179
5	0.033930	78.11086	16.25238	0.591174	1.958534	3.087051
6	0.039568	62.49352	31.26714	0.713410	1.653816	3.872121

6. Conclusion

The impact of government spending on the private sector credit has been a subject of great interest to researchers in economic discourse, particularly after the global financial crisis. This is because most countries across the globe resorted to increased spending to stimulate economic activity in a bid to avert the effects of the global recessions. However, this raised concerns over the possible crowding-out effect of government borrowing and spending on domestic investment. The paper therefore looked at the impact of the increase in government spending on private investment in Zimbabwe. The results indicate that there is a negative relationship between credit to government and credit to private sector. However, this relationship is not statistically significant implying that credit to government may not have crowded-out private credit. This can be explained by the high liquidity levels in the banking

sector even after lending to government as well as the risk aversion in light of the high rate of non-performing loans extended to the private sector.

The impulse response functions also indicate that the response of credit to private sector to shocks from government sector was also limited. The results from the variance decomposition analysis, however, indicates that in the sixth period, about 31.2 percent of the variation in credit to private sector was explained by the consumer price index. Other control variables, notably the volume of manufacturing index, interest rates and credit to government have limited influence on the changes in credit to private sector.

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