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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 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.

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

22 **1. Introduction**

23

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

34

35 Zimbabwe recently experienced a surge in public sector borrowing resulting in sharp increase
36 in domestic debt of almost 34 times in just 7 years, from US\$276 million in 2012, to
37 US\$9,612.2 million in 2018. On the other hand, the economy slowed from a peak growth of
38 16.3 percent in 2011, to 0.2 percent in 2016, thus sparking debate on the impact of excessive
39 government borrowing on private investment and economy growth.

40

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

52

53

54

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

66

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

72

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

74

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

84

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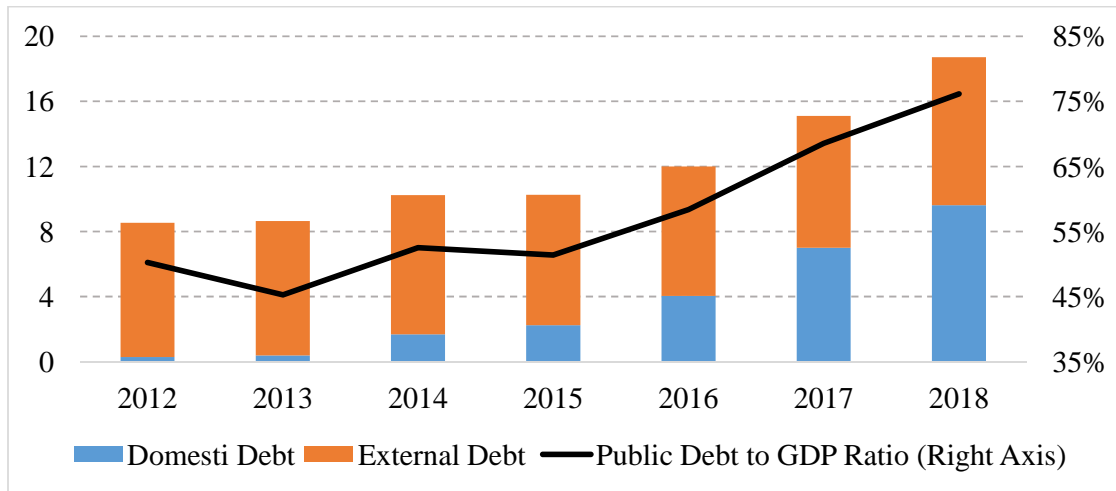
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90 **Figure 1: Public Debt Developments (US\$ Billion)**



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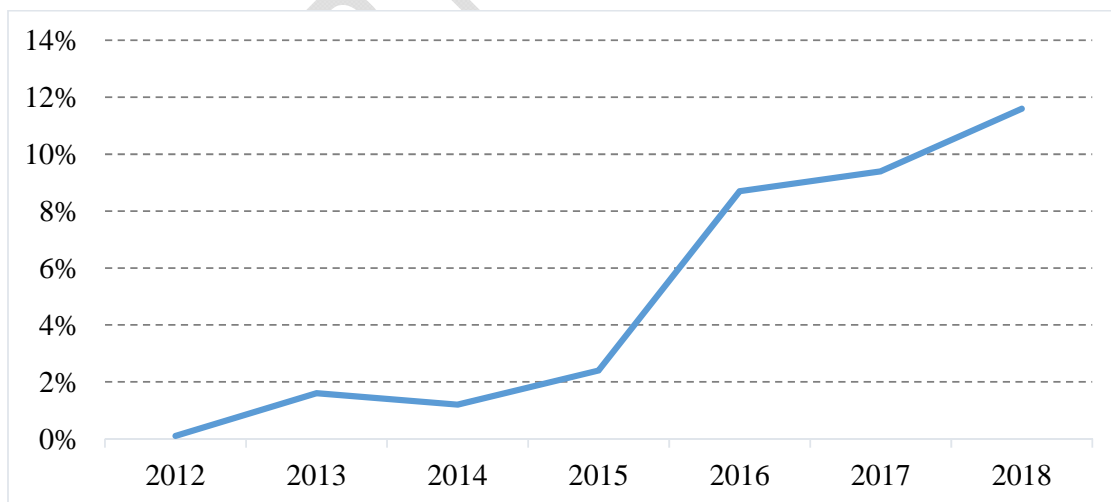
92 Source: Ministry of Finance

93

94 The rising domestic public sector debt is a reflection of fiscal slippages as reflected by a rise
95 in budget deficits from about 0.2 percent in 2012, to 9.4 and 11.6 percent in 2017 and 2018,
96 respectively. The increase in fiscal deficit is believed to be a result of lack of fiscal discipline.
97 Figure 2 shows the budget deficit to GDP ratio.

98

99 **Figure 2: Budget Deficit to GDP Ratio**



100

101 Source: ZIMSTAT, 2019

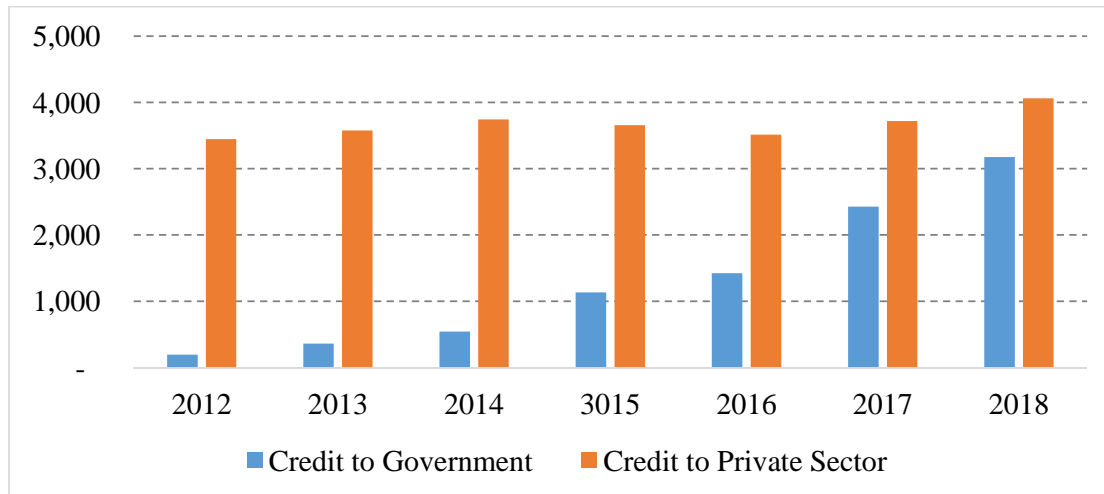
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103 Government financed its deficit mainly through issuance of Treasury Bills and Bonds and
104 borrowing from the central bank. Whilst credit to private sector was almost stagnant, credit to

105 government grew exponentially leading to fears that this might have crowded private sector
106 credit. Figure 3 shown the amount of credit to government and private sector.

107

108 **Figure 3: Bank Credit to Government and Private Sector**



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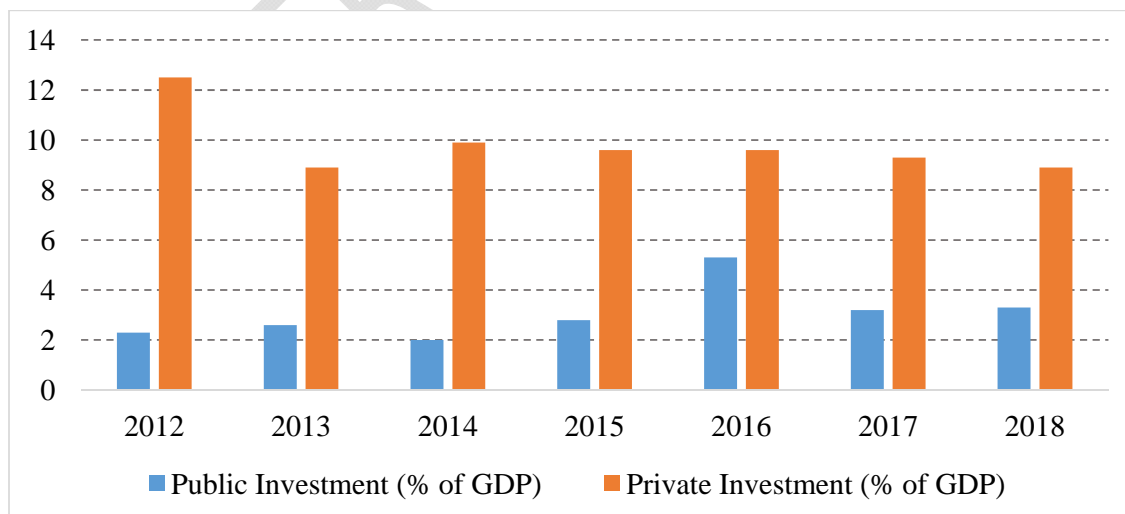
110 Reserve Bank of Zimbabwe, 2019

111

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

115

116 **Figure 4: Investment (% of GDP)**



117

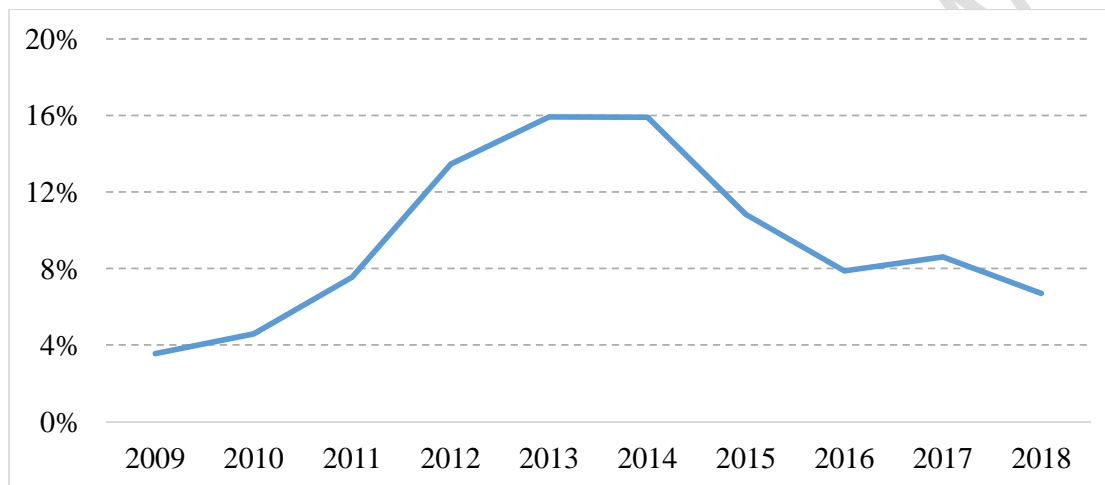
118 Source: Ministry of Finance

119

120 The country also witnessed an increase in non-performing loans (NPLs), mainly by private
121 firms and individuals, an issue that might have influenced banks to shun lending to private
122 sector in favour of lending to government. Figure 5, shows the trend in NPLs from 2012, to
123 2018. The ratio of NPLs to total loans ratio reached a peak of 20.5% in September 2014,
124 before receding to 8.6% to 6.7% as at 30th September 2017 and 2018, respectively (Reserve
125 Bank of Zimbabwe, 2009). Figure 5, shown the average trends in NPLs.

126

127 **Figure 5: Trends in Non-Performing Loans**



128

129 Source: RBZ

130

131 3. Literature Review

132

133 The theoretical strands of literature on the impact of government expenditure on private
134 investment is mainly drawn from two economic theories, namely, the Classical (Neoclassical)
135 and the Keynesian school. The Classical theory is mainly premised on a free market
136 economic system with minimal intervention by government in the economy. The theory
137 argues that an increase in government expenditure increases the demand for loan-able funds
138 thus pushing up interest rates (Atukeren, 2005). The increase in cost of borrowing due to
139 increased interest rates thus discourages private investors from investing into the economy
140 because of a decline in return on investment. This phenomena, is referred to as the
141 “crowding-out” hypothesis. The crowding-out hypothesis depicts a scenario in which
142 expansionary fiscal actions financed by either taxes or debt issuance to the public, fails to
143 stimulate total economic activity, including private sector. In other words, the steady state
144 government spending multiplier, is approximately zero.

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

154

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

164

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

174

175 Bonga-Bonga (2011) investigated the effects of the systematic and surprise changes in budget
176 deficits on the long-term interest rate in South Africa using the vector autoregressive (VAR)
177 techniques. The results from the study indicated a positive relationship between the budget
178 deficits and long-term interest rate under different assumptions of price expectations by

179 economic agents. Snyder (2004) examined the impacts of deficits on investment,
180 consumption and output in the US economy using an error correction vector auto-regression
181 (VECM) model. The study results showed very little support for any crowding out affect.
182 While interest rates appeared to respond very little to deficits, reductions in taxes or increases
183 in government spending seemed to cause a relatively small increase in private investment,
184 suggesting that the Keynesian multiplier effect outweighs or at least offsets any type of
185 crowding out.

186

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

195

196 **4. Methodology**

197

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

203

$$204 \quad CRP_t = \beta_0 + \beta_1 CRP_{t-1} + \beta_2 CRG_t + \beta_3 TBD_t + \beta_4 DIS_t + \beta_5 CPI_t + \beta_6 VMI_t + \varepsilon_t \quad (1)$$

205 Where,

206 CRP = growth in credit to private sector

207 CRG = growth in credit to government

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

209 DIS = the discount rate

210 CPI = the change in consumer price index representing monthly inflation

211 VMI = the growth in volume of manufacturing index

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

213

214 **The Vector Autoregressive (VAR) Model**

215

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

225

$$226 Y_t = C + A_1 Y_{t-1} + \dots + A_p Y_{t-p} + \mu_t \quad (2)$$

227

228 With Y_t representing a vector of endogenous variables with linear dynamics. The parameter
229 matrices $A_1 \dots A_p$ are vectors of autoregressive coefficients and μ_t is an n-dimensional
230 Gaussian white noise with covariance matrix Σ , C is an n-dimensional vector of constants.

231

232 The empirical model is specified as follows:

233

$$234 \begin{bmatrix} CRG_t \\ TBD_t \\ CPI_t \\ INTR_t \\ CRP_t \end{bmatrix} + \begin{bmatrix} C_1 \\ C_2 \\ C_3 \\ C_4 \\ C_5 \end{bmatrix} + \begin{bmatrix} 1 & a_{11} & a_{11} & a_{11} & a_{11} \\ a_{21} & 1 & a_{21} & a_{21} & a_{21} \\ a_{31} & a_{31} & 1 & a_{31} & a_{31} \\ a_{41} & a_{41} & a_{41} & 1 & a_{41} \\ a_{51} & a_{51} & a_{51} & a_{51} & 1 \end{bmatrix} \begin{bmatrix} CRG_{t-1} \\ TBD_{t-1} \\ CPI_{t-1} \\ INTR_{t-1} \\ CRP_{t-1} \end{bmatrix} + \dots$$

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

236

237 **Data**

238

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

244

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

249

250 **5. Empirical Analysis**

251

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

256

257

258 **Table 1: Results of ADF Unit Root Tests**

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

259

260

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

264

265 **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

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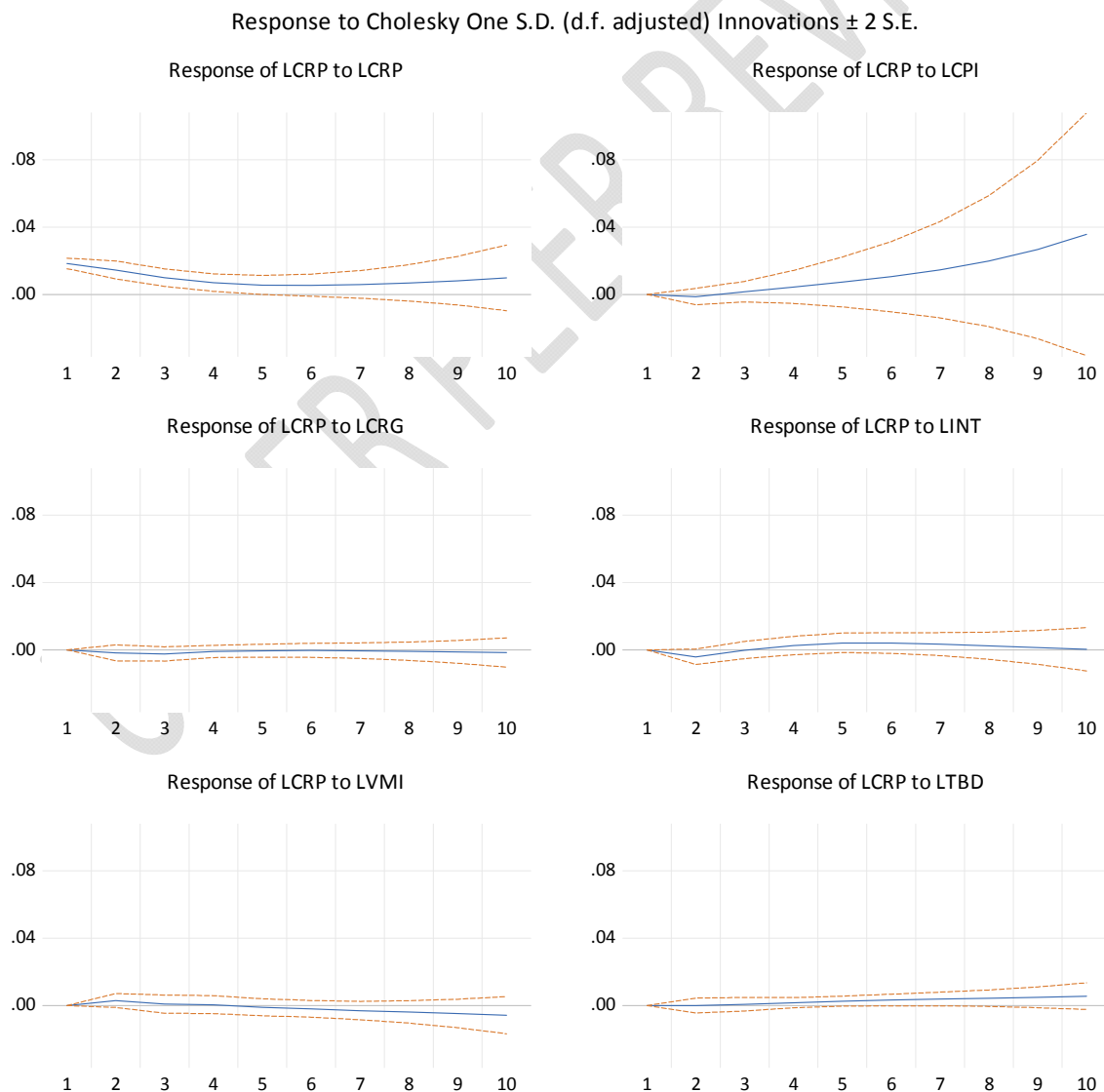
267 Turning to the estimated coefficients, the sign of the credit to government is negative,
 268 although not statistically significant. The negative sign implies that credit to Government
 269 may have a substitution effect on credit to private sector.

270

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

277

278 **Figure 6: Impulse Response Functions**



279

280

281 **Variance Decomposition**

282

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

288

289 **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

290

291

292 **6. Conclusion**

293

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

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

306

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

313

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