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THE RELATIONSHIP BETWEEN MONETARY POLICY AND PRIVATE SECTOR CREDIT IN SADC COUNTRIES

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Abstract

This paper empirically examined the relationship between monetary policy and private sector credit in the Southern African Development Community (SADC) group of countries using a panel autoregressive distributed lag (ARDL) co-integration technique for the period from 2009 to 2018. The Hausman test result indicated that the null hypothesis of long-run homogeneity cannot be rejected and hence we accept the pooled mean group estimators (PMGE) as a consistent and efficient estimator. The PMGE results showed that credit to the private sector and gross domestic product have a positive and statistically significant long-run impact on money supply. The impact of credit to the private sector on money supply is shown by the results to be statistically significant and positive both in the short and long run. The impact of gross domestic product on money supply was found to be statistically significant positive in the long run while positive but insignificant in the short run. The study recommends policy attention that is directed towards the appetite for accelerated growth, investment, and employment in the SADC region but more importantly with more regard to the establishment of sustained macroeconomic stability as a precondition to sustainable growth and for the creation of monetary union in the region.

Keywords: Private Sector Credit, SADC, ARDL, PMG, Money Supply, Economic Growth

JEL Classifications: E51, E52, E58, F45

1. Introduction

The monetary policy-private sector credit relationship has attracted a great deal of attention from policymakers to researchers as well as captains of industry and has placed governments on alert regarding the importance of money supply on price stability. The strategy of monetary policy

implemented across most of the SADC member states assigns a prominent role to money stock and credit analysis as fundamental elements for the determination of risks associated with the achievement of sustainable price levels and growth (Kandil, 2017). According to Liu *et al.* (2016), the conventional monetary transmission mechanism concurs that effective monetary policy implementation works comparatively well by adjusting and monitoring of credit flows. In the same vein, the European Central Bank (2011) and Ibrahim (2014) envisage that the use of legal reserve requirement provides a vehicle through which monetary authorities could have leverage over the stock of money that commercial banks are allowed to keep to remain afloat. As a result, commercial banks are induced to contract or expand their lending capacity thereby stimulating or decelerating consumer spending in the economy, which in turn affects the short-term interest rates and aggregate demand.

It is an overarching fact that the link between credit provision and the effective implementation of monetary policy has received considerable attention in the scholarly literature as it plays a significant role in the formulation of monetary and credit risk policies. While the link between private sector credit and monetary policy is well-founded, existing empirical evidence is far from being uniform with no consensus on data sets, study areas, and methodologies. Such studies as Rasheed (2014), Olweny and Chiluwe (2015), Bellalah *et al.* (2013) have gone further to examine the relationship between other macroeconomic variables and private sector credit both in the developed and developing economies (Van Leuvensteijn *et al.* 2018). In the context of developing economies, a number of studies put emphasis on the impact of monetary policy on the bank lending rate (Emenike, 2017) with some focusing on the regional effects of monetary policy on economic growth by employing an S-VAR approach (Olamide and Maredza, 2019). In addition, a handful of empirical work have examined the determinants of monetary policy dynamics in Sub-Saharan Africa (Maredza and Olamide, 2017).

As is clear in the literature, although more emphasis is put on the relationship between monetary policy and other macroeconomic variables, the majority of studies in the field normally employ the standard time series techniques of cointegration (Bellalah *et al.* 2013), error correction modeling, and Granger causality (Hannan and Berger, 1991). While these techniques enable the evaluation of the long-run relations and short-run interactions, they presume symmetric relations between variables. Accordingly, these methods are not adequate to capture regional potential comparisons between economies as a result of differences in geopolitics, financial stability and the general growth rate. In a way to bridge the gap between time series data and panel data and move from country-specific to regional studies, Maredza (2015) did a study investigating the trade-off between banking outreach and profitability in selected SADC countries. Just like the majority of the existing empirical evidence, these studies fell short of addressing the relations between monetary policy and private sector credit in the SADC community.

These studies with less emphasis on the relationship between private sector credit and monetary policy have continued to excite intense debate and paved ways for further research. Obviously, as envisaged by Bernanke and Gertler (2017) as well as Mamman and Hashim (2013), the appreciation of how credit extended to the private sector influences monetary policy enriches the understanding of the monetary transmission mechanism. However, for proper policy prescriptions, the way the credit channel influences monetary policy requires an empirical investigation of this nature. Therefore, this paper contributes to the existing body of knowledge by shifting the focus from the general macroeconomic-monetary policy relations strictly to private sector credit influence by employing the panel data regression models in the SADC region.

In this paper, we take part in this stream of research by empirically examining the explanatory role of private sector credit to the conduct of monetary policy by member states who have performed exceptionally well in an attempt to stabilize the level of inflation since the passing of the Memorandum of Understanding in 2002. According to the Committee of Central Bank Governors in SADC (2018), the average rate of inflation for the region decreased from 29% in 2002 to 7.7% in 2012, with most of the member states currently experiencing single-digits rates of inflation with exception of countries such as Seychelles and Zimbabwe who presently experience spiraling rates of inflation. The remarkable appreciation of the Rand against the US dollar since the onset of the 2009 global financial crisis has led directly to price increases among

its key trading partners in the region compelling the tightening of monetary policies of a number of countries (Kwapil and Scharler, 2010).

Among other challenges being faced by the SADC economies such as the lagging infrastructure which contributes to the volatility in inflation, food and energy costs remain high in comparison with nations outside the region (Nwakanma *et al.* 2014). Although the rate of inflation has subsided in most member states, according to the Committee of Central Bank Governors in SADC (2018), interest rates remain high, which can hinder borrowing and thereby decelerate the pace of investment and growth of these economies. There is no doubt that high interest rates are a direct result of the tight monetary policies intended to curb inflation in most of these countries in the region. Conventional wisdom tells us that by affecting the rate of interest, the level of credit to private sector is directly influenced resulting in the tightening or loosening of the monetary policy stance. In this paper, unlike the ordinarily used time series econometric methods, we adopt an alternative econometric framework, namely the panel autoregressive distributed lag (ARDL).

We contend that considering the foregoing discussion, the framework is most suitable since it enables the researchers to take into account the country-specific heterogeneity and is determined by its compatibility to study non-integrated variables of the same order or which do not show a long-run relationship in terms of the unrestricted VAR and restricted VECM regression. The remainder of the paper is structured as follows: Section 2 presents the related literature. Section 3 presents the methodology of the study. Section 4 provides the empirical results and discussion, and Section 5 concludes the paper with policy implications.

2. Literature review

The relationship between monetary policy and credit is well known in the theoretical and empirical fronts of economic literature. On the theoretical front, the relationship is richly documented in the credit channel theory and the endogenous growth theory. Advocates of the credit channel theory (Bemanke, 1993; Gertler and Gilchrist, 1993; and Kashyap and Stein, 1994) assert that the resultant effects of monetary policy on interest rates are amplified by endogenous changes in the external finance premium, which represents the difference in cost between funds generated externally through issuing of debt or equity and funds raised internally through retained earnings. This complementary role in the external finance premium helps in explaining the timing, strength, and the composition of monetary policy effects far much better than is possible by making a solo reference to interest rate (Kashyap and Stein, 1994). According to the credit channel theory, two strands have been proposed to explain the link between monetary policy and credit and these include the balance sheet channel and the bank lending channel.

Furthermore, the endogenous growth theory underpins the significance of finance in promoting long-run economic growth and hence provides a theoretical platform to empirically deepen the understanding of the relationship between monetary policy and credit to the private sector. According to the finance-growth nexus, financial sector services such as the availability of credit affect economic growth through their influence on capital accumulation and technological innovation (Levine, 1997; Trew, 2006). This is because financial markets essentially involve resource allocation, and they can be viewed as the central locus of decision making. This is to say, if they fail to deliver on their mandate, not only will the profits of the sector be lower than they would otherwise have been, but the overall economic performance may be impaired (Stiglitz, 1993).

Evidence from the empirical studies indicates that the link between private sector credit and monetary policy has been dominating policy and academic debates due to the significance of money supply to price stability. The majority of previous studies in this area had focused solely on the general macroeconomic-monetary policy relationship using standard time series techniques of cointegration. The common theme running through these studies that have investigated this nexus suggests a positive relationship between private sector credit and monetary policy. For example, in a study conducted in Pakistan by Rasheed (2014) using Johansen cointegration tests and Granger causality tests, the results revealed that credit to the private sector causes reserve money. Similarly, Brima and Brima (2017) investigated the effect of monetary policy on private sector investment for the period 1980 to 2014 in Sierra Leone using

a vector error correction model (VECM). The findings indicated a positive and statistically significant relationship between money supply and private sector investment. This is also confirmed by Bellalah *et al.* (2013), Olweny and Chiluwe (2015), Van Leuvensteijn *et al.* (2018) Hannan and Berger (1991), Adediran *et al.* (2019), and Bilgin *et al.* (2020). These studies use a battery of econometric techniques and they found amongst others, evidence of a long-run relationship between credit to the private sector and monetary policy.

In the same empirical quest, Mamman and Hashim (2013) investigated the impact of private sector credit on the real sector activities of Nigeria using aggregate time series data from 1986 to 2010. The results of the ordinary least squares multiple regression estimates showed a statistically significant impact of private sector credit on the real sector of Nigeria. This was also proven by Nwakanma *et al.* (2014) who evaluated the nature of long-run relationship between private sector credit and economic growth of Nigeria from the period 1981 to 2011 using the autoregressive distributed lag and Granger causality methods. Their findings indicated a long-run relationship between growth in the economy and credit to private sector of Nigeria in the absence of statistically significant causality in any direction. In the same vein, Hakwaashika (2018) in Zambia investigated the relationship between private sector credit extension and economic growth using quarterly data from 2005 to 2017. The cointegration technique and error correction procedures revealed an existence of a positive relationship between private sector credit extension and economic growth. Another empirical study by Effiong *et al.* (2017) that assessed the effectiveness of financial development and monetary policy in Africa using standard panel data techniques also showed a statistically significant but weak relationship between financial development and monetary policy effectiveness in Africa.

In almost all the previous studies cited above less effort has been devoted to the empirical investigation of the relationship between monetary policy and private sector credit, especially in Africa and SADC. Therefore, this study seeks to investigate the relationship between private sector credit and monetary policy in the SADC economies. This empirical investigation will not only deepen the understanding of how monetary policy affects credit to the private sector and vice-versa but also fill in the gap in the literature where majority of previous studies fell short in addressing this important policy area in research.

3. Methodology

This paper employs the dynamic panel cointegration techniques anchored on the approach introduced by Pesaran *et al.* (1999) to empirically examine the relationship between monetary policy and credit extended to the private sector in the SADC economies. The econometric estimations of the data across the SADC countries were conducted using the panel autoregressive distributed lag (ARDL) model, where the pooled mean group (PMG) and the mean group estimators were used to examine both the short and long term relationship between credit extended to the public sector and monetary policy in SADC economies. The application of these ARDL techniques had allowed the researchers to consider the country-specific heterogeneity issue. Secondly, the compatibility of this model lies in its identification of the cointegrating vectors where there are multiple cointegrating vectors (Nkoro and Uko, 2016). Lastly, as maintained by Pesaran *et al.* (2001), the popularity of the model is associated with its ability to investigate non-integrated variables of the same order or which do not have a long-run relationship according to a restricted VECM or unrestricted VAR regression.

Anchored from the theoretical lens of the conventional endogenous growth literature as applied by Nzomoi *et al.* (2012), this paper employs the panel ARDL cointegration technique as proposed by Pesaran *et al.* (2001) to determine the relationship between monetary policy and private sector credit. As such, the study adopted and modified a model by Adediran *et al.* (2019) to capture the economic realities of this relationship in the SADC economies. Therefore, the general econometric model advanced in this study takes the form in Equation (1):

$$M3_{i,t} = \varphi + \varphi CPS_{i,t} + \varphi GDP_{i,t} + \varepsilon_{i,t} \quad (1)$$

where; $M3_{i,t}$ represents the money supply (a proxy of monetary policy) for country i in period t . $CPS_{i,t}$ captures the stock of credit extended to the private sector by commercial banks for country i in period t and $GDP_{i,t}$ denotes the economic growth of country i in period t , and the coefficients of variables and the disturbance term is captured by φ and $\varepsilon_{i,t}$ respectively. Equation (1) is formulated on the assumption that the disturbance term is distributed independently and identically such that the corresponding variance is zero. The study utilized panel data from the 16 selected SADC countries obtainable from the World Bank database for the period from 2009 to 2018. The paper characterized the endogenous growth model for the general framework for the panel ARDL, and explicitly the mathematical form is represented as in the Equation (2):

$$\Delta M3_{it} = \theta(M3_{i,t-1} - \lambda' X_{it}) + \sum_{j=1}^{p-1} \varepsilon_{it} \Delta M3_{it-j} + \sum_{j=1}^{q-1} B'_{ij} \Delta X_{it-j} + \varphi_i + \varepsilon_{i,t} \quad (2)$$

where; $\Delta M3_{it}$ is the differenced money supply as a measure of monetary policy. The set of independent variable X_{it} includes the proxy of private sector credit represented by the stock of credit extended to the private sector by commercial banks for country i in period t and gross domestic product representing the economic growth of country i in period t . Whilst λ' is the vector long run relationships and the $\theta(M3_{i,t-1} - \lambda' X_{it})$ is the vector error correction model whereas B'_{ij} and ε_{it} are short-run dynamic coefficients.

4. Results and discussion

Before engaging in any form of regression analysis, it is important to examine the descriptive statistics of the variables used in the econometric estimation of the model (Gujarati, 2003; McLeod and Li, 1983). As such, the summary statistics of the variables are reported in Table 1 and it is clear from these results that all variables exhibit evidence of a leptokurtic or peaked distribution since their kurtoses are more than the conventional 3. As Table 1 shows, estimates of the standard deviation indicate that the variables are not volatile except for economic growth with a large variance between the largest observed and the smallest values.

Table 1. Descriptive statistics of variables

MEASUREMENT	GDP	LCPS	M3
Mean	2.359433	2.754891	0.916609
Median	2.384154	2.753978	0.793454
Maximum	6.062622	4.665889	4.745985
Minimum	-0.356675	-0.798508	-1.481266
Std. Dev.	1.480564	0.977071	0.889611
Skewness	0.378605	-0.396174	0.747327
Kurtosis	3.383812	3.748865	4.466501
Jarque-Bera	8.948425	14.75863	54.44231
Probability	0.011399	0.000624	0.000000
Sum	703.1109	820.9576	273.1494
Sum Sq. Dev.	651.0451	283.5362	235.0479
Observations	298	298	298

The results reported in Table 1 further suggest that all the variables (except for LCPS) have a long right-tail distribution as they both have positive skewness values with all the series exhibiting significant probability values for the Jarque-Bera with a high likelihood of outliers in the model. Put differently, p-values associated with the Jarque-Bera statistics, a test for departure from normal distribution (McLeod and Li, 1983), exhibit strong evidence that the series do not deviate from normality.

The next step of our empirical analysis involves the examination of unit root properties of the series by employing the panel unit root methods with the results thereof reported in Table 2.

The tests of unit root reported in Table 2 were conducted under the assumption of level and first difference.

Table 2. Panel unit root results

Variable	IPS		ADF FISHER		PP FISHER		Order of Integration
	Level	First Difference	Level	First Difference	Level	First Difference	
LM3	-2.317***	-12.35***	-2.119***	-10.31***	-1.13041	-12.863***	I(0)
LCPS	-1.984**	-9.042***	-1.807**	-8.259***	-1.22333	-8.948***	I(0)
LGDP	1.611	-9.080***	1.748	-7.854***	2.00077	-8.688***	I(0)

Note: *** p<0.01, ** p<0.05, * p<0.1. Lag length selection is based on the Schwartz Bayesian Criterion. ADF–Fisher test is based on Choi’s-Z statistic.

Table 2 presents the results of the IPS, ADF Fisher, and PP Fisher unit root test. As per the results, the variables of the study are found to be stationary and integrated of an order I(0) or I(1) which allows us the possibility to estimate both short-run and long-run relationship between LM3 and its explanatory variables (LCPS & LGDP) using a panel autoregressive distributed lag (ARDL) approach. The precondition for the panel ARDL is that the series be either I(0) or I(1) and not I(2) (Pesaran and Shin, 1999; Pesaran *et al.* 1999).

Table 3. Pooled mean group estimator (PMGE) and mean group estimator (MGE) results

Dependent: LM3	Pooled Mean Group Estimator			Mean Group Estimator		
	Coef.	St. Error	P-values	Coef.	St. Error	P-value
LCPS	0.208424***	0.043428	0.0000	0.328844***	0.054942	0.0000
LGDP	0.507001***	0.124582	0.0001	0.016310	0.054744	0.7661
Error correction coefficient	-0.387280***	0.173292	0.0266	-0.339085	0.072871	0.0000
ShortRun coefficients						
D(LCPS)	0.804372***	0.290033	0.0061	0.058938***	0.218183	0.0177
D(LGDP)	0.039789	0.759525	0.9583	0.559765	0.694964	0.4215
Hausman	0.2704					

Note: *** p<0.01, ** p<0.05, * p<0.1.

Table 3 represents the results of the PMGE and MGE. From these results, the MG was estimated from the unrestricted country by country estimation. Coefficients of MG estimator are the average of country-specific parameters and PMG coefficients are restricted to be the same across countries. The results of the Hausman test, which is greater than 0.05, indicate that the null hypothesis of long-run homogeneity cannot be rejected and hence we accept the PMGE as a consistent and efficient estimator. According to Pesaran *et al.* (1999), the PMG is more informative and has an increased efficiency as compared to the MG. According to the results of the PMGE, LCPS and LGDP have a positive and statistically significant long-run impact on LM3. The error correction coefficient, which represents the speed of convergence is also negative and significant and hence we conclude that LM3 is significantly explained by its dependent variables (LGDP and LCPS) in the long run. The error correction coefficient of -0.387 indicates an average speed of convergence of 38, 7% over the study period. The impact of LCPS on LM3 is shown by

the results to be statistically significant and positive both in the short and long run. The impact of LGDP on LM3 was found to be statistically significant positive in the long run while positive but insignificant in the short run.

These findings corroborate theoretical evidence from the endogenous growth literature which places great emphasis on the link between capital input to economic activities. Empirically, our findings in this case are in line with (Nzomoi et al. 2012; Rasheed, 2014; Olweny and Chiluwe, 2015; Hakwaashika, 2018; Emenike, 2017; Adediran et al. 2019) who also discovered a positive and statistically significant relationship between monetary policy and credit to the private sector in the short as well as the long-run analysis. This may be characterized by the findings by Greenwood and Jovanovic (1990) who found that financial institutions provide symmetric information and improve allocation of resources through financing of firms with advanced technology and thereby inducing growth. Their results indicated that financial institutions such as the banking sector are key in evaluating prospective entrepreneurs and hence most likely to finance them thereby increasing the likelihood of successful innovation which advances economic growth (King and Levine, 1993).

5. Conclusion and policy implications

In this study, we examined the relationship between the credit extended to the private sector by commercial banks and monetary policy in the context of member states within the SADC community. Cognizant of the heterogeneous nature of the data and the importance of the credit channel in influencing the level of interest rate and investment in these countries, we adopted the panel data regression models for econometric inference. The unit root tests showed that the series suffers from both $I(0)$ and $I(1)$, hence we estimated a panel ARDL. The Hausman test results showed that we fail to reject the null hypothesis of long run homogeneity, hence we accepted PMGE as the consistent and efficient estimator. From the analysis, we find evidence for the presence of a long-run relationship between money supply, economic growth, and stock of credit to the private sector. Evidence from this analysis pointed out that economic growth and money supply have a positive long-run relationship with the former variable statistically significant in explaining money supply. In addition, private sector credit was found to be an effective channel of monetary policy and statistically significant in influencing money supply within the SADC region.

The findings of our investigation hint at several macroeconomic approaches that the SADC countries need to put emphasis on so as to achieve macroeconomic convergence, stabilize and harmonize exchange rate systems, liberalize capital and current accounts transactions, and adopt market-oriented approaches to the conduct of monetary policy. Thus, policy attention must be directed towards the appetite for accelerated growth, investment, and employment in the SADC region but more importantly with more regard to the establishment of sustained macroeconomic stability as a precondition to sustainable growth and for the creation of monetary union in the region. It is in our scientific understanding that the coordination of macroeconomic policies within a sound monetary union framework anchored on an inflation-targeting monetary policy would be a positive initiative towards the acceptable policy direction.

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