# BANK CREDIT'S ROLE IN INFLUENCING ECONOMIC GROWTH IN THE EMERGING MARKET

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## Abstract

The relationship between bank credit and economic growth has been subject to extensive empirical research. This study applied a vector autoregressive (VAR) approach to examine the relationship between bank credit and economic growth in South Africa based on three separate periods: pre-crisis (2001–2008), post-crisis (2009–2016), and the combined period. The findings suggested two-way causality between bank credit and economic growth in the post-crisis period; however, the combined sample found evidence of unidirectional causality in support of a demand-leading hypothesis. Bank credit was found to have a positive and statistically significant relationship with the gross domestic product (GDP) growth rate in the pre-crisis period, concurring with Miftari (2023) that the financial system is the crucial supporter of economic growth (economic activities). However, following the events of the financial crisis, both the post-crisis and combined samples revealed that bank credit had a negative influence on economic growth, and this confirms to Koutima-Banzouzi et al. (2024) and Tchouassi and Tomo (2022). Since the financial crisis, the South African economy has been plagued by many issues that have resulted in non-existent economic growth for some time, which, to some extent, has limited banks' credit ability to positively influence economic growth in South Africa.

**Keywords:** Bank Credit, Economic Growth, Vector Autoregressive Model, Financial Crisis, Emerging Market

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## 1. INTRODUCTION

Since the early 1900s, the relationship between bank credit and economic growth has been subject to extensive empirical research considering the important link that exists between the two (Arifaj & Baruti, 2023; Eyalsalman et al., 2024; Miftari, 2023; Mohanty et al., 2016). The availability of bank credit fuels economic growth as an increase in bank credit creates both a demand for and supply of goods and services, which in turn leads to job creation as well as generating a return on capital (Mohanty et al., 2016; Nath & Das, 2023; Suyanto et al., 2024). In South Africa and many other Sub-Saharan countries, bank credit is defined as the credit extended by banking institutions to the private sector, which includes households, business organizations, and industries. Bank credit

is used by individuals and households for both consumption and investment purposes, while business organizations and industries make use of credit to invest in new plant and machinery, working capital, or the hiring of additional employees to improve productivity and gain competitive advantages. It is therefore generally accepted that the banking sector forms a crucial part of any economy, as the credit extended by banking institutions is a vital source of finance in establishing growth in South Africa. The financial system is the crucial supporter of economic growth, as it is said to be the "blood" of economic activities (Miftari, 2023).

A strong and inclusive financial system not only plays a vital role in financing economic activities that promote economic growth, and it is not just a necessary, but also sufficient condition for ensuring that development is inclusive. Productivity growth is enhanced through inclusive finance. Despite the favourable and robust banking sector evident in South Africa, it is most certainly not free of challenges, which greatly limit its obvious potential and, in turn, have created detrimental barriers to financial inclusion (Madarah, 2019). One of the more notable barriers to financial inclusion in South Africa is the difficulty small, medium, and micro enterprises (SMMEs) face in obtaining financial assistance from the mainstream financial system (formal banks), despite the significant contribution to welfare, economic growth, and development. This is against empirical evidence in support of the positive impact of credit, especially micro-credit, on small-scale producers (Matsvai et al., 2022). It is against this backdrop that this study intends to determine how bank credit extension to the private sector affects economic growth in South Africa. There have been several empirical studies conducted in Africa (Chuba & Hitlar, 2022; Ekamena Ntsama et al., 2022; Dembele & Machrafi, 2021) that have found evidence to support that there is a positive and significant relationship that exists between bank credit and economic growth. However, concerning Africa, it depends on the level of financial development and financial inclusivity since some studies diluted the mix of findings by concluding a negative relationship between bank credit and economic growth, such as Okonkwo et al. (2022), Tchouassi and Tomo (2022), and the International Monetary Fund (IMF, 2024) on the Togolese case. This therefore unambiguously exhibited that the relationship between bank credit and economic growth is inconclusive, making it imperative for this study to examine the South African case.

The availability of bank credit fuels economic growth as an increase in bank credit creates both a demand for and supply of goods and services, which in turn leads to job creation as well as generating a return on capital (Mohanty et al., 2016). Access to bank credit allows businesses to invest and create jobs, fostering economic activity and diversification (IMF, 2024). Although bank credit does provide a vital source of finance, excessive borrowing and lending can have devastating effects on an economy and may even result in a financial crisis, as was seen in 2008, which was primarily caused by deregulation in the financial industry. The 2008 global financial crisis showed that credit risk can have a significant impact on the macroeconomy, as well as highlighting the vulnerability of the financial system and its ability to withstand economic instability and volatility (Miao & Wang, 2010). However, in the overall scheme of things, bank credit is in some ways the backbone of an economy as it finances production, consumption, as well as capital formation, and is therefore vitally important to helping a country achieve economic growth.

It is agreed upon by many researchers that the role of financial intermediation falls heavily on the shoulders of the banking sector. Generally, if credit extension to the private sector is approximately 70% or more of gross domestic product (GDP), the country is known to have a relatively well-developed financial system. Europe, which is home to many well-functioning economies, had bank credit that reached 170% of GDP as of 2014, thus placing the banking sector at the forefront of this economic prosperity (Janse, 2016). As well as providing the economy with resources in the form of capital, an efficient, stable, and well-regulated banking sector is also vitally important in effectively managing risk prevalent in any economy (Butterworth & Malherbe, 1999). In 2008, however, during the worst financial crisis in living memory, banking institutions failed miserably in withstanding the economic impact of the crisis. As a result of banks taking on too much risk by holding large quantities of illiquid assets while operating with very little financial protection led to a global meltdown occurred, causing credit markets to freeze, and eventually a severe recession followed (Gara, 2020).

South Africa and many other emerging markets have still not fully recovered from the last financial crisis. Unlike other nations in Europe and the US, South Africa, and in particular the South African Reserve Bank (SARB), does not have the financial firepower that other central banks, like the European Central Bank and the Federal Reserve System, have in being able to provide unlimited liquidity for the banks in times of a crisis. The recent credit rating downgrade to "junk status" by Fitch and Moody's has done South Africa no favours. Fitch Ratings (2020) had already foreseen a difficult year ahead for South African banks in 2020, mainly because of weak GDP growth, but the recent financial turmoil caused by COVID-19 accelerated its decision to downgrade credit ratings (Fitch Ratings, 2020). In addition, the rand has plummeted, making it extremely difficult to decrease the interest rate at a time when the economy desperately needs lower interest rates to free up much-needed capital.

Nevertheless, one of the first measures implemented by the Reserve Bank was to cut the repo rate by 100 basis points from 6.25% to 5.25%. Another measure taken by the SARB was the purchase of government bonds to increase market liquidity (Ramburuth-Hurt, 2020). This allowed South Africa's major banks to introduce a range of measures to help both citizens and businesses affected by the difficult financial circumstances. The economy's ability to withstand the current financial storm will fall heavily on the role of banks and the measures they have put in place to help alleviate the financial difficulties being experienced by both households and businesses alike, thus showing that bank credit is not only essential for influencing economic growth but also in helping the economy recover in times of crises.

In a study carried out by Mboweni (2004), he points out that during the period 1994–2004, South Africa managed to establish a well-developed banking system superior to most other emerging

economies and on par with those in many developed countries. Whilst other African countries are struggling to obtain better returns, South Africa is benefitting from its advanced banking systems, which are further enhanced by a strong regulatory and legal framework. The importance of a strong regulatory framework cannot be stated enough, as this has a major influence on the nature of the market and, therefore, the behaviour of banks, especially when faced with monetary policy shocks. In fact, the extensive regulatory environment played a major role in helping the sector recover from the 2008 global financial crisis. Furthermore, the regulatory environment also dictates the entry, exit, as well as the merging and demerging in the financial markets (Mishi & Tsegaye, 2012).

As of April 2020, there were 18 registered South African banks, of which 13 are locally controlled and 5 that fall under foreign control (South African Reserve Bank, 2020). The banking sector is further made up of four mutual banks, 16 local branches of foreign banks, and 30 foreign banks with approved local representative offices (South African Reserve Bank, 2020). During the period 2000–2008, assets in the banking sector continued to grow at a steady rate; however, the sector experienced a sharp decline in the growth of loans and advances because of the financial crisis, and therefore contributed significantly to the decline of total assets in the sector. This is not surprising given that loans and advances make up the majority of the banking sector's assets. When changes to monetary policy occur, that is, changes to the repo rate, it influences the extension of loans and advances by banks, which in turn impacts the sector's balance sheet and therefore the availability of funds for investment purposes as well as household expenditure. If banks are not large enough to absorb monetary policy shocks that raise interest rates, the cost of funds will increase and discourage borrowing. In addition, as the costs of funds increase, so does the risk of default by borrowers, which explains why banks decided to more closely examine borrowers' creditworthiness and limit the amount of lending in response to the monetary policy shocks caused by the financial crises (Mishi & Tsegaye, 2012).

Despite the large number of banks, the banking sector in South Africa has always been highly concentrated, with the four largest banks, namely, Standard Bank, Amalgamated Bank of South Africa (ABSA), FirstRand, and Nedbank, accounting for more than 84% of total banking sector assets (Mishi & Khumalo, 2019). A banking sector that is competitive is vitally important for ensuring the proper functioning of the economy, as oligopolistic environments like the South African banks operate under can be a major threat to economic stability. Moreover, sectors that operate in highly concentrated settings can reflect adverse results and lead to anticompetitive behaviour, such as price collusions and under-provision, to the detriment of many market participants (Mishi & Tsegaye, 2012).

In addition to the highly concentrated environment, there are many other challenges confronting the South African banking sector. For instance, the politically unstable environment has led to credit rating downgrades, which have caused the Rand to depreciate and, as a result, caused imports such as oil to become more expensive, inevitably leading to everything else in general becoming more expensive. In response, the repo rate is more than likely to rise in order to combat rising inflation, putting pressure on banks to increase interest rates because of increasing funding costs, thus making it more difficult for South Africans to secure credit (Madarah, 2019). Among the many issues related to financial inclusion in South Africa are the high fees that limit the usage of banking services, mistrust in banks' motives, and cumbersome paperwork required by banks, coupled with slow response times (Ikdal, 2017).

Large parts of the country's low-income earners have had limited access to finance from banks, while one of the major problems faced by owners of SMMEs has been the inaccessibility of financial assistance from banks. Since banks are the main source of finance for SMMEs, their lending behaviour has a major influence on the amount of investment expenditure by these enterprises. Given the increase in bank credit in response to crises and pandemics, the study seeks to check whether the traditional and theoretical views that credit increases investment and productivity still hold. The study seeks to answer questions as to how bank credit affects economic growth in South Africa generally (combined study period), pre-crises, and post-crises, with the post-crises engulfing the pre and post COVID-19 pandemic.

The rest of this paper is structured as follows. Section 2 reviews the relevant literature. Section 3 analyses the methodology that has been used to conduct empirical research. Section 4 presents the results. Section 5 discusses the research results. Section 6 concludes and provides policy recommendations.

## 2. THEORETICAL REVIEW

The research is underpinned by various theories of finance and economic growth. As cited from Adhikari et al. (2024), "A well-developed financial sector can foster economic growth (through savings accumulation, enhancing allocative efficiency and promoting capital formation) that is through the supply-led growth hypothesis (finance-led growth hypothesis)" (p. 123). On the other hand, a growing economy will promote financial sector development that is through the demand-led growth model (growth-led finance hypothesis). From Schumpeter (1911) and Levine (1997), banks play the critical funding role that translates into economic growth. The McKinnon (1973) and Shaw (1973) hypotheses acknowledged the significance of the financial (banking) sector through financial repression (mainly capping of interests) and financial liberalization (leaving the capital market to regulate itself through market forces), respectively. There are also endogenous growth models (Lucas, 1988; Romer, 1990), which all content to the fact that human capital development is a result of education and skill development, technological progress from innovation, and efficiency enhanced through knowledge accumulation, all of which amplifies investment where investment is a result of borrowing where the borrowing is from the financial system hence bank credit that should ultimately result in sustained growth and development. For the endogenous growth models, loans from banks reinforce human capital through education, training, and skill enhancement, individual and

business funding. Through the highlighted theories, bank credit is one of the key financial sector development indicators, therefore, resulting in firms being able to access capital (both human and physical capital) for starting, expanding, or increasing production over time.

Koutima-Banzouzi et al. (2024) analysed the effects of bank credit on economic growth in the six Central African Economic and Monetary Community (CEMAC) member states. Annual panel data for the period from 2005 to 2021 was used and analysed using the generalized method of moments (GMM) as the dynamic panel data analysis. Results revealed a negative and significant effect of bank credit on economic growth.

Adhikari et al. (2024) investigated the contribution of bank credit to the economic growth of Nepal by employing the autoregressive distributed lag (ARDL) model using time series data for the period from 1975 to 2023. Empirical findings revealed a positive short-run and long-run association between bank credit and the growth in the economy.

Onwioduokit and O'Neill (2023) investigated the challenges faced by investors in Nigeria despite government efforts to promote credit expansion in the private sector from 1980 to 2022. Credit expansion was proxied by credit to the private sector and deposits at rural bank branches. Other model variables included were exchange rates and interest rates, with real gross domestic product serving as the dependent variable. The ARDL estimation technique was used for analysing the short and long-run relationships among the variables. A long-run relationship between credit and economic growth was established.

Miftari (2023) examined the nexus and contribution of banking intermediation on the economic growth of some Central, Eastern, and South-Eastern European (CESEE) countries. Panel data for the period 2010–2020 was used in ordinary least squares (OLS) and fixed effect regression models. Banking intermediation was measured by banks' credit to the private sector, credit to the government, and state-owned enterprises. Results indicated that credits provided by banks negatively affect economic growth.

Bamba et al. (2023) examined the effect of access to bank credit on economic growth from an analysis by sector of the Malian economy. Sectoral panel data covering the period 1990–2021 was used in an ARDL modelling. The results show that access to bank credit has a negative short-term and positive long-term effect on economic growth in Mali. The sectoral analysis shows that bank credit to the private sector has a positive effect on the manufacturing and service sectors, while a negative effect was revealed on the agricultural sector growth. Also in Mali, Bamba et al. (2023) examined the effect of bank credit access on economic growth in Mali using the ARDL approach. Findings revealed that access to bank credit negatively and positively affects economic growth in Mali in the short run and long run, respectively.

Ornan and Miftahu (2023) examined the impact of bank credits on economic growth in Nigeria using time series data for the period from 1986 to 2022. Johansen cointegration technique and vector error correction model (VEM) were used to determine the long-run and short-run relationships among the study variables. The Granger causality test is used to measure the direction of causality between bank credits and economic growth. Results revealed that credits to the private sector, credits to the public sector, and combined credits to both sectors positively and significantly impacted economic growth.

Paudel and Acharya (2020) examined the impact of financial development on economic growth in Nepal using the ARDL approach. Time series data from 1965 to 2018 was used. Domestic credit was used as a proxy of financial development, and it was found that there is a strong positive long-run relationship between domestic credit and economic growth in Nepal. Mahara (2020) examined the effect of financial development on economic growth in Nepal. A financial development index was constructed and used together with domestic credit as a proxy of financial development. A positive and significant long-run relationship between domestic credit and real economic growth in Nepal.

Tchouassi and Tomo (2022) investigated the impact of financial development and institutional reforms on the economic growth of the CEMAC. Dynamic panel data analysis was used (GMM). Results indicated that private-sector credit does not affect economic growth in CEMAC.

Chakanyuka (2017) analysed the relationship between business cycles and bank credit extension in South Africa, utilizing quarterly data from 1980 to 2013. The study also aimed at establishing the direction of causality between economic growth and bank credit. The Granger causality test technique was used. Business cycles were proxied by GDP at market prices, while bank credit was proxied by credit extended to the private sector. Results revealed a stable long-run relationship between macroeconomic business cycles and real credit growth in South Africa. Economic growth was found to positively influence bank credit (unidirectional causal relationship from economic growth to credit extension for South Africa) in South Africa, indicating that the demand-following hypothesis is stronger than the supply-leading hypothesis.

Tchouassi and Tomo (2022), in their study on the effects on economic growth of institutional reforms of financial development in the CEMAC, revealed that credit to the private sector does not contribute to economic growth. Okonkwo et al. (2022) examine the contributions of the banking sector to the growth of the Nigerian economy from 1986 to 2020 and discovered that bank credit negatively and significantly affects economic growth. Vasconcelos et al. (2021) found that credit generally causes economic growth. Chuba and Hitlar (2022) revealed that agricultural credit from commercial banks has a significant positive effect on economic growth in Nigeria. Furthermore, Ekamena Ntsama et al. (2022) revealed that bank credit to private companies has a positive and significant impact on the economic growth of Cameroon.

Most of the reviewed relevant empirical studies concentrated on regionally integrated countries in panel data frameworks without country-specific evidence, and very few were on country-specific implications of bank credit to economic growth. Very few studies have concentrated on South Africa for country-specific empirical evidence. The study also became imperative following the global

financial crisis and later with the COVID-19 pandemic which resulted in both large-scale and small-scale firms struggling to recover, that triggered the South African government to avail more credit as a firm's recovery strategy hence the need for assessing the impact of credit on economic growth taking cognisance of both the pre- and post-crises COVID-19 eras in the same dataset for analysis with the growth in credit in general in firms.

## 3. RESEARCH METHODOLOGY

All data collected was secondary in nature, where time series data on the four variables was used in the regression analysis, and was collected from well-known data sources, the SARB, the World Bank, and Statistics South Africa. The data collected covered the period 2001–2023. Statistics South Africa was used to obtain data on the dependent variable (*GDP*) in the form of a seasonally adjusted quarterly growth rate. The World Bank provided data on the real interest rate (RIR). Since all data obtained from the World Bank was in annual format, well-renowned econometric software, E-Views, was used to convert the data into quarterly format. Quarterly data on the unemployment rate and domestic credit to the private sector was collected from the SARB, where the monthly data obtained was also converted into a quarterly format using E-Views.

All variables selected to examine the relationship between bank credit and economic growth are in line with both the theoretical and empirical literature. The following multiple variable regression model has been chosen to carry out the regression and test the stated hypotheses.

The framework of the econometric model is as follows:

$$GDP = f(TPSC, RIR, UR) \tag{1}$$

The multiple variable regression model is then specified as follows:

$$GDP_t = \beta_0 + \beta_1 TPSC_t + \beta_2 RIR_t + \beta_3 UR_t + \varepsilon_t \tag{2}$$

where:

- *GDP* — Real GDP growth rate;
- *TPSC* — Total private sector credit provided by the banking sector;
- *RIR* — Real interest rate;
- *UR* — Unemployment rate;
- $\varepsilon$ — Random error term.

All variables were transformed into logarithmic format. Transforming the model into a log format helps rid the data of skewness, thus allowing for data patterns to be more identifiable. In addition, taking the log of one or multiple variables changes the interpretation of the model from being interpreted as unit changes to percentage changes.

The model is then transformed into log format, specified as:

$$\log GDP_t = \beta_0 + \beta_1 \log TPSC_t + \beta_2 \log RIR_t + \beta_3 \log UR_t + \varepsilon_t \tag{3}$$

where:

- *logGDP* — Log of real GDP growth rate;
- *logTPSC* — Log of total private sector credit provided by the banking sector;
- *logRIR* — Log of the real interest rate;
- *logUR* — Log of unemployment rate;
- $\varepsilon$ — Random error term.

The error term is included to capture measurement errors, variations in parameters, errors of functional approximation, and sampling variability.

The vector autoregressive (VAR) approach was selected over ordinary ARDL because forecasts from VAR models are quite flexible, as they can be made conditional on the potential future paths of specified variables in the model and are the most appropriate for structural inference and policy analysis (Stock & Watson, 2001; Gujarati & Porter, 2009). Analyses such as impulse response functions, variance decomposition, and even checking the causal relationships (Granger causality) are more appropriate for VAR modelling (Sims, 1980; Patterson, 2000). VAR model was also chosen over other methodologies because financial variables are usually affected by their previous values, and the previous financial variables can affect other variables in the model, hence a multi-equation VAR model was chosen (where there will be one equation for each variable being examined and each variable is explained by its lags and all the lags of all the other variables). As highlighted by Gujarati (2022), VAR modelling is a multivariate version of a simple ARDL model; hence, it is more general and more comprehensive.

## 4. RESULTS

Previous empirical studies that have set out to determine the nature of the relationship between bank credit and economic growth have reached a wide range of conclusions. Many studies (Chuba & Hitlar, 2022; Dembele & Machrafi, 2021) have managed to establish the existence of a positive linear relationship between bank credit and economic growth. On the other hand, there have been other studies (Koutima-Banzouzi et al., 2024; IMF, 2024; Okonkwo et al., 2022) that have failed to find statistically significant evidence to suggest that bank credit does influence economic growth. The purpose of this study was, therefore, to add further insights into this topic by discussing the empirical results found from the analytical approaches used.

### 4.1. Lag length

Determining the appropriate lag length structure for autoregressive models and making use of time series data is of vital importance. Among the most well-known selection criteria used for determining appropriate lag length are the Schwarz information criterion (SIC), Akaike's information criterion (AIC), and Hann-Quinn criterion (HQC). This study employed the SIC to determine the appropriate lag length for the model. From the results of Table 1 below, SIC has selected a lag length of 1 as the most appropriate lag length in all three data sets; therefore, a lag length of 1 will be used in the regressions.

**Table 1.** Lag length selection

| *Lag* | *AIC* | *SIC* | *HQC* |
|---|---|---|---|
| ***Pre-crisis*** | | | |
| 0 | -8.591808 | -8.398254 | -8.536071 |
| 1 | -14.83843 | -13.87066* | -14.55974 |
| 2 | -15.15062 | -13.40864 | -14.64899 |
| 3 | -16.24944* | -13.73324 | -15.52487* |
| ***Post-crisis*** | | | |
| 0 | -11.33898 | -11.15039 | -11.27991 |
| 1 | -17.50875 | -16.56578* | -17.21342* |
| 2 | -17.58443* | -15.88709 | -17.05284 |
| 3 | -17.27857 | -14.82686 | -16.51072 |
| ***Combined*** | | | |
| 0 | -6.323872 | -6.179204 | -6.267785 |
| 1 | -15.49072 | -14.76738* | -15.21029 |
| 2 | -15.88637 | -14.58436 | -15.38158 |
| 3 | -15.91106 | -14.03037 | -15.18192 |
| 4 | -16.28631 | -13.82695 | -15.33282 |
| 5 | -16.57314* | -13.53511 | -15.39530* |

*Note: * denotes significance at 10% level.*

## 4.2. The VAR approach: The estimated model

Whilst the VAR model framework is bi-directional, the focus was on the contributions of private sector credit, the real interest rate, and the unemployment rate's effect on economic growth. As mentioned previously, it is vitally important that the appropriate lag length be selected when running a VAR model. Based on SIC, the VAR model was run with a lag length of 1 for all three periods. Table 2 shows the short-run coefficients from the VAR regression included with the coefficients are their respective standard errors and t-statistic values.

**Table 2.** VAR estimates

| *Variable* | *Pre-crisis* | | | *Post-crisis* | | | *Combined* | | |
|---|---|---|---|---|---|---|---|---|---|
| | *Coeff.* | *Std. error* | *t-stat* | *Coeff.* | *Std. error* | *t-stat* | *Coeff.* | *Std. error* | *t-stat* |
| *LNGDPGR(-1)* | 0.220 | 0.17 | 1.298 | 0.233 | 0.129 | 1.806 | 0.562 | 0.108 | 5.179* |
| *LNPSC(-1)* | 0.022 | 0.011 | 2.06* | -0.056 | 0.023 | -2.467* | -0.014 | 0.007 | -1.983* |
| *LNRIR(-1)* | -0.038 | 0.013 | -2.875* | -0.007 | 0.019 | -0.391 | -0.015 | 0.012 | -1.386 |
| *LNUR(-1)* | 0.054 | 0.04 | 1.355 | 0.167 | 0.102 | 1.643 | 0.019 | 0.035 | 0.530 |
| *C* | -0.252 | 0.191 | -1.323 | -0.018 | 0.272 | -0.067 | 0.092 | 0.156 | 0.593 |

*Note: Dependent variable: LNGDPGR. * denotes significance at 5% level.*

From the above, both private sector credit and real interest are statistically significant at the 5% level of significance in the pre-crisis period. The results show that private sector credit shares a positive relationship with economic growth, and on the other hand, the real interest rate is found to negatively affect economic growth during the period 2001–2008. This means that ceteris paribus, a 1% increase in total private credit leads to a 0,022% increase in economic growth, concurring with Dembele and Machrafi (2021), and Chuba and Hitlar (2022), whilst a 1% increase in the real interest rate would result in economic growth decreasing by 0,038%. The lagged value of GDP growth and the unemployment rate were both found to be statistically insignificant in the pre-crisis period at the chosen level of significance. It is also worth noting that in the pre-crisis period, private sector credit shared a negative and statistically significant association with the unemployment rate, suggesting that an increase in credit resulted in a lowering of the unemployment rate. However, the relationship between the unemployment rate and the GDP growth rate was found to be statistically insignificant in all three periods, therefore implying that bank credit's ability to reduce unemployment will not necessarily translate into economic growth.

The post-crisis sample revealed only one statistically significant relationship, between bank credit and economic growth. However, the period following the financial crisis showed that economic growth was negatively impacted by bank credit extension to the private sector. In the post-crisis period, the findings suggest a 1% increase in private sector credit leads to a 0.056% decrease in GDP growth. Bamba et al. (2023) and Tchouassi and Tomo (2022) also concluded a negative relationship between banking credit and economic growth. Following an investigation into the effects of 39 financial crisis periods followed by strong private sector credit extension in both developed and emerging economies, Takáts and Upper (2013) suggested that lowering the level of credit extension to the private sector following a financial crisis will not necessarily lead to slower economic growth. The combined sample findings concur with the results found in the post-crisis period, with private sector credit having a statistically significant and negative influence on GDP, as Koutima-Bonzouzi et al. (2024) and Tchouassi and Tomo (2022) found. The negative relationship between banking sector credit and economic growth can be attributed to the increased financial distress in households and SMMEs, giving rise to significant non-performing loans (NPLs) as noted in the SARB (South African Reserve Bank, 2024). The lag of GDP was also found to be statistically significant, suggesting that GDP growth in the previous period strongly influences GDP growth in the current period. The findings from the combined sample found both the real interest rate and the unemployment rate to be statistically insignificant. The lack of statistical significance between the unemployment rate and GDP further questions the bank credit's ability to influence economic growth via greater extension to the SME sector.

### 4.3. Impulse response and variance decomposition

By analysing the impulse response functions and variance decomposition, we can determine how susceptible the dependent variable (*GDPGR*) is to endogenous (own) shocks as well as exogenous shocks (caused by independent variables). The impulse response functions are shown in the form of a graphical display in Figure 1, whilst the variance decomposition is shown in table form in Table 3.

From the impulse response functions, GDP is negatively impacted by endogenous shocks in all three periods, with the effects being felt instantaneously. The pre-crisis and post-crisis periods appear to show a more sudden decline in GDP because of the endogenous shock. The effects of the endogenous shock begin to gradually die off in the subsequent periods in all three periods; however, the combined period continues to show a gradual decline. In the pre-crisis period, a private sector credit shock (exogenous) increases GDP by an extremely small amount in period two before reverting to its original level in periods three and four. A slight increase is witnessed again from period six, which ever so slightly continues to rise through till period 10. The post and combined data sets show a shock to GDP caused by the private sector, offsetting a gradual decline in growth from period two. Looking at the pre-crisis sample, an exogenous shock caused by the real interest rate results in a sharp decline in GDP in period two and begins to steadily rise back to its former level from the third period. The post-crisis period shows a very slight decline in GDP in the second period before beginning to ever so slightly result in growth from the sixth period. Finally, in the combined sample, a real interest rate shock to GDP is also seen to decrease GDP significantly, although not as suddenly as was witnessed in the pre-crisis period. Surprisingly, a shock caused by the unemployment rate indicates an initial increase in growth in both the pre- and post-crisis samples. However, from period four, this eventually results in negative growth in the pre-crisis sample. It should be noted that not too many inferences may be drawn from the exogenous shock to GDP caused by unemployment, as in all three periods, the VAR estimates failed to find a statistically significant relationship.

**Figure 1a.** Impulse response functions: Pre-crisis

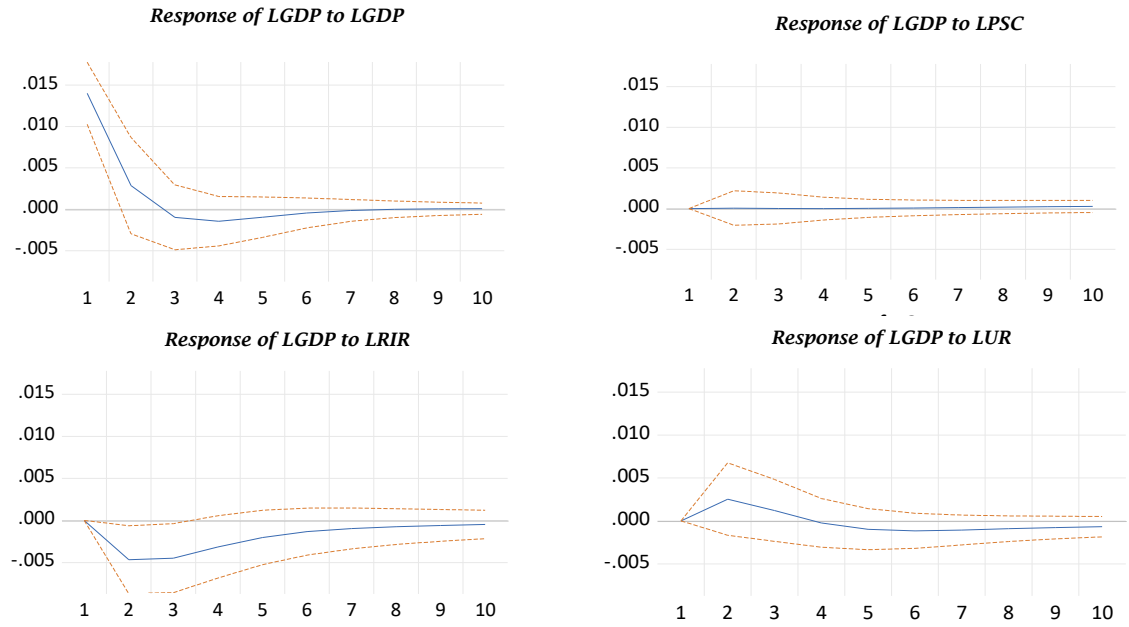


**Figure 1b.** Impulse response functions: Post-crisis

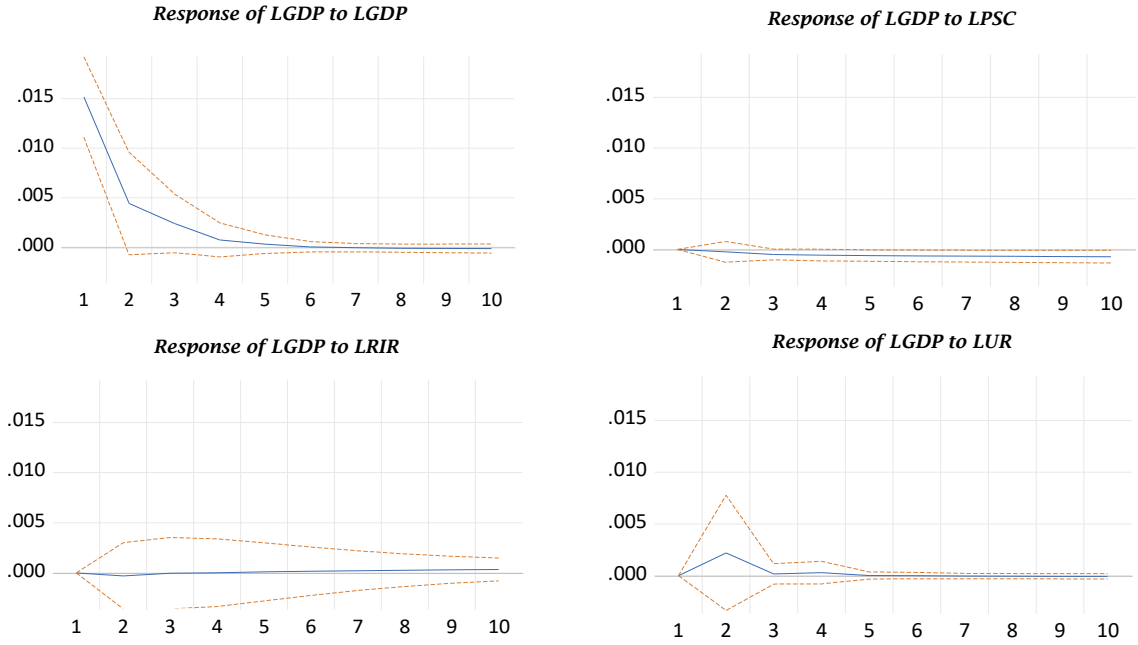
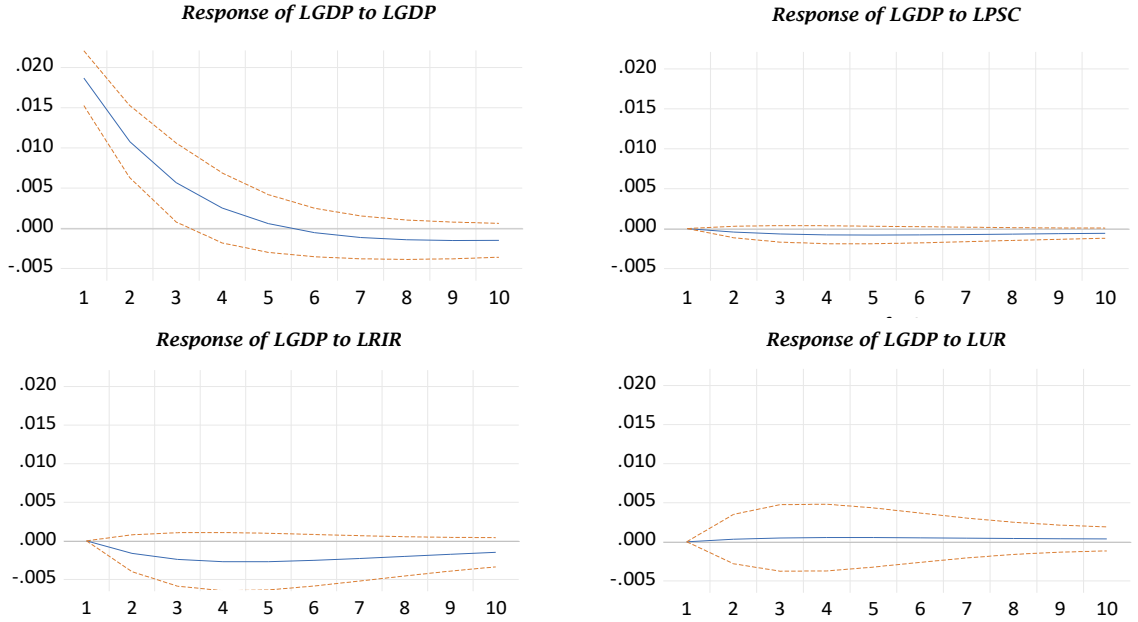



**Figure 1c.** Impulse response functions: Combined




*Source: Authors' own computations.*

When conducting the variance decomposition, determining the appropriate order of the variables is crucial, as the order in which the variables are listed in the VAR will greatly influence the outcome.

**Table 3.** Variance decomposition

| | *LNGDPGR* | *LNPSC* | *LNRIR* | *LNUR* |
|---|---|---|---|---|
| ***Initial period*** | | | | |
| Pre-crisis | 100.00 | 0.00 | 0.00 | 0.00 |
| Post-crisis | 100.00 | 0.00 | 0.00 | 0.00 |
| Combined | 100.00 | 0.00 | 0.00 | 0.00 |
| ***After two periods*** | | | | |
| Pre-crisis | 87.94 | 0.130 | 9.195 | 2.771 |
| Post-Crisis | 98.037 | 0.023 | 0.037 | 1.903 |
| Combined | 99.374 | 0.041 | 0.562 | 0.023 |
| ***After four periods*** | | | | |
| Pre-crisis | 77.701 | 0.240 | 19.069 | 2.99 |
| Post-crisis | 97.828 | 0.239 | 0.036 | 1.896 |
| Combined | 96.602 | 0.239 | 3.031 | 0.122 |
| ***After six periods*** | | | | |
| Pre-crisis | 75.512 | 0.271 | 20.506 | 3.711 |
| Post-crisis | 97.52 | 0.539 | 0.051 | 1.889 |
| Combined | 93.822 | 0.467 | 5.491 | 0.22 |
| ***After eight periods*** | | | | |
| Pre-crisis | 74.584 | 0.311 | 20.739 | 4.366 |
| Post-crisis | 97.14 | 0.879 | 0.097 | 1.884 |
| Combined | 92.038 | 0.643 | 7.031 | 0.287 |
| ***After 10 periods*** | | | | |
| Pre-crisis | 74.123 | 0.374 | 20.793 | 4.71 |
| Post-crisis | 96.693 | 1.252 | 0.176 | 1.877 |
| Combined | 91.077 | 0.763 | 7.828 | 0.331 |

*Source: Authors' calculations.*

From the above, the variance decomposition for all three periods suggests that 100% of the self-induced shocks are felt within the initial period, with the effect slowly diminishing in the periods that follow, especially in the case of the post-crisis and combined data sets. This indicates that in the first period, 100% of the variance in the forecast error of the GDP growth rate is explained by its own unit shock in the initial period. However, in the case of the exogenous shock, it indicates how much a shock to one variable impacts the forecast error of another variable. Barring the post-crisis period, the real interest rate explains most of the variation in the forecast error of the GDP growth rate. A shock to private sector credit in all three periods appears not to cause much variation in the GDP growth rate forecast error.

## 5. DISCUSSION

Based on quarterly data from 2001–2016 and using a VAR framework to analyse the relationship between bank credit and economic growth in the form of both a pre- and post-crisis sample, as well as a combined sample, this study found evidence of a statistically significant relationship between bank credit and economic growth. The post-crisis period (2009–2016) discovered two-way causality between bank credit and economic growth, whilst the unemployment rate was found to Granger-cause private sector credit. Unidirectional causality was discovered in the combined sample in support of a demand-leading hypothesis, suggesting that it is economic growth that influences private sector credit. The VAR estimates found that bank credit had a positive and statistically significant relationship with the GDP growth rate in the pre-crisis period (2001–2008); however, following the events of the financial crisis, bank credit was found to negatively influence GDP in both the post and combined samples. Due to a lack of statistical significance between the GDP growth rate and the unemployment rate, the study could not provide evidence to suggest that greater access to bank credit for SMMEs would lead to increased economic growth. However, given the discordance of some of the results, this is by no means a true reflection of the relationship, and further empirical investigation into this matter may uncover different results. Based on the combined results of this study, the post-crisis period appears to assert more influence on the combined period, revealing that the financial crisis had a significant impact not only on the structures of the South African economy but the foundation itself. In conclusion, since the events of the financial crisis, the South African economy has been plagued by many issues that have resulted in non-existent economic growth for some time, which, to some extent, has limited bank credit to positively influence economic growth in South Africa.

## 6. CONCLUSION

Since the early work done by Schumpeter (1911), the relationship between bank credit and economic growth has been subject to extensive empirical research. In general, due to bank credit's ability to both encourage expenditure and provide funds for business expansion as well as start-up capital, it has the potential to play an influential role in stimulating economic growth. Although bank credit provides a vital source of finance, the 2008 financial crisis is a stark reminder of how excessive borrowing and lending can lead to devastating economic damage. A strong legal and regulatory framework played a crucial role in helping the South African banking sector recover from the financial crisis of 2008. Despite this extensive regulatory framework and the fact that South Africa is home to the largest banking sector in Africa, it has failed to provide adequate financial assistance for SMMEs. Inaccessibility to bank credit has been identified as one of the major causes of SMME failure in South Africa. Given that, the SME sector has been identified as a key job creator and driver of economic growth, in addition to analysing the relationship between bank credit and economic growth, this study also set out to determine if the difficulty faced by SMMEs in obtaining bank credit was negatively impacting economic growth.

Despite the negative association witnessed between bank credit and economic growth in post

and combined samples, based on the empirical findings of others, bank credit remains an important part of the South African economy. The opportunities that readily available credit provides are essential and should be used to help guide the economy through the current economic crisis. Focus should be directed towards the informal sector and financially drained SMMEs to preserve and save as many jobs as possible. Future studies can also consider specifically the pre- and post-COVID-19 pandemic to check on the behaviour of bank credit on economic growth in South Africa. Such studies can also include other variables in the model, such as dummy variables to capture the crises and no crises periods, as such have impacted the general productivity of both capital and labour due to lockdowns, that is, if COVID-19. With some businesses struggling to recover while others are still recovering, the significance and impact of bank credit can be vividly evaluated.

The main limitations to the study are in many emerging markets, data on bank credit and economic indicators may be incomplete, inaccurate, or outdated, potentially leading to biased results. Establishing a direct causal relationship between bank credit and economic growth can be challenging due to confounding factors that may influence both variables simultaneously. The research might be limited by the specific time frame chosen for analysis. Economic conditions can change rapidly, and findings may not be applicable in different periods. The impact of bank credit may vary significantly across different sectors of the economy, and research focusing on aggregate measures may overlook these nuances.

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