
DETERMINANTS OF COMMERCIAL BANK'S CREDIT EXTENDED TO PRIVATE SECTOR IN NAMIBIA

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ABSTRACT

The study's primary objective was to examine the determinants of commercial banks' credit extension to the private sector in Namibia using monthly data from 2005:M1 – 2015:M12. The Engle-Granger two step procedures were employed by the study to conduct an econometric analysis on the selected macroeconomics determinants of bank credit to the private sectors. The study revealed a positive, but statistically insignificant relationship between prime lending rate and banks' credit extension to the private sector. Similarly, inflation was also found to have a positive, but was statistically insignificant in influencing changes in private sector credit extension. On the contrary, exchange rate was found have negative but statistical significant relationship with bank credit both in the short-run and long-run.

Keywords: Commercial banks, macroeconomics, credit, private sector, Engle-Granger, error correction model, Namibia

INTRODUCTION

The volume of money supplied and money demanded in the economy is the outcome of the interaction between lenders, usually commercial banks and the money holding-sectors, consisting of individuals, households, public and/or private sectors (Assefa, 2014). The primary objective of the Bank of Namibia, as a monetary authority, is to ensure price stability, while at the same time maintaining a sound economic growth (Bank of Namibia 2015). Bank rate policy as a monetary tool, has been on the forefront of the Bank of Namibia's policy intervention to influence money supply and demand in the economy. Many studies have questioned the effectiveness of the bank rate policy to influence the demand and supply for money in the

economy. In theory, the demand for money is influenced by the prevailing interest rate, should interest rate increase; demand for money will slow down.

Prime lending rate is the interest rate at which commercial banks charge clients, consisting mainly of individuals, households and private sectors. Prime rate is entirely adjusted to the repo rate, i.e. the interest rate at which the central bank charges commercial banks when borrowing. In a statement released by the Bank of Namibia's monetary policy committee (2015), it was stated that should the economy face excessive borrowing or demand for money to an extent that prices are inflated, the monetary authority will then respond by raising its repo rate with intent to restrain inflation. Should the economy need to be boosted following a contraction, the monetary authority will then respond by reducing its repo rate with intent to boost economic activities in the economy.

According to the Bank of Namibia, the monetary policy committee rely on a month-on-month review of credit extended to money holding sectors in order to determine money supply and demand in a domestic economy. Despite the central bank's tightening monetary policy stance, private sector's appetite to demand credit from commercial banks has somehow raised concerns. Month-on-month growth in private sector credit extended tends to peak a little while later following a hike in the repo rate. Thus, the Bank of Namibia's monetary policy committee has reacted to this "encroaching growth" in credit extended to private sectors by increasing its repo rate 3 times already in a space of 12 months from 6.25% in February 2015 to a staggering 6.75% in February 2016, giving rise to an increase in prime rate from 9.75 to 10.25, and the last increase in February 2016 at 10.50%.

Similarly, commercial bank's prime lending rate had increase consecutively between the last quarter of 2014 and the first quarter of 2015 at least three times in response to the repo rate hikes by the central bank. Despite efforts from the monetary authority to contain borrowing by individuals and businesses, credit extension, especially to the private sector continued to grow, and as such, has become a concern to the policy makers. It is this persistent growth in private sector credit extension that the study seeks to uncover, as to what other factors could have driven this growth. In so doing the objectives of this study are, first, to examine the determinants of commercial bank's credit extension in Namibia. Second, to determine which factor is most significant in influencing commercial banks' credit extended to private sector. Third, to establish whether monetary policy has an effect on banks credit extended to private sector.

The paper is organized as follows: the next section presents a literature review. Section 3 discusses the methodology. The empirical analysis and results are presented in section 4. Section 5 concludes the study.

LITERATURE REVIEW

According to Fisher (1926) the quantity theory of money suggests that there is a direct proportional relationship between changes in the money supply and the general price level. For instance, if currency in circulation is shocked (sudden change), the theory assumes that there would be a proportional change in the general price level. However, Keynesians do not agree to the direct relationship between money supply and general prices. They argue that the role of interest rate is ignored in this model. Keynes (1914) also argued that the process of money circulation is quite complex and rather not direct, thus price per unit for specific markets adapt differently to variation in money supply. Lowness of interest rate is however ascribed to plenty of money in the economy. Hence, Friedman (2010) states that an inverse relationship exists between money supply and interest rate in general.

Post Keynesian economists as opposed to Neoclassical economists believe that growth in money supply in the economy is strictly determined endogenously i.e. as a result of the interactions of other economic factors, rather than the monetary authority. This implies that monetary policy tools aimed at influencing money supply in the economy may not have a direct impact on the money supply. Post Keynesian economists argue that money in circulation is largely driven by the requirements of the real economy and that banking system reserves expand or contract as needed to accommodate loan demand at prevailing interest rates (Keynes, 1914).

Another theory is that of "loans create deposits" - this claim narrates the money creation by banks through bank loans issued. For a banking system as a whole, generating a new loan creates new deposits and the repayment of an existing bank loan destroys deposits, (McLeay, Radia & Thomas, 2014). Money supply in the economy is equal to the quantity of deposits held by the non-bank sectors i.e. currency in circulation.

According to Wicksell's (1906) theory of "cumulative process" increases in the money supply, lead to rises in the price level ("too much money chasing too few goods"), but further states that the original increase is endogenous, created by the relative conditions in the financial market.

In credit extensions, according to Wicksell (1906), two interest rates will prevail: the "natural" rate and the "money" rate. The natural rate was explained as the return on capital whilst the money rate, on the contrary, is the loan rate. Banks provide credit, after all, by creating deposits upon which borrowers can draw. Since deposits constitute part of real money balances, therefore the bank can, in essence, "create" money.

Neoclassical economists on the other hand, argue that growth in money supply transpires from exogenous factors in the financial market. Commercial banks demand money from central banks,

the external factor that determines how much they may borrow, lies in the price (repo rate) at which commercial banks may borrow.

There are two known theories to the demand for money. The Classical theory of money demand and the Keynesian theory of money demand. The Classical theory analyses the effects of money on aggregate demand for goods and services in the economy. According to this theory, aggregate demand is relatively stable; any change in demand and supply of money cause changes in the aggregate demand and the general price level. According to Ahuja (2015) the theory failed to explain the different components of aggregate demand. As a divergent to the classical theory, the Keynesian theory of money divides money demand into components: consumption, investment, government spending and trade balance. According to the Keynesian theory of the demand for money, Aggregate demand is extremely unstable due to major changes in business cycles and consumer expectations. Furthermore, it states that money plays no vital role in the determination of the general price level and the Aggregate Demand of the economy.

Literature has shown that the availability of bank credit plays an important role in boosting up economic growth especially in developing countries. There has been a growing interest in finding the determinants of bank credit to the private sector, as borrowing by this sector continues to trend upwards over the past years (Imran and Nishat, 2008).

Amidu (2006) investigated the link between monetary policy and banks' lending behaviour in Ghana. The study used panel cross sectional data covering the period from 1998 to 2004. The study revealed that credit extension by banks to the private sector is significantly driven by the country's economic activities and changes in money supply. The study also revealed that central bank's prime rate and inflation are inversely related, but statistically insignificant to affect banks' lending. With the firm level characteristics, the study further revealed that bank size and liquidity position in the market has a significant influence on banks' ability to extend credit to borrowers.

Abuka and Egesa (2007) assessed private sector credit evolution in the East African Community" using time series data covering a period from 1995 to 2005. The study employed an error component model to assess the relationship between private sector credit extensions, setting GDP as a dependent variable. The study revealed that GDP per capita has a positive and significant relationship with private sector credit. However, the study further revealed a significant and inverse relationship between private sector credit extension and public sector credit.

Rashid (2011) employed the ordinary least square (OLS) to examine whether the lending behaviour of foreign banks presence in the market sufficiently explains the high interest rate spread and declining levels of credit extended to private sector in the 81 selected developing and

emerging countries. Data were obtained from the Bank scope database, covering the period 1995-2009. The study revealed that the increase in the number of foreign banks in a country is associated with increased reliance on non-deposit funding, which is assumed to be leading to higher interest rate spread, less credit extension to private sectors and hence, higher volatility in bank loans. The study also showed that foreign banks' entry significantly reduced domestic banks' share of deposits, leading to a reduction in bank's lending.

In Albania, Shijaku and Kalluci (2013) employed a vector error correction model (VECM) approach based on demand and supply indicators, in which they have identified and evaluated long run determinants of bank credit to the private sector. The study considered quarterly data covering a period from 2001:Q1 to 2011:Q4. The results implied that growth in credit extension to the private sector is positively linked to real growth in the economy.

Arsene and Dazoue (2013) analysed a link between credit to the private sector and inflation in Cameroon for the period 1965 – 2010. The study employed a vector autoregressive model (VAR Granger causality) and revealed a positive and significant relationship between inflation and credit to the private sector.

Ogbokor and Moses (2014) investigated the determinants of commercial banks' credit by the business sector in Namibia using co-integration analysis with annual time series data for the period running from 1993 to 2010. The study was aimed at identifying factors that push the business sector in Namibia to demand credit from commercial banks and further tested the neoclassical theory that assumes an inverse relationship between real interest rate and growth in investments. In their findings, the demand for credit by businesses in Namibia tends to respond more onto factors, i.e. factors pushing demand for credit, other than real interest.

Pham (2015) investigated the determinants of bank credit by using large samples consisting of 146 countries operating at different levels of economic developments, covering a period 1990-2013. The study employed a dynamic log-linear regression equation for domestic credit which included its lagged dependent variable. The study found some significant evidence of the countries specific effect of economic growth on bank credit. Empirical results also suggested that the health of domestic banking system plays a vital role in encouraging bank lending to private sector.

The theoretical literature simply demonstrated that there are different opposing views on the determinants and circumstances of commercial banks' credit extension. The most notable issue is that, a shock to interest rate will cause a sudden change in credit demand, both by individuals and businesses. The empirical literature also showed varied conclusions being arrived at using different methodologies. In particular, Empirical evidence has revealed that in Namibia and

elsewhere in the world, the primary determinants of banks' credit extension to the private sector were interest rate and inflation. Furthermore, evidence has shown a negative relationship between prime lending rate, inflation and the exchange rate, at least in the short-run and somehow showing a weak correlation in the long-run in the case of Namibia.

METHODOLOGY

Econometric Framework and Model Specification

Growth in private sector credit extension served a significant measure of money demand in a domestic economy expressed as a function of the independent variables (inflation, exchange rate and interest rate). The study has employed the Engle-Granger two step procedures to determine banks credit to the private sector, a co-integration method. The decision to choose this method was based on the nature of stationarity in the data used in the study. Engle and Granger (1987) described the co-integration procedure in the following two steps. In the first step each variable is tested to determine its order of integration. This procedure can only be used if all variables are integrated in the same order, i.e. order one I (1), stationary in first difference. The second step involves estimation of the long-run relationship. The long-run PSCE function is specified as follows:

$$\ln\text{PSCE} = \alpha_0 + \alpha_1 \ln\text{PR} + \alpha_2 \ln\text{CPI} + \alpha_3 \ln\text{EX} + \varepsilon_t \dots\dots\dots 1$$

Equation 1, LnPSCE represents growth in the private sector credit extension, lnPR represents the prime lending rate, lnCPI represents Namibia's inflation and lnEX represents the exchange rate of N\$ against the US\$, all variables are expressed in terms of natural logarithms.

As indicated earlier, the first thing to do is to test for stationarity (or non-stationarity) that has been widely used over the past several years is the unit root test (Gujarati, 2004). Unit root testing is important to determine whether a time series variable is non-stationary or not in order to avoid spurious (nonsensical) results. Many economic time series trend overtime and according to Nielsen (2005), there are two cases to distinguish this. First, a stationary process with a deterministic trend meaning that - shocks have temporary effects and second, a process with a stochastic trend or a unit root suggesting that shocks have permanent effects.

The second step was to test for the existence of long-run equilibrium better known as the cointegration test. According to Stakenas (2006), two non-stationary time series X and Y that eventually becomes stationary when differenced, such that some linear combination of X and Y are stationary, then one may say that X and Y are co-integrated or have a long-run equilibrium relationship (Gujarati, 2004).

The third step was to estimate an error correction model should cointegration be present. This is to correct for short-run dynamics or disequilibrium while taking into account the long-run relationship. Therefore, the error term in equation (1) is treated as the “equilibrium error” and this error term tie the short-run behaviour of PSCE to its long-run value. The error correction mechanism (ECM) used by Engle and Granger corrects for disequilibrium in the equations. Granger’s (1974) representation theorem states that if two variables X and Y are co-integrated, then the relationship between the two can simply suggest be expressed as ECM. The error correction model to be used in this study has been specified below as follows:

$$\Delta PSCE = \Delta\alpha_0 + \alpha_1\Delta PR + \alpha_2\Delta CPI + \alpha_3\Delta ER + \alpha_4\varepsilon_t - 1 + v_t \dots\dots\dots 2$$

Where: Δ is the difference operator, $\varepsilon_t - 1$ is the lagged value of the error term and v_t is a white noise error term.

Data and Data Sources

The study relied on monthly data covering a period from 2005:M1 to 2015:M12. All the data used in this study were sourced from the Bank of Namibia (BoN) and the Namibia Statistics Agency (NSA). The variables used includes, growth in credit extension to private sector (PSCE) served as a dependent variable under study. The independent variables used are the prime rate (PR), inflation (CPI) and the exchange rate (US\$/N\$).

EMPIRICAL FINDINGS AND ANALYSIS

Unit Root Test

Table 1: Unit Root Test: ADF and PP in Levels and First Difference

Variable	Model Specification	ADF		PP		Order of Integration
		Levels	First Difference	Levels	First Difference	
LNPSCE	Intercept	-2.056	-15.052**	-2.484	-15.357**	I(1)
	Trend and Intercept	-2.106	-14.993**	-2.547	-15.294**	I(1)
LNPR	Intercept	-1.212	-4.360**	-0.985	-9.478**	I(1)
	Trend and Intercept	-1.798	-4.342**	-1.479	-9.452**	I(1)

LNCPI	Intercept	-2.971**	-6.189**	-2.148	-12.104**	I(1)
	Trend and Intercept	-2.892	-6.387**	-2.009	-12.215**	I(1)
LNER	Intercept	-0.129	-8.299**	0.163	-8.299**	I(1)
	Trend and Intercept	-1.619	-8.343	-1.267	-8.421**	I(1)

Source: Author's compilation. Notes: ** denotes the rejection of the null hypothesis at 5%.

Table 1 above shows the Augmented Dickey Fuller and the Phillips Peron unit root test results. The two tests have produced similar results and all of the variables in the model became stationary after first differencing. Thus, it is appropriate to use the Engle-Granger two step procedures to estimate the regression model.

Co-integration Test

The Engle-Granger two step procedure involves estimation of the long-run relationship, ensuring that all variables are integrated of the same order, order one (I(1)) and error term are integrated of order zero (I(0)).

Table 2: Residual based co-integration test

	Adj. t-Stat	Prob.*
Phillips-Perron test statistic	-2.667138	0.0825
Test critical values: 1% level	-3.480818	
5% level	-2.883579	
10% level	-2.578601	

*MacKinnon (1996) one-sided p-values.

Source: Author's compilation and obtained from EViews

Table 2 above confirms that the residuals are stationary in levels, meaning that they are integrated of order zero I (0). This implies that there is a long run-relationship between the selected variables.

Error Correction Model

Table 3: The Error Correction Model Results

Dependent Variable: D(LNPSCE)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.003563	0.009079	0.392493	0.6954
D(LNPR)	0.544685	0.555174	0.981106	0.3285
D(LNPR(-1))	0.518277	0.555606	0.932814	0.3528
D(LNCPI)	0.033167	0.067592	0.490692	0.6245
D(LNCPI(-1))	0.119084	0.067940	1.752800	0.0821
D(LNER)	0.013558	0.260572	0.052033	0.9586
D(LNER(-1))	-0.266739	0.262395	-1.016552	0.3114
RESID01(-1)	-0.164018	0.048695	-3.368249	0.0010
R-squared	0.106756	Mean dependent var		0.000610
Adjusted R-squared	0.055504	S.D. dependent var		0.102066
S.E. of regression	0.099193	Akaike info criterion		-1.723939
Sum squared resid	1.200383	Schwarz criterion		-1.547476
Log likelihood	120.0561	Hannan-Quinn criter.		-1.652236
F-statistic	2.082973	Durbin-Watson stat		2.322209
Prob(F-statistic)	0.050279			

Source: Author's compilation using Eviews

Table 3 presents the regression output of the error correction model. The results shows that about 11% of variation in the private sector credit extension can be explained jointly by prime lending rate, exchange rate and inflation. The F-statistics in the model represents the joint significance of the independent variable (prime rate, exchange rate and inflation) to explain the credit demand by the private sector. The corresponding p-value of the F-statistics is indeed significant to conclude that independent variables in the model are jointly significant to explain the dependent variable. The error correction term is negative sign and less than unity as desired. It shows the speed of adjustment, in particular, it shows that it takes about 16 months for the variables to adjust the long-run equilibrium.

This study was aimed at investigating determinants of bank's credit extension to the private sector, a study on Namibia. The regression results showed an insignificant positive short-run and long-run relationship between prime lending rate and bank credit extended to the private sector in Namibia. These findings were quite anticipated, as data collected during the period under review showed a positive and moderate growth in bank's credit to the private sector despite tightening monetary policy stance recorded during that same period. These results are similar to those of Abuka and Egesa (2007) conducted a related study on Uganda, assessing the private sector credit evolution in the East African Community using time series data covering a period from 1995 to 2005 and found a positive short-run and long-run relationship between private sector credit extension and prime lending rate.

In line with theory and expectations, exchange rate (N\$/US\$) has showed a negative and significant relationship with credit extended to the private sector. These findings suggest that an increase in the exchange rate will be followed by a decrease in private sector credit extension in Namibia. The surge increase in private sector since 2005 has largely been influenced by Namibia's floating currency and openness of the economy. The private sector therefore demands extra dollars in order to maintain high cost on the exchange rate when purchasing goods abroad. These findings are similar to those of Albania in a study by Shijaku and Kalluci (2013), who also found a negative relationship between exchange rate and credit extensions to the private sector. Albania is a net import country and the study revealed that the private sector may require more credit to finance their investment needs.

Namibia's inflation on the other hand, showed a positive and statistical significant short-run relationship with bank credit. The results imply that an increase in the general price levels will result in an increase in bank credit to the private sector. These findings are similar to that of Mba and Dazoue (2013) who analyse a link between credit to the private sector and inflation in Cameroon.

CONCLUSION

The study's primary objective was set to examine the determinants of commercial bank's credit extension to the private sector in Namibia using monthly data from 2005 – 2015. The Engle-Granger two step procedures were employed by the study to conduct an econometric analysis on the selected macroeconomics determinants of bank credit to the private sectors. The study revealed a positive, but insignificant relationship between prime lending rate and bank's credit to the private sector. Prime lending rate has remained ineffective to influence private sector credit extension. Exchange rate was however found to be negative and statistically insignificant in determining changes in the private sector credit extension. A negative relationship between bank credit and exchange rate was established both in the short-run and long-run. Inflation on the

other hand, was found to have a positive, but statistically significant in explaining changes in private sector credit extension. The tightening monetary stance has however harmed existing bank loans. Policy tools aimed at containing growth in the bank's credit extension to the private sector may have to certain worked in Namibia, but with adverse results. In light of the above, it is recommended that monetary authority have to be cautious with not to overdo the tightening. This is to avoid adverse effect of further increased income-to-debt ratio and/or increase in banks' non-performing loans.

REFERENCES

- Abuka , K. & Egesa, C. (2007). An Assessment of Private Sector Credit Evolution in the East African Community: The Candidates for a Region wide Reform Strategy for. *The Bank of Uganda Staff Papers Journal*, 1(2): 107-19.
- Ahuja, H. L. (2015). *Macroeconomics Theory and Policy*. S Chand Publishing.
- Amidu, M. (2006). The Link between Monetary Policy and Banks Lending Behaviour: The Ghanaian case. *Banks and Bank Systems*, 1(4): 38-48.
- Arsene, M. F. & Dazoue, D. G. (2013). An Econometric Analysis of the Nexus between Credit to the Private Sector, Inflation and Economic Growth: Case of Cameroon 1965-2010. *Global Journal of Management and Business Research Interdisciplinary*, 13(7): 40-53.
- Assefa, M. (2015). Determinants of Growth in Bank Credit to the Private Sector in Ethiopia: A Supply Side Approach. *Research Journal of Finance and Accounting*, 5(17): 90-102.
- Bank of Namibia. (2005 - 2015). *Annual Reports*. Windhoek.
- Fisher, I. (1926). A Statistical Relation between Unemployment and Price Changes. *International Labour Review*, XIII: 785-792.
- Friedman, M. (2010). Quantity theory of money. *In Monetary Economics* , 299-338.
- Gujarati, D. (2004). *Basis Econometrics*. New York: McGraw-Hill.
- Granger, C. W. (1974). Spurious Regressions in Econometrics. *Journal of Econometrics*, 2(2): 111-120.

Imran, K. & Nishat, M. (2013). Determinants of Bank Credit in Pakistan: A Supply Side Approach. *Economic Modelling* 35: 384-390.

Keynes, J. (1914). What is Money? Review Article in *Economic Journal*, 24(95): 419-421.

McLeay, M. R. (2014). Money creation in the modern economy. *Bank of England Quarterly Bulletin*, Q1.

Nielsen, H. B. (2002). An I(2) Cointegration Analysis of Price and Quantity Formation in Danish Manufactured Exports. *Oxford Bulletin of Economics and Statistics*, 64(5): 449-72.

Ogbokor, C. & Moses, M. W. (2014). Investigating the determinants of commercial banks credit by the Business Sector in Namibia: A Co-integration Analysis. *Research Journal of Finance and Accounting*, 5(8): 64-77.

Pham, T. H. H. (2015). Determinants of Bank Lending. [Accessed 20th July 2016] Available of the World Wide Web: <https://hal.archives-ouvertes.fr/hal-01158241/document>

Rashid, H. (2011, May). Credit to Private Sector, Interest Spread and Volatility in Credit-Flows: Do Bank Ownership and Deposits Matter? Economics and SocialAffairs. *DESA Working Paper* 105.

Shijaku, G. & Kalluci, I. (2013). Determinants of Bank Credit to the Private Sector: The Case of Albania. *Bank of Albania Working paper*, No. 09 (48).

Stakėnas, P. (2012). Fractional Integration and Cointegration in Financial Time Series. Unpublished Doctoral Thesis, University of Amsterdam.

Wicksell, K. (1906). The Influence of the Rate of Interest on Prices. *Economic Journal*, XVII: 213-220