

# Bank credit and economic activity in a developing economy

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## ABSTRACT

The importance of bank credit to financing economic activity and development has been the subject of empirical analysis for decades. This paper contributes to the debate by evaluating the effect of bank credit on economic activity using a developing economy data. The study period ranged from January 2007 to December 2017. Estimates from descriptive statistics show that the economic activity and bank credit series are negatively skewed and peaked, with non-normal distribution. The results generated for the Augmented Dickey unit root test showed that at the level form, all the variables are non-stationary but after first differencing the variables became stationary and integrated of order one (i.e.  $I(1)$ ). The results obtained from the multiple regression model show that bank credit has a positive and significant effect on economic activity. We, therefore, conclude that bank credit has a predictive influence on economic activity. One of the implications of this conclusion is that banking system regulators should formulate policies that enhance access to credit to the private sector while containing inflation.

**Keywords:** bank credit, private sector, economic activity, lending rate, developing economy.

**JEL codes:** G21, E51, O10, O55.

## 1. INTRODUCTION

A well-functioning banking sector, with ease of access to credit, is sufficient to create economic activity and development. Hausmann and Rigobon (2002) opine that it is bank credit that matters to the economic activity; if there is a financing gap then there will be gaps everywhere in the economy. In similar vein, Von, Bukhari, Sillah and Wassu (2005) notes bank credit is essential for production in a developing country; however, the lending capacity of the bank may be misdirected towards consumer goods and services rather than to productive investments, and banks can act like moneylenders rather than professional bankers, giving credits to a clique of friends and high personalities rather to depersonalized and well-appraised projects. Banks have been existing in developing economies for many decades, are they financing the economic activity?

The literature regarding the role of banking system development and economic activity has grown rapidly in recent times (see, for example, King & Levine, 1993; Petkovski & Kjosovski, 2014; Prochniak & Wasiak, 2017). Empirical studies that examine the effect of bank credit to the private sector and how it impacts on the economic activity are however overshadowed by the increasing number of empirical studies that largely focus on financial development and economic growth at the cross-country levels. In a survey of existing literature on finance-growth nexus, Ang (2008) reports that although these studies have contributed to the understanding of finance-growth nexus, the results are subject to a number of criticisms, such as failure to account for the significant differences among countries and hence, points to the need for country-specific studies to inform the policy decisions. More so, few studies on impact bank credit to the private sector were conducted for developed countries (see, Cojocar, Hoffman & Miller, 2011; Leitão, 2012), and for other African countries (see, Were, Nzomoi & Rutto, 2012; Olowofeso, Adeleke & Udoji, 2015; Emenike, 2016). In the Uganda context, there is scant of evidence on how bank credit affects economic activity. There is need therefore for country-specific evidence on the effect of bank credit on economic activity to aid policy decisions.

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The purpose of this study, therefore, is to provide empirical evidence on the effect of bank credit on economic activity in a developing economy. This study is significant to private sector actors such as investors, traders, banks; regulators of the banking system and to future researchers. The banking system regulators, for example, may want to know the nature and effect of credit to the private sector and lending interest rate on economic activity. Such knowledge would be worthwhile if the regulators desire to formulate policies that would propel economic activity. Private sector actors would find the study valuable since it would enable them to adjust their economic activity in anticipation of changes in credit to the private sector and lending interest rate. This study also contributes to improving existing knowledge on the effect of bank credit and economic activity in developing the economy as well as enriches extant literature to be referred to by researchers of related subject.

The remaining parts of this paper are organized in the following order: Section 2 contains a brief review of the literature. Section 3 presents data and methodology. Section 4 presents and discusses empirical results, and Section 5 provides conclusions.

## 2. REVIEW OF LITERATURE

This study was guided by the Financial Intermediation Theory developed by Akerlof (1970), Benston and Smith (1976), and Diamond (1984). The theory of financial intermediation holds that financial institutions (banks, insurance companies, credit associations, pension funds, etc.) whose functions are to accumulate money of citizens and legal entities and then give it to borrowers on commercial conditions to carry out new combinations of productions that lead to economic growth. The financial institutions start the circuit of financial intermediation by intermediating between the deficit and surplus units of the economy. An entrepreneur demands loan to buy labour hours and capital. He blends these two inputs using his entrepreneurial skills and produces the output. According to Diamond (1984), financial intermediaries are the circuit starters in the economy; they switch on the engine of economic activity in the economy. The structure of modern industry could not have been erected without credit, and in carrying out new combinations, financing as a special act is fundamentally necessary for theory as in practice. An entrepreneur can only become an entrepreneur by previously accessing bank credit. By not only transferring the existing purchasing power to the entrepreneurs also creating new purchasing power for financing production, but banks also act as starters of economic activity. The financial intermediation theory, therefore, contemplates a positive effect of credit on economic activity.

A plethora of empirical studies have evaluated the relationship between bank credit and the performance of the economy in both developed and developing countries. Cojocar, Hoffman, and Miller (2011) showed in a study conducted for the period 1990-2008 in 25 countries in Central and Eastern Europe and the former the Soviet Union states, including Romania that the loan granted by the banking sector contributes significantly to the economic growth registered in the countries included in the analysis. The study also shows that there is a negative relationship between the interest rate spread and economic growth. In a recent study, Prochniak and Wasiak (2017) analysed the impact of the financial system on economic growth using 28 EU and 34 OECD economies from the period of 1993 until 2013. They document a positive significant relationship between banking system credit and economic growth. Bongini, Iwanicz-Drozdowska, Smaga, and Witkowski (2017) examined the role of financial development in the economic growth of Central, Eastern and South-Eastern European Countries between 1995 and 2014. The results indicate that banks foster economic growth and indisputably positive to the local market.

Few studies have however shown a negative relationship between bank credit and economic activity. Petkovski and Kjosevski (2014) examined the question of whether Central and South-Eastern Europe economic growth are influenced by developments in banking sectors. They used banking credits, interest rate, and the ratio of quasi money as independent variables and gross domestic product as a proxy variable. They found that banking credits and interest margin are negatively related to economic growth. Recently, Zhao (2017) found that financial development does not have any significant positive effects on Chinese economic growth using data from 286 Chinese cities between 2007 and 2014.

Evidence from developing and emerging economies are similar to those from developed countries. Rahimzadeh (2012), using data from the Middle East and North Africa in the period 1990-2011, showed amongst others that bank credit to the private sector has a positive and significant effect on the countries' production. They conclude that a one percent increase in domestic credits granted to the private sector causes production levels to increase by 10% to 14.2%. Abusharbeh (2017) examined the impact of some banking sector indicators on the gross domestic product using quarterly data from the period of 2000 to 2015 in Palestine. The results reveal that banking credits are positively related to economic growth. However, interest rate, customers' deposits and a number of branches do not have any significant impact on economic growth.

In African studies, Were, Nzomoi and Rutto (2012) investigated the impact of access to bank credit on the economic performance of key economic sectors using sectoral panel data for Kenya. Estimates from their

generalized method of moments and panel data methodology show a positive and significant impact of credit on sectoral gross domestic product measured as real value-added. Emecheta and Ibe (2014) employed the reduced vector autoregression approach using annual data for the period 1960-2011 to investigate the relationship between bank credit and economic growth in Nigeria. The results show evidence of a significant positive relationship between bank credit and economic growth during his sample period. Olowofeso, Adeleke, and Udoji (2015) investigated the effect of private sector credit on economic growth in Nigeria using the Gregory and Hansen cointegration test to quarterly data spanning 2000:Q1 to 2014:Q4, They found a cointegrating relationship between output and credit to the private sector. Estimates from the error correction model confirmed a positive and statistically significant effect of private sector credit on output. A later study by Emenike (2016) evaluated the relationship between monetary policy and private sector credit in Nigeria. The results show evidence of a long-run relationship between monetary policy and credit to the private sector. Similarly, the error correction model results showed that changes in credit have positive and significant short-term effects on changes in monetary policy. The results of innovation accounting also provided support to show that innovations in credit have an impact on monetary policy. Granger causality analysis exhibits unidirectional causality from credit to monetary policy. He concluded that credit to the private sector is an effective channel for monetary policy transmission in Nigeria.

Many studies have also examined the role of interest rates in influencing economic activities. Evans and Adjei (2014) examined the impact of lending rates on borrower's ability to pay back loans in the Tamale Metropolis using cross-sectional survey method. Their results show among others that high lending rates affected borrowers' ability to pay back because they cannot make enough returns from their businesses to service their loans. The results further show that high lending rates affected their businesses negatively in the sense that they are not able to make enough profits to grow their businesses which is the primary reason why they opted for the loan facility. They conclude that lending rates impact on the operations of businesses whether high or low. Akujuobi and Nwezeaku (2015) examined the effect of bank lending activities on economic development in Nigeria using Ordinary Least Square (OLS), and Cointegration procedures on data covering the period from 1980 to 2013. Their results show amongst others that no significant relationship exists between bank lending activities and economic development in Nigeria. Petrescu & Pop (2015) document similar evidence for Romania for the 1990 to 2014 period.

Most of the empirical literature reviewed in this study show that inflation has a negative effect on economic activity. Kasidi and Kenani (2012), for example, used time-series data from 1990-2011 to investigate the impact of inflation on economic growth in Tanzania. The results show amongst others that inflation has a negative impact on the growth rate of the Tanzanian economy. A similar result was documented by Idalu (2015) for the Nigeria economy for the 1970-2013 period. A later study by Oofy (2016) conducted for the economy of Suriname over the period 1975 to 2015 indicates that domestic price shocks and money-supply shocks, in particular, seem to substantially impact on economic activity and that exchange-rate shocks are detrimental to domestic prices. He concluded that his findings reveal how the various sources of inflation impact on the economy of Suriname.

### 3. DATA AND METHODS

#### 3.1. Data

The data for this study were obtained from secondary sources, and include bank credit to the private sector, lending interest rate, inflation rate and the composite index of economic activity. The data were collected from the Bank of Uganda (BoU) selected macroeconomic indicators available on the BoU website: <https://www.bou.or.ug/>. The study period ranged from January 2007 to December 2017, with 132 monthly observations. These study periods were chosen based on the availability of data, as the BoU started publishing the composite index of economic activity in January 2006. The time-series data were transformed to natural log series as follows:

$$\text{Ln}(B_t - B_{t-1}) \tag{1}$$

where  $B_t$  is the monthly closing value of the bank credit to the private sector, lending interest rate, inflation rate and economic activity series at time  $t$ ,  $B_{t-1}$  is the previous month closing value of the series, and  $\text{Ln}$  is natural logarithm.

#### 3.2. Methods

To investigate the effect of bank credit on economic activity in Uganda, we employ a multiple regression model. If the financial intermediation theory exists, bank credit will have a positive and significant effect on economic

activity. Since from the traditional banking models, the interest rate is an explanatory variable for the investments, the regression model may be estimated as in accordance with Abusharbeh (2017) follows:

$$EA^t = f(BCPS^t, LIR^t, IR^t) \tag{2}$$

where  $EA_t$  is an economic activity, CPS is bank credit to the private sector, LIR is lending interest rate, IR is inflation rate, and  $t$  is the time factor. When expressed as an additive function, the relationship in equation 2 above will be translated into multiple equations as follows:

$$EA^t = \beta_0 + \beta_1 BCPS^t + \beta_2 LIR^t + \beta_3 IR^t + \varepsilon_t \tag{3}$$

where, the coefficients  $\beta_1$ ,  $\beta_2$ , and  $\beta_3$  are unknown parameters, and  $\varepsilon_t$  is an error term that incorporates the cumulative effect on  $EA^t$ , of all the factors not explicitly included in the model. The assumption of the error term is absence serial correlation.

## 4. EMPIRICAL RESULTS AND DISCUSSIONS

### 4.1. Preliminary Analysis

#### 4.1.1. Descriptive Statistics

Opara, Emenike, and Ani (2015) recommend that researchers that are studying financial markets should start by describing their variables before delving into the inferential analysis. Hence, Table 1 below shows the summary of statistics of the data used in the analysis. The average credit to the private, lending interest rate and inflation rate are Shs. 7.2 trillion, 21.93% and 7.68% respectively. The maximum credit to the private, lending interest rate and inflation rate are Shs. 12.7 trillion, 27.27% and 22.6% respectively for the study period. Analysis of skewness shows that with the exception of the economic activity and the credit to the private sector, the rest of the distributions of the variables are asymmetrical to the right of their mean. The kurtosis coefficients suggest that all the series have peaked distribution. The Jarque-Bera statistics show that all the series are normally distributed except the inflation rate.

**Table 1.** The descriptive statistics for the series of the variables

Descriptive Statistics	Economic activity	Lending rate	Credit to the private sector	Inflation rate
Mean	5.041655	3.083288	8.739648	1.878013
Median	5.049773	3.078356	8.924621	1.863910
Maximum	5.348742	3.317060	9.454236	3.119661
Minimum	4.675217	2.901689	7.530413	0.534122
Std. Dev.	0.192143	0.098427	0.583758	0.567495
Skewness	-0.115537	0.417522	-0.663484	0.107522
Kurtosis	1.714413	2.454157	2.197618	2.752399
Jarque-Bera	9.383707	5.473846	13.22563	0.591528
Probability	0.009170	0.064769	0.001343	0.743963
Sum	665.4984	406.9940	1153.634	247.8977
Sum Sq. Dev.	4.836382	1.269105	44.64129	42.18866
Observations	132	132	132	132

Note: The table presents the log-level descriptive statistics for the study variables. Source: Researchers' computation using Eviews version 9.

#### 4.1.2 Unit Root Tests

The results of the unit root tests are presented in Table 2 below. The variables employed in the analysis are tested for stationarity using the Augmented Dickey-Fuller (ADF) test to determine whether they are stationary or non-stationary series. From the results of ADF displayed in Table 2 below, all the variables contain unit roots at their level (that is, are stationary) at 5% significance level. But when the variables were converted to the first difference, they do not have unit roots (that is, are stationary) at 5% significance. These results indicate that all the variables for the study are integrated of the same order (i.e.,  $I(1)$ ).

### 4.2. Measuring the Effect of Credit to Private Sector on Economic Activity

This section presents the results of the multiple regression model estimated to evaluate the effect of bank credit on economic activity in a developing economy. Observe from the regression estimates in Table 3 that credit to the private sector has a positive and significant effect on economic activity. This is evident in the  $p$ -value (0.000) of the credit to the private sector is less than the employed significance level (0.05). This evidence is also

supported by the computed *t*-statistic at the 5% significance level. This finding is consonance with the results of Emecheta and Ibe (2014), which show evidence of a significant positive relationship between bank credit and economic activity. The finding is also in line with the results of Were, Nzomoi, and Rutto (2012) who show a positive and significant impact of credit on sectoral gross domestic product. Abusharbeh (2017) also document evidence to prove that banking industry development tends to improve the productive capacity of the Palestinian economy. In another recent study, Prochniak and Wasiak (2017) further show that a significant positive relationship exists between banking system credit and economic activity. Although the majority of the empirical literature shows evidence of the positive effect of credit to the private sector on economic activity, there is dissent evidence on negative effect. Petkovski and Kjosevski (2014) found that banking credits are negatively related to economic activity. Similarly, Zhao (2017) used data from 286 Chinese cities between 2007 and 2014 to show that financial development does not have any significant positive effects on Chinese economic activity and that some banking variables have a negative effect on growth.

**Table 2.** Augmented Dickey-Fuller unit root test results

Variables	At Level with Intercept		At First Difference with Intercept		Order of Integration
	ADF	Critical values	ADF	Critical values	
Economic Activity Index	-1.716 (0.4202)	-3.486at 1% -2.885at 5%	-6.322 (0.000)	-3.483at 1% -2.884 at 5%	I(1)
Lending Interest Rate	-2.659 (0.0840)	-3.480 at 1% -2.883 at 5%	-13.690 (0.000)	-3.481at 1% -2.883at 5%	I(1)
Credit to private sector	-3.942 (0.0023)	-3.480 at 1% -2.883 at 5%	-4.368 (0.0005)	-3.482 at 1% -2.884 at 5%	I(1)
Inflation rate	-2.399 (0.1438)	-3.481 at 1% -2.883 at 5%	-8.994 (0.0000)	-3.481 at 1% -2.883 at 5%	I(1)

Note: The table displays the unit-roots test results for log-level and first difference series of the study variables. Source: Researchers' computation using Eviews version 9

**Table 3:** Results of Regression Model for Bank Credit and Economic Activity in Uganda

Dependent Variable: LNCIEA  
 Method: Least Squares  
 Date: 11/07/18 Time: 11:26  
 Sample: 2007M01 2017M12  
 Included observations: 132

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.667687	0.108083	24.68187	0.0000
LNLIR	-0.070778	0.049206	-1.438386	0.1528
LNCPS	0.307310	0.008770	35.04257	0.0000
LNINF	-0.049833	0.007562	-6.589701	0.0000
R-squared	0.960803	Mean dependent var		5.041655
Adjusted R-squared	0.959884	S.D. dependent var		0.192143
S.E. of regression	0.038484	Akaike info criterion		-3.647307
Sum squared resid	0.189572	Schwarz criterion		-3.559949
Log-likelihood	244.7222	Hannan-Quinn criter.		-3.611809
F-statistic	1045.852	Durbin-Watson stat		1.709592
Prob(F-statistic)	0.000000			

Source: Researchers' computation using Eviews version 9. Note: LNLIR is the interest rate, LNCPS is a credit to the private sector, and LNINF is the inflation rate.

Notice also from Table 3 that the lending interest rate has a negative but insignificant effect on economic activity in Uganda. This finding appears similar to the results of Evans and Adjei (2014) which show among others that high lending rates affected borrowers' ability to pay back because they cannot make enough returns from their businesses to service their loans. The results further show that high lending rates affected their businesses negatively in the sense that they are not able to make enough profits to grow their businesses which is the

primary reason why they opted for the loan facility. The findings, however, are exactly the same with Akujuobi and Nwezeaku (2015) who show amongst others that no significant relationship exists between bank lending activities and economic development in Nigeria. Also similar to this finding, Abusharbeh (2017) shows that interest rate does not have any significant effect on economic activity on the Palestinian economy.

Furthermore, the inflation rate has a negative and significant effect on economic activity in Uganda. This result has support in the empirical literature. Kasidi and Kenani (2012) reported that inflation has a negative impact on economic growth in Tanzania. Similarly, Idalu (2015) showed amongst others that in the long run there exist a negative relationship between inflation and economic growth in Nigeria.

More so, the regression model estimates show that the  $R^2$  is 0.96. This implies that 96% of the total variation in economic activity is explained by bank credit to the private sector, interest rates, and inflation rate. The  $f$ -statistics show that the three coefficients are not zero, as the  $p$ -value (0.00) of the  $f$ -statistics is less than any conventional significance level. In addition, the assumption of absence serial correlation in the error term was evaluated using the Durbin-Watson (DW) statistic. The rule of thumb in DW analysis is to accept the absence of serial correlation when the DW statistic is approximately 2. Notice from Table 3 that the DW statistic is 1.71. This indicates evidence of absence of serial correlation in residual series at the conventional significance level. Consequently, the model is good for a policy decision.

## 5. SUMMARY AND CONCLUSIONS

This paper examined the effect of bank credit on economic activity in Uganda. Bank credit was proxied by a credit to the private sector, interest and inflation rates were included as moderating variables, and economic activity was proxied by the composite index for economic activity. The data for the study ranged from January 2007 to December 2017. The study applied descriptive statistics, Augmented Dickey unit root test, and multiple regression analysis. Estimates from the descriptive statistics show that economic activity and bank credit are negatively skewed, whereas the interest and inflation rates are positively skewed. Kurtosis coefficients show evidence of peaked distribution for all the variables, and Jarque-Bera statistics suggest that all the series are normal except inflation rate. The results generated for the Augmented Dickey unit root test showed that at the level form, all the variables are non-stationary but after first differencing the variables became stationary and integrated of order one (i.e.  $I(1)$ ). The results obtained from the multiple regression model show that bank credit to the private sector has a positive and significant effect on economic activity. Hence, bank credit has a predictive influence on economic activity in Uganda. An implication of this conclusion is that banking system regulators should formulate policies that enhance access to credit to the private sector while containing inflation. In addition, the private sector should closely monitor changes in credit policies so as to adjust their economic activity decisions in anticipation of such changes.

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