Impact of Non-Performing Loans on Credit Growth in the Banking Industry in Tanzania: 2009 – 2018

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Authors' contributions

This work was equally carried out in collaboration between the two authors. Author JPL designed the study, performed the statistical analysis, literature searches, wrote the protocol and wrote the first draft of the manuscript. Author DDN managed the analyses of the study, results discussions and final draft report writing. Both authors read and approved the final manuscript.

Original Research Article

ABSTRACT

This study adopted descriptive statistics and multiple regression analysis in investigating the impact of Non-Performing Loans (NPL) on credit growth to private sector in Tanzania, apart from NPL. The study also investigated the influence of interest rates, inflation rates and GDP on credit advancement to private sector in Tanzania. Using multiple linear regression analysis the study found that both NPL and interest rates have negative impact on the credit growth to private sector in Tanzania, with coefficient values of -0.323 and -0.263 for NPL and interest rate respectively. Furthermore, the study also found that Inflation rate and GDP growth rate have positive impact on the credit growth to private sector in Tanzania with coefficients of 0.247and 0.156 for inflation rate and GDP growth rate respectively. The study found that NPL has a significant negative impact on the credit growth by commercial bank to private sector in Tanzania. These results suggest that the central bank should continue to closely monitor and control the level of NPL in the economy and confine it below the threshold of 5% as stipulated by the BOT and IMF. The study also recommends that commercial banks should ensure that a thorough credit risk assessment is conducted when advancing loans to private sector.

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1. INTRODUCTION

Banking industry in Tanzania has been facing some huge ratios of Non-performing loans accompanied with poor credit growth to private sector particularly in the recent years. For instance, since March 2016 there has been a persistence downward trend of credit growth to private sector for three years consecutive to September 2017. Though there has been a slight improvement during 2018 and 2019 but the recorded improvement has not been good as compared to four or five years ago when growth of credit to private sector was sometimes recording double digit. This poor credit growth to private sector is not health to the economy as private sector is an engine of economic growth, so poor credit growth to the sector may lead to poor private sector growth and slow economic growth. In a move to boost credit to private sector the Bank of Tanzania (BOT) has done a number of initiatives including easing the monetary policy for the aim of making commercial banks in Tanzania more liquid, and also being able to borrow funds from them (BOT) at a very small competitive discount rate. On March 2017 bank of Tanzania revised down it's *discount rates* from 16% to 12% at the same time it also revised down *minimum reserve ratio* from 10% to 8%. Furthermore, on august 2017 BOT had further revised down the discount rates from 12% to 8%. These moves were done for the aim of making commercial banks more liquid and also to reducing the price of lending so as to promote advancement of loans to the private sector at a reasonable interest rate.

On 19 February 2018, BOT issued a Circular No. FA.178/461/01/02 titled *"Measures to Increase Credit to Private Sector and Contain Non-Performing Loans".* This Circular contained measures to curb the general slow-down in credit growth to private sector and the increasing number of non-performing loans (NPLs) in the banking industry. In particular, it provides guidance to commercial banks and financial institutions on how to tackle the rising number of NPLs it also advises commercial banks and financial institutions to produce a quarterly report (In a format that is advised by BOT) so as to track the progress made in curbing NPLs requirements, that banks and financial institutions will have to comply with. In its report *The mid-year review of the monetary policy statement* of February 2019, BOT reported that the ratio of NPLs in the banking sector at the end of 2018, (December 2018) had improved to 10.4% from 11.3% recorded on June 2018, this figure was reported as an improvement, but in reality 10.4% is very higher from the industry NPLs benchmark level of 5.0%. This study looked at how NPL has impacted credit growth in the banking sector in Tanzania from 2009 to 2018. In addition to NPL, it also looked on how other exogenous macroeconomic variables namely the interest rates, inflation and GDP growth affect credit growth in the banking sector in Tanzania.
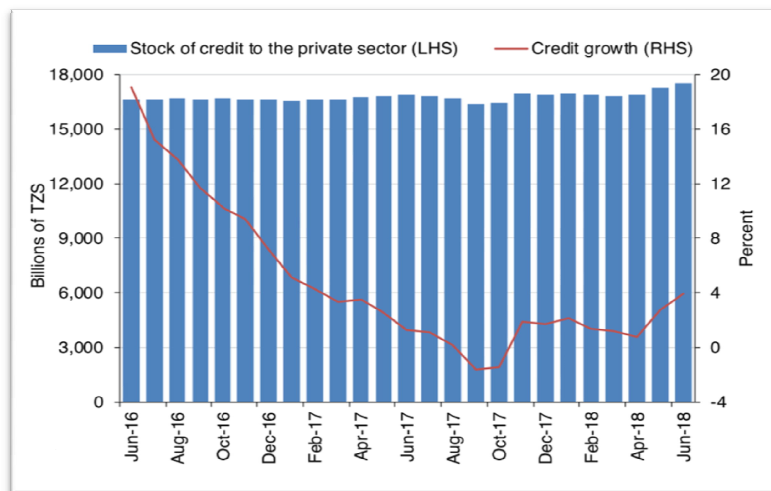

Fig. 1. Credit advancement to private sector in Tanzania
Source: BoT (various publications)

1.1 Research Objective

The objectives of this study are categorized in to two categories, namely general and specific objectives.

1.2 General Research Objective

The general objective of this study is to assess the impact of Non-Performing Loan on the credit growth to private sector in Tanzania from 2009 to 2018.

1.3 Specific Objectives

The study seeks to achieve the following specific research objectives; -

a) To examine the extent at which NPL is linearly correlated with credit growth in Tanzania
b) To determine the influence of macroeconomic variables namely (interest rates and inflation) on the growth credit advanced to private sector in Tanzania
c) To examine the relationship between the growth of credits in the banking sector and GDP growth in Tanzania

1.4 Statement of Hypothesis

To be able to address the stated objective above these hypotheses stated below need to be tested

i. Non-performing loan ratios is not linearly correlated to credit growth in Tanzania
ii. Interest rates and Inflation do not have any influence on the credit growth advanced to private in Tanzania
iii. There is no relationship between the growth of credit advanced to private sector and GDP growth in Tanzania.

2. LITERATURE REVIEW

2.1 The Theory of Credit Creation

The theory of credit creation explains the process through which commercial back issues more loans to the public more than the initial deposit deposited at their custody. That is commercial banks normally lend out all of the deposits they receive from their customers keeping only a small faction (cash reserve ratio) of the deposits for the purpose of meeting their customers' future cash demand. The theory explains how a credit given to a customer will get back in the bank as a deposit allowing a bank to loan it again to another customer, while keeping a friction of it as a reserve and lend out the remaining. The process continues until there is no more excess deposit to lend out. Actually, the maximum amount of the deposit that could be loaned to the public/customers can be determined by multiplying the initial deposit that the bank started with by the reciprocal of the reserve ratio. It is an important theory as it explains the process through which commercial banks issues loans to the companies in the economy nonstop for every deposit they receive. It can be argued that the strong credit creation is a necessary condition for profit growth in an economy: Only if credit creation helps to maintain a high level of aggregate demand, firms will be able to make sufficient profits in the aggregate. S. Dullien [1].

2.2 Quantity Theory of Credit [2]

This theory stresses that when there is an increase in money supply in the economy which was resulted from a new credit money creation by banks that has exceeded the growth of GDP transactions in the economy, the result is inflation. According to this theory the impact of bank lending for GDP transactions will be determined by the purpose of lending. The theory argues that if lending is channeled to consumer credit that later increases consumption, then that will lead to the increase in consumer good prices, hence inflation. On the other hand, bank lending for business investment encourages growth in economic activity, thus the more the loans are taken for the investment actives the more the rate of growth of GDP and vice versa.

2.3 The Theory of Non-performing Loans and Debt Restructuring

This theory was developed by Keiichiro Kobayashi Tomoyuki Nakajima in January 2018, adopted IMF definition of NPL [3] as here extracted:

A loan is non-performing when payments of interest and/or principal are past due by 90 days or more, or interest payments equal to 90 days or more have been capitalized,

refinanced, or delayed by agreement, or payments are less than 90 days overdue, when a loan is classified as nonperforming, it should remain classified as such until it is written off or payments of interest and/or principal are received.

This theory assumed that if an unexpected shock hits the business firm in period "0" leading to an unexpected decline in the firm's productivity, or in the value of the collateral, this may lead to the contractual value of debt to become bigger than the maximum amount debt that the firm can be able to repay. If this happens then the lender has two options either to reduce the amount of debt officially (debt restructuring) or to retain the original amount of debt. The theory suggests that if the bank chooses to restructure debt officially, the levels of lending and output converge to their first-best levels in finite periods but if the bank chooses not to do so and thus retain the original amount of the debt then the loans become non-performing. As the result the bank will lose its ability to commit to a repayment plan. The theory explains the importance of debt restructuring as the best way to deal with the non-performing loans.

Debt restructuring procedure is normally conducted through reducing the interest rates charged on the borrowed loans, or by extending the dates when the company's obligations are due or both. This procedure helps to improve the firm's chances of paying back the obligations in more smooth fashion. However, it might make the lender to receive less than what was borrowed in the first place, but this is the best option for the lender than the company (borrower) to be forced into bankruptcy and/or liquidation where the risk of recovering the loan is even higher and the chance of making more loses is even bigger. In addition, debt restructuring give businesses an opportunity to avoid bankruptcy and the lenders get the chance to recover their money more than what they would through a bankruptcy proceeding, thus at the end of the day everybody is happy. This theory is very instrumental for this study as it informs the study on the connection between Non Performing Loans and interest rate which is done through debt restructuring.

2.4 Literature Review

Maulana and Kurniasih [4], did a study on Factors Affecting Bank Lending Growth using in Indonesia as a case study their study examined and analysed the effect of Interest Rate, Economic Growth, Funding Growth, Capital Adequacy Ratio (CAR) and Non-Performing Loan (NPL) of Lending Growth Banks. They had a sample population of 30 commercial banks with the data for five years from December 2011 to December 2015. Their study showed that economic growth, funding growth and NPL are having positive and significant influence to lending growth in banks. BI rate and CAR are having positive influence but not significant to lending growth in banks. Economic Growth is the most significant variable in influencing lending growth banks.

Alihodžić and Ekşi [5] did a study assessing factors that affect credit growth rate of some western Balkan countries (Bosnia and Herzegovina, Croatia and Serbia) and Turkey their study used credit growth rate as the dependent variable while the rate of the non-performing loans along with the deposit growth rate, return on equity and the real growth rate of the GDP as independent variables. They used quarterly data from 2007quarter one to 2017 quarter, after conducting a regression analysis their study found that there is a reverse relationship between the rate of non-performing loans and the credit growth rate for all the observed countries. Moreover, the basic results of the regression analysis also depicted a positive relationship between economic growth and the credit growth of banks.

Rwigi [6] examined the effects of inflation on Kenya commercial banks' lending behaviour, using a sample size of five profitable commercial banks in Kenya namely equity bank, Kenya commercial bank, standard chartered bank, Barclays bank and cooperative bank. Through analysing quarterly time series data between January 2011 to march 2016, in her study's regression model, credit growth was used as dependent variable and inflation and weighted interest as an independent variable. The result of her study found that, inflation was significantly positive related to credit growth in Kenya.

Henry Akani, and Dr. Onyema [7] (2017) investigated the determinants of credit growth in Nigeria, using time series data from 1981 to 2016, their study investigated the influence of macroeconomic variables, monetary policy variables and international variables on the growth of Nigeria's net domestic credit. A

multiple linear regression model was developed to examine this. Their study found that the macroeconomic variable, public expenditure, inflation rate and capital formation have a negative relationship with growth of Nigeria net domestic credit, whereas real gross domestic product, government revenue and balance of payment have a positive effect on the dependent variable.

They concluded that macroeconomic variables have significant influence on the growth of Nigeria's net domestic credit. The monetary policy variables, treasury bill rate, interest rate and compliance to credit rules have a negative influence on net domestic credit while monetary policy rate, financial deepening and growth of broad money supply have a positive impact on the dependent variables. They also conclude that monetary policy variables have no significant relationship with the growth of net domestic credit in Nigeria.

Their study also found that the international variables, exchange rate, international liquidity, foreign direct investment and openness of the economy have positive effect on net domestic credit whereas cross boarder credit and net foreign portfolio investment have negative relationship with net domestic credit. They concluded that international variables have no significant relationship with the growth of net domestic credit in Nigeria. They recommended that "macroeconomics, monetary and external policies should be formulated to achieve equilibrium level of net domestic credit in the economy".

P. Mchopa [8] (2011) assessed the causes of Non-Performing Loans in Tanzania commercial banks using National Microfinance Finance Bank (NMB) as a case study. In his study he found that causes of nonperforming are related to bank operations and customer operations. According to his study, courses of NPLs which related to customer operations are moral hazards, inadequate business, financial, marketing, entrepreneurship and management skills, fund diversion and multiple loans. Furthermore, his study found that causes of nonperforming loans which are related banking operations were adverse customer selection problem, poor loan policy, inadequate loan monitoring and recovery, long queue in banking hall, poor customer services and corruptions of bank officers. His

study recommended that leaders should formulate suitable loan strategy that will minimize credit risks, improve loan monitoring and collection.

S. Matai. [9] also did a study on the causes of Non-Performing Loans in commercial banks in Tanzania using CRDB bank operating in Rukwa and Dar es salaam regions as his case study. His study mainly focused on assessing the courses of Non-Performing Loans in commercial banks. His study had a sample size of seventy-nine (77) observations that contained of 44 officials from 6 CRDB bank branches and 35 customers of CRDB Bank loan advancement. He employed both qualitative and quantitative method in analysing the collected data. The outcomes of his analysis found that external factors are more predominant in causing Non Performing Loans in CRDB Bank Limited. Factors causing Non Performing Loans were natural calamities or change in economic condition such as inflation rates, government policy, change in real GDP and the integrity of the borrower.

Findings suggested that integrity of borrower such that utilisation of funds for purposes different from those agreed with the bank is a major factor that cause NPLs, in CRDB bank. Thus the bank need to closely monitor its borrowers so as to be able to follow up on the utilization of the borrowed funds. Moreover, his study recommended that creation and enhancement a good relationship with borrowers is key for successful credit monitoring. He insisted this strategy should be adopted by CRDB in its efforts of reducing non-performing loans in its balance sheet.

2.5 Conceptual Framework

Despite the fact that this study focuses on assessing the impact of non-perfuming loans on the growth of credit to privates sector in Tanzania from 2009 to 2018, the study also checked how other factors apart from non-performing loans also impacted credit growth to private sector in Tanzania, as shown in the diagram below, so the other factors that the study looked at are *interest rates, GDP growth rates and inflation rates* as captured in the bellow conceptual framework (Fig. 2) the detailed explanation of these variables will be given in the theoretical frame work.
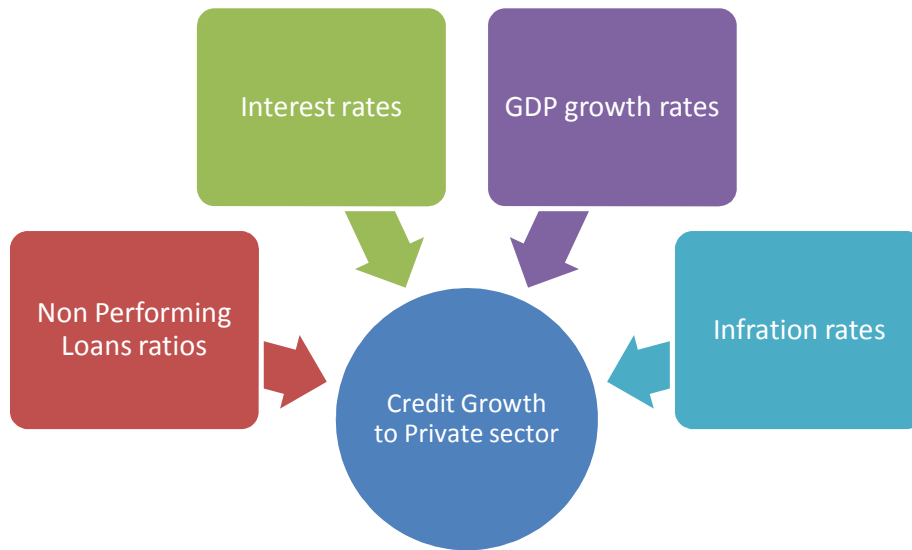
Fig. 2. Conceptual framework

3. METHODOLOGY

The study collected secondary data on credit growth rates, NPL ratios, inflation rates, interest rates and GDP growth rates from various reports produced by the Bank of Tanzania. The obtained data represent 53 financial institutions that were operating in Tanzania by the time this study was carried out. This study followed systematic sampling method, by picking quarterly data of credit growth, NPL, interest rates, inflation rate and GDP growth rate in Tanzania from 2009 to 2018, this gave a total sample size of 40 observations, i.e. 4 x 10 = 40. The study employed multiple regression analysis in analysing the relationship between Credit growth in Tanzania with NPL and other explanatory variables included in the model (i.e. *NPL, GDP growth, Inflation rates and Interest rates)* on the credit growth in Tanzania,

3.1 Model Formulation

Credit growth (Cr) = f (interest rates, inflation, non-performing loans ratios, Economic growth)

$$C_g = \propto +\beta_1 NPL + \beta_2 Inter + \beta_3 Infl + \beta_4 GDP + \mu_i \quad (1)$$

where as

Crg = Credit Growth
α = Constant intercept
Inter = Interest rate
Infl = Inflation rate
NPL = Non performing loan ratio

GDP = GDP growth rate
μ_i = Other factors that affect credit growth not included in the model

3.2 A Test for Time Series Data Problems

The model will be tested to see if it been impacted with the time series data problems the Durbin-Watson and Variance Inflation Factor (VIF) test will be done to check for auto correction problem and multicollinearity problems, if any problem is found some necessary measures will be taken to solve them i.e. for autocorrelation is detected then will be treated through adopting either generalized difference equation procedure, and for multicollinearity problem such as removing some of highly correlated variables will be removed or keep them but perform an analysis designed for highly correlated variables, such as principal components analysis or partial least squares regression.

4. RESULTS AND DISCUSSION

Results in Table 1 indicate that the NPL has a negative impact on credit growth rate with a coefficient of (-0.323) at 5% significant level, meaning that a unit increase results to 0.323-unit decrease in credit growth rate. Also, the study found that interest rate has got negative impact on credit growth rate with a coefficient of (0.263).

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Table 1. Estimation of linear regression coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	**Std. Error**	**Beta**		
1	(Constant)	2.607	.964		2.704	.011
	Rho_NPL_rate	-1.343	.637	-.323	-2.108	.043
	Rho_Intererest_rate	-2.886	1.670	-.263	-1.728	.094
	Rho_Inflation_rate	.421	.250	.247	1.685	.102
	Rho_GDP_growth	.226	.211	.156	1.073	.291

Furthermore, the study found that inflation rate impacts positively credit growth rate in Tanzania with a coefficient of 0.247, meaning that a unit increase in inflation will cause 0.247 increase in credit growth rate and vice versa, however the finding is not statistically significant at 5% significance level. The estimation of a linear regression coefficients gave the linear regression equation as presented in equation 2.

$$Rho\_Credit\_growt\_rate = 2.607 - 0.323 Rho\_NPL\_rate - 0.263 Rho\_Inerest\_rate + 0.247 Roh\_Inflation\_rate + 0.156 Rho\_GDP\_growth \qquad (2)$$

Lastly the study found that Gross Domestic Product (GDP) growth rate has a positive impact on Credit growth rate, with a coefficient of 0.156, meaning that a unit increase GDP growth will cause 0.156 increase on the credit growth rate and verse versa, however this result is not statistically significant at 95% confidence level.

Table 2 shows that (R-square) represents a value of 0.334 meaning that 33.4% of the variation of the variation of credit growth rate is explained by variation of the variations of the four independent variables namely NPL, Interest rate, inflation rate and |GDP growth rate. In other words, 62.6% of the variance of credit growth is not yet explained by the four existing variables of this model. This calls for inclusion of more variables beyond what are included in this model.

4.1 Non-Performing Loan and Credit Growth

Basing on the finding of the regression analysis study has found that the there is a significant linear negative relationship between NPLs and credit growth to private sector in Tanzania, NPL liner regression coefficient had a value of (-0.323) with this this result we reject the null hypothesis that there is no linear correlation between credit growth in and Non perfuming loans in Tanzania, and accepted the hypothesis that there is linear correlation between credit.

4.2 Interest Rates and Inflation and Credit Growth

From the regression findings, both interest rates and inflation rate had found to have a relationship with the credit growth, where by interest rate has a negative relationship with credit growth and inflation has a positive relationship with the credit growth in Tanzania with coefficient values of -0.263 and 0.247 respectively. With his finding the null hypothesis that states that "Interest rates and Inflation do not have any influence on the credit growth advanced to private in Tanzania" was rejected.

4.3 GDP Growth and Credit Growth

The study found that there is a positive relationship between GDP growth and credit advancement to in the banking sector, however this relationship is not significant at 5% significant level. Thus the hypothesis that states that There is no relationship between the growth of credit advanced to private sector and GDP growth in Tanzania that was put in the beginning of the study in 1.4 (iii) was rejected.

Table 2. Model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.578[a]	.334	.251	.18472

5. CONCLUSIONS AND RECOMMENDA-TIONS

The study found that NPL has a significant negative impact on the credit growth by commercial bank to private sector in Tanzania. Thus the study recommends that the government through the central bank should continue to closely monitor and control the level of nonperforming loans in the economy and confine it below the threshold of 5% as stipulated by the BOT policy.

The study also recommends that commercial banks to ensure that, a thorough credit risk assessment is conducted when advancing loans to private sector so as to avoid giving loans to customers who will not be able to pay back as agreed, this will help reducing NPL in their books, increase their profitability and further increase the ability of these commercial banks to issue more loans to private sector. Furthermore, they should have to follow all the directives issued by the BOT through its circular No. FA.178/461/01/02 issued on February 19, 2018 which contained measures to increase credit to private sector and contain Non-Performing Loans in banking sector in Tanzania.

In addition, the study recommends that the government should control interest rates charged on the loans, which the study found to be having negative relationship with credit growth in the economy. Thus maintaining easy monetary policy is very crucial so as to maintain low interest rates and stimulation of credit growth. moreover, formulation and implementation of policies that aim on reducing the default risk on borrowed money is very crucial otherwise accommodative monetary policy alone will fail to keep lending rates down if the risk of default is very high in the financial market, commercial banks will continue charging high interest rates to cover for the high default risk associated with lending even if the central bank is running accommodative monetary policy.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Dullien S. Central banking, financial institutions and credit creation in developing countries, Trinidad and Tobago. International Journal of Economics and Finance. 2009;9(3):126-132.
2. Werner RA. The quantity theory of credit and some of its policy implications. University of Southampton, Highfield, UK; 2012.
3. Kobayashi K, Nakajima T. A theory of nonperforming loans and debt restructuring; 2016.
4. Maulana Y, Augustina K. Factors affecting bank lending growth: Cases in Indonesia. Int J Sci Res Publ. 2017;7(11):1-8.
5. Alihodžić A, Ekşi E. Credit growth and non-performing loans: Evidence from turkey and some Balkan countries. Eastern Journal of European Studies. 2018;9:229-249.
6. Rwigi E. Effects of inflation on Kenya commercial bank lending; Published thesis (MBA), University of Nairobi; 2018.
7. Henry A, and Onyema J, The determinants of credit growth in Nigeria; a mult dimensional analysis, Journal of Economics and Sustainable Development. 2017;8.
8. Mchopa P. Causes of non-performing loans in commercial banks a case study of Rukwa and Dar es Salaam regions of CRDB bank. Unpublished master dissertation, Mzumbe University, Morogoro, Tanzania; 2013.
9. Matai S. An assessment of the causes of non-performing loans in Tanzania commercial banks, a case of NMB bank plc, unpublished master dissertation, Mzumbe University, Morogoro, Tanzania; 2013.

APPENDIX 1

Time series data of NPL, Credit growth, Interest rate, Inflation rate and GDP growth rate:

Table 3. Time series data

S/n	Year	NPL	Credit growth	Interest rate	Inflation rate	GDP growth
1	2009Q1	7.35	35.7	15.28	13.00	6.77
2	2009Q2	7.76	33.2	15.23	10.70	2.98
3	2009Q3	6.42	26.6	14.91	12.10	2.57
4	2009Q4	6.4	9.6	14.52	12.20	9.29
5	2010Q1	7.03	10.8	14.97	9.00	5.01
6	2010Q2	7.21	14.1	14.73	7.20	7.38
7	2010Q3	7.2	18.5	14.24	4.50	5.06
8	2010Q4	6.7	20	14.59	5.55	8.00
9	2011Q1	9.5	23.3	14.72	8.04	7.92
10	2011Q2	9.1	25.6	14.66	10.91	10.23
11	2011Q3	8.1	29.5	15.15	16.80	9.25
12	2011Q4	6.7	27.2	14.33	19.75	4.43
13	2012Q1	7.6	21.9	15.72	18.96	7.10
14	2012Q2	8.33	18.5	15.62	17.39	3.50
15	2012Q3	7.5	16.1	16.25	13.51	5.53
16	2012Q4	7.32	18.2	16.84	12.06	4.43
17	2013Q1	7.7	21.9	16.77	9.77	6.24
18	2013Q2	7.6	17.1	14.91	7.64	5.88
19	2013Q3	7.1	15.3	14.68	6.06	7.25
20	2013Q4	6.4	15.3	16.73	5.56	9.68
21	2014Q1	8.3	16.4	16.68	6.08	8.29
22	2014Q2	8.1	21.4	16.46	6.41	10.19
23	2014Q3	8.4	20.7	15.24	6.63	5.77
24	2014Q4	6.6	19.4	15.16	4.75	3.75
25	2015Q1	6.5	19.8	15.47	4.28	6.56
26	2015Q2	6.6	21	15.07	6.14	6.47
27	2015Q3	6.8	24.6	15.15	6.08	6.82
28	2015Q4	6.6	24.8	15.87	6.84	8.00
29	2016Q1	8.2	19.8	15.57	5.42	6.91
30	2016Q2	8.9	19.1	15.62	5.47	8.50
31	2016Q3	9.1	11.7	15.79	4.47	6.62
32	2016Q4	9.5	7.2	15.15	5.04	5.51
33	2017Q1	10.8	3.3	17.22	6.39	4.90
34	2017Q2	10.6	1.3	17.56	5.45	6.60
35	2017Q3	12.5	-1.6	19.54	5.27	5.00
36	2017Q4	11.7	1.7	19.24	3.97	10.30
37	2018Q1	11.6	1.2	17.92	3.92	7.67
38	2018Q2	11.3	3.7	17.47	3.40	6.17
39	2018Q3	9.7	4.9	17.05	3.35	7.12
40	2018Q4	9	4.9	16.57	3.25	6.66

Source: Bank of Tanzania (BOT) and National Bureau of Statistics (NBS) various reports