

ANALYSIS OF FACTORS INFLUENCING BANK ASSET QUALITY IN TANZANIA

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ABSTRACT

The study intends to examine factor that affect quality of loan portfolio using non-performing loans (NPLs) as proxy variable in Tanzania for the period of 2006 to 2013. The study finding shows that there is no significant impact of banks specific variables and macroeconomic variables on bank asset quality except for GDP. The study finding reveals that banks specific variables (bank size, profitability, bank liquidity, capital adequacy, and operating efficiency) contribute to quality of loan portfolio, where as profitability measured by ROA and NIM decreases quality of bank loans portfolio. This suggests that management of banks concentrate in increasing loan portfolio with the view of increasing banks profitability which in turn increases risk of non-performing loans. On the other hands the finding reveals that GDP has significant positive impact on NPLs implying that economic performance is attributed with poor bank asset quality. The increase in NPLs might be caused by laxity of conditions attributed with issuance of loans to borrowers during good economic performance believing in business success and continuity. MCAP has insignificant negative impact on NPLs where as INF has positive impact on NPLs. This is caused by the increase in operating costs. The findings call for the study on the impact of behavioral factors on the quality of banks loans portfolio in Tanzania that will guide on the issue of specific policy by regulators to ensure financial stability

Keywords: Bank, Specific and macroeconomic factors, asset quality in Tanzania.

INTRODUCTION

Asset quality of banks is very important element that determines overall condition of banks. Factors that primary affect asset quality of banks is loan portfolios of bank and programs in place to administer loans advanced to customers. Loans form large part of assets of the bank which implies that risk of capital invested is more associated with loan portfolio of a given bank. Given sensitivity of this case, proper management of loan portfolio is a key factor for financial soundness and bank profitability.

Bank asset quality is very important element for both management and all stakeholders of banks due to the fact that, banking system and economic financial system of any country depend on good management of loan portfolio as such it play significant role on bank performance.

Financial stability of any economy depends on the stability of banking system. To ensure stability of banking system banks are required to maintain asset quality of banks in order to achieve sustainable profit from their operation. Failure to maintain banking system stability may lead into financial crisis as such experienced in 2007 and 2008. There is growing concern worldwide from financial supervisory authority which requires asset quality issue to be addressed properly by all banks (Tseng and Huang 1997). According to Nagle (1991) problems that affect bank asset quality can be the factors that may lead into failure of banks in future. Also the study conducted in US by William Streeter (2000) revealed that banks asset quality is a major management problem. Due to increasingly pressures from bank supervisory authority and other interested on good management of asset quality it is now considered by banking industry as crucial element for management of banks at home and foreign.

Poor management of bank asset quality is the root cause of loan problems. Addressing factors that enhance asset quality in Tanzania context will minimize loans defaults from borrowers. Several studies have been conducted to investigate factors that influence credit risk of banks after financial crisis of 2007 and 2008. Studies undertaken to examine loan problems (credit risk), includes Zhong, Dickinson and Kutan (2016), De Young (1997) and Bonfim (2009) Brown & Mues, (2012) Iscoe et al., (2012) and Wozabal & Hochreiter, (2012). These studies focused in examining bank specific determinations, firms' characteristics determinants and macroeconomic determinates of loan problems.

Despite that bank asset quality play a great role in operational performance of banks, focus of many studies has been put on the determinants of credit risk (loans problem), with very few studies conducted to examine the determinants of bank asset quality (Yin, 1999, Nagle, 1991 and William Streeter, 2000) in particular, Tanzania. Therefore exploring factors which influence bank asset quality is of great importance. The study findings will allow Tanzanian banks, regulators and supervisory authorities to take appropriate actions and develop policies that enhance quality of assets in banking industry to enhance financial system stability. The main purpose of the study is to investigate factors that explain bank asset quality in Tanzania context. Factors investigated are in two categories, bank specific factors and macroeconomic factors. The study will also contribute to the growing literature related to management of bank asset quality in developing economies.

The study is organized as follow. Part 2 reviews theoretical and empirical literature on the bank specific determinants and macroeconomic determinants of asset quality of bank. Part 3 of the study describe methodology used to examine determinants of bank asset quality. Part 4 present findings and discussion of the results. Finally, part five provides conclusion and policy implication.

1.0 Related Literatures

There is growing concern over management of bank asset quality. It is argued that poor asset quality of bank is the root cause of bank failure. Asset quality of bank exists before the banks go bankrupt. This argument is supported by previous studies which relates to asset quality of bank under which the findings suggested that bank asset quality is an indicator of going concern of banks, (Demirguc–Kunt 1989, Whalen, 1991 and Barr and Siems 1994).

Banks efficiency and bank asset quality are non-related element in prediction of banks bankrupt as personnel’s involved in supervision and selection of borrowers differ.

It is believed that performance of loans portfolio is associated with economic condition which is the key determinant of level of economic activities in the country. Study conducted by Dermiguc-Kunt and Detragiache (2000), Beck, Dermirguc-Kunt, and Levine (2005) and Lis et, al. (2000) reveals that size of the bank, economic growth measured by GDP, and capital adequacy affect positively quality of asset, where as net interest margin (profitability) and market concentration (market power) affect management bank asset quality.

Resti and Sironi (2001) investigated rate of corporate bond recovery. Economic growth measure by GDP growth and interest rate are positively related with quality of bank asset. Study by Luis et al. (2002) using model of simultaneous equations found that, economic growth measured by GDP growth, size of the bank, capital adequacy are positively related with bank asset quality whereas net interest margin (profitability) while market capitalization had negative effect on bank asset quality.

Study carried out by Das and Ghosh (2003) found that, macroeconomic variables such as interest rate and inflation rate affect negatively quality of asset, similar to operating efficiency, and capital adequacy measured by capital reserve affect negatively quality of asset.

According to Berger and De Young (1995) commented that operating efficiency which describe ability of management team has an impact on bank asset quality. Lack of capability to supervise and control operating costs efficiently will lead into the increase of non-performing loans that will results into poor bank asset quality.

Operating efficiency measured by cost efficiency (management efficiency) has positively influence over asset quality of banks (Berger and De Young, 1997 and Podpiera and Weill, 2008). This is due to the fact that decrease in operating costs will lead into increase of non-performing loans which result into poor asset quality of bank. It is also demonstrated in the

study by Louzid et al (2012) that, there is negative relationship between operating cost efficient and asset quality.

Berger and De Young (1997) found that capital adequacy increases quality of loans portfolio. This is contrary to the findings documented by Louzis et al. (2012) which noted that, capital adequacy has no impact on asset quality measured by non-performing loans. Also it suggested that positive relationship exist between capital adequacy and asset quality as reported in the study by Mpunga (2002). Kendal (1992), Abdioglu and Ahmet (2011) and Shrieves and Dahl (1992). Study by Santomero and Watson (1977) reveal that capital adequacy increases credit risk which in turn decreases asset quality of banks.

Increase in bank liquidity improves asset quality of the bank (Bonfim, 2009, Benito et al. 2004) and Bunn and Redwood 2003). The findings suggest that liquidity of bank increases both credit supply and confidence which increases ability of management to recover loans from customer

It was also found that size of the bank and bank operating efficiency are inversely related to bank asset quality. Small banks manage loans portfolio efficiently relative to large commercial banks (Cole et al. 2004, Carter, McNutty and Verbrugge 2004 and Verbrugge 2005). The fact of this relationship is that, small banks explore valuable information that is used to evaluate loans issuance and monitor performance of loans advanced to customer. For this reason quality of borrowers from small banks is improved which in thus improves bank asset quality of small bank relative to large banks.

Study by Ghosh, A. (2015), reveals that liquidity of bank is negatively related with asset quality. This is due to the fact that increase in bank liquidity increases credit supply which results into increase in credit risk. Another study by Imbierowicz and Rauch (20014) found that liquidity of bank has no significant impact on bank asset quality. This implies that asset quality is independent from liquidity of the bank.

Bank size affects negatively bank asset quality as document by Stern and Feldman, (2004). Louzis, Vouldis and Metax (2012) on the other hand found that bank size does not influence asset quality of the bank. Also this study suggested that profitability of bank measures by return on Equity (ROE) is positively related with bank asset quality. Historical profit increases with the decrease in non-performing loans.

1. Data and Study Methodology

The study use secondary data from published financial statements for 49 banks for period starting from 2006 to 2013. The sample used comprises small banks, medium banks and large banks operating in Tanzania. Banks specific determinants and macroeconomic determinants of

bank asset quality are examined by the study to ascertain the impact of the factors used on the asset quality of bank. Linear regression model related to measures of bank asset quality for various factors is employed as follows.

$$NPA_{it} = \alpha + \beta_1 GDP + \beta_2 MCAP + \beta_3 INF + \beta_4 BSIZE + \beta_5 OE$$

$$+ \beta_6 CA + \beta_7 NIM + \beta_8 ROA + \beta_9 LQ$$

The regression vector includes industry specific and macroeconomic determinants of bank asset quality measured by non-performing asset (NPA) or non-performing loans (NPL).

Variables used to test their impact on asset quality representing macroeconomic variables include market capitalization (MCAP), Inflation Rate INF, and Gross Domestic Product Growth Rate (GDP). Explanatory variables representing bank specific variables includes Capital Adequacy (CA), Bank Size (BSIZE), Profitability measured with Return on Asset (ROA), Bank liquidity (LQ), and operating efficiency/management efficiency (OE). This equation is estimated by using Panel Data Regression Analysis by considering NPL as dependent variable estimated as the ratio of non-performing loans to total advance.

GDP is considered as a determinant of bank asset quality due to the fact that economic activities are affected by macroeconomic conditions. Economic performance plays a great role in performance of loan portfolio measured by non-performing loans. It is expected that economic growth improves bank asset quality by decreasing non-performing loans. Inflation rate (INF) and market capitalization are considered to be macroeconomic determinant because they are related with Tanzania economy. Increase in inflation rate increases with interest rate which is attributed with increase in cost of operation thus reduces amount that could have been used to repay loan. Defaulters increases with increase in inflation rate as this element increases burden to the borrowers. In view of the study Dar es Salaam stock exchange (DSE) growth rate is taken as factors that affect bank asset quality as stock market growth is associated with quality management because of accountability requirement.

Size of the bank measured by bank assets is taken as specific determinant of bank asset quality. It is considered to see whether large banks experience problem of non-performing loans relative to small banks which deteriorate asset quality of the bank as the results of the increase in non-performing loans. Other specific factors used includes capital adequacy (CA) with view of a fact that, increase in capital improve asset quality of bank. This is because increase in capital increases confidence of the bank which improves efficiency in collection of loans from customer. Profitability of banks measured by net interest margin and Return on Asset (ROA) has been taken as another specific determinant as bank profitability is related with non-performing loans

of respective bank. Operating efficiency measured by cost is another aspect which affects bank asset quality. Part of costs is incurred to manage loan portfolio, which implies that cost increases with the increase of bank asset quality. Another factor that completes the set of specific determinants is bank liquidity. It is expected that bank liquidity is associated with poor bank asset quality because, liquidity of the bank increases supply of lending which in turn increases defaulters/non-performing loans.

Panel Regression estimation to analyses bank asset quality determinants comprises non-performing asset/loan (NPL) as dependent variable (asset quality proxy). The model employed is Panel Least Square Regression. The use of this model to examine determinants of bank asset quality is consistent to model suggested by Baltagi and Chang (1994, 2005). The model as suggested in these studies assumed the presence of heteroskedasticity in analyzing data to establish determinants of bank asset quality.

Table 3.1: Description of Variables

Variables	Definition
Return on Asset -ROA	Net Income/Average Earnings Assets.
Capital adequacy ratio-CA	Shareholder Capital/Total Assets.
Bank liquidity-LQ	Liquid Assets/ Total Deposits*100.
Bank size-SIZE	LN (TOTAL ASSETS).
Size of the banking sector - SBS	The ratio of total assets of the banks to GDP.
Asset quality-AQ	NPL/Total Loans and Advances*100
Operating efficiency-OE	Total Assets /Total Revenue*100
Inflation –INF	Percentage rate of change of a price index over time
Gross Domestic Product-GDP	All private and public consumption, government outlays, investments and exports minus imports that occur within a defined territory
Market Capitalization - MCAP	Stock market capitalization divided by GDP

3.2 Empirical Results and Discussions

The study employed pre-regression tests to confirm the validity of Ordinary least Square (OLS) Model to analyze selected study variables. Tests performed include Multicollinearity and Heteroscedasticity tests. Multicollinearity test was performed using Variance Inflation Factor (VIF) which test significance of collinearity in OLS. The test provides with an index measures of amount of variance of regression coefficient estimates increased as a results of co linearity. According to Myers (1990), Variance Inflation Factor (VIF) greater than 10 raises concern on the validity of the model used.

Table 2 presents co linearity statistics for the model under study. The value of VIF revealed of 1.62 is well below the threshold of 10. This suggests that collinearity of independent variables do not exist. The study also used heteroscedasticity test to investigate whether error terms have constant variance as suggested by Studenmund, (2011). There are number of statistical methods used to test model if heteroscedasticity problem exist or not. The study adopted test method suggested by Glejser (1969). The examination results suggested that existence of heteroscedasticity problem leading to correction to be carried out by applying robust check on OLS model. After correction of heteroscedasticity problem while multicollinearity suggested being acceptable, the Ordinary Least Square Model is used.

Table 2: VIF Test Results of Multicollinearity

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. vif
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Variable	VIF	1/VIF
OperatingE-y	2.66	0.376086
NIM	2.47	0.405307
ROAA	1.83	0.546604
CapitalAde-y	1.70	0.589047
BankSize	1.43	0.697936
BankLiquid-y	1.38	0.723792
Inflation	1.10	0.910167
GDP	1.04	0.958232
MCAP	1.01	0.992639
Mean VIF	1.62	

Table 3: Regression Coefficients Results for Asset Quality

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. regress AssetQuality ROAA NIM CapitalAdequacy BankSize OperatingEfficiency BankLiquidity GDP Inflation MCAP BankConc,robust level(95)
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Linear regression                               Number of obs =    201
                                                F( 10,   190) =    3.43
                                                Prob > F      = 0.0004
                                                R-squared     = 0.0763
                                                Root MSE     = .0987
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AssetQuality	Robust					
	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
ROAA	.103019	.1298609	0.79	0.429	-.1531354	.3591734
NIM	.0092951	.0077163	1.20	0.230	-.0059255	.0245157
CapitalAdequacy	-.0861633	.0536061	-1.61	0.110	-.1919028	.0195762
BankSize	-.0014921	.0042276	-0.35	0.725	-.0098313	.006847
OperatingEfficiency	-.058633	.0574468	-1.02	0.309	-.1719484	.0546823
BankLiquidity	-.0231201	.0515654	-0.45	0.654	-.1248342	.0785941
GDP	.0183853	.0093919	1.96	0.052	-.0001406	.0369112
Inflation	.1632326	.2341265	0.70	0.487	-.2985884	.6250537
MCAP	-.0032364	.0093882	-0.34	0.731	-.021755	.0152822
BankConc	-.0035023	.0018749	-1.87	0.063	-.0072006	.0001961
_cons	.2365535	.1429698	1.65	0.100	-.0454584	.5185655

The regression findings for banks specific variables and macro economic variables are presented in table 3. With regards to banks profitability measured by NIM and ROA reveals positive insignificant impact on non-performing loans. This can be an indication that banks management tends to manipulate earnings to influence public perception and market reaction. On other hands it can be caused by the increase in loan portfolio to meet target in order to achieve desired performance which in turn increases non-performing loans due laxity in issuance of loans.

Operating efficiency measured by operating expenses to income ratio shows negative impact on non-performing loans. Operating efficiency is attributed with quality management that minimizes cost to attain desired objective. Good banks management not only increases cost efficiency but also quality of banks loan portfolio. Another side suggests that cost minimization used to monitor loans assessment of loans issuance increases non-performing loans. The finding is similar with other studies such as Berger and De Young (1995), Giovanniz and Grimardx (2002), Louzis et al. (2012) and Podpiera and Weill (2008). These studies suggest that operating capability of management significantly affect banks loan quality.

Coefficient of bank size reported shows insignificant negative impact on non-performing loans. Efficiency management of loan portfolio is attributed with bank size. This is due to the fact that large banks have human and financial resources required to evaluate loans application and monitor the performance of loans portfolio. Efficiency management of loans improves quality of the loan portfolio. The finding is supported with studies carried by Hu et al. (2006), Rajan and Dhal (2003), Al-Smad and Ahmad (2009) and Salas and Saurina (2002).

Coefficients of bank liquidity and capital adequacy show insignificant negative impact on non-performing loans. Decrease in bank liquidity and capital adequacy increases default level. Bank liquidity and capital adequacy increase accessibility of financial resources used to evaluate and monitor loans issued to borrowers to ensure quality of loan portfolio. The finding is similar with the study carried out by Lis et al. (2000) which suggested that bank liquidity and capital adequacy have significantly positively impact on quality of bank assets.

Variables used to examine impact of macroeconomic impact on non-performing loans includes gross domestic product growth rate (GDP), inflation rate (INF) and market capitalization (MCAP). Coefficient value reported for GDP shows positive significant impact at 5% level of significant as reveals in the table above. Non-performing loans is associated with economic performance. The increase in NPLs might be caused by increase in volume of loans during good economic condition which result into the increase in non-performing loans as the results of laxity of conditions attributed with issuance of loans to borrowers. The finding confirm the argument put forward by Fofack (2005), Rajan and Dhal (2003) and Jimenez and Saurina (2006) which suggested that GDP is predictor of performance of loan portfolio.

Coefficient value for inflation show insignificant positive impact on non-performing loans (NPLs). The result noted can be caused by the increase in loans volume issued by the banks because high demand of loans resulting from high operating costs to borrowers due to inflation. The finding is in line with finding documented by the studies carried by Jimenez and Saurina (2006), Quagliariello and Fofack (2005) which suggested that increase in interest and inflation rate increases borrowers cost in terms borrowing costs and operating costs leading to increase in default level.

Regarding market capitalization (MCAP), the result show negative insignificant impact on NPLs. The findings suggest that banks with low capitalization are reluctant to issue loans to low rating borrowers which in turn improves quality of banks loan portfolio.

3.3 Conclusion and Recommendation

The study is carried out to examine determinants of asset quality measured by level of non-performing loans (NPLs). Bank asset quality improves with the decrease in NPLs. The study considers both bank specific characteristics and macroeconomic variable to test the impact on non-performing loans.

In regards to bank specific characteristics, the finding reveals that capital adequacy, bank size, operating efficiency and bank liquidity have insignificantly negative impact on non-performing loans. The findings imply that performance of banks loans portfolio in Tanzania is induced by these variables though not significant at 5% level of significant. Banks profitability measured by ROA and NIM has a positive impact on NPLs. Increase in non-performing loans reduces profit of the bank. The result suggests that management of banks in Tanzania concentrate in increasing loan portfolio with the view of increase in interest income which in turn increases risk resulting from non-performing loans.

It can be noted that there is less impact for most of variables under study on the bank asset quality. Some of findings are contrary to the expectation which sign for more effort to carry out the same study to find consensus about factors that contribute on the quality of bank loan portfolio (Bank asset quality)The findings conclude that no factors influencing quality of banks asset that can be relied on to be applicable in different economic environment.

The findings call for the study on the impact of behavioral factors on quality of banks loans portfolio. The findings will guide regulators and law makers on the issues of specific policies and guideline by law maker and regulators that will ensure financial stability in Tanzania banking sector. There should be specific policy that guides criteria on issuance of loans to borrowers to avoid financial distress resulting from collapse of financial system. Most of the variable considered under this study reveals that they are less significant to influence asset quality in the banking sector. It is therefore imperative to find out behavioral aspect of borrowers that might be associated with bank asset quality of banks

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