

An Alternative Ratio to Measuring Bank Asset Quality

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Received June 6, 2019; Reviewed June 12; Accepted June 13, 2019

Abstract: *The benchmark that is internationally accepted in measuring asset quality using non-performing loans (NPLs) ratio is between 1 - 3 percent. In Rwanda it is 5 percent. This ratio might present deficiencies due to its computation whereby if the denominator increases more, the ratio can be in the acceptable range. For example when changes in NPLs and loan book are in the same proportion. This suggests that there is the stability of the bank as far as the asset quality is concerned, while the growing loan book is not of good quality. This paper examines limitations of the ratio of NPLs to report fairly the quality of the portfolio at risk. Based on a descriptive method of inquiry in analyzing the essence of this ratio and its limitations, this paper proposes an alternative ratio to measuring the asset quality of a bank that is the growth of non-performing loans in absolute value (gNPLs). In order to achieve the above, first, the study deduced the amount of NPLs from the audited financial reports for at least three banks operating in Rwanda. Second, it computed the growth rate of NPLs in absolute value for each bank year-to-year in the period covered by the study, and then contrasted findings to prove how the alternative proposed ratio which is the growth of NPLs displays better, the extent of how the loan portfolio quality changed year-to-year. Findings reveal that between 2010 and 2016, the growth of NPLs has fluctuated much higher between -67.4 percent and 320.6 percent whereas the ratio of NPLs has only fluctuated between 2.9 percent and 14.8 percent. Thus, the study recommends central banks to explore the use of the growth of NPLs along with the ratio of NPLs by banks in their reports about asset quality because this alternative ratio can send signals to managers, board members and regulator about the way the loan portfolio quality is being managed and take correctives measures on time, hence contributing to the sustainability of shareholders' value.*

Key words: Bank, Non-Performing Loans, Growth of non-performing loans.

1. Introduction

Lending is one of the most important activities in the banking industry (Casu, et al., 2015). It is argued that loan portfolios form the largest proportion of banks' assets as they represent a big portion of total deposits. The amount that banks have to keep as reserves at the central bank are low, leaving an important portion to granting loans.

Even though countries present differences in reserves requirement, but all converge to low reserves, hence making loans to deposit ratio higher. For example, in the UK, banks are compelled to maintain reserves at the Bank of England equal to 0.15 percent of eligible liabilities (roughly approximated by deposits) and allocating the rest to loans (Matthews and Thompson, 2008). Likewise, in the European Union, banks have to keep 2 percent of specified short-term liabilities in reserve at the European

Central Bank (ECB). Similarly, in Japan and Switzerland, banks are required to keep reserves varying between 0.05

and 1.3 percent, respectively. In contrast, in the US, reserves with the Central Bank vary between 0 and 10 percent of deposits depending on the bank nature and size. In South Africa, banks are required to keep a minimum of 5 percent of their average daily total deposits in reserve, of which 2.5 percent is kept with the South African Reserve Bank (Zyl et al., 2003), while in Rwanda, banks are required to keep a minimum of 20 percent of total deposits (BNR, 2018), hence directing about a maximum of 80 percent to loans.

This suggests that, profits in the banking sector which are directly associated with loans granted to borrowers are threatened if loans are not paid back as expected, hence giving place to non-performing loans (NPLs). Even though definitions of non-performing loan (NPL) vary across countries, in many countries, a loan is said to be

nonperforming if at least one of the following two elements applies: first, there is non-payment of the principal or interest for a period of 90 days or more (Wahlen 1994, Beck, Jakubik et al., 2013). This implies that NPLs include all loans in the loan portfolio that have more than 90 days overdue in principal and interest. Second, it can result in a situation where there is existence of essential well-defined weaknesses of the loan or the borrower (MacDonald and Koch 2006, Barisitz, 2011). In this case, the borrower might be in a situation of an economic or financial deterioration of his business. Thus, the loan amount recorded as nonperforming is the gross value as recorded on the bank's balance sheet, and not the amount overdue comprising of the instalment made of the principal and interest rate. The ratio of NPLs is the proportion of total value of a loan portfolio (before the deduction of loss-loan provisions) to total loan portfolio of the bank following the indicator measure of the International Monetary Fund (Agresti, Baudino et al., 2008).

As every NPL is not automatically classified as a loss, but they can end up being a loss to the banks. Therefore, managers make provisions to some categories of loans in prevention of losses in the future to the bank if they are not paid. Provisions for loan losses stand for the current estimation of future loan losses, if the borrowers do not pay the amount overdue and interests (Wahlen, 1994). They integrate the income statement of the bank as accrued expenses, hence decreasing profit before taxes.

The increase in NPLs affects banks' profit and the payment of dividends to shareholders due to provisions for loan losses that banks incur (Abreu and Mendes, 2001; Casu, et al., 2015; Fofack, 2005; Rose and Hudgins, 2013). They also disrupt the flow of credit that banks have to grant to borrowers because payment of funds loaned out is interrupted by defaulting borrowers. Consequently, NPLs contribute to a decrease in investment and/or consumption, and affect the performance of the bank (Demirgüç-Kunt and Detragiache, 1998). NPLs also reduce the lending capacity of lending institutions, which affect adversely the expansion of credit, that indirectly affects economic growth in a country (Berger and DeYoung, 1997; Sexton, 2008). As borrowers are experiencing a shortage of revenue, banks refrain from granting new loans fearing that they will not be repaid.

In addition, an increase in NPLs leads to additional costs to the bank in the process of loan recovery. This indicates that besides the delay in payment of amount overdue, the bank incurs additional costs. These costs consist of telephone calls to the borrowers facing repayment problems and paying visit to those borrowers. They may also comprise the legal costs that the bank engages in the judicial procedure if the bank has to take borrowers to court as well in the conduct of banks auctions for selling pledged collateral (Kirkpatrick, Murinde et al., 2008).

As in most cases, banks report that ratio of NPLs to express the banks' assets quality, its computation can be misleading by an important increase in the bank loan book (that appear on the denominator of the ratio) while the quality of NPLs (at the numerator) is deteriorating. This paper aims at exposing that limitation and propose an alternative way of assessing adequately the quality of a bank loan portfolio that is the growth of non-performing loans in absolute value.

2. Literature review

There has been renewed interest in the issue of NPLs among researchers due to its influence on banks' lending and profitability as well as the performance of the economy. NPLs give rise to loss-loan provisions that decrease banks' profits and hence their dividends to shareholders (Fofack, 2005). They also disturb the flow of credit to borrowers, as funds loaned out are not paid back, either in full or in part. Consequently, NPLs contribute to a decrease in investment and/or consumption (Demirgüç-Kunt and Detragiache, 1998). NPLs are also among the signals of banks' failure and can affect macroeconomic performance (Freixas and Rochet, 2008; Waweru and Kalani, 2009). It is argued that banking crises can also drive firms, including viable banks, into bankruptcy because borrowers are unable to service their debt. Therefore, banks' assets drop in value leading to insolvency that ends in banking crises.

The literature has argued that deposit insurance should prevent banking crises as it protects depositors in the advent of bank runs or bank failure (MacDonald and Koch, 2006). Depositors that are fully covered by deposit insurance will not care about the selection of a bank when making regular deposits because they are assured of getting their money back should the bank fail or become insolvent. However, empirical evidence has shown the opposite; instead of preventing the failure of banks, deposit insurance has been a source of moral hazard in the banking industry that leads to banking instability (see Chang and Velasco, 2001; Green and Lin, 2003; Ngalawa, Tchana and Viegli, 2016). The presence of deposit insurance gives bank managers room to maneuver to take excessive risk by lending to borrowers with high-risk projects, as they are assured cover for depositors in the advent of bank failure (Kane, 1989; Demirgüç-Kunt and Detragiache, 1998; Mankiw, 2011; Casu *et al.*, 2015).

In addition, the evidence indicates that NPLs have served as warning sign of several banking and financial crises (Yang, 2003; Ahmad and Bashir, 2013). The banking distress in France and Scandinavian countries in the early 1990s, the East Asian financial crisis of 1997, the global financial crisis of 2007–2009, and the banking sector instability in Cyprus and Greece in 2010 – 2012 are among recent examples

Matthews and Thompson (2008) report that NPLs were among key drivers of banking distress in France and

Scandinavian countries. In 1994, France recorded a level of 8.9 percent of total loans as NPLs. The French government decided on a rescue package for Credit Lyonnais amounting to US\$ 27 billion. Equally, following a liquidity crisis in 1991, the Scandinavian bank crisis of 1991–1992 cost about US\$ 16 billion. In Finland, NPLs reached 13 percent of total bank loans in 1992. Substantial losses and insolvency in Norway led to a banking crisis in 1991 in which 6 percent of commercial bank loans were non-performing. In Sweden, 18 percent of total bank loans were reported lost between 1990 and 1993, and the Swedish government assisted the main banks to avert their failure.

Yang's (2003) study on the connection between the Asian financial crisis and the level of NPLs in Taiwan, found that the rates of NPLs steadily increased from 1996, as a precursor of the 1997 crisis. The ratio of NPLs was reported to be above 6 percent, which is relatively high by international standards (1 to 3 percent). The same trend was observed in other countries in the region, and worsened during the crisis (Heffernan, 2005). From 1996 to 1999, the rates of NPLs varied from 3.9 percent to 9 percent in Malaysia; 4.1 percent to 6.2 percent in South Korea; 8.8 percent to 37 percent in Indonesia, and 7.7 percent to 38.6 percent in Thailand. Similarly, Arena (2008) shows that banks' asset quality contributed significantly to the probability of bank failure in the 1997 East Asian financial crisis and that of Latin America from 1994 to 1995. In East Asia, 69.74 percent of failed financial institutions had a problem of NPLs while the figure stood at 55.46 percent in Latin America. This indicates that generally, banks with lower asset quality had a higher likelihood of failure than those that were stronger; with a lower level of NPLs. The majority of banks that failed were those with a higher level of NPLs prior to the crises.

Subsequent to the increase in the level of NPLs in Thailand, the intermediation role of banks declined, implying that businesses shifted to other non-bank financing sources such as corporate bond issues or simply their retained earnings (Disyatat and Vongsinsirikul, 2003). During this time of financial troubles, the systemic macroeconomic and liquidity shocks that were additional factors that triggered the crises, not only destabilized the weak banks, but by contagion even the well capitalized and strong banks were affected in one way or another (Arena, 2008).

It was also reported that the global financial crisis which started in the US was prompted by borrowers defaulting on sub-prime mortgages loans (Adebola, Sulaiman and Dalahan, 2011). The persistent effects of such bad loans and uncertainty about the health of financial institutions prolonged the crisis and depressed economic growth in many countries. The economic fallout of 2007–2009 highlights how a financial crisis can increase damage to the global economy (Stojković, 2013). Many business owners closed their companies, and retired people's

savings plummeted. Millions of families lost their homes and their wealth. Around the world, about 30 million workers lost their jobs (Claessens, Kose, Laeven and Valencia, 2014).

In the US, the problems relating to the global financial crisis of 2007–2009 can be compared with those of the Great Depression of 1929. During the Great Depression, real output fell by an estimated 27 percent, while unemployment rose from 3 percent in 1929 to 25 percent by 1933. There were approximately 30,000 banks in 1920 but this declined to 15,000 in 1933, and more than 9,000 banks closed between 1930 and 1933 causing huge losses to depositors and shareholders estimated at about US\$ 2.5 billion (Sexton, 2008; Mankiw, 2011). Banks in rural areas closed due to large levels of NPLs among farmers, who were not able to pay on time due to low prices on farm's products.

The case of bank instability in Cyprus in 2010–2012 supports the view that financial distress goes hand in hand with increases in NPLs and a slowdown in economic growth. In this three-year period, NPLs grew more than threefold from 5.6 percent to 18.6 percent. Economic growth slowed down from 1.3 percent in 2010 to -2.4 percent in 2012 (World Bank, 2014). The same trends were observed in Greece where NPLs increased from 9.1 percent in 2010 to 23.3 percent in 2012 and economic growth slowed down from -4.9 percent to -7.0 percent in 2010 and 2012, respectively.

In addition, NPLs affect banks and other deposit-taking institutions by reducing profits due to loan loss provisions, thus affecting the payment of dividends to shareholders. NPLs are part of influencing factors in the profitability of banks because they affect banks' earnings due to provisions constituted. Provisions for loan losses (PLL) represent management's estimate of the potential incremental lost revenue from bad loans and is a deduction from income. Their essence is to account for expected future losses in the bank's loan portfolio resulting from a borrower's defaulting in order to constitute provisions ahead of time (Ahmed, Takeda et al., 1999). Conceptually, management is allocating a portion of income to the loan loss reserves to protect against future potential losses based on their judgment. It is not cash expense, but indicates management perception of the quality of the bank's loans. It is subtracted from net interest income in recognition that some of the reported interest income overstates that will actually be received when some of the loans go into default. NPLs also reduce institutions' lending capacity, hence placing a limit on the expansion of credit, that indirectly affects economic growth (Berger and DeYoung, 1997).

While factors contributing to increased NPLs are both exogenous and endogenous to the bank, this paper focuses on endogenous factors that make a greater contribution to the change in the level of NPLs in the Rwandan banking sector, and which are under the control of the management

of banks, suggesting that they can be reduced or eliminated.

loss loans or charge-offs sometimes called also write-offs. In some countries, only the two last categories “doubtful” and “loss loans” are counted as NPLs. For example in Russia, only the amount of instalment overdue and interests is counted as non-performing loan than the whole

In order to facilitate comparison across-countries in reporting NPLs, three categories are used (Beck, Jakubik et al., 2013). These include; substandard, doubtful, and

trouble loan. For Romania, to classify a loan to be non-performing, it requires additional information to timing that is the financial performance of the debtor as well as whether or not a juridical procedure is ongoing.

Table 1: Classification of non-performing loans

Description	Days in arrears		
	90 – 179	180 – 360	> 360
Category	Substandard	Doubtful	Loss/ Charges-off/ Write-offs
Characteristics	Payments of principal or interest are not made for a period of more than 90 days but less than 180 days.	Loans suffer from liquidation of amount overdue for a period between 180 and 360 days. Such loans presage a plausible loss	Expectation to recover the debt is at the lowest level or quasi-inexistent. The loss on the outstanding amount is now counted, suggesting that the outstanding balance judged uncollectible leading to total loss

Source: (BNR, 2017; Saba, Kouser et al., 2012 and Beck, Jakubik et al., 2013)

Note that the international standard of the acceptable level of NPLs for a healthier bank is between 1 and 3 percent (Heffernan 2005). In Rwanda, the benchmark is 5 percent and is used in discussions of findings in section four.

However, from the surveyed literature none of studies has emphasized on the growth of non-performing loans in absolute value in evaluating the asset quality of the bank. This paper fills in this gap by suggests a new approach of measuring asset quality that displays the real image on the status of the growth of non-performing assets, even though the banking sector may appear to be stable when changes in NPLs and loan book are in the same proportion. The real image means that the growth of NPLs reports the magnitude of the portfolio in distress more than any other ratio of NPLs, showing that the bank is in a comfort zone by hoping for example that NPLs are decreasing while probably this situation may depend on a huge increase in the loan book (the denominator) while on the numerator side the quality may be deteriorating or simply improving a little. The higher the ratio, the wider is the decrease in the bank’s profit and dividends distributed to shareholders, which is a concern to shareholders.

Concerning the provisioning, they also differ from countries. For Example for Rwanda provisions are in the proportion of not less than 20 percent for substandard loans, not less than 50 percent for doubtful loans and 100 percent for written-off loans (BNR, 2017) while in the United States they are respectively 10 percent, 50 percent and 100 percent for substandard, doubtful and written-off loans (Saba, Kouser et al. 2012). Along with these

categories of NPLs, managers of banks pay attention another categories called “watch loans” and “normal loans”. “Watch loans” are loans having a delay in payments of the overdue amount for a period between 30 and 89 days and “normal loans” are those having a delay in payments of the overdue amount for a period between 1 and 29 days. These loans display signs of trouble in the financial situation of the borrower. Hence, managers of banks have to make sure what is going on in order to provide advice to the borrower so, limiting the move to the non-performing category. To further strength the management of portfolio at risk, in Rwanda these “watch loans” and “normal loans” call respectively for provisions of at least 1 percent and 3 percent of the outstanding amount (BNR, 2017).

Likewise, when managers presume that the outstanding balance is uncollectible during the period, generally in one calendar year, they write –off these loans from their books (Wahlen, 1994). However, writing –off these loans does not mean that the bank ignores completely these assets. They are kept in separate file for further follow-up, generally by engaging in judicial procedure.

3. Methodology

To measure a bank’s assets quality, the ratio most used in many studies (Boudriga, Boulila et al., 2009; Karim, Chan et al., 2010 and Louzis, Vouldis et al., 2012) among others is ratio of non-performing loans relative to total loans (Agresti, Baudino et al., 2008). It is given by equation (1).

$$\text{Ratio of NPLs} = \frac{\text{Amount of NPLs}}{\text{Total amount of outstanding loans}} * 100 \dots \dots \dots (1)$$

The decrease of this ratio depends on four options:

- (1) The numerator (amount of NPLs) decreases when the denominator (total amount of outstanding loans) remains unchanged;
- (2) The numerator (amount of NPLs) remains constant when the denominator (total amount of outstanding loans) increases;
- (3) The numerator (amount of NPLs) increases less than the denominator (total amount of outstanding loans);
- (4) The numerator (amount of NPLs) decreases more than the increase in the denominator (total amount of outstanding loans).

The study uses data from audited financial statements of three banks operating in Rwanda. The choice of the three banks is purposive. It is due to their age (they are among the oldest banks in Rwanda) and the availability and accessibility of data on their website and their market share in the banking sector. For example, by December, 2016, these banks counted for about 46 percent of the total banks' assets that were estimated at Frw 2,380 billion (BNR, 2018).

Data are related to outstanding amount and NPLs for these banks for the period spanning from 2010 to 2016. That period after 2010 is a new era of intense competition in the banking sector in Rwanda. FINA BANK, a Kenyan commercial bank acquired BACAR in 2004, which was acquired by Guaranty Trust Bank, a Nigerian financial services conglomerate in 2013 to form Guaranty Trust Bank (Rwanda) Ltd or GT-Bank Rwanda Ltd. During the same period, a takeover occurred at the *Banque Commerciale du Rwanda* (BCR) owned solely by the government of Rwanda. In 2012, Actis Capital sold its shares to a consortium consisting of Kenya's I & M Bank

Group, PROPARCO from France and a German investment corporation. Actis Capital, a private equity investment firm in the UK bought 80 percent of BCR's shares in 2004. These takeovers have come after that of 2007 where by a Pan African banking conglomerate, ECOBANK, headquartered in Lome (Togo) acquired BCDI and BANCOR was taken over by ACCESS BANK, a Nigerian multinational commercial bank owned by the Access Bank Group that acquired 75 percent of its shares (BNR, 2008). In 2009, 2011, and 2013, the National Bank of Rwanda licensed three regional banks to operate in Rwanda, the Kenya Commercial Bank (KCB) and Equity Bank (both from Kenya) and Crane Bank Ltd from Uganda that was acquired by Commercial Bank of Africa, a Kenyan commercial bank which started its operations in Rwanda in March, 2018. In 2011, AGASEKE Microfinance Bank Ltd was an upgrade of Agaseke IMF S.A along with Unguka IMF S.A that also upgraded to become a microfinance bank. In the same year, ZIGAMA CSS, a financial cooperative exclusively for the national army and police, also upgraded to become a cooperative bank. In October, 2015, the National Bank of Rwanda also licensed Bank of Africa Rwanda Ltd. That newly licensed bank immediately acquired AGASEKE Microfinance Bank, purchasing 90 percent of its shares.

The microfinance industry in Rwanda comprises of 470 institutions of which 19 are limited liability companies and 451 are savings and credit cooperatives (SACCOs) of which 416 are UMURENGE SACCOs and 35 are non-UMURENGE SACCOs. SACCOs are financial institutions that offer deposit and lending facilities, mainly to their members. The establishment of 416 UMURENGE SACCOs in 2009 extended financial services to many that were formerly excluded from the sector (BNR, 2018).

Variables of interest for this study are:

- ❖ Ratio of NPLs = $\left(\frac{NPLs}{Total\ loans} * 100\right) \dots \dots \dots (2)$
- ❖ Growth of NPLs (gNPLs) is given by $gNPLs = \left(\frac{X_t - X_{t-1}}{X_{t-1}}\right) * 100 \dots \dots \dots (3)$ where X_t represent NPLs for a given year and X_{t-1} represent NPLs for a given previous year.

First, there is a computation the ratio of NPLs. Second, the study computes the growth rate of NPLs in absolute value for each bank over year-to-year. Then, contrasts findings to prove how the alternative proposed ratio, which is the growth of NPLs displays better the extent of how the loan portfolio quality changed in the year.

4. Results and Discussion

The study uses data from audited financial statement of three banks that are called by names M, N and R for reason to keep their privacy on their data accessed. It discusses the ratio of NPLs and gNPLs as well as that of the loan book for each bank, after what it presents and discusses the trend of the ratio of NPLs and gNPLs and the loan book for the two banks all together.

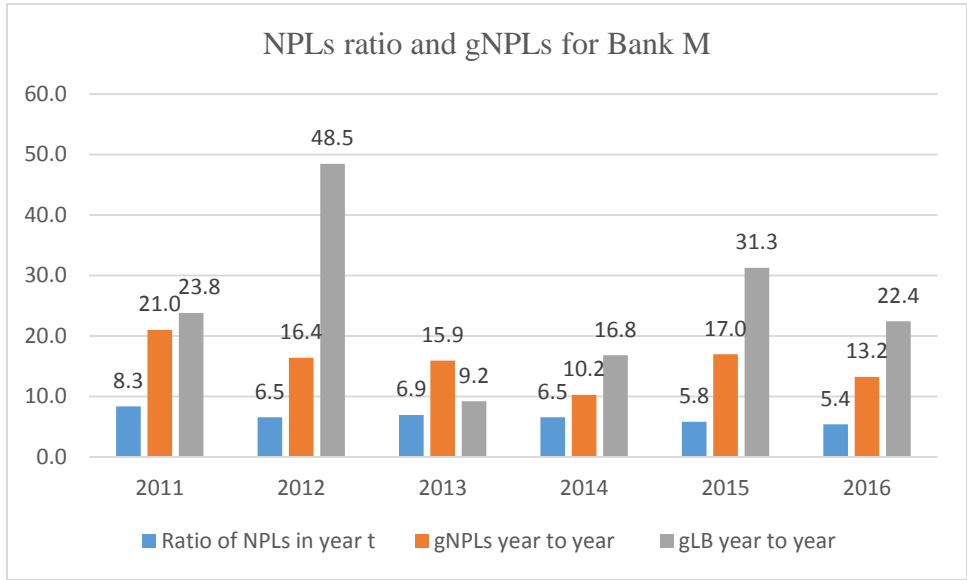


Figure 1. Comparison of Ratio of NPLs and gNPLs for Bank M for the period 2010 – 2016

Figure 1 summarises the changes in both ratio of NPLs, growth of NPLs and growth of loan book for bank M. For this bank M, there is a decrease in NPLs ratio from 8.5 percent to 5.4 percent between 2010 and 2016 and positive growth of the loan book and even above the ratio of NPLs (23.8 percent, 48.5 percent, 9.2 percent, 16.8 percent, 31.3 percent, and 22.4 percent respectively between 2010-2011, 2011-2012, 2012-2013, 2013-2014, 2014-2015 and 2015-2016). Nevertheless, nowhere gNPLs ratio is below NPLs ratio, instead it has increased above the increase in the ratio of NPLs. This ratio is of 21.0 percent, 16.4 percent, 15.9 percent, 10.2 percent, 17.0 percent and 13.2

percent respectively between 2010-2011, 2011-2012, 2012-2013, 2013-2014, 2014-2015 and 2015-2016. This suggests that the decrease in the ratio of NPLs is attributable to the growth in loan book and not in higher quality of loan portfolio. The management has grown the loan book but with some of bad loans. Such situation calls for managerial and strategic decisions from managers and boards to correct the trend of those bad loans while growing the loan book. To the regulator, it can be a case for investigation to provide necessary guidance to the bank and to the sector if cause(s) can be established to be specific or systematic.

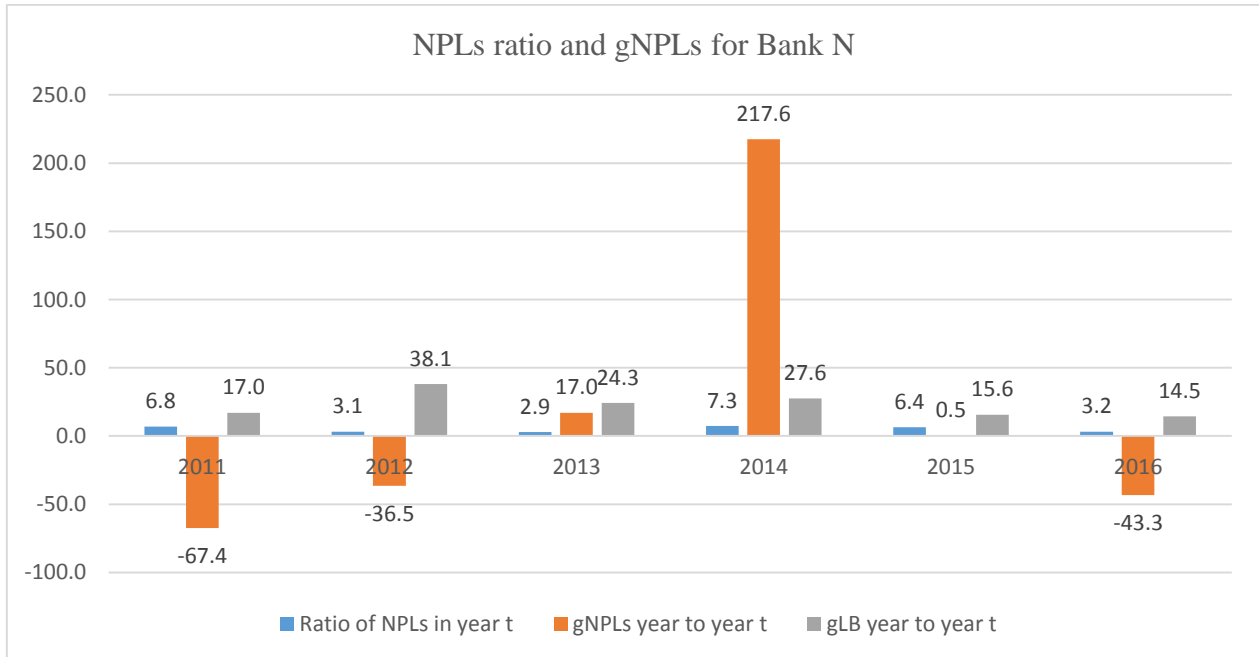


Figure 2. Comparison of Ratio of NPLs and gNPLs for Bank N for the period 2010 – 2016

Figure 2 summarises the changes in both ratio of NPLs, growth of NPLs and growth of loan book for bank N. For this bank N, there is a decrease in NPLs, as expressed by the negative growth of NPLs between: 2010-2011 (-67.4 percent), 2011-2012 (-36.2 percent) and 2015 – 2016 (-43.3 percent) while the loan book has a positive growth of 17 percent, 38 percent, 24.3 percent, 27.6 percent, 15.6 percent and 14.5 percent respectively between 2010-2011, 2011-2012, 2012-2013, 2013-2014, 2014-2015 and 2015-2016. The above negative growth of NPLs is probably a sign of a strong management of the loan portfolio or a massive write offs by the bank. However, the higher growth of NPLs between 2013 and 2014 (217.6 percent) can attract the attention of managers, decision makers as

well as the regulator because they exceed far the acceptable thresholds at international level for which the maximum is 3 percent (Heffernan 2005) and 5 percent for Rwanda (BNR, 2018). They will need to understand what might have been the causes of such an abrupt increase and take appropriate measures to get out the problem or to have it under control. Thus, they avoid any escalation to a financial crisis in this sector as observed in the US in 2007 – 2009 (Adebola, Sulaiman and Dalahan, 2011) or that of Cyprus and Greece in 2010 – 2012 (World Bank, 2014). In addition, this analysis can lead to corrective action that prevent the decline of the intermediation role of banks that adversely affect the business of banks and contagion in the financial sector (Disyatat and Vongsinsirikul, 2003).

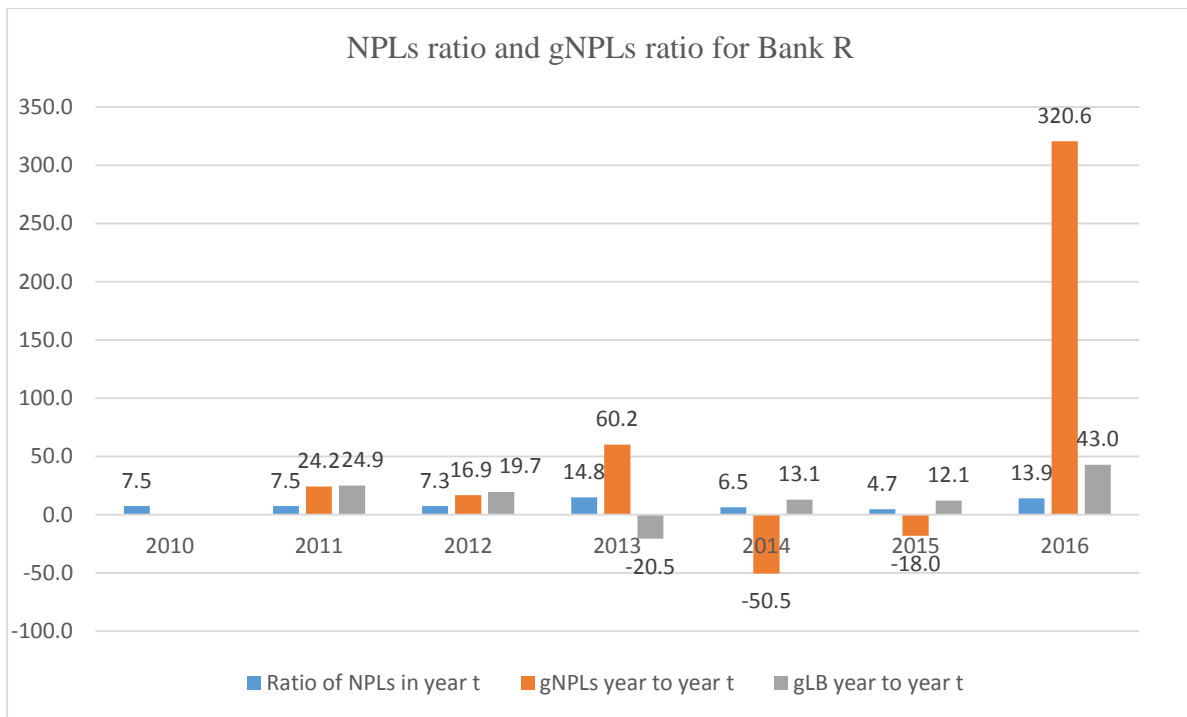


Figure 3. Comparison of Ratio of NPLs and gNPLs for Bank R for the period 2010 – 2016

Figure 3 summarises the changes in both ratio of NPLs, growth of NPLs and growth of loan book for bank R. For this bank R, there is a fluctuation in the NPLs ratio. From 2010 to 2012, it varies from 7.5 percent to 7.3 percent before rising to 14.8 percent, and later decreased and increased respectively to 4.7 percent and 13.9 percent between 2013 to 2015 and 2015 to 2016.

Concerning growth of NPLs ratio, it has decreased by (-50.5 percent) between 2013 to 2014 and by (-18.0 percent) between 2014-2015. The negative growth of NPLs can be seen as a sign of committed management team to reducing non-performing assets or eventually a systematic written

offs of loans in delay of payment for more than 360 days. However, the higher growth of NPLs between 2015 and 2016 (320.6 percent) attracts special attention to managers, decision makers as well as the regulator to understand the reasons behind such unexpected increase and suggest appropriate measures to get out the problem or to keep it under control. An additional concern for this bank is why the loan book has decreased by (-20.5 percent)? May be the bank had difficult times growing the business while at the same time experiencing a series of bailout of its existing loans by other banks, which also might not be a good sign in the bank’s business.

Table 2. Ratios of NPLs and gNPLs across Banks M, N and R for the period 2010 – 2016.

	2011	2012	2013	2014	2015	2016
Ratio of NPLs for Bank M in year t	8.3	6.5	6.9	6.5	5.8	5.4
gNPLs for Bank M year to year	21.0	16.4	15.9	10.2	17.0	13.2
gLB year to year for Bank M	23.8	48.5	9.2	16.8	31.3	22.4
Ratio of NPLs for Bank N in year t	6.8	3.1	2.9	7.3	6.4	3.2
gNPLs for Bank N year to year	-67.4	-36.5	17.0	217.6	0.5	-43.3
gLB year to year for Bank N	17.0	38.1	24.3	27.6	15.6	14.5
Ratio of NPLs for Bank R in year t	7.5	7.3	14.8	6.5	4.7	13.9
gNPLs for Bank R year to year t	24.2	16.9	60.2	-50.5	-18.0	320.6
gLB year to year t for Bank R	24.9	19.7	-20.5	13.1	12.1	43.0

Source: author's calculations

Table 2 captures the changes in both ratio of NPLs, growth of NPLs and growth of loan book for bank M, bank N and Bank R. For the 3 banks M, N and R, the ratio of NPLs has fluctuated between 2.9 percent and 14.8 percent while that of growth of NPLs has fluctuated much higher (-67.4 percent to 320.6 percent).

Regarding the loan book for bank M and bank N, it has grown above the ratio of NPLs for the entire period 2010 – 2016. However, for bank R, the loan book has deteriorated by (-20.5 percent) between 2012 and 2013. This trend is also coupled with deterioration of the assets' quality whereby the ratio of NPLs moved to 14.8 percent from 7.3.

Important questions can be asked: what strategies had bank N and bank R put in place to bring down NPLs in 2010- 2011 (-67.4 percent), 2011-2012 (-36.2 percent) and 2015 – 2016 (-43.3 percent) for bank N and (- 50.5 percent) and (- 18.0 percent) respectively between 2013 – 2014 and 2014 – 2015 for bank R. What problem(s) faced bank N and bank R to experience huge increase in NPLs of 217.6 percent and 320.6 percent respectively? Why the loan book has deteriorated for bank R?

Concerns related to the above questions support the adoption of the new analysis of banks' assets quality to fairly represent the situation prevailing on ground and conduct interventions urgently to correct unusual circumstances reflected in the ratios observed.

5. Conclusion and Recommendations

This paper examines limitations of the ratio of NPLs to report fairly the quality of portfolio at risk, hence

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proposing an alternative that is the growth on NPLs (gNPLs). Findings prove that for the two banks the growth of NPLs has fluctuated much higher (-67.4 percent to 320.6 percent) than the ratio of NPLs that fluctuated between 2.9 percent and 14.8 percent. In addition, for the entire period 2010 – 2016, for the three banks, except bank R that experienced a deterioration in the loan book between 2012 and 2013, the growth of the loan book was positive ranging from 9.2 percent to 48.5 percent while the ratio of NPLs has never been above 14.8 percent for the entire period. This justifies again why the alternative proposed ratio, which is the growth of NPLs displays better the extent in the fluctuation of loan portfolio from year to year.

Additional lessons that can be drawn are related to deeper understanding why the growth of NPLs has drastically changed from (-67.4 percent to 320.6 percent) and why on the other hand the loan book can decrease to that extend for a bank that has been in existence of more than 35 years?

Thus, the study recommends central banks to explore the use of the growth of NPLs along with the ratio of NPLs because it can send signals of the way the loan portfolio quality is being managed and take corrective measures on time by decision makers, hence contributing to shareholders' value and the stability of the economy.

For further study, one can explore the dynamic nature of a Non- Performing Loan. Why a loan falling in the category of NPL before and after its breakeven-point cannot be assessed differently, hence attracting different policy implications?

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