

AN ANALYSIS OF THE SUFFICIENCY OF CREDIT RISK MANAGEMENT FRAMEWORK IN THE BANKING SECTOR IN ZIMBABWE

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Abstract

The research investigates sufficiency of credit risk management policies of banks in Zimbabwe from 2000 to 2007 using the E-Views statistical software package. The regression model suggests that high non performing loans were due to inefficient management of the banks' credit risk activities. An inverse relationship between non performing loans and credit risk management competency was also detected. The t-statistic for size of the bank was found to be closer to 1.5 and that shows the size of the bank has a bearing on both the level of non performing loans and the sufficiency of credit risk management frameworks. The author therefore recommends enough credit risk management frameworks be instituted in Zimbabwe banking sector to ensure financial sector stability.

Keywords: Zimbabwe, Credit Risk, Commercial Banks, Linear Regression Model

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1. Introduction

The crisis that bedeviled the Zimbabwe financial sector has led to many stakeholders questioning the credibility of default risk management policies being employed and implemented by financial institutions. Numerous studies have so far been carried out to find the fundamental causes of Zimbabwe banking sector failures witnesses in the year 2004. Most of the studies however have focused on the role played by poor corporate governance and in particular the contribution of non-core business activities on year 2004 financial sector crisis. In view of the unprecedented spate of operational challenges faced by Zimbabwean banks in recent years, this research seeks to establish whether poor implementation of effective default risk management and challenges played any part in the banking sector crisis witnesses in recent years. The lag that occurs in implementation of new international default risk management systems by local commercial banks in comparison to commercial banks in developed countries is also a cause for concern as local institutions remain exposed for longer periods.

Developments in the local financial sector in the past four years have led to enthusiasm among researchers in investigating the reasons behind banking sector instability. As a result, bank failures have been and continue to be a major public policy concern not only in Zimbabwe but also in other countries hence the reason why banks are regulated more rigorously than other firms. Banking sector failures are widely perceived to have greater adverse

effects on the economy than other firms because banks' collapse can spread throughout the whole banking sector system.

Commercial banks are more subjected to credit risk by virtue of their traditional role of lending function. Effective counter and preventive credit risk management systems have to be installed if banking sector stability is to be restored. Credit risk has been implicated in many studies as the chief cause of bank weaknesses leading eventually to bank collapse. Moreover, since banks are closely intertwined financially with each other, a failure of any one bank will lead to the collapse of a majority of other banks. Even though it has been recognized in the recent theoretical literature on banking sector crisis that both macro economic and bank level fundamentals have to be taken into account in the explanation of systemic banking sector crisis, there is little cross country empirical evidence on banking sector crisis brought about by ineffective credit risk management systems.

The fragility of financial services sector was witnessed in Zimbabwe eight years ago when eight banking institutions were placed under the management of a curator while liquidation proceedings were instituted on two banks namely Barbican and Royal bank. Prior to the year 2004, a broad range of corrective measures were applied on a number of banking institutions by the Reserve Bank of Zimbabwe in an effort that was aimed at averting the threat to the survival and stability of the entire financial services sector.

Most investigations on the causes of bank failures in Zimbabwe so far have concentrated on the

role played of poor corporate governance in the financial crisis. Weak credit risk management systems continue to be a dominant cause of bank failures and banking crises world-wide (Basel Committee on Banking Supervision, 1999). The Central Bank of Bahamas (2003) concurred that failure to adopt and adhere to sound credit policies and procedures is often a source of financial sector crisis. It further suggested that the major negative consequence which arises from poor credit risk management is the impairment of capital and liquidity. It is against this background that the researcher seeks to investigate the extent to which poor credit risk has contributed to the challenges currently being faced by the banking sector in Zimbabwe. The researcher will also investigate the present credit risk management systems employed by banking institutions in an effort to establish the sufficiency of credit risk management systems among banks in Zimbabwe.

The findings are going to help banking institutions develop and implement an effective default risk management frameworks that enhance safety and soundness of the whole financial sector. The findings of this research will also enlighten bank regulatory authorities on what institutional programs should be put in place in order to ensure that the banking sector implement effective and efficient default risk management frameworks that promote bank soundness. It is hoped that the findings of this research are going to contribute significantly towards on-going efforts being spearheaded by the Reserve Bank of Zimbabwe aimed at ensuring the return of normalcy and lasting stability of the financial sector. The findings on the best prudent credit risk management systems will go a long way in restoring investor confidence in the role played by banking institutions in economy building. The research findings will help banking sector institutions to identify credit risk symptoms before they manifest themselves and this will generally help in stabilizing the whole financial services sector.

The rest of the paper is structured as follows: Section 2 looks at challenges of installing effective credit risk management in the banking sector. Section 3 analyses the sufficiency of credit risk management framework using the Non performing loans (NPL)/Total loan book value (TLBV) ratio analysis among commercial banks in Zimbabwe. Section 4 discusses the methodology applied in carrying out the research. Chapter 5 summarises the research findings and conclude the study.

2. Challenges of installing effective credit risk management in the banking sector

Credit risk refers to the probability that a borrower will not own its obligations as per the agreed terms (Basel Committee on Banking Supervision 1999). The Finland Financial Supervision Authority defined credit risk as the risk that a borrower may not perform

the obligations of his loan relationship to a lending institution such that the collateral pledged by the borrower is insufficient to cover the claims of the lending institution.

The Central Bank of The Bahamas (2003) also defined credit risk management as a process of controlling the impact of credit risk-related events on a loan granting institution. The bank further pointed out that credit risk management involves identification, understanding, and quantification of the degree of potential loss and the consequent taking of appropriate measures to reduce the risk of loss to a loan granting institution.

Greanghyt (1952) argued that it was important for loan granting institution to identify and measure credit risk on a continuous basis to enable them to determine the quantity of capital required to hold against credit risks for compensation purposes in the event that borrowers defaults payments. The Central Bank of Bahamas (2003) asserted that loan granting institutions should develop sufficient credit risk management policies, procedures and adequate information systems for measuring credit risk to ensure that credit risk inherent in off-balance sheet products such as guarantees and derivative instruments is sufficiently measured, monitored and controlled. The complexity of the credit risk measurement tools depend on the nature and degree of the inherent risks of the products involved (Johnson 2002). The Finland Financial Supervision Authority (2001) further pointed out that a loan granting institution must develop sufficient ways for measuring credit risks that are consistent with its size of operation.

Duffie and Singleton (2003) suggested that loan granting institutions should develop systems and frameworks for credit risk monitoring. Apart from concurring with Duffie and Singleton (2003), the bank of Mauritius (2003) in its guide to credit risk management further suggested that a proper credit monitoring framework prompts corrective actions when warning signs point to a deterioration in the financial health status of the borrower. The bank further argued that all loan granting organizations should have systems and policies in place to review the financial health status of the borrower on a regular basis especially where the loans are big and where the borrower's operating environment is dynamic. Duffie and Singleton (2003) pointed out that issues which must be included in the credit risk monitoring framework include size of exposure, exposure to groups of connected parties, individual product lines, economic sector of the borrower, borrowers' demographic profiles, account performance, internal credit ratings, types and coverage of collateral and interest rate sensitivity.

Rojas (2000) pointed out that an integrated risk management framework is an approach to risk management that takes cognisance of the relationship between credit risk and all other risks that impact on

the banking institution. He further argued that banks must take into account the intricate relationship between credit risk and other risks to achieve effective overall risk management. In some instances, credit risk is a by product of market risk taken on in the trading book by actively trading bonds, derivatives such as swaps and forwards, and credit derivatives. In other cases like the traditional lending business, credit risk arises from actively originating, servicing and funding corporate loans or supporting lending operations.

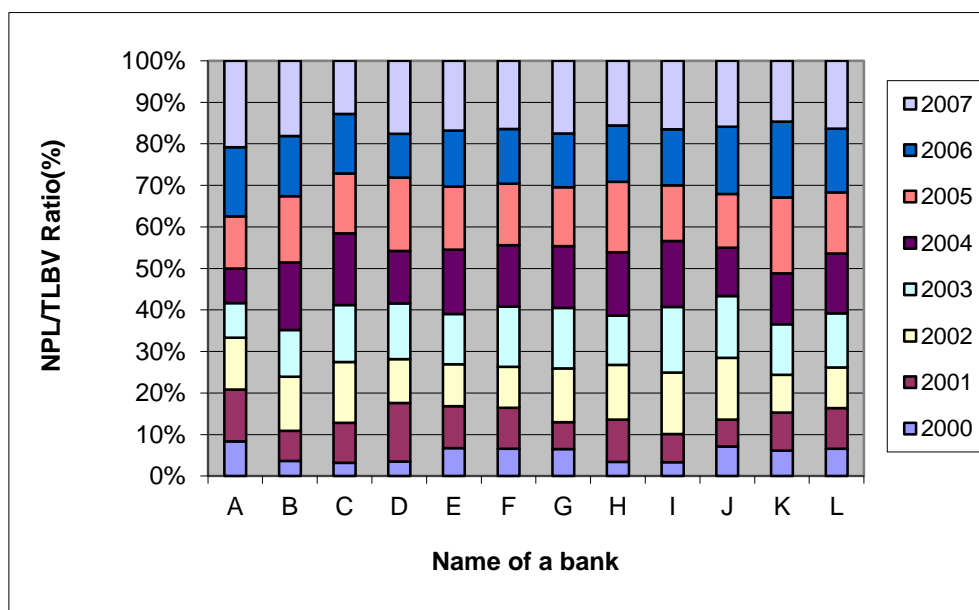
According to Simpson (2000), effective overall risk management requires an integrated approach that takes cognisance of the inter-linkage between credit risk and other risks. Contrary to the view by some authors that credit risk is inextricably linked to other risks, Falkena (1989) argued that in contrast to interest rate risk, liquidity risk and currency risk which are all closely interlinked, credit risk stands very much on its own. He argued that once a loan has been granted, the performance of the borrower falls outside the lender although monitoring and control

systems in a bank continue to provide some degree of influence. Many researchers concur that failure to link credit risk to other risks within a banking institution set up is a major handicap by some organizations. The Central Bank of Bahamas (2003) pointed out that credit risk can not be managed in isolation as a single business plan which focus on an integrated approach to risk management is needed in ensuring the safety and soundness of the banking institution.

3. Analysis of the sufficiency of credit risk management framework using the NPL/TLBV ratio analysis among commercial banks in Zimbabwe

Figure 1 shows a comparison of non performing loans (NPL) against total loan book value (TLBV) among commercial banks in Zimbabwe. The objective of the comparison is to make it easy to analyse the sufficiency of credit risk management framework across the entire commercial banking sector in Zimbabwe.

Figure 1. A comparison and analysis of non performing loans versus loan book Value (NPL/TLBV ratio) among commercial banks in Zimbabwe



Source: Primary data

The ratio (NPL/TLBV) in figure 1 has been going up gradually for the period under study with year 2000 recording the lowest and 2007 recording the highest across the whole commercial banking sector. On average, the year 2000 experienced the lowest ratio across the entire banking sector. The fact that the loan book in year 2000 experienced the lowest non performing loans compared with the other periods probably is due to relative macro economic stability compared to the other years. The ratio (NPL/TLBV) gradually and almost uniformly went up to record the highest in year 2007. The trend

coincided with that of economic recession hence the researcher concluded that economic decline was the chief reason behind poor loan book performance across the banking sector in Zimbabwe during the period under study.

The uniformity of the ratio (NPL/TLBV) indicates that the reason behind deteriorating loan book performance is not company specific (credit risk management framework) but due to market wide reasons such as macro economic instability. The trend made it extremely difficult for the researcher to evaluate the sufficiency of credit risk management

framework in the banking sector of Zimbabwe using the ratio (NPL/TLBV). The data also shows that it can only be possible to measure the sufficiency of credit risk management framework if the macro economic environment is stable.

4. Empirical Model Specification and Estimation Techniques

The following is the linear regression model used by the researcher to measure the sufficiency of credit risk management framework in the commercial banking sector in Zimbabwe.

$$NPL = \alpha + \beta_1 A + \beta_2 B + \beta_3 C + \beta_4 D + \beta_5 E + \varepsilon$$

Where NPL=Non performing loans, α =constant, A = management competency, B = size of the institution, C = provision for loan losses, D = profitability of the institution, E = capital adequacy, ε = error term, β_1 ... β_5 measures the proportion of the variation in non performing loans that is explained by A..... E.

Non Performing Loans indicates the level of credit risk management framework sufficiency. The bigger the figure for non performing loans, the poorer the credit risk management framework whilst a low level of non performing loans reflects sound credit risk management framework. Non performing loans is a function of insider loans, size of the institution, provision for loan losses, profitability and capital adequacy of banking institutions.

Lack of effective policies that govern the granting of loans to insiders increase the bank's accumulating non-performing loans. This is because insider loans are not usually subjected to rigorous loan approval, policies, procedures and processes. In other words, more insider loans increase the bank's exposure to credit risk. Capital base of a bank determines the quantity of capital that can be apportioned to credit risk management activities hence banks with a strong capital base has the capacity to allocate more capital to cover credit risk than banks with a weak capital base. Inadequately capitalized institutions are more susceptible to credit risk than institutions that are adequately capitalized because they will allocate less capital towards credit risk management. The quantity of loans that a bank can grant to clients is determined by its balance sheet size. Small balance sheet banks are limited in terms of the quantity of loans they are able to offer as opposed to those banks with relatively small balance sheet size.

Banks derive interest income from loans granted therefore the more the quantity if interest income received, the more the level of sufficiency of the credit risk management framework being employed. An institution that has a high level of performing loans will accrue high interest income that will in turn boost the return on assets. The data used in running the model was obtained from monthly returns that were submitted by commercial banks to the Reserve Bank of Zimbabwe between the years 2002 to 2006. The researcher then used the computer package called E-views to run data and the results are as follows.

Table 1. Model results analysis of the sufficiency of credit risk management framework in the banking sector in Zimbabwe

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Constant	-0.450000	0.142234	-4.345345	0.00023
Capital Adequacy	-0.074532	-0.054676	0.432345	0.4943
Provisions	0.655543	1.543445	3.342345	0.0002
Return on assets	-0.432345	0.177896	-1.712321	0.0465
Size	-0.098760	3.345673	-1.554671	0.0678
Management	-0.045490	0.048675	-3.342133	0.4567
R-squared	0.743432	Mean variance		0.041234
Adjusted R-squared	0.543412	S.D. dependent var		0.072342
S.E. of regression	0.032342	Akaike info criterion		-2.456732
Sum squared	0.324567	Schwarz criterion		-2.456343
Log likelihood	112.4532	F-statistic		5.234532
Durbin-Watson stat	1.234565	Prob (F-statistic)		0.000276

The linear regression function will appear as follows after substituting the coefficients.

$$NPL = -0.450000 - 0.045490 A - 0.098760B + 0.655543 C - 0.432345 D - 0.074532 E + \varepsilon$$

The negative coefficient of A reflects that non performing loans will be low if management of the

banks' credit risk management activities is efficient. There is an inverse relationship between non performing loans and credit risk management competency. The researcher therefore can conclude from the model results that lack of proper credit risk management framework witnessed in the banking sector during the period under study was mainly a result of inefficient management. There is an inverse

relationship between the level of non performing loans and the size of the bank as shown by the negative coefficient of B. This shows that small banking institutions are more susceptible to high credit risk than larger institutions. The t-statistic for size is closer to 1.5 and that shows the size of the bank has a bearing on both the level of non performing loans and the sufficiency of credit risk management frameworks.

The positive coefficient of C shows that there is a positive relationship between provision for bad debts and the level of non performing loans. In order to cover themselves against credit risk, banks increase their provision for bad debts if the level of non performing loans goes up. The negative coefficient of D indicates an inverse relationship between non performing loans and profitability levels as the former reduces interest income for the bank. The relationship between non performing loans and capital adequacy is negative as shown by the coefficient of E. Previous studies showed that all banks which were affected by the 2004/2005 crisis were not adequately capitalized further confirming the assertion by the model that poor capital adequacy leads to inadequate credit risk management. In summary, there were no sufficient credit risk management frameworks in the banking sector of Zimbabwe during the period under study because of increased non performing loans relative to the total loan book value as supported by the model.

5. Conclusion

A number of conclusions can be drawn with regard to the extent to which research findings of this study confirm empirical findings. The research findings to a larger extent confirmed those that were found by other researchers in the same area. However, some slight deviations from empirical research findings were noted. The research findings to a larger extent confirm findings by Lepus (1995) and the central bank of Bahamas (2003) that revealed that advanced technology helps to identify, measure and manage credit risk. The study also confirm findings by the Algorithmics Corporation (2001) whose research revealed that technology forms an integral element in executing the credit risk management function. Moreover, the research findings also concur with those of Lepus (1995) on the fact that banking institutions must maintain a comprehensive policies, procedures and adequate information systems for measuring credit risk.

The research findings further confirms those of the Basel Committee on Banking Supervision (1999) that revealed that the ability to measure, monitor and control credit risk is a crucial determinant of the long-term success of any banking organization. The research findings by Pikož and Eeyonda (1987) to a greater extent resembles the researcher's findings in that they both revealed that sound credit risk management involves establishing a credit risk

philosophy, policies and procedures for prudently managing the risk-reward relationship across a variety of dimensions. It can therefore be concluded that a comprehensive credit risk analysis and management framework is a key component in ensuring stability in the banking sector in any economy. This efficient and accurate credit risk analysis would then enable credit risk managers to formulate and make better and well informed decisions. The total framework would then include issues to do with credit risk transparency, loan decision processes, sophisticated risk measurement methodologies, stress testing, timeliness and accuracy of risk calculations as well as efficient credit risk reporting.

References

1. Algorithmics Incorporated (2001), *The Benefits of Enterprise Credit Risk Management*, New York.
2. Basel committee on Banking Supervision (1999): *Best Practices for Credit Risk Disclosure*.
3. Basel committee on Banking Supervision (1999): *Principles for the Management of Credit Risk*, publication No. 54.
4. Blum J.(1999) Do Capital Adequacy Requirements Reduce Risk in Banking?, *Journal of Banking and Finance* 23, 755-771.
5. Bratanovic S. B. and Greuning H. (2003) *Analysing and Managing Banking Risk*, The World Bank, Washington, D.C.
6. Cooper J. (1984) *The Management and Regulation of banks*, Mcmillan Publishers Ltd, Hampshire.
7. Domac I. and Ferri G. (1999) *The Credit Crunch in East Asia: Evidence from field findings on bank behavior and policy issues*, World Bank, Washington, D.C.
8. Duffie D. and Singleton K. J.(2003) *Credit Risk Pricing, Measurement, and Management*, Princeton University Press.
9. Empirical Dyer L. S. (1987) *A Practical Approach to bank lending*, Bankers Books, Ltd, London.
10. *Evidence from Banks in Emerging Market Economies*, Institut d'Etudes Politiques, Strasbourg Cedex, France.
11. Falkena H., Kok W. and Meijer J. (1989) *Financial Risk Management in South Africa*, Mcmillan Press Ltd, London.
12. Furlong F. T. and M. C. Keelay (1989) *Capital Regulation and Bank Risk Taking: A note*, *Journal of Banking and Finance* 13, 883-891.
13. Garside T. and Stevens A. (1999) *Credit Portfolio Management*, Oliver, Wyman & Company.
14. Godlewski C. J. (2004) *Capital Regulation and Credit Risk Taking*.
15. Jeitschko T. D. and S.D. Jeung (2004) *Incentives for risk taking in banking: a unified approach*, *Journal of Banking and Finance* 14, 86-89.
16. Johnson E. G. (2002) *Financial Risks, Stability and Globalisation*, International Monetary Fund Publication Services, Washington.
17. Keelay M. C. and F. T. Furlong (1990), *A re-examination of mean variance analysis of bank capital regulation*, *Journal of Banking and Finance* 14, 69-84.
18. Koopman J. and Lucas A. (2003) *Business and Default Cycles for Credit Risk*, Tinbergen Institute Discussion Paper, Amsterdam.

19. Lowe P. (2002), Credit Risk Measurement and Procyclicality, Bank for International Settlements, BIS Working Papers No. 116.
20. Rochet J. C. (1992) Capital Requirements and the Behavior of Commercial Banks, *European Economic Review* 36,1137-1178.
21. Rojas S. L. (2000) Can international standards strengthen banks in emerging markets? Working Paper – Institute for International Economics.
22. Samson G. (2000) Converging credit risk and market risk, *Risk Magazine*, December 2000 issue, Risk Waters Group Ltd.
23. SAS institute GmbH (2000), Best Practices in Strategic Credit Risk Management, Heidelberg, Germany.
24. The Bank of Mauritius (2000), Guideline on Credit Concentration Limits.
25. The Bank of Mauritius (2004), Guideline on Credit Risk Management.
26. The Central Bank of the Bahamas, (2003) Guidelines for the Management of Credit Risk
27. The Finland Financial Supervision Authority (1996), General Guideline on Credit Risk Management.