STRESS TEST ANALYSIS OF NEPAL FINANCE LIMITED : A STRATEGIC PERSPECTIVE

A Dissertation submitted to the Office of the Dean, Faculty of Management, in partial fulfillment of the requirements for the Degree of

Masters of Business Studies

By

Sagar Prajapati

Symbol No.: 15763/19

T.U. Registration no: 7-2-355-201-99

People's Campus

Roll No: 09/075

Kathmandu

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Certification of Authorship

I, hereby, declare that the work reported in this dissertation entitled "Stress Test Analysis of Nepal Finance Limited : A Strategic Perspective on sensitivity analysis results" submitted to the office of the Dean, Faculty of Management, Tribhuvan University, is my original work, which has neither been submitted previously for the purpose of conferral of any degrees nor has been proposed and presented as part of requirements for any other academic purposes.

………………………………….

Sagar Prajapati

November, 2022

11-11-2022

Report of Research Committee

Mr. Sagar Prajapati has defended research proposal entitled “Stress Test Analysis of Nepal Finance Limited : A Strategic Perspective” successfully. The research committee has registered the dissertation for further progress. It is recommended to carry out the work as per suggestions and guidance of supervisor Mr. Bikash Shrestha and submit the dissertation for evaluation and viva voce examination.

Supervisor (Defend)	Dissertation Proposal Defended Date
Supervisor	Dissertation Submitted Date
Head, Research Committee	Dissertation Viva Voce Date

11-11-2022

Approval Sheet

We've examined the dissertation entitled "Stress Test Analysis of Nepal Finance Limited : A Strategic Perspective" presented by Mr. Sagar Prajapati for the degree of Master of Business Studies. We hereby certify that the dissertation is acceptable for the award of degree.

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Dissertation Supervisor

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Internal Examiner

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External Examiner

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Abbreviations

BAFIA	:	Bank and Financial Institution Act
BCBS	:	Basel Committee on Banking Supervision
BODs	:	Board of Directors
CAR	:	Capital Adequacy Ratio
CEO	:	Chief Executive Officer
CPI	:	Customer Price Index
EMI	:	Equal Monthly Installment
GDP	:	Gross Domestic Product
HPI	:	House Price Index
LFL	:	Lalitpur Finance Limited
LLP	:	Loan Loss Provision
NFL	:	Nepal Finance Limited
NPL	:	Non Performing Loan
NRB	:	Nepal Rastra Bank
PCA	:	Prompt Corrective Action
RWE	:	Risk Weighted Exposure

Abstract

Abstract: Along with the global recession and inclusion of the various risk had increased the vulnerability of financial institutions and it had affected Nepal too. Because of the global recession, BCBS has introduced the concept of stress testing which is one of the effective and popular ways to alert bank management with regard to adverse unexpected outcomes related to variety of risks and provides an indication how much capital might be needed to absorb losses, if such large shocks occur. In this paper, stress test of Nepal Finance Limited has been conducted completely based on the Stress Test Guidelines, 2012 issued by Nepal Rastra Bank. The various shocks on credit risk, liquidity risk and market risk has been carried out its some negative worst case scenarios on which the CAR has been declined to less than 11% and if it happens, PCA will be imposed by NRB. Finally, management implications have also been stated which help the senior management, Board of Directors, depositors, shareholders and all other stakeholders of Nepal Finance Limited for the respective benefit.

Key Words: Stress testing, Strategic management, Risk, Credit risk shocks, Liquidity risk shocks, Interest rate shocks, Capital adequacy ratio

CHAPTER I
INTRODUCTION

1.1 Background of the study

Banking business is the risky business, with having several inherent risk which can be defined within systematic risk and unsystematic risks. Because of the global financial crisis including recession in 2008 as well, adverse situation raised for most of the financial institutions in most of the countries due to which in May 2009, The BCBS introduced the concept of stress testing and issued principles for sound stress testing practices and supervision which address key weaknesses in stress testing practices as highlighted by the global financial crisis and again BCBS has issued stress testing principles on October 2018 replacing the previous one issued on 2009.

A stress test is an important risk management tool used by financial institutions as part of their internal risk management through the capital adequacy framework as per BASEL requirement, which evaluates the potential effects on an institution's financial condition, conducted under hypothetical scenarios designed to determine whether a financial institute has enough capital to withstand a negative economic shock. This technique alerts management of financial institute to adverse unexpected outcomes related to a variety of risks and provides an indication of how much capital might be needed to absorb losses ie the stress tests provide an indication of the appropriate level of capital necessary to endure deteriorating economic conditions, a financial institution alternatively may employ other actions in order to help mitigate increasing levels of risk. Stress test is described as a quantitative “what if” exercise to estimate the resilience of banks or the financial systems as a whole if certain shocks were to materialize.

Strategic management is a complex subject which provides the answers to the question of why do some companies succeed while others fail? Definitely the success and failure of organizations depends on the effective implementation of the strategies irrespective of the size and type of organization. Because of the volatile environment in which today’s organizations operating and increasing risks of error, costly mistakes, and even economic ruin are forcing professional managers and business leaders in all organizations to take strategic management seriously in order to keep their companies competitive. The importance of strategic management in a firm can be answered by looking at the relationship between strategic management and organizational performance.

Because of the cut throat competition and the nature of the product or service they provide to the customer, the issue of strategic management in the financial institutions specially in the banking industry is a challenging task, which extensively influence the external environment. The relatively new trend towards strategic management in banking industry is viewed as a more designed not only to help them negotiate their environment more effectively, but to improve their financial performance as well.

1.2 Organizational background

There are various types of financial institutions working in the modern banking system in Nepal. As per the list issued by NRB April (2022), the modern banking sector includes 27 commercial banks ("A" class institution), 17 development banks ("B" class institution), 17 finance companies ("C" class institution), and 65 micro finance financial institution ("D" class institution), 1 infrastructure development bank and 15 other institutions and all regarding finance companies, 17 finance companies are operating nationwide except Janaki Finance Co. Ltd and Multipurpose Finance Co. Ltd are still operating within province no 2 and 5 districts (Saptari, Siraha, Dhanusha, Mahottari and Sarlahi district) of Province no 2 respectively.

NFL, one of the “C” class financial institution with limited liability, started its transaction from January 06, 1993 and is the first finance company of private sector in Nepal and since its establishment, along with facing various ups and downs it has set various mile stones as well in the financial industries which has been later on adapted by other financial institutions including commercial banks. During the period, NFL was also declared problematic by NRB on December 2014 and after five years it has been subsequently released from problematic on December 2019. In order to have the synergetic effect and also to strengthen its existence in the market, NFL has acquired LFL and started joint transaction from July 11, 2021 onwards. The brief history of NFL regarding key performance indicators for last eight years are shown in the table which is as follows:

Table 1

Major indicators of NFL for last eight years

Major Indicators	Mid July 2015	Mid July 2016	Mid July 2017	Mid July 2018	Mid July 2019	Mid July 2020	Mid July 2021	Mid July 2022
Total Loan (Rs.)	284.77	208.21	162.98	140.33	102.80	119.48	563.05	1,410.42
Total Deposit (Rs.)	232.34	141.04	83.81	61.62	44.81	210.32	711.29	1,614.26
Net profit (Rs.)	-27.61	36.29	25.35	16.77	8.32	44.61	50.76	48.57
CAR (%)	-28.51	-25.47	-19.56	6.81	111.00	35.62	66.35	43.32
Liquidity (Rs.)	2.69	0.65	18.43	156.50	275.42	126.89	118.29	70.40
No of shares (units)	1,358	1,358	1,358	1,358	1,358	1,358	4,934.96	7,254.72
NPL (%)	91.43	99.66	100	100	100	68.63	46.35	14.07

Source : (Nepal Finance Limited, 2019), (Nepal Finance Limited, 2021) (Nepal Finance Limited, 2022).

Based on the above table, it can be concluded that, there is no doubt that NFL is in the right track which is obvious from the inclined volume of deposit & loan transactions ie crossing 1 billion and also supported by the declining non-performing loan percentage of 14.07 %, adequate capital adequacy, liquidity and net profit etc. From the fiscal year of problematic declared by NRB (July 2016) to up to release of the company from problematic by NRB, the loans and deposit were in decreasing trend and even non-performing loans was 100 %, which shows that NFL had adapted the strategy to return the deposit of the deposit holders in the proportionate basis through the special recovery of the loans from the defaulters. During the time of problematic, the management team of NRB has handed over the company to the newly elected board members from the new investor group through special AGM conducted on March 2019. Similarly through the formulation and adaption of successful strategies by newly elected BODs and implementation of those formulated strategies by newly appointed CEO, NFL was successful to maintain the adequate CAR, adequate internal control system and all other necessary requirements by NRB because of which NRB released NFL from problematic on Dec 2019 and since then, the company's health is in the right track and extended its business from two outlets to fourteen outlets ie twelve branches and two extension counters upto November 2022.

1.3 Problem statement

A statement of the problem is used in research work as a claim that outlines the problem addressed by a study. A good research problem should address an existing gap in knowledge in the field and lead to further research. In this case as well, though the issue stress test has got impressive attentions in the last few decades as to measure the level of economic resistance and to alert bankruptcy threat warning of the financial institutions in general, and the financial institutions do the stress test scenario of a deepening economic and financial crises came truth. There is mere doubt that most of the studies related to the issue were done in the context of developed countries of the world and there are lack of sufficient academic research regarding the stress testing in undeveloped and/or underdeveloped countries such as in Nepalese banking sector as well. In light of the above background, this study seeks to conduct stress testing of Nepal Finance Limited (NFL), as this finance company has been released from problematic from NRB from since December 2019 only.It is expected to flourish the conceptual, operational know how and the managerial implications of stress test in institutional level. On the basis of the statement, the study seeks the answer to the following questions:

1. What are the various potential shocks implemented in the stress testing ?
2. Do those shocks under the credit stress test, liquidity stress test and market stress test can be appetited by the selected financial institution?
3. What are the implication and strategies to be adapted after performing stress test?

1.4 Objectives of study

The major objectives of the research are:

1. To ascertain whether the selected financial institution can appetite the risk or not in the mentioned scenarios and in mentioned time period.
2. To identify the worst case scenarios.
3. To identify the implications and appropriate management strategies after having the stress test in such worst case scenarios.

1.5 Hypothesis of study

For this study, setting of hypothesis does not seem to be relevant, as all the analysis has been done based on stress test guidelines issued by NRB on January 2012.

1.6 Rationale of the study

In Nepal, during the year 2000 AD onwards, because of the huge investment in real estate industry, price of land and building has been inclined unnaturally. In addition, as the global recession of 2009, which was caused by the bursting of the housing bubble in USA, it eventually impacted the Nepalese local economy as well. Hence, NRB had also circulated financial institutions of the country to limit investment in real estate upto 15 % of their portfolio and both real estate & housing loans up to 25 % of their portfolio, which also caused the price of the real estate to be declined and it was very difficult to cope with some commercial banks such as KIST bank Ltd, Grand Bank Ltd etc and because of which its existence became vanished. If those banks did not concentrate its credit portfolio in real estate sectors, perhaps the new generation can see those banks as well. Eventually afterwards, NRB has issued the risk management guidelines and stress testing guidelines so that none of the financial institution will be affected onwards because of worst case scenario as stress test is the tool for the forward looking risk assessment which facilitates the risk mitigation process with developing the contingency plans after setting the risk tolerance.

1.7 Limitations of the study

The main limitation of the research is as follows:

1. Because of the limitation of data collection, the research covers only twenty-seven quarters ie from January 14, 2016 to July 16, 2022.
2. The accuracy of the research work has been dependent on data received from the concerned organization.
3. Upto July 15, 2021, the provision for good loan has to be provided only 1 % of the loan outstanding of good loan, whereas after July 16, 2021, the provision has been allocated as 1.3% for good loans. Hence, in this report as well, provision has been assigned as 1.3% in the merged data.
4. Because of the unavailability of the data, related to concentration on top borrowers, top deposit holders, sector wise etc cannot be done for the merged data
5. Because of the unavailability of data related to the segregation of quarterly deposit into saving, current, fixed, call deposit, liquidity stress test can't be done for merged data.
6. Because of unavailability of data related to the segregation of total deposit excluding fixed deposit and current deposit and segregation of total loan into

interest only loans, interest risk stress test (market rate stress test) can't be done on merged data.

7. Under market risk stress test, only interest rate stress test has been considered because NRB has restricted to deal with foreign exchange transactions for “C” class financial institutions.

1.8 Chapter Plan

This research has been divided into five chapters. The first chapter is introduction chapter which is the first segment of the research and it starts with the background of the study which has been followed by problem statement, objective of study, hypothesis of study, rational of the study and finally limitation of the study. Similarly, the second chapter is literature review, which includes theoretical review and empirical review ie theoretical review is completely based on the various theories of credit risk, liquidity risk and market risk as stated in the stress test guidelines, 2012 issued by NRB and empirical review is based on reviews done from the various articles, journals, research works etc. Similarly, the third chapter is research methodology, which includes the various research framework and definition of the variables, research design, population and sample and sample design, nature and sources of data and the instrument of data collection and finally various methods of used for data analysis so that it will be easier to have the concrete data analysis. In addition, the fourth chapter is result and discussion, which is the heart of the study under which various analysis of credit stress test, liquidity stress test and market stress test has been performed and its major finding has been derived whether organization can appetite risk on the said scenarios on said time. Finally, the last chapter is the summary and conclusion, which includes the adequate conclusions on the various finding derived from the data analysis and necessary strategic suggestions have been provided based on hypothetical condition of the extreme negative shocks. Beside these five chapter, the study contains the bibliography and annexures as well at the end.

CHAPTER II
LITERATURE REVIEW

This chapter intends to provide the detail literature review related to risk, its sources, stress test, various hypothetical scenarios of stress test, strategic management, etc.

2.1 Theoretical review

This stress test has been conducted based on "Stress Testing Guidelines" issued by NRB on January 2012 and basically this guideline focus on stress test on three theories related to risks which includes risk related stress test, liquidity risk related stress test and market risks related stress test. Hence the following three theories related to stress tests as discussed in the said stress testing guidelines are as follows (Stress Testing Guidelines, 2012)

2.1.1 Theory regarding credit risk related stress test

Credit risk is the possibility of a loss resulting from a borrower's failure to repay a loan or meet contractual obligations and it will be determined by the level of NPL. There is the direct relationship between the credit risk and NPL i.e., credit risk increases if NPL increases and vice versa and increment in credit risk adversely hits CAR i.e. if credit risk increases, NPL also increases and finally CAR will be decreased because additional LLP has to be set aside due to increment in NPL. Under credit stress test, NRB has developed various scenario for analysis and reporting purposes and accordingly each and every financial institution has to check whether financial institution can appetite such scenario or not ie such scenario leads to negative CAR and/or less than the CAR specified by NRB. As per NRB, at least CAR must be maintained at least 11 % of RWE. High CAR will lead to the financial institution in the safe zone whereas CAR below 11 % leads the financial institution in the stressed position and PCA will be imposed by NRB as per Prompt Corrective Action Bylaws (2017) which has been quoted under Unified NRB directive, 2078 and even financial institution can also be declared problematic and/or process of liquidation started if CAR has been maximum decreased.

As per NRB stress test guidelines, credit risks stress tests include the study of what happens if for various scenarios such as certain percentage of good loans deteriorated to substandard or doubtful or loss category, certain percentage of substandard loans deteriorated to doubtful loans or loss category, certain percentage of doubtful loans deteriorated to loss loans, certain percentage of good loans disbursed of any one sector or combination of two or more than two sectors (for e.g., real estate, housing, deprived sector, share loan, etc.) downgraded to substandard, doubtful or loss category, large exposures downgraded to doubtful, substandard or loss category etc.

2.1.2 Theory regarding liquidity risk related stress test

A liquidity stress test aims to measure the level of liquidity the institution must maintain to ensure a continuous ability to meet financial obligations in stressed conditions ie it assesses the financial institution's ability to discharge its liabilities during the stressed events for which financial institution needs to maintain the adequate liquid assets for which institution needs to maintain adequate cash balance, bank balance, money at call, investment in government securities etc for discharging the liquid liabilities such as deposits from customers, borrowing and payables etc. Financial institutions needs to maintain minimum level of liquidity to meet their day to day obligation. Liquidity risk is determined by the liquidity ratio. High liquid assets compared to the liquid liabilities leads to the high liquidity ratio, which means the financial institution is in the good position and vice versa. Through liquidity stress test, the financial institution ensures financial institution can appetite the stressed scenario of withdrawal of maximum unexpected deposit amount within short span of time. As per NRB, financial institution must maintain the liquidity exceeding 20 % of the deposit.

Financial institutions may introduce advanced models or forecasting tools for liquidity risk analysis according to the nature, size and complexities of their business. But at minimum, financial institutions are required to conduct stress test and report to NRB developing the scenarios. As per NRB stress test guidelines, financial institution has to do liquidity risks stress tests which includes the study of what happens if for various scenarios such as withdrawal of deposits in percentage for number of days, withdrawal by certain top depositors, etc.

2.1.3 Theory regarding market risk related stress test

Market risk studies the changes in a financial institution's portfolio values due to unanticipated changes in market risk factors, such as the prices and volatilities of equities, interest rates and foreign exchange rates. Generally, market risk shock tries to study the relationship between change in the market risk factor and the institution's capital position. Institution's capital position may vary, when there is a change in the interest rate, equity prices and exchange rates and as stated in the credit risk stress test, the major objective of the financial institution is not to decrease CAR below 11 %. There are various tools to evaluate the relationship of these variables.

As per NRB stress test guidelines, financial institution has to do market risk stress tests which includes interest rate shocks, exchange rate shocks and equity price shocks. In interest rate shock determines what happens if, there is a change in market interest rate. Similarly, exchange rate shock determines what happens if, there is a change in exchange rate and equity price shock determine what happens, if there is an adverse movement in the prices of equity exposures.

2.2 Empirical review

2.2.1 Risk related review

Financial institution is facing numerous risk, which have affected negatively in the business. As we all are aware that risk is the inherent characteristics of business and it is rightly said that high risk, high gain subject to if such risk is effectively managed and if not managed such risk will finally impact on the reputation of the institution through likely of happening numerous risks. Risk is a subjective concept that needs to be viewed and quantified on an individual basis. What risks do you, your company, or your clients face? What is your tolerance for risk? The answers to these questions shapes the definition of and approach to risk (Baillie, C., Broder, J., & Sennewald, C. C., 2020).

Financial institution has to classify risk in the various categories as per Directive no 5 (Unified NRB Directive, 2022) which are credit risk, operational risk, liquidity risk, market risk, interest rate risk, foreign exchange risk and other risk. The details explanation of such risks are as follows:

2.2.1.1 Credit risk

Credit risk arises from the potential that an obligor is either unwilling to perform on an obligation or its ability to perform such obligation is impaired resulting in economic loss to the institution. Credit risk arises from on balance sheet claims such as loans and overdrafts as well as off balance sheet commitments such as guarantees, letters of credit. For most institutions, loans are the largest and most obvious source of credit risk. The common sources of credit risks are credit concentration and credit process issues.

2.2.1.2 Operational risk

Operational risk is the current and prospective risk to earnings and capital arising from inadequate or failed internal processes, people and systems or from external events. Operational risk itself is not a new concept, and well run financial institutions have been addressing it in their internal controls and corporate governance structures. The most important types of operational risk involve breakdowns in internal controls and corporate governance. Such breakdowns can lead to financial losses through error, fraud, or failure to perform in a timely manner or cause the interests of the bank to be compromised in some other way. Other aspects of operational risk include major failure of information technology systems or events such as major fires or other disasters.

2.2.1.3 Liquidity risk

Liquidity risk is the potential for loss to an institution arising from either its inability to meet its obligations as they fall due or to fund increases in assets without incurring unacceptable cost or losses. Liquidity risk includes inability to manage unplanned decreases or changes in funding sources. Liquidity risk also arises from the failure to recognize or address changes in market conditions that affect the ability to liquidate assets quickly and with minimal loss in value. In another words, liquidity risk arises because of the liquid assets are not sufficient enough to meet maturing obligation.

2.2.1.4 Market risk

Market risk is the risk of losses in on and off balance sheet positions as a result of adverse changes in market prices i.e. interest rates, foreign exchange rates, equity prices and commodity prices. Market risk exists in both trading and banking book. A trading book consists of positions in financial instruments and commodities held either with trading intent or in order to hedge other elements of the trading book.

2.2.1.5 Interest rate risk

Interest rate risk is the exposure of a financial institution’s condition to the adverse movement in interest rate. Changes in interest rates affect an institution’s earnings and also affect the underlying value of the institution’s assets, liabilities and off-balance-sheet instruments. Interest rate risk encompasses:

2.2.1.5 Foreign exchange risk

Foreign exchange risk is the risk of losses arising from the movement of foreign currency exchange rates.

2.2.1.6 Other risks

Other risk includes various risk which are strategic risk, compliance risk, reputational risk etc. and its details are as follows:

1. Strategic risk

Strategic risk is the current and prospective impact earnings, capital, reputation or good standing of an institution arising from poor business decisions, improper implementation of decisions or lack of response to industry, economic or technological changes. This risk is a function of the compatibility of an organization's strategic goals, the business strategies developed to achieve these goals, the resources deployed to meet these goals and the quality of implementation.

2. Compliance risk

Compliance risk is the current or prospective risk to earnings, capital and reputation arising from violations or non-compliance with laws, rules, regulations, agreements, prescribed practices, or ethical standards, as well as from incorrect interpretation of relevant laws or regulations. Institutions are exposed to Compliance risk due to relations with a great number of stakeholders, e.g. regulators, customers, counter parties, as well as, tax authorities, local authorities and other authorized agencies.

3. Reputational Risk

Reputational risk refers to all such type of risks which directly and have the final impacts on the reputation of the company.

2.2.2 Stress test related review

As banking industry is a risky business consisting of various risk. In order to manage such risk, certain quantitative techniques have been developed which alerts the management of the bank to be aware on adverse situations related to a several risks. Basically stress testing is the forward looking risk management analytical tool which evaluates the financial position under stressed scenarios for assisting in the decision making process and provides an indication of how much capital is needed to absorb losses and liquidity required during the adverse situation. Under stress testing, a number of quantitative techniques have been developed to assess the potential risks to the individual bank and financial institution as well as financial system.

A stress test is the evaluation of the financial position of a bank under a severe but plausible scenario to assist in decision making within the bank. Stress test is defined as forward-looking exercises that aim to evaluate the impact of severe but plausible adverse scenarios on the resilience of financial firms which involves the use of models and data at the firm or system wide level and may rely on historical or hypothetical scenarios.

A bank stress test is an analysis conducted under hypothetical scenarios designed to determine whether a bank has enough capital to withstand a negative economic shock. These scenarios include unfavorable situations, such as a deep recession or a financial market crash. Stress test is useful for (forward looking risk assessment, setting the risk tolerance, capital and liquidity planning procedures, facilitating the risk mitigation process and developing contingency plans, overcoming limitation of historical data analysis and facilitating internal and external planning procedures etc (Stress Test Guidelines, 2012, Nepal Rastra Bank)

2.2.2.1 Principles of stress testing

Following are the major stress testing principles (Bank for International Settlements, 2018), stress testing frameworks should have clearly articulated and formally adopted objectives:

1. Stress testing frameworks should include an effective governance structure.
2. Stress testing should be used as a risk management tool and to inform business decisions.
3. Stress testing frameworks should capture material and relevant risks and apply stresses that are sufficiently severe.
4. Resources and organizational structure should be adequate to meet the objectives of the stress testing framework.
5. Stress tests should be supported by accurate and sufficiently granular data and by robust IT system.
6. Models and methodologies to assess the impacts of scenarios and sensitivities should be fit for purpose.

7. Stress test models, results and frameworks should be subject to challenge and regular review.

2.2.2.2 Stress testing in Nepalese banking industry

In the global context, the banks are increasingly using stress testing as a risk management tool. Nepalese banking system is growing at a rapid pace. Similarly, there is a tendency of a gradual integration of Nepalese banking into global financial system. After recent global financial crisis, stress testing has gained strength in the field of bank management. Merely studying and analyzing the historical data may not be sufficient to manage the future uncertainty. Therefore, its felt necessity of forward looking approaches for risk management. Stress testing is the forward-looking risk management tool popularly used by banks globally. There are several methodologies, ranging from very simple to complex, to study the behaviors of financial variables. On the basis of relationship of these variables, stress-testing methodologies are generally classified as simple sensitivity test and scenario analysis. Stress testing can be conducted at micro level as well as macro level. In this background, NRB has presented these guidelines for conducting stress testing in Nepalese banking. As the first step in stress testing, these guidelines cover simple sensitivity tests in different areas of risk management. There are simple shocks, which provide the minimum standards for stress testing in Nepalese banking. At minimum, all the financial institution are required to conduct stress test at corporate level on a regular basis. Based on the nature, size and complexities of the business activities, the techniques for stress testing may vary. These guidelines present simple methods of stress tests as an initial step and aim to establish link between our current banking practices and the Basel principles and international best practices.

Stress testing is a risk management tool used to evaluate the potential impact on a firm of a specific event and/or movement in a set of financial variables. Various risks in the banking business are mainly credit, market, operational and liquidity risk. Stress tests should be conducted to analyze the impact of these risks in the bank’s financial performance. There are several methodologies used for the stress testing. These methodologies are varying from the simple sensitivity tests to complex stress tests. All of these methodologies assess the impact of a severe stress event on the variables like earnings, liquidity and capital. These guidelines present some shocks associated with the risk factors. Financial institutions are required to conduct stress test on a quarterly basis and the result should be reported to Bank Supervision Department.

Most of the banks have conducted stress testing as per the requirement of central bank and respective banks have not customized bank specific stress tests parameters for comprehensive liquidity testing to identify potential liquidity crunch (Bank Supervision Report, 2021). Similarly, bank supervision department (BSD) of NRB has revised existing stress testing guidelines, 2012 and prepared the final draft for updating the guidelines and final draft has been circulating among the concerned stakeholders for their feedback and the guidelines shall be issued and come into effect after the receipt of the feedback and making amendment accordingly if necessary (Bank Supervision Report, 2022).

2.2.2.3 Process of stress test

According to Vladmir, M. (2014), the various process to be followed to perform stress test is as follows :

1. Collection of data:

The process of stress test begins with data collection. For any stress test availability of data plays an important role. All the relevant information required for stress test has to be collected.

2. Portfolio and environment analysis

The second step in the process of stress testing is to survey the individual portfolio of the bank and environment, to understand the strengths and weaknesses of each bank.

3. Identification of risk factors

The third step is to identify the risk factors that affects the banking financial stability and sustainability. The risk factor has to be identified on the basis of vulnerability according to bank's own assessment and as recommended by the regulators.

4. Construction and launching stress test

The next is designing the stress tests which is the most important step in stress test. Designing scenarios involves determining potential shock that are extreme but plausible. For example, changes in different asset classes that may affect the banks or identifying the appropriate risk factors affecting the banks. The shock selected for the stress test must be realistic and relevant to the portfolio of the bank.

5. Calculation of losses

After conducting the stress test the impact of the stress has to be analyzed. The loss due to stress are calculated to find the impact on RWA, capital and provisions. The result of stress test along with the methodology used for stress test has to be reported to the risk management committee.

6. Reporting about losses

The report must include the following such as details of the variable and risk factors tested, the coverage of stress test, the assumptions for stress testing, impact of stress on profitability, procedure used to monitor stress loss limit, absolute loss amount, key financial ratios etc.

7. Take corrective Actions

The committee has to take remedial measures if they feel there is a breach in stress tolerance levels. The corrective action may be deciding about injecting the additional capital, making provision to face the crisis etc.

8. Reassessment of stress test

After implementation of strategies the committee has to reassess the stress test to understand sustainability of the institution to crisis after the remedial action.

2.2.2.4 Types of stress test

According to Ramlall, I. (2018); Cihak, M. (2004), the various type of stress test are as follows

2.2.2.4.1 Micro prudential stress testing and macro prudential stress testing

At institutional level when financial institute conduct the stress testing to study the relationship of the variables it is understood as micro-level stress test ie stress test focused on the institutional specific risk exposure. Under micro prudential stress testing, various parameters such as credit risk, liquidity risk, market risk etc are used and basically CAR and liquidity ratio based on the BASEL framework has been used. By using these ratios, if institutions are reported with weak results needs to take necessary strategic actions by the top level management and if in worst case scenario punishable action will be taken by regulatory body ie NRB for Nepalese perspective.

Similarly, when it's applied in the study of macro variables the stress test is known as macro-level stress test. It focuses on the system wide risk from the aspect of macroeconomic perspective and is related to financial system as whole. It is a uniform approach to the assessment of risk exposures across banks and is more complex and have wider coverage as compared to micro prudential stress testing and the main purpose is to have a financial sector surveillance rather than risk management. Under macro prudential stress testing, various parameters such as real GDP growth, inflation, unemployment, exchange rate, depreciation, interest rate, stack market width long term yield spread are used.

2.2.2.4.2 Scenario stress test and sensitivity stress test

Based on the methodologies adapted, stress test can be classified into scenario stress test and sensitivity stress test.

Scenario testing adopts a hypothetical future state of the world or nature to define changes in risk factors that would affect an institution’s operations. This will normally involve changes in a number of risk factors, as well as ripple effects that are represent other impacts that follow logically from these changes and related management and regulatory actions. Scenario testing is typically conducted over the time horizon appropriate for the business and risks being tested. Various types of scenarios stress test are historical scenario stress test and hypothetical scenario stress test.

Stress test can be made on historical scenario ie the shocks that has already occurred on the past. For eg if the financial company which has been penalized by the regulatory body because of less CAR as prescribed by regulatory body because of 100% of good loan on the heading real state has been converted into loss loan. Then now as that company being released from penalized because of the fully recovery of such real estate loan and now again implementation of such hypothetical shock of conversion of 100% of good loan on the heading real state scenario is called historical scenario stress test.

Under hypothetical scenario stress test, various test has to be carried under various hypothetical scenarios. Hypothetical scenario means simulating shocks that are most suspected or most likely to occur in the future. For this purpose, three hypothetical scenario based on the minor level shocks, moderate level shocks and major level shocks (Stress Testing Guidelines, 2010, Bangladesh Bank).

Scenario 1: Minor level shocks : It is a situation which means that all risk elements of financial institution will plausibly encounter small level of shocks at varied level for each risk factor.

Scenario 2: Moderate level shocks: It is a situation which means that all risk elements of the financial institution will plausibly encounter medium level of shocks at varied level for each risk factor.

Scenario 3: Major level shocks: It is a situation which means that all the risk elements of the financial institution will plausibly encounter major level of shocks at varied level for each risk factor.

Sensitivity testing typically involves an incremental change in a risk factor (or a limited number of risk factors) which have to deal with providing answers to what if questions. It is typically conducted over a shorter time horizon, for example an instantaneous shock. Sensitivity testing requires fewer resources than scenario testing and can be used as a simpler technique for assessing the impact of a change in risks when a quick response or when more frequent results are needed. The main difference between sensitivity analysis and scenario analysis is the former assesses the result of changing of one variable at a time, while the later examines the result of changing of all possible variables at the same time.

2.2.2.4.3 Bottom up and top down approach of stress test

Bottom-up stress testing is typically conducted by individual financial institutions by using internal data and models. Under bottom-up approach, individual institutions implement stress testing based on their internal risk management. In that respect, bottom-up approach hinges a lot on the expertise of the individual institutions

Top-down stress testing is typically conducted by central banks/regulators on individual banks (for the whole banking system) based on supervisory data by using a sound methodology and well specified assumptions.

2.2.2.4.5 Reverse Stress Tests

Under normal stress testing approach, the circumstances are first identified to then assess their impacts on the outcomes. Reverse stress testing resorts to scenarios which fall outside the normal stress testing environment. By adopting reverse stress tests, institutions show a real commitment to a full-fledged stress testing attitude not only looking at the effects of plausible events on outcomes, but given the outcomes, what are those plausible triggering causes. Under reverse stress tests, no forecasts are made under the scenarios as the focus is on the assumptions which would trail behind extremely severe risk scenarios. The objective of clinging to reverse stress tests is to better understand the real vulnerabilities of the system. the reverse stress tests tend to be more difficult due to multiplicity problem whereby the same outcome can be caused through different combinations of risk factors.

2.2.3 Strategic management related review

As banking business is fully surrounded by numerous risk and if such risk can be managed through implementation of strategic planning on the right time then there is no doubt on the success of that organization. Strategic management consists of all activities which examines both present and future environments, formulating the organizations objectives, implementing and controlling decisions focused on achieving those objectives in the said present and future environment. Strategic management is concerned with making decisions about organization’s future direction and implementing those decisions. Strategic management is the study of the functions and responsibilities of top management, the crucial problems that affect success in the total enterprise and the decisions that determine the direction of the organization and shape its future (Okumus et al., 2019).

In general words, strategic management can be defined as the process through which organization analyses and learn from their internal and external environments, establish strategic decisions, create strategies that are intended to help achieve established goals and execute these strategies, all in an effort to satisfy key organizational stakeholders. Thus in order to achieve the predetermined organizational objective, proper implementation of strategic decisions must be focused and which must be executed by top management level. If the strategic decision taken by management seems to be perfect, definitely the organization goal will be achieved and if not the risk will be created and the degree of such risk will be measured through the stress test ie stress test focus on the risk tolerance resulted from the various hypothetical scenarios and whether if finally effects on the reputation of the organization. Hence there is strong relation between the strategic management and stress test.

2.2.3.1 Process and model of strategic management

According to Gupta, C. B. (2014), the process of strategic management consists of four broad phases and all the elements of the strategic management process are interrelated and interdependent and it includes following processes:

1. Establishing strategic intent

The strategic intent of an organization represents what the organization wants to become in future and lays the foundation for the organizations strategic management. The main elements of strategic intent are creating and communicating the vision, designing a mission statement, defining the business, choosing the business model and setting objectives.

2. Formulating strategies

In this phase of strategic management, there will be involvement of various activities such as analysis of external environment to identify the opportunities and threats for the organization, analysis of internal environment (organizational analysis) to identify the organization's strength and weakness, identification of the strategic alternatives in terms of corporate level strategies and business level strategies and strategic analysis and choice of strategy.

3. Implementing strategies

The main activities involved in strategy implementation are activating strategies, designing the structure, systems and process, behavioral implementation, formulating functional strategies and operationalizing strategies.

4. Evaluating and controlling strategies

The last phase of the strategic management process consists of various activities such as evaluation of strategies, exercising strategic control and reformulating strategies

Finally, the feedback from strategic evaluation helps in exercising strategic control which involves the reformulation of strategies and/or improving implementation of strategies. In this way, the strategic management process becomes an iterative process.

2.2.4 Analysis of conclusion derived from various research papers

According to the research conducted by Mohsin, M., & Kamal, M. (2012) on "Managing Stress Test for Banks: A Case Study on Ten Commercial Banks in Bangladesh" focusing on stress test including credit shocks ie increase in NPLs have been implemented and out of ten commercial banks, it was found that six commercial banks cannot cope with the third scenario ie major level of shocks (3 % increase in NPLs) ie the capital adequacy become less than the minimum capital adequacy (10 %) as stated by central bank of Bangladesh which includes Dhaka Bank Ltd., Shajalal Islamic Bank Ltd, Social Islamic Bank Ltd, Mercantile Bank Ltd, The City Bank Ltd and One Bank Ltd. The other three bank which can cope with such shocks which were Eastern Bank Ltd., IFIC Bank Ltd, NCC Bank Ltd and National Bank Ltd.

Research done on its paper "Bangladesh: Financial System Stability Assessment" and stress test have been performed on both micro aspect perspective and macro aspect perspective with taking different shocks. Considering micro aspects, if, shocks performed assumed a uniform 20 % deterioration of the loan portfolio, then overall banking sector CAR will be declined by 1.4 % and would require 29 billion taka to meet the regulatory minimum of 10 %. Additionally, if analyzed individually, five banks including two state owned are currently below the CAR minimum and when shocks were applied, three more banks fell below the minimum CAR and all nine foreign banks operating in Bangladesh were resilient. In addition, considering macro-economic prospective, if scenario was assumed in which GDP declined by 1.5 %, it was found that it will effect on NPLs (20 %), exchange rate (25 % depreciation of taka against dollar) and interest rates (200 base point decrease) and finally the result indicated that 15 banks would fall below the regulatory requirement and the development finance institutions (DFIs) would essentially be insolvent, however the private and foreign banks would be resilient (International Monetary Fund, 2010).

In the report "Financial Inclusions: Soundness and Resilience", sensitivity analysis has been carried on the vulnerabilities of various forty-six scheduled commercial banks under various scenarios of credit risk by administering a number of single factor shocks. For eg. Regarding credit concentration risk, if top three individual borrowers fails to pay the due amount and degraded to substandard category, then CAR of one bank will fall below 9 % and 34 banks would experience a decline of more than 1 % point in CAR. In addition, if top three group borrowers fails to pay the due amount and degraded to substandard category, then one bank will fall below 9 % and 38 banks would experience a decline of more than 1 % point in CAR (Reserve Bank of India, 2021).

In the report "Soundness Assessment of the Financial Sector", stress testing has been carried through various stress scenarios ie mild shock, medium shock and severe shock on various risks ie credit risk (NPL increment in overall loans, real estate loan heading, concentrated credit risk, local government debt, credit risk of off balance sheet exposure), market risk (interest rate risk, bond portfolios, foreign exposure) liquidity risk. The total number of sample banks were 1,171 (ie 6 large commercial bank, 12 joint stock commercial banks, 68 city commercial banks, 8 private banks and 39 foreign banks) only 30 banks remain resilient to various said external shocks as a whole ie even dropping 2.65 % of CAR, after the most severe hypothetical shocks the CAR will be above 10.5% (Reserve Bank of India, 2021).

Research done on commercial banks of China on their research paper "Stress Testing of Commercial Banks' Exposure to Credit Risk: A Study Based on Write off non-performing Loans" on which the relation between four macro variables ie real GDP growth (GGDP), customer price index (CPI), house price index (HPI) and nominal monetary growth (M2) and their effect on NPL rate of commercial banks. It shows, there is strong relationship between the said macro variables and NPL and in short term perspective, specially NPL is more sensitive to CPI than to other three macro factors. In long run, GGDP and M2 affects NPL most and has longest lasting influence (Lu, W., & Yang, Z., 2012).

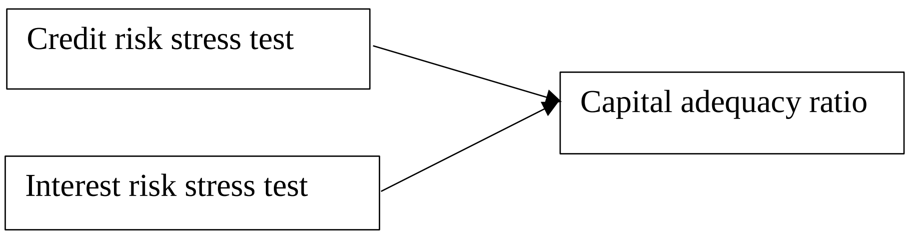
According to the research conducted on commercial banks of Tunisia on his research paper "Credit Risk Stress Testing of Commercial Banks in Tunisia" by Ben Youssef, A. (2018) on macro stress testing on credit risk on ten commercial banks considering macroeconomic factor such as real GDP, oil price, real effective exchange rate, inflation rate, total loans granted to the economy and broad money supply and its impact on credit risk level. In this research, the researcher created the stressed event by anticipating an extreme change of real GDP growth and it was observed that, the real GDP has a strong negative effect on the level of credit risk related to LLP.

Regarding in the Nepalese perspective, as far as I know, no any research papers and articles related to stress testing has been published by government and/or any other institutions or by any individuals.

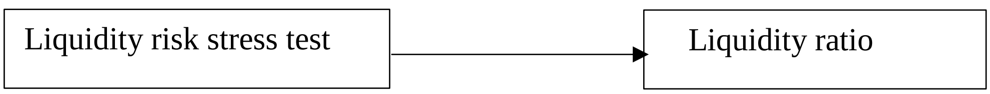
CHAPTER III
RESEARCH METHODOLOGY

3.1 Research framework and definition of variables

For stress testing purpose for this research, research framework has been completely based on "Stress Testing Guidelines" issued by NRB on January 2012 and basically this guideline focusses on stress test on three risks i.e., credit stress test, liquidity stress test and interest rate stress test. As the main objective of the credit risk stress test and the interest risk stress test is to check the ultimate effect ie decrement in capital adequacy in the various scenarios specially in the worst-case scenarios. Thus, the various independent variables under the credit risk stress test and interest risk stress test are analyzed to quantify the dependent variable i.e., capital adequacy ratio. The research framework used for the credit stress test and interest risk stress test is:



In addition, under liquidity stress test, the main objective is to check the ultimate effect in the decrement in the liquidity ratio in various scenarios specially in the worst-case scenarios ie top depositor holders withdraw their respective deposit. The deposit figures are the independent variable and the liquidity ratio is the dependent variable. The research framework used for the liquidity stress test is:



The various independent variables and independent variable used in this research under abovementioned three types of stress test and their respective definitions are as follows:

3.1.1 Definition of variables used for credit stress tests:

For credit stress test, capital adequacy ratio is the dependent variable and all loan categorized under various headings under performing loans and non-performing loans such as pass loans, watch list, restructured and rescheduled loans, substandard loans, doubtful loans and loss loans are independent variables and loans are categorized as per heading stated under Unified Nepal Rastra Bank Directives (2022)., issued by NRB which has been categorized based on the time elapsed for nonpayment of either the interest or the equal monthly installment (EMI). Loans are the sum amount which has been invested with or without pledging the securities therewith and for that purpose, the borrower has to pay certain charges to the institution. Loans are the assets to the institution and the deposit collected are ultimately invested into loan. The definition of the variables used for credit risk stress test are as follows:

3.1.1.1 Performing loans

Performing loans are the good loans which includes pass loans and watch list loans and details of such loans are as follows:

3.1.1.1.1 Pass loans

The various types of loans have to be categorized under pass loans such as loan due up to one-month period, loan disbursed pledging the fixed deposit receipt, loan disbursed pledging the government securities and gold loans not exceeding 10 lacks subject to adequate securities pledged.

3.1.1.1.2 Watch list loans

Following loans have to be categorized under watch list loans such as loan outstanding due from one month to three months, loan not renewed up to one month and working capital loans which has been extended up to 90 days, loans disbursed to those loanee which has been categorized under NPL by other financial institutions, loan disbursed to those institutions which has negative net worth or however the loan (interest or installment) is regular, it its financial statement shows net loss for continuous three years and more periods, loan outstanding exceeding 20 billion with multiple banking was not categorized under consortium loan, loan disbursed exceeding debt equity ratio of 80:20 and as specified by NRB supervision team during onsite supervision inspection.

3.1.1.2 Non-performing loans

Further loans which have been due exceeding three months and more period has been categorized under NPL and it has been further classified under following headings:

3.1.1.2.1 Substandard loans

Loan outstanding which has been due from three months to six months are categorized under substandard loans.

3.1.1.2.2 Doubtful loan

Loan outstanding which has been due from six months to one year are categorized under doubtful loans.

3.1.1.2.3 Loss loans

Loan outstanding which has been due for more than one year are categorized under loss loans.

3.1.1.2.4 Restructured and rescheduled loans

As per the request of the borrower, if any terms and condition has been changed including the time period, then such loans are said to be restructured and rescheduled loans and accordingly, but subject some terms and condition such as borrower has to provided adequate documentation, financial institution is confident that borrower will repay the loans after rescheduling or restructuring the loans.

The details of loan loss provision based on the above loan categorization as per directive no 2 of Unified NRB Directive, 2078, has been separately presented in Appendix 1. Previously before issue of Unified NRB Directive, 2078, only 1% provision has to be set aside for loan categorized under pass loans.

Similarly, the total loan outstanding and total loss provision based on the category of loan, which was disbursed on various heading such as business loans, agriculture loans, auto loan, share loan, home loan, deprived sector loan etc has been separately presented in appendix - 2. Out of the total loans amounting NRs. 1.41 billion of NFL, performing loan amounting NRs. 16,483.49 million which includes NRs. 15.50 million and 983 thousand as good loan and watch list. Similarly, the non-performing loan amounted to NRs. 1,393.94 thousand as non-performing loan which consists of 188.51 million, 3.48 million and 737 thousand as bad loan, doubtful loan and substandard loan respectively.

Similarly, the total loan loss provision with heading wise categorization has also separately discussed in the appendix no 3. Out of total provision of NRs. 209.21 million set aside for total loan of NRs.1.41 billion, which includes provision amount NRs. 16.48 million and 192.73 million set aside for performing loan and non-performing loan respectively.

3.1.1.2 Capital adequacy ratio (CAR)

As per directive no 1 of Unified NRB directive, 2078, issued by NRB, CAR ensure that financial institutions have enough capital to absorb a reasonable amount of losses before they become insolvent and it is derived by dividing the total capital fund by the risk weighted exposure and it is determined in percentage. It is summation tier 1 capital ie core capital and tier 2 capital ie supplementary capital and “C” financial institution must maintain core capital of 6 % of RWE and capital fund of 11 % of RWE and its violation attracts the prompt corrective action (PCA) with prohibition of various activities subject to the decrement of the CAR.

3.1.2 Definition of variables used for liquidity stress tests

For liquidity stress test liquidity ratio, liquidity ratio is the dependent variable and deposits is the independent variable.

3.1.2.1 Deposits

Deposits are the sum amount which has been collected from the individual and/or institution with ultimately liability to pay on demand to them with the option of payment of the extra interest. Deposit includes interest bearing which includes fixed deposit, saving deposit, call deposit and non-interest bearing which includes current account. Deposits are ultimately the liability to the institution. Upto July 16, 2022, the total deposit of NFL amounted to NRs. 1.61 billion.

3.1.2.2 Liquidity ratio

As amount deposited in the financial institution by the deposit holders needs to be returned at any cost, for that purpose, financial institution needs to keep the adequate liquid asset and liquid assets include cash in hand, bank balance and investment in government. As per NRB, at least 20 % of liquidity ratio has to be maintained.

3.1.3 Definition of variables used for market stress tests

For market stress test, CAR is the dependent variable and interest to be paid on deposit and interest to be received on loans are the independent variable. We have already discussed about CAR in above paragraphs. Regarding the deposit collection, the financial institution must have to pay some interest to the deposit holders depending upon the account type on which deposit has been collected and similarly the borrower must have to pay interest to the financial institution because of using the fund.

3.2 Research design

To obtain the objective of the study, the researcher has applied sensitivity and scenario analysis along with descriptive and analytical procedure, so that it will help in boosting the various strategies to be adopted related to various planning related to data collection procedures & its method, measurement and method of data collection etc.

In addition, stress testing has been done as per the “Stress Testing Guidelines” issued by Nepal Rastra Bank issued on January 2012 in order to predict the probable vulnerabilities regarding credit shocks, liquidity shocks and interest rate shocks of NFL. Thus, as per NRB stress testing guidelines, various scenario analysis has been done based on credit risk, liquidity risk and interest rate risk

3.3 Population and sample, and sample design

At present, there are 17 finance companies (“C” class financial institution) exist in Nepal. Due to the time and resource constraints, it is not possible to study all of them. Therefore, based on the cluster sampling and convenient sampling method, the research has been carried out ie out of the various cluster such as commercial banks (“A” Class), development banks (“B” class), finance companies (“C” Class) and microfinance companies (“D” class), the researcher has chosen finance company cluster because in finance companies various risks, as said in NRB guidelines, seems to be high which is because of not having skilled manpower who finally don't initiate sufficient internal control system in the finance company as compared to commercial banks and development banks. As the stress test focus on the appetite and tolerance of the risk, again out of the finance company cluster, focus has been done on the cluster of the finance companies which has been declared problematic and later on released by NRB. It's obvious that, in such finance companies, definitely NRB had pointed out numerous intolerable risks during the onsite inspection report of the organization and hence declared problematic. Finally, based on the convenient sampling method, only one sample i.e., Nepal Finance Limited has been selected. In fact, as stress test is also directly concerned with risk and among the various problematic released organization such as Best Finance Limited, Sammriddhi Finance Limited and Nepal Finance Limited, because of the various following reasons researcher has chosen NFL as only one sample:

1. NFL was declared problematic by NRB on December 2014 and was released from problematic on December 2019 and started its normal transactions i.e. the time gap of being problematic was five years, which is quite high and being comparatively maximum taken for the release for problematic, the researcher assumes, risk also seems to be high on NFL.
2. Out of the total problematic released company, NFL was released recently i.e. on December 2019, and as it was recently released, the risks may be still high.
3. Afterwards NFL has acquired Lalitpur Finance Limited, which was also declared problematic on March 2015 and released on Dec 2017 and started joint transactions from July 2021. Considering the fact that a problematic released company has acquired another problematic released company, hence again the risks associated there on may be still high.
4. Finally, because of the data accessibility as well for the research purpose, NFL has been chosen.

3.4 Nature and sources of data, and the instrument of data collection

The study is mainly based on secondary data and those secondary data are published secondary data and unpublished secondary data. Published data are those secondary data, which needs to be mandatorily published by the financial institution as instructed by Nepal Rastra Bank through Unified NRB Directive, Security Exchange Board etc.

Those published data are received through quarterly published data taken from web sites and newspaper and annual reports of NFL.

Similarly, unpublished data are those secondary data, which are not published by financial institution, however, various workout done by the management and department heads for making strengthening the internal decision making of the finance company. Those unpublished data are received through the numerous interviews which had been taken with the respective staffs from management team and head of department of finance company.

3.5 Methods of analysis

Various methods of sensitivity analysis as stated in the "Stress Testing Guidelines, 2012" issued by NRB has been implemented for the stress test of credit risk, liquidity risk and market risk.

3.5.1 Method of analysis for credit risk related stress test

The various methods for credit risk stress test as said by NRB stress test guidelines has been implemented and some of the additional scenario has also been created, which are stated below:

1. Sensitivity analysis for degradation of 25%, 50% and 100% of good loans into substandard loans
2. Sensitivity analysis for degradation of 25%, 50% and 100% of good loans into doubtful.
3. Sensitivity analysis for degradation of 25%, 50% and 100% of good loans into loss loans.
4. Sensitivity analysis for degradation of 54%, 56% and 57% of good loans into loss loans.
5. Sensitivity analysis for degradation of 25 %, 50 % and 100 % of substandard loans into doubtful loans.
6. Sensitivity analysis for degradation of 25 %, 50 % and 100 % of substandard loans into loss loans.
7. Sensitivity analysis for degradation of 25 %, 50 % and 100 % of doubtful loans into loss loans.

8. Sensitivity analysis for degradation of 25 % each of good loan, substandard loans and doubtful loans deteriorated to substandard loans, doubtful loans and loss loans respectively
9. Sensitivity analysis for degradation of 50 % each of good loan, substandard loans and doubtful loans deteriorated to substandard loans, doubtful loans and loss loans respectively
10. Sensitivity analysis for degradation of 100 % each of good loan, substandard loans and doubtful loans deteriorated to substandard loans, doubtful loans and loss loans respectively
11. Sensitivity analysis for degradation of 25 % each of good loan, substandard loans and doubtful loans deteriorated to substandard loans, doubtful loans and loss loans respectively
12. Sensitivity analysis for degradation of 50 % each of good loan, substandard loans and doubtful loans deteriorated to substandard loans, doubtful loans and loss loans respectively
13. Sensitivity analysis for degradation of 100 % each of good loan, substandard loans and doubtful loans deteriorated to substandard loans, doubtful loans and loss loans respectively
14. Sensitivity analysis for degradation of 25 % each of good loan, substandard loans and doubtful loans deteriorated to loss loans.
15. Sensitivity analysis for degradation of 50 % each of good loan, substandard loans and doubtful loans deteriorated to loss loans.
16. Sensitivity analysis for degradation of 56 % of good loan, 100 % each of substandard loans and doubtful loans deteriorated to loss loans.
17. Sensitivity analysis for degradation of 57 % of good loan, 100 % each of substandard loans and doubtful loans deteriorated to loss loans.
18. Sensitivity analysis for degradation of 25%, 50% and 100% of good loans of deprived sector loan deteriorated to bad loans.
19. Sensitivity analysis for degradation of 25%, 50% & 100% of good loans of business loans deteriorated to bad loans.
20. Sensitivity analysis for degradation of 25%, 50% & 100% of good loans of agriculture loans deteriorated to bad loans.
21. Sensitivity analysis for degradation of 25%, 50% & 100% of good loans of auto loans deteriorated to bad loans.

22. Sensitivity analysis for degradation of 25%, 50% & 100% of good loans of personal loans deteriorated to bad loans.
23. Sensitivity analysis for degradation of 25 %, 50 % & 100 % of good loans of home loans to bad loans.
24. Sensitivity analysis for degradation of 25 %, 50 % and 100 % good loan each of deprived sector, business loan, agriculture loan, auto loan, personal loan and home loan downgrades to loss loan .
25. Sensitivity analysis for degradation of 70 %, 75% and 76% of good loan each of deprived sector, business loan, agriculture loan, auto loan, personal loan and home loan downgrades to loss loan category.
26. Sensitivity analysis for degradation of good loans top 5, top 10, top 15 and top 20 borrowers degraded to substandard loans, subject to 100 % provisions already provided provision to remaining loss loans.
27. Sensitivity analysis for degradation of good loans categorized under top 5, top 10, top 15 and top 20 borrowers degraded to doubtful loans, subject to 100 % provisions already provided provision to remaining loss loans.
28. Sensitivity analysis for degradation of good loans top 5, top 10, top 15 and top 20 borrowers degraded to doubtful loans, subject to 100 % provisions already provided provision to remaining loss loans.
29. Sensitivity analysis for degradation of good loans top 5, top 10, top 15 and top 20 borrowers degraded to doubtful loans, subject to 100 % provisions already provided provision to remaining loss loans

Similarly, for the credit stress test to be conducted based on the mean taken from the mean data, almost the same abovementioned methods have been used, subject to the availability of the data.

3.5.2 Method of analysis for liquidity risk related stress test

As per stress testing guidelines issued by NRB, various methods for stress test of liquidity risk can be implemented which includes the study of various alternatives and its implications afterwards and the various methods are stated below:

1. Sensitivity analysis for withdrawal of deposits by 10%, 15% or 20%.
2. Sensitivity analysis for withdrawal by top 10, top 15 and top 20 of individual deposit holders

3. Sensitivity analysis for withdrawal by top 10, top 15 and top 20 of institutional deposit holders
4. Sensitivity analysis for withdrawal by top 10, top 15 and top 20 of both institutional and personal deposit holders
5. Sensitivity analysis for withdrawal by 2%, 5%, 10%, 20% and 30% for five consecutive days respectively
6. Sensitivity analysis for withdrawal of deposits by 5%, 10%, 15%, 20% and 30% for five consecutive days respectively

3.5.3 Method of analysis for market risk related risk stress test

As per stress testing guidelines issued by NRB, various methods for stress test of interest rate risk can be implemented which includes the study of various alternatives and its implications afterwards and the various methods are stated below:

Interest risk stress tests include the study of what happens if;

1.Sensitivity analysis for an increase in deposit interest rate by 100, 150 or 200 basis points.
2.Sensitivity analysis for decrease in deposit interest rate by 100, 150 or 200 basis point.
3. Sensitivity analysis for decrease in loan interest rate by 100, 150 or 200 basis point.
4.Sensitivity analysis for an increase in loan interest rate by 100, 150 or 200 basis point

There is no exchange rate risk in the financial institutions as financial institutions are not eligible to do transaction related to the foreign currencies. Similarly, for the liquidity stress test to be done from mean data, almost the same abovementioned methods have been used, subject to the availability of the data.

CHAPTER IV
RESULT AND DISCUSSION

For analysis of data, based on data collection and the cutoff date of data collection, the study has been divided into two sections i.e. one is the study of stress test based on the data as of July 16, 2022 and another is by taking the mean data collected for twenty-seven quarters i.e. from January 14, 2016 to July 16, 2022.

4.1 Analysis of data as of July 16, 2022

Table 2

Necessary parameters for credit stress testing based on data as of July 16, 2022 (Amount in thousand)

Total Loan	1,410,427
Good Loan	1,192,342
Watch List Loan	19,660
Performing Loan	1,212,002
Substandard Loan	2,949
Doubtful Loan	6,967
Bad Loan	188,507
Total NPL	198,424
Total Deposit	1,614,267
Fixed Deposit	948,002
Saving Deposit	343,787
Current Deposit	35,108
Call Deposit	287,368
Total Deposit except call and fixed	378,896
Capital Fund	796,888
Total Risk Weighted Exposure	1,840,933
Capital Adequacy Ratio (CAR in %)	43.29 %
Top five borrowers	223,647
Top ten borrowers	340,374

Top fifteen borrowers	425,320
Top twenty borrows	480,397
Good loans among top five borrowers	140,519
Good loans among top ten borrowers	216,334
Good loans among top fifteen borrowers	301,280
Good loans among top twenty borrowers	346,357
Loss loans among top five borrowers	94,329
Loss loans among top ten borrowers	124,040
Loss loans among top fifteen borrowers	124,040
Loss loans among top twenty borrowers	134,040
Substandard loan and doubtful loans among top twenty borrowers	Nil

Source : Nepal Finance Limited, 2022

4.1.1 Analysis of data related to credit risk stress tests

Based on NRB stress test guidelines, for credit stress test, following scenarios with three shocks i.e. mild level shock, moderate shock and major level of shock, stated in the below mentioned tables, have been implemented to check whether such shocks can be absorbed by NFL or not. In addition, if in case of the negative capital adequacy arrived from the said shock, then the further calculation has been done to determine the specific percentage as cut off percentage which should not be crossed by NFL, so as to prevent organization from imposing PCA determined under Unified NRB Directive, 2078. Separate annexures have also been attached for all tables on which detail calculations have been shown for arriving the final figures stated in the below mentioned tables and the said scenarios are as follows:

Table 3

Sensitivity analysis for degradation of 25%, 50% and 100% of good loans into substandard loans. (Amount in thousand)

Magnitude of Shock:	25%	50%	100%
Increase in Provision	70,646	141,292	282,585
Revised Capital Fund	726,241	655,595	514,303

Revised RWE	1,770,287	1,699,641	1,558,348
Revised CAR	41.02%	38.57%	33%
Pre Shock CAR	43.29%	43.29%	43.29%

From the abovementioned table, it is clear that, if the good loans have been deteriorated to substandard as per the abovementioned said percentage, the maximum CAR will be decreased to 33 %, which is within limit prescribed by NRB. Hence, it is clear in that said scenarios, company can appetite that prescribed shocks.

Table 4

Sensitivity analysis for degradation of 25%, 50% and 100% of good loans into doubtful loans. (Amount in thousand)

Magnitude of Shock:	25%	50%	100%
Increase in Provision	145,167	290,335	580,670
Revised Capital Fund	651,720	506,552	216,217
Revised RWE	1,695,766	1,550,598	1,260,263
Revised CAR	38.43 %	32.67 %	17.16 %
Pre Shock CAR	43.29 %	43.29 %	43.29 %

From the abovementioned table, it is clear that, if the good loans have been deteriorated to doubtful loans as per the abovementioned said percentage, the maximum CAR will be decreased to 17.16 %, which is within limit prescribed by NRB. Hence, it is clear in that said scenarios, company can appetite that prescribed shocks.

Table 5

Sensitivity analysis for degradation of 25%, 50% and 100% of good loans into loss loans. (Amount in thousand)

Magnitude of Shock:	25%	50%	100 %
Increase in Provision	294,210	588,420	1,176,841
Revised Capital Fund	502,677	208,467	126,787
Revised RWE	1,546,723	1,252,512	(379,953.)
Revised CAR	32.50 %	16.64 %	(57.21%)
Pre Shock CAR	43.29%	43.29%	43.29%

From the abovementioned table, it is clear that, if the good loans have been deteriorated to loss loans as per the abovementioned said percentage, the revised CAR will be decreased to (57.21) % and if such condition happened then NRB will take the serious actions as per PCA as specified under Unified NRB Directive, 2078.

Table 6

Sensitivity analysis for degradation of 54%, 56% and 57% of good loans into loss loans. (Amount in thousand)

Magnitude of Shock:	54 %	56%	57%
Increase in Provision	635,494	659,031	670,799
Revised Capital Fund	161,393	137,856	126,088
Revised RWE	1,205,439	1,181,902	1,170,134
Revised CAR	13.39 %	11.66 %	10.78 %
Pre Shock CAR	43.29%	43.29%	43.29%

From the above-mentioned table no 5, it has been confirmed that the negative CAR will be raised if the good loans deteriorated up to 100 %. So considering more than 50 % i.e. 54%, 56% and 57 %, it can be concluded that, if good loans reached to 56 % , then CAR will not cross the limit as set by NRB i.e. its 11.66 % and if such loans exceeds 57%, then it will lead to CAR less than prescribed and leads to 10.78 % and hence good loans should not cross 56% and if it crossed 56 %, then NRB will impose PCA.

Table 7

Sensitivity analysis for degradation of 25 %, 50 % and 100 % of substandard loans into doubtful loans. (Amount in thousand)

Magnitude of Shock:	25%	50%	100%
Increase in Provision	184	368	737
Revised Capital Fund	796,703	796,519	796,150
Revised RWE	1,840,749	1,840,565	1,840,196
Revised CAR	43.28%	43.28%	43.26 %
Pre Shock CAR	43.29%	43.29%	43.29%

From the abovementioned table, it is clear that, if the substandard loans have been deteriorated to doubtful loans as per the abovementioned said percentage, the maximum

CAR will be decreased to 43.26 %, which is within limit prescribed by NRB. Hence, it is clear in that said scenarios, company can appetite that prescribed shocks.

Table 8

Sensitivity analysis for degradation of 25 %, 50 % and 100 % of substandard loans into loss loans. (Amount in thousand)

Magnitude of Shock:	25%	50%	100%
Increase in Provision	552	1,105	2,211
Revised Capital Fund	796,335	795,782	794,676
Revised RWE	1,840,380	1,839,827	1,838,721
Revised CAR	42.27%	43.25%	43.22%
Pre Shock CAR	43.29%	43.29%	43.29%

From the abovementioned table, it is clear that, if the substandard loans have been deteriorated to loss loans as per the abovementioned said percentage, the maximum CAR will be decreased to 43.22 %, which is within limit prescribed by NRB. Hence, it is clear in that said scenarios, company can appetite that prescribed shocks.

Table 9

Sensitivity analysis for degradation of 25 %, 50 % and 100 % of doubtful loans into loss loans. (Amount in thousand)

Magnitude of Shock:	25%	50%	100%
Increase in Provision	870	1,741	3,483
Revised Capital Fund	796,017	795,146	793,404
Revised RWE	1,840,062	1,839,191	1,837,449
Revised CAR	43.26 %	43.23%	43.18%
Pre Shock CAR	43.29%	43.29%	42.06%

From the abovementioned table, it is clear that, if the doubtful loans have been deteriorated to loss loans as per the abovementioned said percentage, the maximum CAR will be decreased to 43.18%, which is within limit prescribed by NRB. Hence, it is clear in that said scenarios, company can appetite that prescribed shocks.

Table 10

Sensitivity analysis for degradation of 25 % each of good loan, substandard loans and doubtful loans deteriorated to substandard loans, doubtful loans and loss loans respectively (Amount in thousand)

Magnitude of Shock:	25%	25%	25%
Increase in Provision	70,646	184	870
Revised Capital Fund		725,186	
Revised RWE		1,769,232	
Revised CAR		40.99 %	
Pre Shock CAR		43.29 %	

From the abovementioned table, it is clear that, if the loans have been deteriorated as per the abovementioned said percentage, the CAR will be decreased to 40.99 %, which is within limit prescribed by NRB. Hence, it is clear in that said scenarios, company can appetite that prescribed shocks.

Table 11

Sensitivity analysis for degradation of 50 % each of good loan, substandard loans and doubtful loans deteriorated to substandard loans, doubtful loans and loss loans respectively. (Amount in thousand)

Magnitude of Shock:	50%	50%	50%
Increase in Provision	141,292	368	1,741
Revised Capital Fund		653,485	
Revised RWE		1,697,530	
Revised CAR		38.50 %	
Pre Shock CAR		43.29 %	

From the abovementioned table, it is clear that, if the loans have been deteriorated as per the abovementioned said percentage, the CAR will be decreased to 38.50 %, which is within limit prescribed by NRB. Hence, it is clear in that said scenarios, company can appetite that prescribed shocks.

Table 12

Sensitivity analysis for degradation of 100 % each of good loan, substandard loans and doubtful loans deteriorated to substandard loans, doubtful loans and loss loans respectively (Amount in thousand)

Magnitude of Shock:	100%	100%	100%
Increase in Provision	282,585	737	3,483
Revised Capital Fund		510,082	
Revised RWE		1,554,127	
Revised CAR		32.82%	
Pre Shock CAR		43.29 %	

From the abovementioned table, it is clear that, if the loans have been deteriorated as per the abovementioned said percentage, the CAR will be decreased to 32.82 %, which is within limit prescribed by NRB. Hence, it is clear in that said scenarios, company can appetite that prescribed shocks.

Table 13

Sensitivity analysis for degradation of 25 % each of good loan, substandard loans and doubtful loans deteriorated to substandard loans, doubtful loans and loss loans respectively (Amount in thousand)

Magnitude of Shock:	25%	25%	25%
Increase in Provision	137,618	552	870
Revised Capital Fund		657,845	
Revised RWE		1,701,890	
Revised CAR		38.66 %	
Pre Shock CAR		43.29 %	

From the abovementioned table, it is clear that, if the loans have been deteriorated as per the abovementioned said percentage, the CAR will be decreased to 38.66 %, which is within limit prescribed by NRB. Hence, it is clear in that said scenarios, company can appetite that prescribed shocks.

Table 14

Sensitivity analysis for degradation of 50 % each of good loan, substandard loans and doubtful loans deteriorated to substandard loans, doubtful loans and loss loans respectively (Amount in thousand)

Magnitude of Shock:	50%	50%	50%
Increase in Provision	290,335	1,105	1,741
Revised Capital Fund		503,705	
Revised RWE		1,547,750	
Revised CAR		32.54%	
Pre Shock CAR		43.29 %	

From the abovementioned table, it is clear that, if the loans have been deteriorated as per the abovementioned said percentage, the CAR will be decreased to 32.54 %, which is within limit prescribed by NRB. Hence, it is clear in that said scenarios, company can appetite that prescribed shocks.

Table 15

Sensitivity analysis for degradation of 100 % each of good loan, substandard loans and doubtful loans deteriorated to substandard loans, doubtful loans and loss loans respectively (Amount in thousand)

Magnitude of Shock:	100%	100%	100%
Increase in Provision	58,067	221	348.38
Revised Capital Fund		738,251	
Revised RWE		1,782,297	
Revised CAR		41.42%	
Pre Shock CAR		43.29 %	

From the abovementioned table, it is clear that, if the loans have been deteriorated as per the abovementioned said percentage, the CAR will be decreased to 41.42 %, which is within limit prescribed by NRB. Hence, it is clear in that said scenarios, company can appetite that prescribed shocks.

Table 16

Sensitivity analysis for degradation of 25 % each of good loan, substandard loans and doubtful loans deteriorated to loss loans. (Amount in thousand)

Magnitude of Shock:	25%	25%	25%
Increase in Provision	294,210	552	870
Revised Capital Fund		501,253	
Revised RWE		1,5,45,299	
Revised CAR		32.44 %	
Pre Shock CAR		43.29 %	

From the abovementioned table, it is clear that, if the loans have been deteriorated as per the abovementioned said percentage, the CAR will be decreased to 32.44 %, which is within limit prescribed by NRB. Hence, it is clear in that said scenarios, company can appetite that prescribed shocks.

Table 17

Sensitivity analysis for degradation of 50 % each of good loan, substandard loans and doubtful loans deteriorated to loss loans. (Amount in thousand)

Magnitude of Shock:	50%	50%	50%
Increase in Provision	588,420	1,105	1,741
Revised Capital Fund		205,619	
Revised RWE		1,249,665	
Revised CAR		16.45%	
Pre Shock CAR		43.29 %	

From the abovementioned table, it is clear that, if the loans have been deteriorated as per the abovementioned said percentage, the CAR will be decreased to 16.45 %, which is within limit prescribed by NRB. Hence, it is clear in that said scenarios, company can appetite that prescribed shocks.

Table 18

Sensitivity analysis for degradation of 56 % of good loan, 100 % each of substandard loans and doubtful loans deteriorated to loss loans. (Amount in thousand)

Magnitude of Shock:	56%	100%	100%
Increase in Provision	659,031	2,211	3,483
Revised Capital Fund		132,161	
Revised RWE		1,176,206	
Revised CAR		11.24 %	
Pre Shock CAR		43.29 %	

From the abovementioned table, it is clear that, if the loans have been deteriorated as per the abovementioned said percentage, the CAR will be decreased to 11.24 %, which is within limit prescribed by NRB. Hence, it is clear in that said scenarios, company can appetite that prescribed shocks.

Table 19

Sensitivity analysis for degradation of 57 % of good loan, 100 % each of substandard loans and doubtful loans deteriorated to loss loans. (Amount in thousand)

Magnitude of Shock:	57%	100%	100%
Increase in Provision	670,799	2,211.75	3,483.76
Revised Capital Fund		120,393	
Revised RWE		1,164,438	
Revised CAR		10.34 %	
Pre Shock CAR		43.29 %	

From the abovementioned table, it is clear that, if the loans have been deteriorated as per the abovementioned said percentage, ie in the above portfolio of loan, if 57 % of good loan has been deteriorated into bad loans, then CAR will be decreased to 10.34 %, and if such condition happened then PCA shall be imposed by NRB.

Table 20

Sensitivity analysis for degradation of 25%, 50% and 100% of good loans of deprived sector loan deteriorated to bad loans. (Amount in thousand)

Magnitude of Shock:	25%	50%	100%
Increase in Provision	56,646	113,293	226,587

Revised Capital Fund	740,241	683,594	570,300
Revised RWE	1,784,286	1,727,640	1,614,346
Revised CAR	41.49%	39.57 %	35.33 %
Pre Shock CAR	43.29%	43.29%	43.29%

From the abovementioned table, it is clear that, if good loans of deprived sector have been deteriorated as per the abovementioned said percentage, CAR will be decreased to maximum 35.33 %, which means within limit prescribed by NRB. Hence, it is clear in that said scenarios, company can appetite that prescribed shocks.

Table 21

Sensitivity analysis for degradation of 25%, 50% & 100% of good loans of business loans deteriorated to bad loans. (Amount in thousand)

Magnitude of Shock:	25%	50%	100%
Increase in Provision	32,209	64,419	128,838
Revised Capital Fund	764,678	732,468	668,049
Revised RWE	1,808,724	1,776,514	1,712,095
Revised CAR	42.28 %	41.23 %	39.02 %
Pre Shock CAR	43.29 %	43.29 %	43.29 %

From the abovementioned table, it is clear that, if good loans of business loans have been deteriorated as per the abovementioned said percentage, CAR will be decreased to maximum 39.02 % and as its within limit prescribed by NRB.

Table 22

Sensitivity analysis for degradation of 25%, 50% & 100% of good loans of agriculture loans deteriorated to bad loans. (Amount in thousand)

Magnitude of Shock:	25%	50%	100%
Increase in Provision	21,399	42,798	85,597
Revised Capital Fund	775,488	754,089	711,290
Revised RWE	1,819,534	1,798,134	1,755,336
Revised CAR	42.62 %	41.94 %	40.52%
Pre Shock CAR	43.29%	43.29%	43.29%

From the abovementioned table, it is clear that, if good loans of agriculture loans have been deteriorated as per the abovementioned said percentage, the CAR will be decreased to maximum 40.52 %, which is within limit prescribed by NRB. Hence, it is clear in that said scenarios, company can appetite that prescribed shocks.

Table 23

Sensitivity analysis for degradation of 25%, 50% & 100% of good loans of auto loans deteriorated to bad loans. (Amount in thousand)

Magnitude of Shock:	25%	50%	100%
Increase in Provision	11,160	22,320	44,640
Revised Capital Fund	785,727	774,567	752,247
Revised RWE	1,829,773	1,818,613	1,796,292
Revised CAR	42.94%	42.59 %	41.88%
Pre Shock CAR	43.29%	43.29%	43.29%

From the abovementioned table, it is clear that, if good loans of auto loans have been deteriorated as per the abovementioned said percentage, the CAR will be decreased to maximum 41.88 %, which is within limit prescribed by NRB. Hence, it is clear in that said scenarios, company can appetite that prescribed shocks.

Table 24

Sensitivity analysis for degradation of 25%, 50% & 100% of good loans of personal loans deteriorated to bad loans. (Amount in thousand)

Magnitude of Shock:	25%	50%	100%
Increase in Provision	60,109	120,219	240,439
Revised Capital Fund	736,778	676,668	556,448
Revised RWE	1,780,823	1,720,713	1,600,493
Revised CAR	41.37%	39.32%	34.77%
Pre Shock CAR	43.29%	43.29%	43.29%

From the abovementioned table, it is clear that, if good loans of personal loans have been deteriorated as per the abovementioned said percentage, the CAR will be decreased to maximum 34.77 %, which is within limit prescribed by NRB. Hence, it is clear in that said scenarios, company can appetite that prescribed shocks.

Table 25

Sensitivity analysis for degradation of 25 %, 50 % & 100 % of good loans of home loans to bad loans . (Amount in thousand)

Magnitude of Shock:	25%	50%	100%
Increase in Provision	38,940	77,880	155,760
Revised Capital Fund	757,948	719,007	641,127
Revised RWE	1,801,993	1,763,053	1,685,173
Revised CAR	42.06%	40.78%	38.05%
Pre Shock CAR	43.29%	43.29%	43.29%

From the abovementioned table, it is clear that, if good loans of housing loans have been deteriorated as per the abovementioned said percentage, the CAR will be decreased to maximum 38.05 %, which is within limit prescribed by NRB. Hence, it is clear in that said scenarios, company can appetite that prescribed shocks.

Table 26

Sensitivity analysis for degradation of 25 %, 50 % and 100 % good loan each of deprived sector, business loan, agriculture loan, auto loan, personal loan and home loan downgrades to loss loan . (Amount in thousand)

Magnitude of Shock:	25 %	50 %	100 %
Increase in Provision	220,466	440,932	881,864
Revised Capital Fund	576,421	355,955	(84,976)
Revised RWE	1,620,467	1,400,001	959,068
Revised CAR	35.57%	25.43 %	-8.86%
Pre Shock CAR	43.29%	43.29%	43.29%

From the abovementioned table, it is clear that, if good loans of abovementioned heading loans have been deteriorated as per the abovementioned said percentage, the CAR will be decreased to maximum (8.86 %), and if such condition happened then NRB will impose PCA as per Unified NRB Directive.

Table 27

Sensitivity analysis for degradation of 70 %, 75% and 76% of good loan each of deprived sector, business loan, agriculture loan, auto loan, personal loan and home loan downgrades to loss loan category. (Amount in thousand)

Magnitude of Shock:	70 %	75 %	76%
Increase in Provision	617,305	661,398	670,217
Revised Capital Fund	179,582	135,489	126,670
Revised RWE	1,223,628	1,179,535	1,170,716
Revised CAR	14.68%	11.49 %	10.82 %
Pre Shock CAR	43.29%	43.29%	43.29%

From the abovementioned table, it is clear that, if good loans of abovementioned heading loans have been deteriorated as per the abovementioned said percentage, specially, if it crossed 76 %, then the CAR will be decreased to more than 10.82 % and if such condition happened then NRB will impose PCA as per Unified NRB Directive.

Table 28

Sensitivity analysis for degradation of good loans of top 5, top 10 , top 15 and top 20 borrowers degraded to substandard loans, subject to 100 % provisions already provided provision to remaining loss loans . (Amount in thousand)

Magnitude of Shock:	Top 5	Top 10	Top 15	Top 20
Loan	223,647	340,374	425,320	480,397
Increase in Provision	30,648	51,271	71,403	84,456
Revised Capital Fund	766,240	745,616	725,484	712,431
Revised RWE	1,810,285	1,798,662	1,769,530	1,756,477
Revised CAR	42.33 %	41.66 %	41.00 %	40.56 %
Pre Shock CAR	43.29%	43.29%	43.29%	43.29%

From the abovementioned table, it is clear that, if top loans (concentration of loan) has been deteriorated as per the abovementioned said percentage, the CAR will be decreased to maximum 40.56 %, which is within limit prescribed by NRB. Hence, it is clear in that said scenarios, company can appetite that prescribed shocks.

Table 29

Sensitivity analysis for degradation of good loans categorized under top 5, top 10 , top 15 and top 20 borrowers degraded to doubtful loans, subject to 100 % provisions already provided provision to remaining loss loans. (Amount in thousand)

Magnitude of Shock:	Top 5	Top 10	Top 15	Top 20
Loan	223,647	340,374	425,320	480,397
Increase in Provision	62,977	105,354	146,723	168,675
Revised Capital Fund	733,910	691,533	650,164	628,212
Revised RWE	1,777,956	1,735,578	1,694,210	1,672,257
Revised CAR	41.28 %	39.84 %	38.38 %	37.57 %
Pre Shock CAR	43.29%	43.29%	43.29%	43.29%

From the abovementioned table, it is clear that, if top loans (concentration of loan) has been deteriorated as per the abovementioned said percentage, the CAR will be decreased to maximum 37.57 %, which is within limit prescribed by NRB. Hence, it is clear in that said scenarios, company can appetite that prescribed shocks.

Table 30

Sensitivity analysis for degradation of good loans top 5, top 10, top 15 and top 20 borrowers degraded to doubtful loans, subject to 100 % provisions already provided provision to remaining loss loans. (Amount in thousand)

Magnitude of Shock:	Top 5	Top 10	Top 15	Top 20
Loan	223,647	340,374	425,320	480,397
Increase in Provision	127,635	213,521	297,363	341,854
Revised Capital Fund	669,252	583,366	499,524	455,033
Revised RWE	1,713,297	1,627,411	1,543,570	1,499,079
Revised CAR	39.06 %	35.85%	32.36 %	30.35 %
Pre Shock CAR	43.29%	43.29%	43.29%	43.29%

From the abovementioned table, it is clear that, if top loans (concentration of loan) has been deteriorated as per the abovementioned said percentage, the CAR will be decreased to maximum 30.35 %, which is within limit prescribed by NRB. Hence, it is clear in that said scenarios, company can appetite that prescribed shocks.

4.1.2 Analysis of data related to liquidity risk stress tests

For the liquidity stress test, following parameters has been used:

Table 31

Necessary parameters for calculating interest rate stress test (Amount in thousands)

Details	Amount	% of total deposit
Total liquid assets	1,136,395	
Total deposit	1,614,267	
Top five individual deposit holder	201,949	12.51 %
Top ten individual deposit holder	276,885	17.15 %
Top fifteen individual deposit holder	333,112	20.64 %
Top twenty individual deposit holder	381,778	23.65 %
Top five institutional deposit holder	220,272	13.65 %
Top ten institutional deposit holder	281,339	17.43 %
Top fifteen institutional deposit holder	310,577	19.24 %
Top twenty institutional deposit holder	332,602	20.60 %
Top five deposit holder (both individual and institutional)	306,057	18.96 %
Top ten deposit holder (both individual and institutional)	422,222	26.16 %
Top fifteen deposit holder (both individual and institutional)	503,700	31.20 %
Top twenty deposit holder (both individual and institutional)	562,190	34.83 %

Note : Total liquid assets includes cash, bank balance and investment in the government bonds and/or treasury bills which includes 26,281 thousand, 730,114 thousand and 380,000 thousand respectively.

By using the above-mentioned parameters, various below mentioned scenarios has been used for the liquidity stress test, which are as follows:

Table 32

Sensitivity analysis for withdrawal of deposits by 10%, 15%, 20% (amount in thousand)

Magnitude of Shock: Deposit withdrawn by	10%	15%	20%
Decreased Deposit	161,426	242,140	322,853

Revised Deposits	1,452,840	1,372,127	1,291,413
Revised Net Liquid Assets	974,968	894,255	813,542
Revised Liquidity Ratio	67.11%	65.17 %	63.00 %
Pre Shock Liquidity Ratio	70.40 %	70.40 %	70.40 %

From the abovementioned table, it is clear that, deposit has been decreased by abovementioned percentage, the liquidity portion percentage will be decreased to maximum 63.00 %, which is within limit prescribed by NRB. Hence, it is clear in that said scenarios, company can appetite that prescribed shocks.

Table 33

Sensitivity analysis for withdrawal by top 10, top 15 and top 20 of individual deposit holders (Amount in thousand)

Magnitude of Shock: Deposit withdrawn by	Top 10	Top 15	Top 20
Decreased Deposit	276,885	333,112	381,778
Revised Deposits	1,337,381	1,281,154	1,232,488
Revised Net Liquid Assets	859,510	803,282	754,617
Revised Liquidity Ratio	64.27 %	62.70 %	61.23 %
Pre Shock Liquidity Ratio	70.40 %	70.40 %	70.40 %

From the abovementioned table, it is clear that, deposit has been decreased by abovementioned percentage, the liquidity portion percentage will be decreased to maximum 61.23 %, which is within limit prescribed by NRB. Hence, it is clear in that said scenarios, company can appetite that prescribed shocks

Table 34

Sensitivity analysis for withdrawal by top 10, top 15 and top 20 of institutional deposit holders (Amount in thousand)

Magnitude of Shock: Deposit withdraw by	Top 10	Top 15	Top 20
Decreased Deposit	281,339	310,577	332,602
Revised Deposits	1,332,928	1,303,689	1,281,664
Revised Net Liquid Assets	855,056	825,817	803,793

Revised Liquidity Ratio	64.15 %	63.34 %	62.71 %
Pre Shock Liquidity Ratio	70.40 %	70.40 %	70.40 %

From the abovementioned table, it is clear that, deposit has been decreased by abovementioned percentage, the liquidity portion percentage will be decreased to maximum 62.71 %, which is within limit prescribed by NRB. Hence, it is clear in that said scenarios, company can appetite that prescribed shocks.

Table 35

Sensitivity analysis for withdrawal by top 10, top 15 and top 20 of both institutional and personal deposit holders (Amount in thousand)

Magnitude of Shock: Deposit withdraw by	Top 10	Top 15	Top 20
Decreased Deposit	422,222	503,700	562,190
Revised Deposits	1,192,044	1,110,566	1,052,076
Revised Net Liquid Assets	714,172	632,694	574,205
Revised Liquidity Ratio	59.91%	56.97%	54.48%
Pre Shock Liquidity Ratio	70.40 %	70.40 %	70.40 %

From the abovementioned table, it is clear that, deposit has been decreased by abovementioned percentage, the liquidity portion percentage will be decreased to maximum 54.48 %, which is within limit prescribed by NRB. Hence, it is clear in that said scenarios, company can appetite that prescribed shocks

Table 36

Sensitivity analysis for withdrawal by 2%, 5%, 10%, 20% and 30 % for five consecutive days respectively (Amount in thousand)

Magnitude of Shock:	Day 1	Day 2	Day 3	Day 4	Day 5
Deposit withdrawal by	2%	5%	10%	20%	30%
Decreased Deposit	32,285	79,099	150,288	270,518	324,622
Revised Deposit	1,581,981	1,502,882	1,352,594	1,082,075	757,452
Revised Net Liquid Assets	1,104,110	1,025,011	874,722	604,204	279,581
Revised Liquidity ratio	69.79 %	68.20 %	64.67 %	55.84%	36.91%

Pre shock liquidity ratio	70.40 %	70.40 %	70.40 %	70.40 %	70.40 %

From the abovementioned table, it is clear that, deposit has been decreased by abovementioned percentage for five consecutive days, the liquidity portion percentage will be decreased to maximum 36.91 %, which is within limit prescribed by NRB. Hence, it is clear in that said scenarios, company can appetite that prescribed shocks

Table 37

Sensitivity analysis for withdrawal of deposits by 5%, 10%, 15%, 20% and 30 % for five consecutive days respectively (Amount in thousand)

Magnitude of Shock:	Day 1	Day 2	Day 3	Day 4	Day 5
Deposit withdrawal by	5%	10%	15%	20%	30%
Decreased deposit	80,713	153,355	207,029	234,633	281,560
Revised deposit	1,533,553	1,380,198	1,173,168	938,534	656,974
Revised net liquid assets	1,055,682	902,326	695,297	460,663	179,102
Revised liquidity ratio	68.84 %	59.27 %	59.27 %	49.08 %	27.26 %
Pre shock liquidity ratio	70.40 %	70.40 %	70.40 %	70.40 %	70.40 %

From the abovementioned table, it is clear that, deposit has been decreased by abovementioned percentage for five consecutive days, the liquidity portion percentage will be decreased to maximum 27.26 %, which is within limit prescribed by NRB. Hence, it is clear in that said scenarios, company can appetite that prescribed shocks

4.1.3 Analysis of data related to market risk stress test

For the market stress test, following parameters are used:

Table 38

Necessary parameters for calculating interest rate stress test (Amount in thousands)

Total Deposit	1,614,267
Total saving deposit	343,787
Total fixed deposit	948,002
Total call deposit	287,368
Total current deposit	35,108

Total deposit excluding fixed and current	631,156
Total loan	1,413,430
Total term loan	939,606
Total loan excluding term loan	473,824

Table 39

Sensitivity analysis for an increase in deposit interest rate by 100, 150 or 200 basis points. (Amount in thousand)

Magnitude of shock: Deposit interest increased by	100 basis point	150 basis point	200 basis point
Impact(-) in profit	525	788	1,051
Revised capital fund	796,362	796,099	795,836
RWE	1,840,933	1,840,933	1,840,933
Revised CAR	43.26 %	42.24 %	43.23 %
Pre Shock CAR	43.29%	43.29%	43.29%

From the abovementioned table, it is clear that, deposit interest rate has been increased by 100, 150 or 200 basis points, the CAR will be decreased to maximum 43.23%, which is within limit prescribed by NRB. Hence, it is clear in that said scenarios, company can appetite that prescribed shocks.

Table 40

Sensitivity analysis for decrease in deposit interest rate by 100, 150 or 200 basis point. (Amount in thousand)

`Magnitude of Shock: Deposit Interest Increased by	100 Basis point	150 Basis Point	200 Basis point
Impact(-) in Profit	525	788	1,051
Revised capital Fund	797,414	797,677	797,940
RWE	1,840,933	1,840,933	1,840,933
Revised CAR	43.32 %	43.33 %	43.34 %
Pre Shock CAR	43.29%	43.29%	43.29%

From the abovementioned table, it is clear that, deposit interest rate has been decreased by 100, 150 or 200 basis points, the CAR will be increased to maximum 43.34%, which is within limit prescribed by NRB. Hence, it is clear in that said scenarios, company can appetite that prescribed shocks. Ie if the interest rate on deposit has been decreased, CAR will be increased.

Table 41

Sensitivity analysis for decrease in loan interest rate by 100, 150 or 200 basis point (Amount in thousand)

Magnitude of Shock: Loan Interest decreased by	100 Basis point	150 Basis point	200 Basis point
Impact(-) in Profit	394	592	789
Revised Capital Fund	796,493	796,295	796,098
RWE	1,840,933	1,840,933	1,840,933
Revised CAR	43.27 %	43.26%	43.34 %
Pre Shock CAR	43.29%	43.29%	43.29%

From the abovementioned table, it is clear that, loan interest rate has been decreased by 100, 150 or 200 basis points, the CAR will be increased to maximum 43.34 %, which is within limit prescribed by NRB. Hence, it is clear in that said scenarios, company can appetite that prescribed shocks. Ie if the interest rate on loan has been decreased, CAR will be increased.

Table 42

Sensitivity analysis for an increase in loan interest rate by 100, 150 or 200 basis point (Amount in thousand)

Magnitude of Shock: Loan Interest decreased by	100 basis point	150 basis Point	200 basis point
Impact(-) in Profit	394	592	789
Revised Capital Fund	795,883	802,596	802,596
RWE	1,874,627	1,874,627	1,874,627
Revised CAR	42.46 %	42.81 %	42.39 %
Pre Shock CAR	43.29%	43.29%	43.29%

From the abovementioned table, it is clear that, loan interest rate has been decreased by 100, 150 or 200 basis points, the CAR will be decreased to maximum 42.39%, which is within limit prescribed by NRB. Hence, it is clear in that said scenarios, company can appetite that prescribed shocks. Ie if the interest rate on loan has been decreased, CAR will be increased.

There is no exchange rate risk in the financial institutions as financial institutions are not eligible to do transaction related to the foreign currencies.

4.2 Analysis of data considering the mean data for twenty-seven quarters

Similarly, stress test has also been conducted taking the mean data after collection on for twenty-seven quarters ie from September 18, 2015 to July 16, 2022.

Table 43

Necessary parameters for stress testing taking mean data (Amount in Rs. '000)

Particulars	Mean Data
Total Loan	421,241.13
Good Loan	267,639.77
Watch List Loan	7,868.30
Performing Loan	275,508.10
Restructure/Reschedule Loan	-
Substandard Loan	3,410.10
Doubtful Loan	2,496.77
Bad Loan	139,826.16
Total NPL	145,733.03
NPL in Percentage	34.60 %
Total Deposit	434,628.69
Fixed Deposit	199,936.20
Saving Deposit	151,288.96
Current Deposit	16,144.43
Call Deposit	67,259.10
Capital Fund	235,105.39
Total Risk Weighted Exposure	613,449.56
Capital Adequacy Ratio (CAR in %)	38.33%
(Calculation of NRB format of BASEL - II)	

4.2.1 Analysis of data related to credit risk stress tests

Similarly, various scenarios have been assumed for the credit risk stress test, as it has done previously above and its details are as follows:

Table 44

Sensitivity analysis for degradation of 25%, 50% and 100% of good loans deteriorated to substandard loan. (Amount in thousand)

Magnitude of Shock:	25%	50%	100%
Increase in Provision	15,857	231,715	63,430
Revised Capital Fund	219,247	203,390	171,674
Revised RWE	597,591	581,734	550,018
Revised CAR	36.69 %	34.96%	31.21 %
Pre Shock CAR	38.33 %	38.33 %	38.33 %

From the abovementioned table, it is clear that, if the loans has been deteriorated as per the abovementioned said percentage, the CAR will be decreased to maximum 31.21 %, which is within limit prescribed by NRB. Hence, it is clear in that said scenarios, company can appetite that prescribed shocks.

Table 45

Sensitivity analysis for degradation of 25%, 50% & 100% of good loans deteriorated to doubtful loans. (Amount in thousand)

Magnitude of Shock:	25%	50%	100%
Increase in Provision	32,585	65,170	130,340
Revised Capital Fund	202,520	169,935	104,764
Revised RWE	580,864	548,279	483,108
Revised CAR	34.87 %	30.99 %	21.69 %
Pre Shock CAR	38.33 %	38.33 %	38.33 %

From the abovementioned table, it is clear that, if the loans has been deteriorated as per the abovementioned said percentage, the CAR will be decreased to maximum 21.69 %, which is within limit prescribed by NRB. Hence, it is clear in that said scenarios, company can appetite that prescribed shocks.

Table 46

Sensitivity analysis for degradation of 25%, 50% and 100% of good loans deteriorated to loss loans (Amount in thousand)

Magnitude of Shock:	25%	50%	100%
Increase in Provision	66,040	132,080	264,160
Revised Capital Fund	169,065	103,025	(29,055)
Revised RWE	547,409	481,369	349,289
Revised CAR	30.88 %	21.40 %	-8.32 %
Pre Shock CAR	38.33 %	38.33 %	38.33 %

From the abovementioned table, it is clear that, if the loans have been deteriorated as per the abovementioned said percentage, the CAR will be decreased to maximum -8.32 %, which is not favorable condition to the company.

Table 47

Sensitivity analysis for degradation of 70%, 71% and 72% of good loans deteriorated to loss loans. (Amount in thousand)

Magnitude of Shock:	70 %	71 %	72 %
Increase in Provision	184,912	187,553	190,195
Revised Capital Fund	50,193	47,551	44,909
Revised RWE	428,537	425,895	423,254
Revised CAR	11.71%	11.17 %	10.61 %
Pre Shock CAR	38.33 %	38.33 %	38.33 %

From the abovementioned table, it is clear that, if the loans have been deteriorated as per the abovementioned 72 %, CAR will be decreased to maximum 10.61 %, which is not favorable condition to the company ie more than 71 % of good loans of the company should not deteriorated to loss loans.

Table 48

Sensitivity analysis for degradation of 25%, 50% and 100% of sub-standard loans deteriorated to doubtful loans. (Amount in thousand)

Magnitude of Shock:	25%	50%	100%
Increase in Provision	213	426	852
Revised Capital Fund	234,892	234,679	234,252
Revised RWE	613,236	613,023	612,597
Revised CAR	38.30 %	38.28%	38.24 %
Pre Shock CAR	38.33 %	38.33 %	38.33 %

From the abovementioned table, it is clear that, if the loans have been deteriorated as per the abovementioned said percentage, the CAR will be decreased to maximum 38.24 %, which is within limit prescribed by NRB. Hence, it is clear in that said scenarios, company can appetite that prescribed shocks.

Table 49

Sensitivity analysis for degradation of 25%, 50% & 100% of substandard loans deteriorated to loss loans. (Amount in thousand)

Magnitude of Shock:	25%	50%	100%
Increase in Provision	639	1,278	2,557
Revised Capital Fund	234,466	233,826	232,547
Revised RWE	612,810	612,170	610,891
Revised CAR	38.26 %	38.20 %	38.07%
Pre Shock CAR	38.33 %	38.33 %	38.33 %

From the abovementioned table, it is clear that, if the loans have been deteriorated as per the abovementioned said percentage, the CAR will be decreased to maximum 38.07%, which is within limit prescribed by NRB. Hence, it is clear in that said scenarios, company can appetite that prescribed shocks.

Table 50

Sensitivity analysis for degradation of 25%, 50% and 100% of doubtful loans deteriorated to loss loans. (Amount in thousand)

Magnitude of Shock:	25%	50%	100%
Increase in Provision	312	624	1,248
Revised Capital Fund	234,793	234,481	233,857
Revised RWE	613,137	612,825	612,201
Revised CAR	38.29 %	38.26%	38.20 %
Pre Shock CAR	38.33 %	38.33 %	38.33 %

From the abovementioned table, it is clear that, if the loans have been deteriorated as per the abovementioned said percentage, the CAR will be decreased to maximum 38.20 %, which is within limit prescribed by NRB. Hence, it is clear in that said scenarios, company can appetite that prescribed shocks.

Table 51

Sensitivity analysis for degradation of 25 % of each of good loan, substandard loans and doubtful loans deteriorated to substandard loans, doubtful loans and loss loans respectively. (Amount in thousand)

Magnitude of Shock:	25%	25%	25%
Increase in Provision	15,857	213	312
Revised Capital Fund		218,722	
Revised RWE		597,066	
Revised CAR		36.63 %	
Pre Shock CAR		38.33%	

From the abovementioned table, it is clear that, if the loans has been deteriorated as per the abovementioned said percentage, the CAR will be decreased to maximum 36.63 %, which is within limit prescribed by NRB. Hence, it is clear in that said scenarios, company can appetite that prescribed shocks.

Table 52

Sensitivity analysis for degradation of 50 % each of good loan, substandard loans and doubtful loans deteriorated to substandard loans, doubtful loans and loss loans respectively. (Amount in thousand)

Magnitude of Shock:	50%	50%	50%
Increase in Provision	31,715	426	624
Revised Capital Fund		202,339	
Revised RWE		580,683	
Revised CAR		34.85 %	
Pre Shock CAR		38.33 %	

From the abovementioned table, it is clear that, if the loans has been deteriorated as per the abovementioned said percentage, the CAR will be decreased to maximum 34.85 %, which is within limit prescribed by NRB. Hence, it is clear in that said scenarios, company can appetite that prescribed shocks.

Table 53

Sensitivity analysis for degradation of 100 % each of good loan, substandard loans and doubtful loans deteriorated to substandard loans, doubtful loans and loss loans respectively. (Amount in thousand)

Magnitude of Shock:	100%	100%	100%
Increase in Provision	63,430	852	1,248
Revised Capital Fund		169,573	
Revised RWE		547,918	
Revised CAR		30.95 %	
Pre Shock CAR		38.33 %	

From the abovementioned table, it is clear that, if the loans have been deteriorated as per the abovementioned said percentage, the CAR will be decreased to maximum 30.95 %, which is within limit prescribed by NRB. Hence, it is clear in that said scenarios, company can appetite that prescribed shocks.

Table 54

Sensitivity analysis for degradation of 25 % each of good loans , substandard loans and doubtful loans deteriorated to substandard loans, loss loans and loss loans respectively. (Amount in thousand)

Magnitude of Shock:	25%	25%	25%
Increase in Provision	32,585	639	312
Revised Capital Fund		201,568	
Revised RWE		579,912	
Revised CAR		34.76 %	
Pre Shock CAR		38.33 %	

From the abovementioned table, it is clear that, if the loans have been deteriorated as per the abovementioned said percentage, the CAR will be decreased to maximum 34.76 %, which is within limit prescribed by NRB. Hence, it is clear in that said scenarios, company can appetite that prescribed shocks.

Table 55

Sensitivity analysis for degradation of 50 % each of good loan , substandard loans and doubtful loans deteriorated doubtful, loss and loss loans respectively. (Amount in thousand)

Magnitude of Shock:	50%	50%	50%
Increase in Provision	65,170	1,278	624
Revised Capital Fund		168,032	
Revised RWE		546,376	
Revised CAR		30.75 %	
Pre Shock CAR		38.33 %	

From the abovementioned table, it is clear that, if the loans has been deteriorated as per the abovementioned said percentage, the CAR will be decreased to maximum 30.75 %, which is within limit prescribed by NRB. Hence, it is clear in that said scenarios, company can appetite that prescribed shocks.

Table 56

Sensitivity analysis for degradation of 100 % of good loans, substandard loans and doubtful loans deteriorated to substandard loans, doubtful loans and loss loans respectively. (Amount in thousand)

Magnitude of Shock:	100%	100%	100%
Increase in Provision	13,034	255	124
Revised Capital Fund		221,690	
Revised RWE		600,034	
Revised CAR		36.95 %	
Pre Shock CAR		38.33 %	

From the abovementioned table, it is clear that, if the loans have been deteriorated as per the abovementioned said percentage, the CAR will be decreased to maximum 36.95 %, which is within limit prescribed by NRB. Hence, it is clear in that said scenarios, company can appetite that prescribed shocks.

Table 57

Sensitivity analysis for degradation of 25 % each of good loan , substandard loans and doubtful loans deteriorated to loss loans. (Amount in thousand)

Magnitude of Shock:	25%	25%	25%
Increase in Provision	66,040	639	312
Revised Capital Fund		168,113	
Revised RWE		546,457	
Revised CAR		30.76 %	
Pre Shock CAR		38.33 %	

From the above mentioned table, it is clear that, if the loans has been deteriorated as per the abovementioned said percentage, the CAR will be decreased to maximum 30.76%, which is within limit prescribed by NRB. Hence, it is clear in that said scenarios, company can appetite that prescribed shocks.

Table 58

Sensitivity analysis for degradation of 50 % each of good loans, substandard loans and doubtful loans deteriorated to loss loans. (Amount in thousand)

Magnitude of Shock:	50%	50%	50%
Increase in Provision	132,080	1,278	624
Revised Capital Fund		101,122	
Revised RWE		479,466	
Revised CAR		21.09 %	
Pre Shock CAR		38.33 %	

From the abovementioned table, it is clear that, if the loans have been deteriorated as per the abovementioned said percentage, the CAR will be decreased to maximum 21.09 %, which is within limit prescribed by NRB. Hence, it is clear in that said scenarios, company can appetite that prescribed shocks.

Table 59

Sensitivity analysis for degradation of 100 % each of good loan, substandard loans and doubtful loans deteriorated to loss loans. (Amount in thousand)

Magnitude of Shock:	100%	100%	100%
Increase in Provision	264,160	2,557	624
Revised Capital Fund		(32,236)	
Revised RWE		346,107	
Revised CAR		-9.31 %	
Pre Shock CAR		38.33 %	

From the abovementioned table, it is clear that, if the loans has been deteriorated as per the abovementioned said percentage, the CAR will be decreased to maximum -9.31 %, which is within limit prescribed by NRB. Hence, it is clear in that said scenario, company can't appetite that prescribed shocks.

Table 60

Sensitivity analysis for degradation of 70 % of good loan loans, 100 % each of substandard and doubtful loans deteriorated to loss loans. (Amount in thousand)

Magnitude of Shock:	70%	100%	100%
Increase in Provision	184,912	2,557	624
Revised Capital Fund		47,011	
Revised RWE		425,355	
Revised CAR		11.05 %	
Pre Shock CAR		38.33 %	

From the abovementioned table, it is clear that, if the loans has been deteriorated as per the abovementioned said percentage, the CAR will be decreased to maximum 11.05 %, which if happened company can't appetite that prescribed shocks.

Table 61

Sensitivity analysis for degradation of 71 % of good loan, 100 % each of substandard loans doubtful loans deteriorated to loss loans. (Amount in thousand)

Magnitude of Shock:	71%	100%	100%
Increase in Provision	187,553	2,557	624
Revised Capital Fund		44,369	
Revised RWE		422,713	
Revised CAR		10.50 %	
Pre Shock CAR		38.33 %	

From the abovementioned table, it is clear that, if the loans has been deteriorated as per the abovementioned said percentage, the CAR will be decreased to maximum 10.50 %, ie company can appetite the risk upto 70 % good loans deteriorated to bad loans and all other types of loans deteriorated to bad loans.

Table 62

Sensitivity analysis for degradation of 75 % each of good loan, substandard loans and doubtful loans deteriorated to loss loans. (Amount in thousand)

Magnitude of Shock:	75%	75%	75%
Increase in Provision	198,120	1,918	936
Revised Capital Fund		34,130	
Revised RWE		412,474	
Revised CAR		8.27%	
Pre Shock CAR		38.33 %	

From the above mentioned table, it is clear that, if the loans have been deteriorated as per the abovementioned said percentage, the CAR will be decreased to maximum 8.27 %, which if happened will attract prompt corrective action as per Unified NRB Directive, 2078.

Table 63

Sensitivity analysis for degradation of 69 % of good loan and 75 % each of substandard loans and doubtful loans deteriorated to loss loans. (Amount in thousand)

Magnitude of Shock:	69 %	75%	75%
Increase in Provision	182,270	1,918	936
Revised Capital Fund		49,980	
Revised RWE		428,324	
Revised CAR		11.67 %	
Pre Shock CAR		38.33 %	

From the abovementioned table, it is clear that, if the loans have been deteriorated as per the abovementioned said percentage, CAR will be decreased to maximum 11.67 %.

Table 64

Sensitivity analysis for degradation of 70 % of good loan and 75 % each of substandard loans and doubtful loans deteriorated to loss loans. (Amount in thousand)

Magnitude of Shock:	70 %	75%	75%

Increase in Provision	184,912	1,918	936
Revised Capital Fund		47,338	
Revised RWE		425,628	
Revised CAR		11.12 %	
Pre Shock CAR		38.33 %	

From the abovementioned table, it is clear that, if the loans have been deteriorated as per the abovementioned said percentage, CAR will be decreased to maximum 11.12 %, which is within prescribed limit as stated in directive no 1 of Unified NRB Directive, 2078.

4.3 Discussion

In the above mentioned tabulation, stress test related to credit risk, liquidity risk, market risk has been carried out with assuming various scenarios. Except in few cases of credit risk, there is no risk at all in the liquidity risk and market risk. The few cases of credit risk which has been categorized under worst case scenarios based on the CAR (11 %) which is below the minimum standard as stated in directive no 1 of unified NRB Directive, 2078 for finance companies. From the above major findings, it has been obvious that except in some cases, certain worst-case scenarios have also been determined on which NFL must be alert and certain precaution must be taken in Regarding the strategic implication, PCA will be attracted and concerned institution will be penalized if CAR has been declined as stated in by NRB. The BOD and higher management team must be aware about such situations and for preventing not to happening such situation, the respective authority must take some strategic decision and implement in strictly accordingly. The details of worst case scenarios have been separately tabulated in the following next chapter as well.

According to Prompt Corrective Action Bylaw (2017), issued by NRB, four level of restrictions has been categorized based on the declining of the CAR ie considering the minimum CAR (Prompt Corrective Active Regulation, 2074) ie if CAR has been decreased (a) upto 25 %, (b) more than 25 % to upto 50 %, (c) more than 50 % to upto 75 % and (d) more than 75 %. As the CAR decreased by higher ratio, accordingly harsh actions shall be taken by NRB which includes declaration the company as problematic and even to starting liquidation process as well.

For eg, The four level of restrictions are as follows ie in the first level, if CAR has been decreased upto 25 % of the minimum ratio stated, following prohibition will be imposed to the respective financial institution such as (a) Discussion on the strategic planning for resolving such issues with higher management team (b) Requesting recapitalization planning (c) Prohibition to open new branches (d) Prohibition on declaration of the cash dividends and bonus shares (e) Prohibition on increment of the staff facilities of CEO, higher management team and allowance of BODs.

In addition, in the second level, if CAR has been decreased above 25 % to 50 % of the minimum ratio stated, following prohibitions including above-mentioned prohibitions stated in first level following prohibition will be imposed such as (a) Restriction on the mobilization of deposit and loans to certain limit, (b) Restriction on new business ventures, (c) Prior approval to be taken from NRB to purchase or leasing the fixed assets, (e) Prohibition on providing incentives to staffs (f) prohibition on increment on the facilities to the resigned staffs

Similarly, in the third level, if CAR has been decreased more than 50 % to 75 %, including above-mentioned prohibitions stated in second level following prohibition will be imposed such as (a) Prohibition in opening new deposit account and to disburse new loans (b) prohibition on increment on staff facilities (c) Prohibition on appointment of new staffs without permission of NRB (d) Actions shall be taken to BODs and CEO as per section 100 of NRB Act, if CAR is still below the minimum specified by NRB even after implementation of PCA has been crossed six months.

Similarly, if CAR has been decreased more than 75 %, including above-mentioned prohibitions stated in third level following prohibition will be imposed such as (a) declaring the company as problematic and further actions shall be taken as per section 86 of NRB Act, (b) If CAR not done even after crossing six month of declaring the company as problematic, process of merger and acquisition to be started or to start liquidation process (c) Another actions taken as per BAFIA, 2073.

Hence, as stress testing is the forward looking approach and no BODs, higher management and various stakeholders want the institution to attract PCA and hence, various strategic decisions has to be adapted and make them implement accordingly.

CHAPTER V
SUMMARY AND CONCLUSION

5.1 Summary

This chapter focuses on the major findings of the research and also provides major strengths and weakness of NFL. The details of the major findings are presented as follows:

5.1.1 Major findings from the analysis of data related to credit risk

Based on the analysis of the data it has been clear that, except in some extreme scenario mentioned below, in most of the cases, the company can appetite the risk and the detail analysis of credit risk which if happened, NRB can penalize the company by implementing prompt corrective action ie such conditions leads the capital adequacy ratio of the company below 11%. In another words, the worst-case scenario for credit stress test and those conditions are as follows:

Table 65

Major findings (CAR below prescribed limit) considering the data as of July 16, 2022

Scenarios	Capital Adequacy
If 100% of good loans deteriorated to loss loans	-57.21 %
If 57 % of good loans deteriorated to loss loans	10.78 %
If 57 % of good loan, 100 % each of substandard loans and doubtful loans deteriorated to loss loans	10.34 %
If 100 % good loan each of Deprived Sector, Business Loan, Agriculture Loan, Auto Loan, Personal Loan and Home Loan downgrades to Loss loan	-8.86 %
If 76% of good loan each of Deprived Sector, Business Loan, Agriculture Loan, Auto Loan, Personal Loan and Home Loan downgrades to Loss loan category	10.82 %

Table 66

Major Findings (CAR below prescribed limit) considering the merged average data of 27 quarters

Scenario	Capital Adequacy
If 100 % of good loans deteriorated to loss loans	-8.32 %
If 72 % of good loans deteriorated to loss loans	10.61%
If 100 % each of good loan, substandard loans and doubtful loans deteriorated to loss loans	-9.31 %
If 71 % of good loan, 100 % each of substandard loans doubtful loans deteriorated to loss loans	10.50 %
If 75 % each of good loan, substandard loans and doubtful loans deteriorated to loss loans	8.27 %

As stress testing is also the forward-looking approach, various strategic decisions have also to be taken depending on the numerous scenarios. In the previous chapter, we've calculated various scenarios where companies can appetite the risk except in the abovementioned cases. Thus, the higher level management and the Board of Director need to take the appropriate strategic decisions and those strategic decisions are as follows:

5.2 Conclusion

From the above study it can be concluded that, except in some cases of major level shocks (scenario 3) stated in the credit risk, NFL can appetite almost all the stress considered under the scenario 1 (minor level shocks) and scenario 2 (moderate level of shocks). In addition, NFL can appetite the almost all the risk on various abovementioned scenarios stated in the liquidity stress test and market stress test. Thus, for managing some worst-case scenarios under credit stress test as calculated above, management must take the appropriate strategic decisions, as stated above for its prevention of worst-case scenario. If such worst-case scenario happened as calculated above, PCA shall be imposed as per Unified NRB Directive, 2078 and if PCA imposed, financial institution shall be prevented to do various activates and if CAR became extreme negative, financial institution can be declared problematic as well and ultimately institution may be sent to liquidation as well.

5.3 Strategic implication

From the above major findings, it has been obvious that except in some cases stated above, certain worst-case scenarios have also been determined on which NFL must be alert and certain precaution must be taken in advance so as PCA won't be attracted as its penalty. The BOD and higher management team must be aware about such situations and in order to not face such situation, the respective authority must take some strategic decision and implement in strictly accordingly. Some of the strategic management to be adapted on such worst-case scenario are state below:

5.3.1 Strategic management to be adapted on the major findings from the analysis of data related to credit risk

The main intention of the management of the financial institution is to do the business smoothly with one step ahead thinking and for this purpose stress testing is one of the methodology for thinking one step ahead. Hence, through implementation of the stress testing techniques, various worst-case scenario has been observed based on data of mid July 2022 and the merged data as well. Considering forward thinking approach, management must be aware on such worst-case scenario and based on above mentioned worst case scenario, management must take the following strategic decisions for the prevention of not to be happening of the worst case scenarios, which are as follows:

5.3.1.1 Considering the data as of July 16, 2022

Case no 1: If percentage of good loans deteriorated into loss loan

In this case, if 100 % of good loans deteriorated into loss loans, then the company's CAR will become -57.21 % which is less than 11 % as specified under Directive no 1 of Unified NRB Directive, 2078 and attracts the fourth level of the prohibitions as per 3 (gha) of PCA regulation, 2074 as well and if such condition exists NRB might declare the company as problematic. If there is no any progress on CAR as well afterwards, the company can be sent into liquidation. In the initial phase of this stage, existing BOD will be replaced by NRB's management team and do the necessary action to revive it. With proper coordination, there must be proper implementation of the various strategic decision related to decrement of the defaulters as decided by NRB management team, as even NRB team also does not want to dissolve the company. No doubt, it is the rare situation and this case won't happen all of sudden moment ie it takes time to happen such situation and hence BOD and senior management must be alert from time to time. Such worst case scenario continues if such good loans have been deteriorated to loss loans up to 57 %, CAR will be 10.78 % which is still not tolerable to the company and if happened still first level of prohibition stated in PCA will be attracted. As per unified NRB directive, each and every financial institution needs to maintain upto 5 % of NPL and if it increased credit risk shall be increased which is the alarming situation for the organization and gradual adequate actions must be taken for decrement of NPL.

Hence, in order to prevent from such risk, BOD and management of the company must be alert that those good loans must not deteriorated to loss loan crossing 56 % as no any promotor wants to dissolve the company and in order to prevent from such scenario, there must be frequent communication between BOD and management team and each and every decision must be strategically reviewed by BOD and management team ie which innovative strategies needs to introduced and/or existing strategies needs to be modified or fully changed so that progress shall be materialized. In addition, management information system including the internal control mechanism must be strong enough so that prompt decisions can be taken in a short moment. Similarly, adequate new policies, including credit polices related to recovery such as full rebate in the penal, certain rebate in the interest amount, must also be passed through board meeting so that subsequent amount of loans can be settled, which helps to decrease NPL and increased in CAR. Side by side, along with focusing in all department, the legal and recovery department must be mobilized efficiently and effectively with addition manpower so that NPL will be decreased in the earliest possible time. In the recovery department as well, the defaulters must be categorized in various categories such as willful defaulters, non-willful defaulters, chronic defaulters, fresh defaulters etc so that recovery department shall also prepare necessary strategies accordingly and implement so that such loss loans shall be recovered and again categorized under good loan heading. Side by side, this condition shall also create various types of problems including liquidity risk thus management team must depute such type of staffs who've ability to control the emotions and having effective numerous skills, including communication skill, negotiation skill etc so that all types of clients can be handled effectively.

Case no 2: Portfolio of various percentage of good loan, substandard loans and doubtful loans

Similarly, in this case, if in the combination, 57 % of good loan deteriorated to bad loans followed by 100 % of substandard loans deteriorated to bad loans and100 % of doubtful loans deteriorated to loss loans, then in this scenario, the company's CAR will become 10.32 % i.e., less than 11 % as specified under Directive no 1 of Unified NRB Directive, 2078. No doubt, it also attracts PCA, but only first level of PCA as per 3(ka) of PCA regulation, 2074 as CAR has been decreased upto 25 %. This condition may occur in the financial institution. Hence, in order to prevent from such scenario, BOD must instruct senior management team for mobilization of the legal and recovery team to recover various loans specified under good loan heading up to 56 % subject to 100 % provision provided to other said loan headings through effective mobilization of the legal and recovery department. In addition, another alternative of prevention is, though good loans are more than 57 % if some percentage of loans classified under substandard and doubtful loans must also be recovered as well.

Case no 3: Portfolio of various percentage of good loans of various sectors deteriorated into loss loans

In this case, if 100 % of good loan each on deprived sector, business loan, agriculture loan, auto loan, personal loan and home loan downgrades to loss loan category, in such scenario, the capital adequacy will be decreased to -8.86 %, and in this case, the company's CAR will also become less than 11 % as specified under Directive no 1 of Unified NRB Directive, 2078 NRB will impose fourth level of prohibition of PCA as per 3 (gha) of PCA regulation, 2074. This situation is also the rare condition as well and in order to save it from PCA, less than 75 % of such portfolio must be maintained ie even maintain of such portfolio of 76 % leads to capital adequacy of 10.82 % and BOD must instruct senior management team for mobilization of the legal and recovery team to recover various loans. Hence, in order to prevent from such scenario, the management and BOD must take the implement the adequate strategies as stated in case no 1 to recover various loans specified under these headings

5.3.1.2 Considering the merged data

Case no 1: If percentage of good loans deteriorated into loss loan

In this case, if 100% of good loan deteriorated into loss loans category, then the company's CAR will be -8.32 % i.e., less than 11 % as specified under Directive no 1 of Unified NRB Directive, 2078 and even if good loans have been deteriorated to loss loans up to 72 % also CAR will be low i.e. be 10.61 % and such risk can't be tolerable and in order to prevent from such risk, management must be alert that those good loans must not deteriorated to loss loan crossing 71 %. Hence, in order to prevent from such scenario, the management and BOD must take the implement the adequate strategies to recover various loans specified under these headings.

Case no 2 : Portfolio of various percentage of good loan, substandard loans and doubtful loans deteriorated into loss loans

If 100 % each of good loan, substandard and doubtful loans deteriorated to loss loans, then in such case, the company's CAR will also become -9.32 % which is less than 11 % as specified under Directive no 1 of Unified NRB Directive, 2078 and if such condition happened, definitely PCA will be attracted. In addition, even CAR will be 10.63 % again even less than 11%, if again 100 % each of substandard loans and doubtful loans and good loans exceeding 71 % deteriorated into loss loans, which is not tolerable. Hence, management must be alert that those even though 100 % each of substandard and doubtful loans have been deteriorated into loss loan, good loans deteriorated into loss loans must be below 71 %. Hence, in order to prevent from such scenario, the management and BOD must take and implement the adequate strategies to recover various loans specified under these headings.

Case no 3: Portfolio of various percentage of good loan, substandard loans and doubtful loans deteriorated into loss loans

Similarly, if 75 % of loan each of good loans, substandard loans and loss loans deteriorated to bad loans, then again in such case, CAR will be 8.13 %, which is below the limit specified by NRB which is not tolerable and hence, in order to prevent from such scenario, the management and BOD must take the implement the adequate strategies to recover various loan headings below 75 % and less for good loans subs standard loan and doubtful loan headings.

5.3.2 Major findings from the analysis of data related to liquidity risk

Regarding the liquidity risk, company can appetite the risk as specified on the various scenarios as said on stress test guidelines, 2012 issued by NRB.

5.3.3 Major findings from the analysis of data related to market risk

Regarding the interest rate risk, company can appetite the risk as specified on the various scenarios as said on stress test guidelines, 2012 issued by NRB.

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Appendixes

Appendix 1

Loan categorization and its provision to be set aside as per Directive no 2 of Unified NRB Directive, 2078

Loan Heading	Provision
Pass Loan	1.3 %
Watch List Loan	5 %
Restructured and Rescheduled Loan	12.5 %
Substandard Loan	25 %
Doubtful Loans	50 %
Loss Loans	100 %

Appendix 2

Total loan outstanding with heading wise loan categorization (Amount on thousand)

Loan Heading	Good Loan	Watch list	Sub standard	Doubtful	Bad	Total
Deprived Sector Loan	229,572	-	-	-	249	229,821
Business Loan	130,536	-	-	-	150,560	281,096
Agriculture Loan	86,725	-	-	-	-	86,725
Auto Loan	45,229	1,567	-	4,610	4,739	56,145
Personal Loan	243,607	-	600	2,358	15,317	261,882
Home Loan	157,812	9,769	2,349	-	8,400	178,330
Share Loan	176,793	8,325	-	-	79	185,197
Subsidized Loan	61,728	-	-	-	-	61,728
Other Loan	60,341	-	-	-	9,162	69,503
TOTAL	1,192,343	19,661	2,949	6,968	188,506	1,410,427

Note: Other loan includes Loan Against FDR, Professional loan, Real estate loan.

Appendix 3

Total loan loss provision with heading wise categorization (Amount on thousand)

Loan Heading	Good Loan	Watch list	Sub standard	Doubtful	Bad	Total
Deprived Sector Loan	2,984	-	-	-	250	3,234
Business Loan	1,697	-	-	-	150,560	152,258
Agriculture Loan	1,128	-	-	-	-	1,128
Auto Loan	588	78	-	2,305	4,739	7,710
Personal Loan	3,167	-	150	1,179	15,317	19,813
Home Loan	2,052	488	587	-	8,400	11,527
Share Loan	2,298	416	-	-	79	2,794
Subsidized Loan	803	-	-	-	-	802
Other Loan	785	-	-	-	9,162	9,946
TOTAL	15,502	982	737	3,484	188,507	209,212

Appendix 4

Detail analysis for sensitivity analysis for degradation of 25%, 50% and 100% of good loans into substandard. (Amount in thousand)

Magnitude of Shock:	25%	50%	100%
Increase in Provision	1,192,342x 0.25 x 0.237 = 70,646	1,192,342x 0.5 x 0.237 = 141,292	1,192,342x 1 x 0.237 = 282,585
Revised Capital Fund	796,888 – 70,646= 726,241	796,888-141,292=655,595	796,888-282,585=514,303
Revised RWE	1,840,933 - 70,646 = 1,770,287	1,840,933-141,292=1,699,641	1,840,933 -282,585=1,558,348
Revised CAR	41.02%	38.57%	33%
Pre Shock CAR	43.29%	43.29%	43.29%

Appendix 5

Detail analysis for sensitivity analysis for degradation of 25%, 50% and 100% of good loans into doubtful. (Amount in thousand)

Magnitude of Shock:	25%	50%	100%
Increase in Provision	1,192,342x x 0.25 x 0.487 = 145,167	1,192,342x x 0.5 x 0.487 = 290,335	1,192,342x x 1 x 0.487 = 580,670
Revised Capital Fund	796,888- 145,167 = 651,720	796,888 - 290,335 = 506,552	796,888- 580,670 = 216,217

Revised RWE	1,840,933 - 145,167= 1,695,766	1,840,933- 290,335=1,550,598	1,840,933 - 580,670= 1,260,263
Revised CAR	38.43 %	32.67 %	17.16 %
Pre Shock CAR	43.29 %	43.29 %	43.29 %

Appendix 6

Detail analysis for sensitivity analysis for degradation of 25%, 50% and 100% of good loans into loss loans. (Amount in thousand)

Magnitude of Shock:	25%	50%	100 %
Increase in Provision	1,192,342x x 0.25 x 0.987 =294,210	1,192,342.11x x 0.5 x 0.987 =588,420	1,192,342x x 1 x 0.987 =1,176,841
Revised Capital Fund	796,888 -294,312=502,677	796,888-588,624=208,467	796,888.30 -1,176,841= (379,953)
Revised RWE	1,840,933-294,312 = 1,546,723	1,840,933-588,624 = 1,252,512	1,840,933 -1,176,841 = 664,092
Revised CAR	32.5 %	16.64 %	(57.21%)
Pre Shock CAR	43.29%	43.29%	43.29%

Appendix 7

Detail analysis for sensitivity analysis for degradation of 54 %, 56% and 57% of good loans into loss loans. (Amount in thousand)

Magnitude of Shock:	54 %	56%	57%
Increase in Provision	1,192,342x x 0.54 x 0.987 =635,494	1,192,342x x 0.56 x 0.987 = 659,031	1,192,342x x 0.57 x 0.987 =670,799
Revised Capital Fund	796,888-635,494= 161,393	796,888- 659,031= 137,856	796,888-670,799= 126,088
Revised RWE	1,840,933-635,494 = 1,205,439	1,840,933 -659,031 =1,181,902	1,840,933 - 706,349=1,170,134
Revised CAR	13.39 %	11.66 %	10.78 %
Pre Shock CAR	43.29%	43.29%	43.29%

Appendix 8

Detail analysis for sensitivity analysis for degradation of 25 %, 50 % and 100 % of substandard loans into doubtful loans. (Amount in thousand)

Magnitude of Shock:	25%	50%	100%
Increase in Provision	2,949 x 0.25 x 0.25 = 184	2,949 x 0.5 x 0.25 = 368	2,949 x 1 x 0.25 =737
Revised Capital Fund	796,888-184= 796,703	796,888 -368= 796,519	796,888-737= 796,150
Revised RWE	1,840,933 - 184= 1,840,749	1,840,933 -368 = 1,840,565	1,840,933-737= 1,840,196
Revised CAR	43.28%	43.28%	43.26 %
Pre Shock CAR	43.29%	43.29%	43.29%

Appendix 9

Detail analysis for sensitivity analysis for degradation of 25 %, 50 % and 100 % of substandard loans into loss loans. (Amount in thousand)

Magnitude of Shock:	25%	50%	100%
Increase in Provision	2,949 x 0.25 x 0.75 = 552	2,949 x 0.5 x 0.75 =1,105	2,949 x 1 x 0.75=2,211
Revised Capital Fund	796,888 -552 = 796,335	796,888 -1,105=795,782	796,888-2,211= 794,676
Revised RWE	1,840,933 - 552 = 1,840,380	1,840,933-1,105 = 1,839,827	1,840,933 -2,211= 1,838,721
Revised CAR	42.27%	43.25%	43.22%
Pre Shock CAR	43.29%	43.29%	43.29%

Appendix 10

Detail analysis for sensitivity analysis for degradation of 25 %, 50 % and 100 % of doubtful loans into loss loans. (Amount in thousand)

Magnitude of Shock:	25%	50%	100%
Increase in Provision	6,967 x 0.25 x 0.50 = 870	6,967 x 0.5 x 0.5 =1,741	6,967 x 1 x 0.5 =3,483
Revised Capital Fund	796,888 -870= 796,017	796,888 -1,741=795,146	796,888-3,483= 793,404
Revised RWE	1,840,933 - 870= 1,840,062	1,840,933-1,741= 1,839,191	1,840,933.74 -3,483= 1,837,449
Revised CAR	43.26 %	43.23%	43.18%
Pre Shock CAR	43.29%	43.29%	42.06%

Appendix 11

Detail analysis for sensitivity analysis for degradation of 25 % each of good loan, substandard loans and doubtful loans deteriorated to substandard loans, doubtful loans and loss loans respectively (Amount in thousand)

Magnitude of Shock:	25%	25%	25%
Increase in Provision	1,192,342x 0.25 x 0.237 = 70,646	2,949 x 0.25 x 0.5 =184	6,967x 0.25 x 0.5=870
Revised Capital Fund		796,888-70,646- 184- 870 = 725,186	
Revised RWE		1,840,933 - 70,646- 184- 870 = 1,769,232	
Revised CAR		40.99 %	
Pre Shock CAR		43.29 %	

Appendix 12

Detail analysis for sensitivity analysis for degradation of 50 % each of good loan, substandard loans and doubtful loans deteriorated to substandard loans, doubtful loans and loss loans respectively. (Amount in thousand)

Magnitude of Shock:	50%	50%	50%
Increase in Provision	1,192,342x 0.5 x 0.237 = 141,292	2,949 x 0.5 x 0.25 =368	6,967 x 0.5 x 0.5= 1,741
Revised Capital Fund	796,888-141,292- 368- 1,741= 653,485		
Revised RWE	1,840,933- 141,292- 368.63- 1,741= 1,697,530		
Revised CAR	38.50 %		
Pre Shock CAR	43.29 %		

Appendix 13

Detail analysis for sensitivity analysis for degradation of 100 % each of good loan, substandard loans and doubtful loans deteriorated to substandard loans, doubtful loans and loss loans respectively (Amount in thousand)

Magnitude of Shock:	100%	100%	100%
Increase in Provision	1,192,342x 1 x 0.237 = 282,585	2,949 x 1 x 0.25 =737	6,967 x 1x 0.5=3,483
Revised Capital Fund	796,888- 282,585- 737.25 - 3,483.76 = 510,082		
Revised RWE	1,840,933- 282,585- 737-3,483= 1,554,127		
Revised CAR	32.82%		
Pre Shock CAR	43.29 %		

Appendix 14

Detail analysis for sensitivity analysis for degradation of 25 % each of good loan, substandard loans and doubtful loans deteriorated to substandard loans, doubtful loans and loss loans respectively (Amount in thousand)

Magnitude of Shock:	25%	25%	25%
Increase in Provision	1,192,342 x 0.25 x 0.487 = 137,618	2,949 x 0.25 x 0.75 = 552	6,967 x 0.25 x 0.5 = 870
Revised Capital Fund	796,888 -137,618- 552 – 870 = 657,845		
Revised RWE	1,840,933 - 137,618- 552 – 870 = 1,701,890		
Revised CAR	38.65 %		
Pre Shock CAR	43.29 %		

Appendix 15

Detail analysis for sensitivity analysis for degradation of 50 % each of good loan, substandard loans and doubtful loans deteriorated to substandard loans, doubtful loans and loss loans respectively (Amount in thousand)

Magnitude of Shock:	50%	50%	50%
Increase in Provision	1,192,342 x 0.5 x 0.487 = 290,335	2,949 x 0.5 x 0.75 =1,105	6,967 x 0.5 x 0.5 = 1,741
Revised Capital Fund	796,888 -290,335- 1,105- 1,741= 503,705		
Revised RWE	1,840,933 - 290,335 - 1,105 - 1,741 = 1,547,750		
Revised CAR	32.54%		
Pre Shock CAR	43.29 %		

Appendix 16

Detail analysis for sensitivity analysis for degradation of 100 % each of good loan, substandard loans and doubtful loans deteriorated to substandard loans, doubtful loans and loss loans respectively (Amount in thousand)

Magnitude of Shock:	100%	100%	100%
Increase in Provision	1,192,342 x 1 x 0.487 = 58,067	2,949 x 1 x 0.75 =221	6,967 x 1x 0.5=348
Revised Capital Fund	796,888-58,067- 221- 348 = 738,251		
Revised RWE	1,840,933 - 58,067- 221- 348= 1,782,297		
Revised CAR	41.42%		
Pre Shock CAR	43.29 %		

Appendix 17

Detail analysis for sensitivity analysis for degradation of 25 % each of good loan, substandard loans and doubtful loans deteriorated to loss loans. (Amount in thousand)

Magnitude of Shock:	25%	25%	25%
Increase in Provision	1,192,342x 0.25 x 0.987 = 294,210	2,949 x 0.25 x 0.75 = 552	6,967 x 0.25 x 0.5= 870
Revised Capital Fund	796,888-294,210- 552- 870= 501,253		
Revised RWE	1,840,933 - 294,210.39- 552- 870= 1,545,299		
Revised CAR	32.44 %		
Pre Shock CAR	43.29 %		

Appendix 18

Detail analysis for sensitivity analysis for degradation of 50 % each of good loan, substandard loans and doubtful loans deteriorated to loss loans. (Amount in thousand)

Magnitude of Shock:	50%	50%	50%
Increase in Provision	1,192,342x 0.5 x 0.987 = 588,420	2,949 x 0.5 x 0.75 =1,105	6,967 x 0.5 x 0.5=1,741
Revised Capital Fund	796,888-588,420- 1,105- 1,741= 205,619		
Revised RWE	1,840,933 - 588,420- 1,105- 1,741= 1,249,665		
Revised CAR	16.45%		
Pre Shock CAR	43.29 %		

Appendix 19

Detail analysis for sensitivity analysis for degradation of 56 % of good loan, 100 % each of substandard loans and doubtful loans deteriorated to loss loans. (Amount in thousand)

Magnitude of Shock:	56%	100%	100%
Increase in Provision	1,192,342 x 0.56 x 0.987 = 659,031	2,949 x 1 x 0.987=2,211	6,967.52 x 1 x 0.987=3,483
Revised Capital Fund	796,888-659,031- 2,211- 3,483 = 132,161		
Revised RWE	1,840,933 - 659,031- 2,211- 3,483.76 = 1,176,206		
Revised CAR	11.24 %		
Pre Shock CAR	43.29 %		

Appendix 20

Detail analysis for sensitivity analysis for degradation of 57 % of good loan, 100 % each of substandard loans and doubtful loans deteriorated to loss loans. (Amount in thousand)

Magnitude of Shock:	57%	100%	100%
Increase in Provision	1,192,342x 0.57 x 0.987 = 670,799	2,949x 1 x 0.75 =2,211.75	6,967 x 1x 0.5=3,483
Revised Capital Fund	796,888-670,799- 2,211- 3,483 = 120,393		
Revised RWE	1,840,933 – 670,799- 2,211-3,483 = 1,164,438		
Revised CAR	10.34 %		
Pre Shock CAR	43.29 %		

Appendix 21

Detail analysis for sensitivity analysis for degradation of 25%, 50% and 100% of good loans of deprived sector loan deteriorated to bad loans. (Amount in thousand)

Magnitude of Shock:	25%	50%	100%
Increase in Provision	229,571 x 0.25 x 0.987 = 56,646	229,571 x 0.5 x 0.987 =113,293	229,571 x 1 x 0.987 =226,587
Revised Capital Fund	796,888-56,646= 740,241	796,888-113,293= 783,594	796,888-226,587= 570,300
Revised RWE	1,840,933 - 56,646 = 1,784,286	1,840,933-113,293 = 1,727,640	1,840,933-226,587= 1,614,346
Revised CAR	41.49%	39.57 %	35.33 %
Pre Shock CAR	43.29%	43.29%	43.29%

Appendix 22

Detail analysis for sensitivity analysis for degradation of 25%, 50% & 100% of good loans of business loans deteriorated to bad loans. (Amount in thousand)

Magnitude of Shock:	25%	50%	100%
Increase in Provision	796,888 x 0.25 x 0.987 = 32,209	796,888x 0.5 x 0.987 = 64,419	796,888x 1 x 0.987 =128,838
Revised Capital Fund	796,888 -32,209 = 764,678	796,888-64,419 = 732,468	796,888-64,419 = 668,049
Revised RWE	1,840,933 - 32,209= 1,808,724	1,840,933 -64,419 =1,776,514	1,840,933-64,419 =1,712,095
Revised CAR	42.28 %	41.23 %	39.02 %
Pre Shock CAR	43.29 %	43.29 %	43.29 %

Appendix 23

Detail analysis for sensitivity analysis for degradation of 25%, 50% & 100% of good loans of agriculture loans deteriorated to bad loans. (Amount in thousand)

Magnitude of Shock:	25%	50%	100%
Increase in Provision	86,725x 0.25 x 0.987 = 21,399	86,725x 0.5 x 0.987 =42,798	86,725 x 1 x 0.987 = 85,597
Revised Capital Fund	796,888-21,399 = 775,488	796,888 -42,798 =754,089	796,888-85,597.67 =711,290
Revised RWE	1,840,933 - 21,399 = 1,819,534	1,840,933-42,798 =1,798,134	1,840,933 -85,597 =1,755,336
Revised CAR	42.62 %	41.94 %	40.52%
Pre Shock CAR	43.29%	43.29%	43.29%

Appendix 24

Detail analysis for sensitivity analysis for degradation of 25%, 50% & 100% of good loans of auto loans deteriorated to bad loans. (Amount in thousand)

Magnitude of Shock:	25%	50%	100%

Increase in Provision	45,228x 0.25 x 0.987 = 11,160	45,228x 0.5 x 0.987 =22,320	45,228 x 1 x 0.987 =44,640
Revised Capital Fund	796,888-21,399= 785,727	796,888-22,320=774,567	796,888-44,640=752,247
Revised RWE	1,840,933 - 11,160 = 1,829,773	1,840,933-22,320 =1,818,613	1,840,933-44,640 =1,796,292
Revised CAR	42.94%	42.59 %	41.88%
Pre Shock CAR	43.29%	43.29%	43.29%

Appendix 25

Detail analysis for sensitivity analysis for degradation of 25%, 50% & 100% of good loans of personal loans deteriorated to bad loans. (Amount in thousand)

Magnitude of Shock:	25%	50%	100%
Increase in Provision	243,606 x 0.25 x 0.987 = 60,109	243,606x 0.5 x 0.987 =120,219	243,606 x 1 x 0.987 =240,439
Revised Capital Fund	796,888-60,109= 736,778	796,888-121,437=676,668	796,888-240,439=556,448
Revised RWE	1,840,933- 60,109= 1,780,823	1,840,933-121,437=1,720,713	1,840,933-240,439= 1,600,493
Revised CAR	41.37%	39.32%	34.77%
Pre Shock CAR	43.29%	43.29%	43.29%

Appendix 26

Detail analysis for sensitivity analysis for degradation of 25 %, 50 % & 100 % of good loans of home loans to bad loans . (Amount in thousand)

Magnitude of Shock:	25%	50%	100%
Increase in Provision	157,888x 0.25 x 0.987 = 38,940	157,888 x 0.5 x 0.987 = 77,880	157,888 x 1 x 0.987 =155,760
Revised Capital Fund	796,888-38,970 = 757,948	796,888 -75,010 =719,007	796,888-240,439 =641,127
Revised RWE	1,840,933- 38,940 = 1,801,993	1,840,933-77,888=1,763,053	1,840,933 -240,439=1,685,173
Revised CAR	42.06%	40.78%	38.05%
Pre Shock CAR	43.29%	43.29%	43.29%

Appendix 27

Detail analysis for sensitivity analysis for degradation of 25 %, 50 % and 100 % good loan each of deprived sector, business loan, agriculture loan, auto loan, personal loan and home loan downgrades to loss loan . (Amount in thousand)

Magnitude of Shock:	25 %	50 %	100 %
Increase in Provision	893,480 x 0.25 x 0.987 =220,466	893,480 x 0.5 x 0.987 =440,932	893,480x 1 x 0.987 =881,864
Revised Capital Fund	796,888-220,466 =576,421	796,888-440,932 = 355,955	796,888 - 881,864 = (84,976)
Revised RWE	1,840,933 -220,466 = 1,620,467	1,840,933-440,932 = 1,400,001	1,840,933-881,864= 959,068
Revised CAR	35.57%	25.43 %	-8.86%

Pre Shock CAR	43.29%	43.29%	43.29%

Appendix 28

Detail analysis for sensitivity analysis for degradation of 60 %, 70% and 76% of good loan each of Deprived Sector, Business Loan, Agriculture Loan, Auto Loan, Personal Loan and Home Loan downgrades to Loss loan category. (Amount in thousand)

Magnitude of Shock:	70 %	75 %	76%
Increase in Provision	893,480 x 0.7 x 0.987 = 617,305	893,480 x 0.75 x 0.987 =661,398	893,480 x 0.76 x 0.987 = 670,217
Revised Capital Fund	796,888.30-617,305 = 179,582	796,888-661,398=135,489	796,888 -670,217 = 126,670
Revised RWE	1,840,933.- 617,305= 1,311,814.75	1,840,933-661,398= 1,223,628	1,840,933 - 670,217=1,170,716
Revised CAR	14.68%	11.49 %	10.82 %
Pre Shock CAR	43.29%	43.29%	43.29%

Appendix 29

Detail analysis for sensitivity analysis for degradation of good loans top 5, top 10 , top 15 and top 20 borrowers degraded to substandard loans, subject to 100 % provisions already provided provision to remaining loss loans . (Amount in thousand)

Magnitude of Shock:	Top 5	Top 10	Top 15	Top 20
Loan	223,647	340,374	425,320	480,397
Increase in Provision	30,648	51,271	71,403	82,086
Revised Capital Fund	766,240	745,616	725,484	714,801
Revised RWE	1,810,285	1,798,662	1,769,530	1,758,847
Revised CAR	42.33 %	41.66 %	41.00 %	40.64 %
Pre Shock CAR	43.29%	43.29%	43.29%	43.29%

Appendix 30

Detail analysis for sensitivity analysis for degradation of good loans categorized under top 5, top 10 , top 15 and top 20 borrowers degraded to doubtful loans, subject to 100 % provisions already provided provision to remaining loss loans. (Amount in thousand)

Magnitude of Shock:	Top 5	Top 10	Top 15	Top 20
Top Loans	223,647	340,374	425,320	480,397
Increase in Provision	62,977	105,354	146,723	168,675
Revised Capital Fund	733,910	691,533	650,164	628,212

Revised RWE	1,777,956	1,735,578	1,694,210	1,672,257
Revised CAR	41.28 %	39.84 %	38.38 %	37.57 %
Pre Shock CAR	43.29%	43.29%	43.29%	43.29%

Appendix 31

Detail analysis for sensitivity analysis for degradation of good loans top 5, top 10 , top 15 and top 20 borrowers degraded to doubtful loans, subject to 100 % provisions already provided provision to remaining loss loans. (Amount in thousand)

Magnitude of Shock:	Top 5	Top 10	Top 15	Top 20
Loan	223,647	340,374	425,320	480,397
Increase in Provision	127,635	213,521	297,363	341,854
Revised Capital Fund	669,252	583,366	499,524	455,033
Revised RWE	1,713,297	1,627,411	1,543,570	1,499,079
Revised CAR	39.06 %	35.85 %	32.36 %	30.35 %
Pre Shock CAR	43.29%	43.29%	43.29%	43.29%

Appendix 32

Detail analysis for sensitivity analysis for withdrawal of deposits by 10%, 15% or 20% (Amount in thousand)

Magnitude of Shock: Deposit withdrawn by	10%	15%	20%
Total Deposit		1,614,267	
Liquid assets		1,149,395	
Decreased Deposit	161,426	242,140	322,853
Revised Deposits	1,614,267- 161,426=1,452,840	1,614,267- 242,140 =1,372,127	1,614,267- 322,853=1,291,413
Revised Net Liquid Assets	1,149,395-161,426=974,968	1,149,395-242,140=894,255	1,149,395-322,853=813,542
Revised Liquidity Ratio	67.11%	65.17 %	63 %
Pre Shock Liquidity Ratio	70.40 %	70.40 %	70.40 %

Appendix 33

Detail analysis for sensitivity analysis for withdrawal by top 10, top 15 and top 20 individual deposit holders (Amount in thousand)

Magnitude of Shock: Deposit withdrawn by	Top 10	Top 15	Top 20
Total Deposit		1,614,267	
Liquid assets		1,149,395	
Decreased Deposit	276,885	333,112	381,778

Revised Deposits	1,614,267- 276,885 =1,337,381	1,614,267- 333,112 =1,281,154	1,614,267- 381,778 =1,232,488
Revised Net Liquid Assets	1,136,395 -276,885 =859,510	1,136,395 -333,112 =803,282	1,136,395 -381,778 =754,617
Revised Liquidity Ratio	64.27 %	62.70 %	61.23 %
Pre Shock Liquidity Ratio	70.40 %	70.40 %	70.40 %

Appendix 34

Detail analysis for sensitivity analysis for withdrawal by top 10, top 15 and top 20 of institutional deposit holders (Amount in thousand)

Magnitude of Shock: Deposit withdrawn by	Top 10	Top 15	Top 20
Total Deposit		1,614,267	
Liquid assets		1,149,395	
Decreased Deposit	281,339	310,577	332,602
Revised Deposits	1,614,267- 281,339 =1,332,928	1,614,267- 310,577 =1,303,689	1,614,267- 332,602 =1,332,928
Revised Net Liquid Assets	1,136,395-281,339 =855,056	1,136,395 -310,577 =825,817	1,136,395-332,602 =803,793
Revised Liquidity Ratio	64.15 %	63.34 %	62.71 %
Pre Shock Liquidity Ratio	70.40 %	70.40 %	70.40 %

Appendix 35

Detail analysis for sensitivity analysis for withdrawal by top 10, top 15 and top 20 of both institutional and personal deposit holders (Amount in thousand)

Magnitude of Shock: Deposit withdraw by	Top 10	Top 15	Top 20
Total Deposit		1,614,267	
Liquid assets		1,149,395	
Decreased Deposit	422,222	503,700	562,190
Revised Deposits	1,614,267- 422,222 = 1,192,044	1,614,267- 503,700=1,110,566	1,614,267- 562,190=1,052,076
Revised Net Liquid Assets	1,136,395-422,222 =714,172	1,136,395-503,700=632,694	1,136,395 -562,190=574,205
Revised Liquidity Ratio	59.91%	56.97%	54.58%
Pre Shock Liquidity Ratio	70.40 %	70.40 %	70.40 %

Appendix 36

Sensitivity analysis for withdrawal by 2%, 5%, 10%, 20% and 30 % for five consecutive days respectively (Amount in thousand)

Magnitude of Shock:	Day 1	Day 2	Day 3	Day 4	Day 5
Deposit withdrawal by	2%	5%	10%	20%	30%
Decreased Deposit	32,285	79,099	150,288	270,518	324,622

Revised Deposit	1,581,981	1,502,882	1,352,594	1,082,075	757,452
Revised Net Liquid Assets	1,104,110	1,025,011	874,722	604,204	279,581
Revised Liquidity ratio	69.79 %	68.20 %	64.67 %	55.84%	36.91%
Pre shock liquidity ratio	70.40 %	70.40 %	70.40 %	70.40 %	70.40 %

Appendix 37

Sensitivity analysis for withdrawal of deposits by 5%, 10%, 15%, 20% and 30 % for five consecutive days respectively (Amount in thousand)

Magnitude of Shock:	Day 1	Day 2	Day 3	Day 4	Day 5
Deposit withdrawal by	5%	10%	15%	20%	30%
Decreased deposit	80,713	153,355	207,029	234,633	281,560
Revised deposit	1,533,553	1,380,198	1,173,168	938,534	656,974
Revised net liquid assets	1,055,682	902,326	695,297	460,663	179,102
Revised liquidity ratio	68.84 %	59.27 %	59.27 %	49.08 %	27.26 %
Pre shock liquidity ratio	70.40 %	70.40 %	70.40 %	70.40 %	70.40 %

Appendix 38

Detail analysis for sensitivity analysis for an increase in deposit interest rate by 100, 150 or 200 basis points. (Amount in thousand)

Magnitude of Shock: Deposit interest increased by	100 Basis point	150 Basis Point	200 Basis point
Deposit except fixed and current	631,156	631,156	631,156
Impact(-) in Profit	(631,156*1 %) / 12 =525	(631,156*1.5 %) / 12 =788	(631,156*2 %) / 12 =1,051
Revised Capital Fund	796,888– 525 =796,362	796,888 -788 =796,099	796,888- 1,051 =795,836
RWE	1,840,933	1,840,933	1,840,933
Revised CAR	43.26 %	43.24%	43.23 %
Pre Shock CAR	43.29 %	43.29 %	43.29 %

Appendix 39

Detail analysis for sensitivity analysis for decrease in deposit interest rate by 100, 150 or 200 basis point. (Amount in thousand)

`Magnitude of Shock: Deposit interest increased by	100 Basis point	150 Basis Point	200 Basis point
Deposit except fixed and current	631,156	631,156	631,156
Impact(-) in Profit	(631,156.02*1 %) / 12 =525	(631,156*1.5 %) / 12 = 788	(631,156*2 %) / 12=1,051

Revised Capital Fund	796,888 + 525 =797,414	796,888+788 =797,677	796,888+1,051 =797,940
RWE	1,840,933	1,840,933	1,840,933
Revised CAR	43.32 %	43.33 %	43.34 %
Pre Shock CAR	43.29%	43.29%	43.29%

Appendix 40

Detail analysis for sensitivity analysis for decrease in loan interest rate by 100, 150 or 200 basis point (Amount in thousand)

Magnitude of Shock: Loan Interest decreased by	100 Basis point	150 Basis Point	200 Basis point
Total loan excluding term loan	473,824	473,824	473,824
Impact(-) in Profit	(473,824*1 %)/ 12 = 394	(473,824*1.5 %) / 12 =592	(473,824*2 %) / 12 =789
Revised Capital Fund	796,888 – 394 =797,283	796,888.20-592 =797,480	796,888.20-789.71 =797,677
RWE	1,840,933	1,840,933	1,840,933
Revised CAR	43.31 %	43.32 %	43.33 %
Pre Shock CAR	43.29%	43.29%	43.29%

Appendix 41

Detail analysis for sensitivity analysis for an increase in loan interest rate by 100, 150 or 200 basis point (Amount in thousand)

Magnitude of Shock: Loan Interest decreased by	100 Basis point	150 Basis Point	200 Basis point
Impact(-) in Profit	(473,824*1 %) /12 =394	(473,824*1.5 %) / 12 =592.28	(473,824*2 %) /12 = 789
Revised Capital Fund	796,888 + 394= 796,493	796,888+592= 796,295	796,888+789 =796,098
RWE	1,840,933	1,840,933	1,840,933
Revised CAR	43.27 %	43.26 %	43.24 %
Pre Shock CAR	43.29%	43.29%	43.29%

Appendix 42

Detail analysis for sensitivity analysis for degradation of 25%, 50% and 100% of good loans deteriorated to substandard loan. (Amount in thousand)

Magnitude of Shock:	25%	50%	100%
Increase in Provision	267,639 x 0.25 x 0.237 = 15,857	267,639.x 0.5 x 0.237 =231,715	267,639x 1 x 0.237 =63,430
Revised Capital Fund	235,105-15,857= 219,247	235,105-231,715=203,390	235,105 -63,430=171,674
Revised RWE	613,449 - 15,857= 597,591	613,449-231,715=581,734	613,449-63,430=550,018
Revised CAR	36.69 %	34.96%	31.21 %

Pre Shock CAR	38.33 %	38.33 %	38.33 %

Appendix 43

Detail analysis for sensitivity analysis for degradation of 25%, 50% & 100% of good loans deteriorated to doubtful loans. (Amount in thousand)

Magnitude of Shock:	25%	50%	100%
Increase in Provision	267,639 x 0.25 x 0.487 =32,585	267,639 x 0.5 x 0.487 =65,170	267,639 x 1 x 0.487 = 130,340
Revised Capital Fund	235,105- 32,585= 202,520	235,105- 65,170= 169,935	235,105- 130,340= 104,764
Revised RWE	613,449 -32,585= 580,864	613,449 - 65,170= 548,279.	613,449 - 130,340 = 483,108
Revised CAR	34.87 %	30.99 %	21.69 %
Pre Shock CAR	38.33 %	38.33 %	38.33 %

Appendix 44

Detail analysis for sensitivity analysis for degradation of 25%, 50% and 100% of good loans deteriorated to loss loans (Amount in thousand)

Magnitude of Shock:	25%	50%	100%
Increase in Provision	267,639 x 0.25 x 0.987 = 66,040	267,639 x 0.5 x 0.987 =132,080	267,639 x 1 x 0.987 =264,160
Revised Capital Fund	235,105-66,040=169,065	235,105-132,080=103,025	235,105 -264,160 = (29,055)
Revised RWE	613,449 -66,040= 547,409	613,449 -132,080 = 481,369	613,449 -264,160= 349,289
Revised CAR	30.88 %	21.40 %	-8.32 %
Pre Shock CAR	38.33 %	38.33 %	38.33 %

Appendix 45

Detail analysis for sensitivity analysis for degradation of 70%, 71% and 72% of good loans deteriorated to loss loans. (Amount in thousand)

Magnitude of Shock:	70 %	71 %	72 %
Increase in Provision	267,639 x 0.7 x 0.987 =184,912	267,639 x 0.71 x 0.987 =187,553	267,639 x 0.72 x 0.987 =190,195
Revised Capital Fund	235,105-184,912=50,193	235,105- 187,553= 47,551	235,105-190,195= 44,909
Revised RWE	613,449-184,912= 428,537	613,449 - 187,553= 425,895	613,449 - 190,195= 423,254
Revised CAR	11.71%	11.17 %	10.61 %
Pre Shock CAR	38.33 %	38.33 %	38.33 %

Appendix 46

Detail analysis for sensitivity analysis for degradation of 25%, 50% and 100% of sub-standard loans deteriorated to doubtful loans. (Amount in thousand)

Magnitude of Shock:	25%	50%	100%
Increase in Provision	3,410 x 0.25 x 0.25 = 213	3,410 x 0.5 x 0.25 = 426	3,410 x 1 x 0.25= 852
Revised Capital Fund	235,105 -213= 234,892	235,105 -426 = 234,679	235,105-852= 234,252
Revised RWE	613,449 – 213 = 613,236	613,449 -426= 613,023	613,449 -852= 612,597
Revised CAR	38.30 %	38.28%	38.24 %
Pre Shock CAR	38.33 %	38.33 %	38.33 %

Appendix 47

Detail analysis for sensitivity analysis for degradation of 25%, 50% & 100% of substandard loans deteriorated to loss loans. (Amount in thousand)

Magnitude of Shock:	25%	50%	100%
Increase in Provision	3,410 x 0.25 x 0.75 = 639	3,410 x 0.5 x 0.75 =1,278	3,410 x 1 x 0.75=2,557
Revised Capital Fund	235,105 - 639= 234,466	235,105-1,278=233,826	235,105-2,557= 232,547
Revised RWE	613,449 – 639 = 612,810	613,449-1,278= 612,170	613,449 -2,557= 610,891
Revised CAR	38.26 %	38.20 %	38.07%
Pre Shock CAR	38.33 %	38.33 %	38.33 %

Appendix 48

Detail analysis for sensitivity analysis for degradation of 25%, 50% and 100% of doubtful loans deteriorated to loss loans. (Amount in thousand)

Magnitude of Shock:	25%	50%	100%
Increase in Provision	2,496 x 0.25 x 0.50 = 312	2,496 x 0.5 x 0.5 = 624	2,496 x 1 x 0.5 = 1,248
Revised Capital Fund	235,105 -312= 234,793	235,105 -624=234,481	235,105-1,248= 233,857
Revised RWE	613,449 - 312 = 613,137	613,449-624=612,825	613,449 -1,248 = 612,201
Revised CAR	38.29 %	38.26%	38.20 %
Pre Shock CAR	38.33 %	38.33 %	38.33 %

Appendix 49

Detail analysis for sensitivity analysis for degradation of 25 % of each of good loan, substandard loans and doubtful loans deteriorated to substandard loans, doubtful loans and loss loans respectively. (Amount in thousand)

Magnitude of Shock:	25%	25%	25%
Increase in Provision	267,639 x 0.25 x 0.237 = 15,857	3,410 x 0.25 x 0.5 =213	2,496 x 0.25 x 0.5=312
Revised Capital Fund		235,027 -15,857 - 213- 312 = 218,722	
Revised RWE		613,449 -15,857 - 213- 312= 597,066	
Revised CAR		36.63 %	
Pre Shock CAR		38.33%	

Appendix 50

Detail analysis for sensitivity analysis for degradation of 50 % each of good loan, substandard loans and doubtful loans deteriorated to substandard loans, doubtful loans and loss loans respectively. (Amount in thousand)

Magnitude of Shock:	50%	50%	50%
Increase in Provision	267,639 x 0.5 x 0.237 = 31,715	3,410 x 0.5 x 0.25 =426	2,496 x 0.5 x 0.5= 624
Revised Capital Fund		235,027-31,715- 426- 624= 202,339	
Revised RWE		613,449 31,715- 426- 624= 580,683	
Revised CAR		34.85 %	
Pre Shock CAR		38.33 %	

Appendix 51

Detail analysis for sensitivity analysis for degradation of 100 % each of good loan, substandard loans and doubtful loans deteriorated to substandard loans, doubtful loans and loss loans respectively. (Amount in thousand)

Magnitude of Shock:	100%	100%	100%
Increase in Provision	267,639 x 1 x 0.237 = 63,430	3,410 x 1 x 0.25 =852	2,496 x 1x 0.5=1,248
Revised Capital Fund		235,027-63,430- 852-1,248= 169,573	
Revised RWE		613,449-63,430- 852-1,248= 547,918	
Revised CAR		30.95 %	
Pre Shock CAR		38.33 %	

Appendix 52

Detail analysis for sensitivity analysis for degradation of 25 % each of good loans , substandard loans and doubtful loans deteriorated to substandard loans, doubtful loans and loss loans respectively. (Amount in thousand)

Magnitude of Shock:	25%	25%	25%

Increase in Provision	267,639x 0.25 x 0.487 = 32,585	3,410 x 0.25 x 0.75 =639	2,496 x 0.25 x 0.5=312
Revised Capital Fund	235,027 -32,585- 639- 312= 201,568		
Revised RWE	613,449-32,585- 639- 312= 579,912		
Revised CAR	34.76 %		
Pre Shock CAR	38.33 %		

Appendix 53

Detail analysis for sensitivity analysis for degradation of 50 % each of good loan , substandard loans and doubtful loans deteriorated doubtful, loss and loss loans respectively. (Amount in thousand)

Magnitude of Shock:	50%	50%	50%
Increase in Provision	267,639 x 0.5 x 0.487 = 65,170	3,410 x 0.5 x 0.75 =1,278	2,496 x 0.5 x 0.5= 624
Revised Capital Fund	235,027 -65,170- 1,278- 624= 168,032		
Revised RWE	613,449 -65,170- 1,278- 624= 546,376		
Revised CAR	30.75 %		
Pre Shock CAR	38.33 %		

Appendix 54

Detail analysis for sensitivity analysis for degradation of 100 % of good loans, substandard loans and doubtful loans deteriorated to substandard loans, doubtful loans and loss loans respectively. (Amount in thousand)

Magnitude of Shock:	100%	100%	100%
Increase in Provision	267,639 x 1 x 0.487 = 13,034	3,410 x 1 x 0.75 =255	2,496 x 1x 0.5=124
Revised Capital Fund	235,027 -13,043- 255-124= 221,690		
Revised RWE	613,449--13,043- 255-124 = 600,034		
Revised CAR	36.95 %		
Pre Shock CAR	38.33 %		

Appendix 55

Detail analysis for sensitivity analysis for degradation of 25 % each of good loan , substandard loans and doubtful loans deteriorated to loss loans. (Amount in thousand)

Magnitude of Shock:	25%	25%	25%
Increase in Provision	267,639 x 0.25 x 0.987 = 66,040	3,410 x 0.25 x 0.75 =639	2,496 x 0.25 x 0.5=312
Revised Capital Fund	235,027 -66,040- 639- 312 = 168,113		

Revised RWE	613,449 -66,040- 639- 312= 546,457
Revised CAR	30.76 %
Pre Shock CAR	38.33 %

Appendix 56

Detail analysis for sensitivity analysis for degradation of 50 % each of good loans, substandard loans and doubtful loans deteriorated to loss loans. (Amount in thousand)

Magnitude of Shock:	50%	50%	50%
Increase in Provision	267,639 x 0.5 x 0.987 = 132,080	3,410 x 0.5 x 0.75 =1,278	2,496 x 0.5 x 0.5=624
Revised Capital Fund	235,027 -132,080- 1,278- 624= 101,122		
Revised RWE	613,449 -132,080- 1,278- 624= 479,466		
Revised CAR	21.09 %		
Pre Shock CAR	38.33 %		

Appendix 57

Detail analysis for sensitivity analysis for degradation of 100 % each of good loan, substandard loans and doubtful loans deteriorated to loss loans. (Amount in thousand)

Magnitude of Shock:	100%	100%	100%
Increase in Provision	267,639 x 1 x 0.987 = 264,160	3,410x 1 x 0.75 =2,557	2,496 x 1x 0.5 = 624
Revised Capital Fund	235,027 -264,160- 2,557-624= (32,236)		
Revised RWE	613,449-264,160- 2,557-624= 346,107		
Revised CAR	-9.31 %		
Pre Shock CAR	38.33 %		

Appendix 58

Detail analysis for sensitivity analysis for degradation of 70 % of good loan loans, 100 % each of substandard and doubtful loans deteriorated to loss loans. (Amount in thousand)

Magnitude of Shock:	70%	100%	100%
Increase in Provision	267,639x 0.75 x 0.987 = 184,912	3,410x 1 x 0.75 = 2,557	2,496 x 1x 0.5 = 624
Revised Capital Fund	235,027-184,912- 2,557-624= 47,011		
Revised RWE	613,449 -184,912- 2,557-624= 425,355		
Revised CAR	11.05 %		
Pre Shock CAR	38.33 %		

Appendix 59

Detail analysis for sensitivity analysis for degradation of 71 % of good loan, 100 % each of substandard loans doubtful loans deteriorated to loss loans. (Amount in thousand)

Magnitude of Shock:	71%	100%	100%
Increase in Provision	267,639 x 0.74 x 0.987 = 187,553	3,410 x 1 x 0.75 =2,557	2,496x 1x 0.5=624
Revised Capital Fund	235,027 -187,443 - 2,557-624= 44,369		
Revised RWE	613,449-187,443 - 2,557-624= 422,713		
Revised CAR	10.50 %		
Pre Shock CAR	38.33 %		

Appendix 60

Detail analysis for sensitivity analysis for degradation of 75 % each of good loan, substandard loans and doubtful loans deteriorated to loss loans. (Amount in thousand)

Magnitude of Shock:	75%	75%	75%
Increase in Provision	267,639x 0.75 x 0.987 = 198,120	3,410 x 0.75 x 0.75 =1,918	2,496 x 0.75x 0.5=936
Revised Capital Fund	235,027 -198,120- 1,918 -936 = 34,130		
Revised RWE	613,449-198,120- 1,918 -936 = 412,474		
Revised CAR	8.27 %		
Pre Shock CAR	38.33 %		

Appendix 61

Detail analysis for sensitivity analysis for degradation of 69 % of good loan and 75 % each of substandard loans and doubtful loans deteriorated to loss loans. (Amount in thousand)

Magnitude of Shock:	69 %	75%	75%
Increase in Provision	267,639x 0.74 x 0.987 = 182,270	3,410 x 0.75 x 0.75 =1,918	2,496 x 0.75x 0.5=936
Revised Capital Fund	235,027-182,270- 1,918 -936= 49,980		
Revised RWE	613,449 -182,270- 1,918-936= 428,324		
Revised CAR	11.67 %		
Pre Shock CAR	38.33 %		

Appendix 62

Detail analysis for sensitivity analysis for degradation of 70 % of good loan and 75 % each of substandard loans and doubtful loans deteriorated to loss loans. (Amount in thousand)

Magnitude of Shock:	70 %	75%	75%
Increase in Provision	267,639 x 0.74 x 0.987 = 184,912	3,410 x 0.75 x 0.75 =1,918	2,496 x 0.75x 0.5=936
Revised Capital Fund		235,027-184,912- 1,918 - 936= 47,338	
Revised RWE		613,449 -184,912- 1,918 - 936= 425,682	
Revised CAR		11.12 %	
Pre Shock CAR		38.33 %	