THE EFFECTS OF ASSET LIABILITY MANAGEMENT ON PROFITABILITY OF NATIONAL INVESTMENT BANK IN THE NEW JUABENG MUNICIPALITY

BY

KNUST

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A THESIS SUBMITTED TO THE INSTITUTE OF DISTANCE LEARNING, KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY IN THE PARTIAL FULFILMENT OF THE REQUIREMT FOR AN AWARD OF THE DEGREE OF COMMONWEALTH EXECUTIVE MASTERS OF BUSINESSS ADMINISTRATION.

JUNE,2011

DECLARATION

I hereby declare that this is my own work towards the Commonwealth Executive Masters of Business Administration (CEMBA) and that to the best of my knowledge and belief, it does not contain materials that have been previously published by another person or accepted for the award of a degree or diploma in any institution. All information gotten from sources other than the researchers own investigation have been dully acknowledged. I wish to further state that in spite of the contribution from my supervisor, I am solely liable for any errors of omission or commission that may still remain.

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CERTIFICATION

I, the undersigned do hereby certify that this research entitled **"The Effect of Asset Liability Management On Profitability Of National Investment In New Juabeng Municipality"** was carried out by Gyekyi Samuel (PG) and was supervised by me in accordance with the guidelines for project work supervision laid down by the school of Graduate Studies of the Kama Nkrumah University of Science and Technology, Kumasi.

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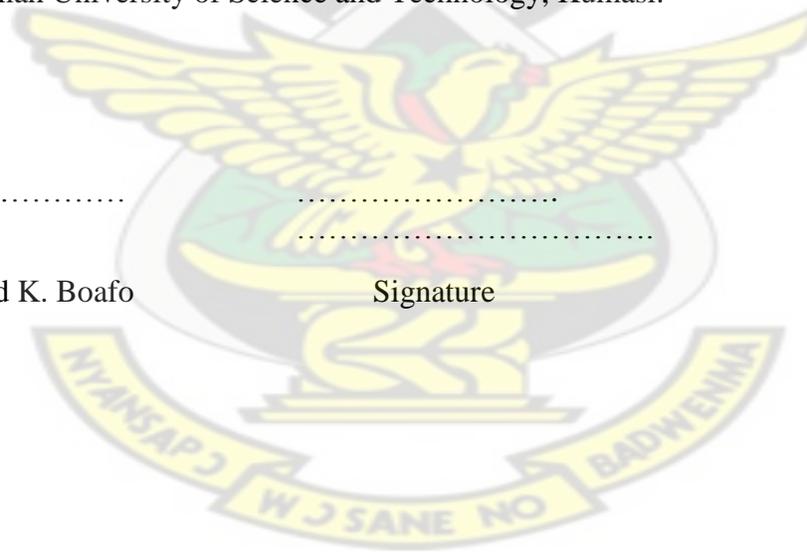
DEDICATION

With special affection and admiration, I dedicate this thesis to my wife to be: Mrs. Antwiwaa

Rachel and my sister: Mrs. Felicia Gyekyi.

ACKNOWLEDGEMENTS

I foremost give thanks to God, Almighty for his grace to complete this project work. My thanks also goes to Mr. Godfried Kofi Boafo of Koforidua Polytechnic, my supervisor for the extensive, useful and intellectual comments and directions towards the success of this work. I am also grateful to Mr. Edwin Boadu Okoampa for his unflinching and intellectual support. I also acknowledge my wife to be Mrs. Rachel Antwiwaa for her inspirational advice and support during the CEMBA programme.

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Special thanks goes to my father, mother and all my siblings, I say God bless you all for your prayers and support.

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ACRONYMS

- ALM: Asset and liability Management

- AWAM: Association of West African Merchant

- BOG: Bank of Ghana

- CIO: Chief Investment Officer

- ERM: Enterprise Risk Management

- GCIDC: Gold Coast Industrial Development Corporation

- GIDC: Ghana industrial Corporation

- IMF: International Monetory Fund

- MPT: Modern Portfolio Theory

- NIB: National Investment Bank

- NPL: Non Performing Loans

- VAR: Value at Risk

ABSTRACT

ALM is relevant to and critical for the sound management of the finances of any organization that invest to meet its future cash flow needs and capital requirements. An efficient asset-liability management requires maximizing firms profit as well as controlling and lowering various risks. This multi-objective decision problem aims at reaching goals such as maximization of liquidity, revenue, capital adequacy, and market subject to strategic financial management, legal requirements and institutional policies in order to progress the profitability of banks. This study used a goal programming model to examine the assets and liability management in relation to profitability by financial institution taking into account the specific characteristics of Ghanaian Financial Environment. The ultimate aim is to identify the best possible strategy to manage the composition of financial institution's assets and liability by controlling the various types of business strategies to maximize profitability. The model contribute to the model contributes to the specific goals and constrains. It also tests the sensitivity of financial institution performance for different risk taking strategies in environment. To be able to achieve the objectives of this research, a study target of all the 27 NIB branches in the country were considered by randomly interviewing functional managers from 7 branches in the country from Eastern Region and Greater Accra and five years financial reports from the head quarters were fully analysed to draw conclusion about the subject. It is recommended that in view of the importance of asset-liability management, banks should adopt formalized ALM techniques that should be subjected to periodic update and with the view to meeting the goals and objectives of portfolio management. OECD (2005), "Advances in Risk Management of Government Debt", Financial Market Trends, No.88.D. e.tal.Mason R.

CHAPTER ONE

INTRODUCTION

1.0 Background to the study

As the service sector continues to expand in today's economy, the financial services sub-sector also experiences rapid growth accompanied by a heightened demand for good asset and liability portfolios.

As asset portfolio's performance normally affects the profitability of a firm so as the expansion of the rises which calls for more challenges to the financial sector. Therefore, growth in banking industries may be accompanied by increased risks. The volume and timing of assets and liabilities and the relation between them may be of critical concern in profit maximization. More especially, expansion in financial market activities may result in the value of a firm's liabilities exceeding the value of its assets. This phenomenon may indicate increased levels of risks associated with these portfolios which may be greatly magnified by unstable financial market activities and changes in interest rates.

The imperative that result from the simultaneous unstable financial markets and changes in interest rates make asset and liability essential in prudent portfolio management. The preceding development therefore put operators in the industry under considerable pressure to improve upon their profit margin by finding effective strategies for managing their asset and liability portfolios. The rewards from such process improvements in the sector would spread across firm, industry and economic levels. At the national level for example, the financial services sectors is of central importance to the overall Ghanaian economy as it influences, directs and engineer growth. The sector provides market, liquidity, reduces transactions cost, Provides investment opportunities and ensure competition in economic activities.

In particular, structural differences in emerging markets like that of Ghana introduce new risks such as currency and maturity mismatch thus the managers of financial institutions have to consider a wide range of scenarios and manage their balance sheet optimally by developing an efficient credit management strategy.

This study sought to examine some best practices in the management of asset -liability and their impact on profitability of banks and into account the unique attributes of the Ghanaian economy and culture using National Investment Bank as a case study.

1.1 STATEMENT OF THE PROBLEM

The landscape of Asset Liability Management (ALM) for the financial sector is ever changing. Various academic and practicing financial professional have even questioned the strengths of the traditional methods of identifying, measuring and managing risk. Several attempts have been and continue to be in the area of exploring up-to –date risk measurement, management and control in financial institutions and how the credit process integrates with the overall strategy of the firm in order to increase its profitability. Graphic Business (March,2011) reported on NPL rate of 17.6% in Ghana due to poor strategic implementations in some of the Ghanaian Banks. National Investment Bank financial report for (2008 and 2009) also indicated massive increased in NPL rate from 33.5% to 44.31% respectively and this call for the need to examine the Asset and liability management strategies adopted by the bank and to ensure effective rearrangement of both sides to maximise profitability.

It also looked at the impact of interest rate on the profitability of National Investment Bank and to find out how managers are able to strategically manage both external and internal issues which distort the stability of profit margin of the banking system.

However, empirical evidence on the application of both the traditional and contemporary techniques of assets liability management in the risk management process by financial institutions in Ghana is scanty. Therefore, this study sought to examine and document the effect of assets liability management on profitability of banks in Ghana, using national investment bank.

1.2 MAIN OBJECTIVE OF THE STUDY

The main objective of the study was to identify and examine some of the key asset liability management strategies employed by national investment bank to either maintain its profit margin or increased it and to propose a multi-objective decision model to reach an optimal strategy.

Secondly, to coordinate asset and liability management as a means of achieving internal consistency and maximizing the spread between revenue and cost and minimization of risk exposure

1.3 SPECIFIC RESEARCH OBJECTIVES

To achieve the broad objective of the study, the following specific objectives were examined:

1. To evaluate the effect of management strategic decision on profitability of National Investment Bank.

2. To assess the effect of economic policies on profitability of financial institution.

3. To assess the relationship between Bank of Ghana Base rate on profitability of National Investment Bank.

1.4 SIGNIFICANCE OF THE STUDY

This study is significant because it deals with an issue banks are facing and will continue to confront in the future. According to the IMF, the average level of non-performing loans (NPLs) in Ghana is around 25% of the total loans. The institution also underlined that the definition of a non-performing loan in Ghana and the associated provisioning modalities were rather lax compared with other countries. That means NPLs have been underestimated. At the same time, the Bank of Ghana in its last Financial Stability Report (FSR May 2005) was estimating the NPL ratio at 15.7% and Graphic Business (March,20011) reported on the NPL rate in Ghana to be 17.6% which means that this has been increasing year by year due to inability to manage our resource effectively. National Investment Bank Financial Report for (2008 and 2009) also indicated a massive increased in NPL rate from 33.5% to 44.31% respectively and this call for the need to investigate how strategic management is when it comes to the management of their assets and liability at the Bank and the effect it has on their profit margin.The study might also contribute to the existing body of knowledge in the area of asset-liability management in general and the role of risk management strategies to increase the profitability of financial institutions.

First and foremost, the study could contribute to our understanding of best practices in managing different risks in the Ghana business and economic environment.

Secondly, the study could provide the management of National Investment Bank further insights into best management risk practices that may be useful and appropriate for specific asset and liability portfolio in order to increase their profit margin.

Finally, and yet importantly, the study might contribute and form the basis for further research into the application of innovative asset and liability management strategies by similar industry player since it has direct bearing with institutional profitability.

1.5 RESEARCH QUESTIONS

How do you identify and examine some of the key Assets liability Management strategies employed by NIB?

What is the effect of management strategic decisions on profitability of NIB?

How do you coordinate Asset and Liability as the means of maximizing profit?

What is the effect of bank of Ghana Base Rate on profitability?

How do you assess the effect of economic policies on profitability of NIB?

1.6   ORGANISATION OF THE STUDY

This research work has been organized into five main chapters. The first chapter would provide an introduction to the essay. It also examined the background to the study and defined the research problem and thus, pointing the direction of the study.

Chapter Two reviewed relevant existing theoretical and empirical studies on asset liability management strategies. This helped to identify the research gaps that require bridging and therefore, establishing the justification for the study.

The third chapter critically examined the research methodology. Its appropriateness and limitations for the current study have been evaluated and the data analysis techniques discussed.

Chapter four, which proceeds from chapter three provided the details of the analysis and findings of the research. It also outlined how the data obtained from the survey was used to establish significant relationships.

The fifth and final chapter summarized the significant findings of the research: the conclusions that were reached; and their implications for the financial sector in the business and economic environment in Ghana in general; and then particular case of National Investment Bank. Also, the recommendations on how the findings could aid in the risk management strategies of financial institutions to either maintain or maximized profit has been outlined.

1.6.1 CONCEPTUAL FRAMEWORK

The theoretical/conceptual framework of this study followed the Goal Programming Model. This model was applied to the financial sector taking into account specific characteristics of the institutions that operate within it. The ultimate aim was to identify the best possible composition of a bank's assets and liabilities by controlling the various types of risks. The model would contribute to similar studies in asset liability management literature by examining emerging financial markets of the West African Sub-region. This may provide evidence for testing the validity of similar findings in other environments of the globalised world.

1.7 **LIMITATIONS OF THE STUDY**

The findings of this research may have some limitations: The competitive nature of Ghanaian financial market led to the limitation of gathering some of the key data that would have enabled me to analyse into detail the risk aspect of NIB loan management process. Such as inability of the bank to furnish me with the non performing loan rates for the five years period of their financial statement report. The generation of values of the results could be low as a small sample size was used. The conclusions researched in this study may therefore not be valid for those of all other financial institutions as far as assets and liabilities management in Ghanaian business and economic environment is concerned. The socio cultural characteristics of the Ghanaian environment, the volume and vigour of financial market activity and efficiency among other factors could affect the validity of the results for international comparison may therefore be affected. The gathering of the empirical data for this present study was conducted over a limited period of time. A relatively, long period time series may be required so that the long term pattern and behaviour of the variables under study could be examined with the view of establishing and explaining plausible relationship. It is therefore recommended that future research should embrace a larger and wider time period so as to provide valuable insights.

Despite the limitation outline in the previous paragraphs, these findings could be treated as part of a larger body of research contribution, towards the understanding of similar subject matters relating to the management of assets and liabilities by firms, especially, those in the financial services sector in the context of the environment like developing economies like Ghana.

CHAPTER TWO

LITERATURE REVIEW

2.0 INTRODUCTION

Recently, there has been much discussion regarding the concept of enterprise risk management (ERM). ERM is a broader concept than asset liability management. ERM can be viewed as a comprehensive and integral process of identifying, assessing, monitoring and managing the risk exposure of an organization, ideally through a formal organizational structure and a quality approach. The goal of ERM is to minimize the effects of risk on an organization's capital and earnings, and to better allocate its risk capital. Thus, ERM considers the broad range of risks associated with operating a business, including financial, strategic, and operational and hazard risks. Because financial institutions thrive on the business of risk, they are good examples of companies that can benefit from effective ERM. Asset liability Management is a significant component of ERM because it is an important process in addressing financial risk since all risk cannot be eliminated but it is the responsibility of risk managers to identify their risk levels and know which level can be controlled or accept.

2.1 THE ASSET LIABILITY MANAGEMENT CONCEPT

Baum, G.(1996) defined Asset Liability management as the practice of managing a business so that decisions and actions taken with respects to assets and liabilities are coordinated in order to ensure effective utilization of company's resources to increase its profitability. ALM

can be defined as the ongoing process of formulating, implementing, monitoring and revising strategies related to assets and profitability to achieve an organization's financial objectives given the organization's risk tolerance and other constraints. According to Dynamic Business Analysts, it is the coordination, or large scale simulation of an entire company to manage its assets and liability to enable financial company to operate in a more soundly and profitable environment and this enables financial institutions to define strategic asset allocation and to identify financial opportunities and uncertainty in order to improve its financial resources. Asset Liability management is relevant to, and critical for, the sound management of the finances of any organization that invests to meet its future cash flow needs and capital requirements. Traditionally, asset liability management has focused primarily on the risks associated with changes in interest rates. Currently however, credit management considers a much broader range of risks including equity risk, liquidity risk, legal risk, currency risk and sovereign or country risk.

Asset Liability Management is practiced in diverse settings:

1. Derivates dealers manage their long and short positions
2. Bankers coordinate the reprising horizons of their assets and liabilities.
3. Pension plans adjust their investments to mirror the characteristics of their liabilities with respect to interest rates, equity returns and expected changes in wages
4. Insurers select investment strategies to ensure they can support competitive pricing and interest strategies.

With each of these involves the application of management techniques to a particular financial problem, the implementations in these situations may bear little resemblance to each other. The derivatives dealer must make many decisions during the course of a trading day, and it is therefore likely to use a technique such as Value At Risk (VAR) based on itra-day market price volatility that can be used quickly and easily. On the other hand, insurers typically manage credit risks using simulation models that may take weeks or months to operate and validate. Daily application of risk limits is neither feasible nor necessary. Similarly, bankers' credit management risks are primarily those that will show in profits in the near-to medium term future, so their approach to credit management may emphasis short-term income and expenses, while a pension plan, taking a longer view, may focus on the present value of required contribution.

2.2 OBJECTIVES OF ASSET LIABILITY MANAGEMENT

According to Dynamic Business Analyst, (2011) a vital issue in strategic bank planning is asset and liability management, which is the assessment and management of endogenous-financial, operational, business and exogenous risks.

The objective of ALM is to maximize profit through efficient fund allocation given an acceptable risk structure. ALM is a multidimensional process, requiring simultaneous interactions among different dimensions. If the simultaneous nature of loan management is discarded the decreasing risk in one dimension may result in unexpected increases in other risks.

ALM has changed significantly in the past two decades with the growth and integration of financial institutions and the emergence of new financial products services which has

influenced the target profit of most industries in Ghana. New information-based activities and financial innovation increased types of endogenous and exogenous risks as well as the correlation between these. Consequently, the structure of balance sheet instruments has become more complex and the volatility in the banking system has increased. These developments necessitate the use of quantitative skills to manage risks more objectively and improve performance.

Diversity in financial institution decision makers' attitudes toward risk results in diverse credit management strategies to sustain target or maximized profit. Risk taker decision makers are willing to accept higher risk for higher returns whereas risk-averse managers accept lower level of risks for lower return.

Consequences of high risk taking strategies might be more devastating in unstable macroeconomic environments such as emerging financial markets. On the other hand, financial risks may also increase a firm's overall risk.

2.3 THE EFFICIENT FRONTIER AND ASSET ALLOCATION

The work of Markowitz, H. (1952), called "Portfolio Selection", proposed that the investor should take into account the impact of a risky security on not only a portfolios expected return but also its variability of return. He suggested that primary function of portfolio management is to identify an asset allocation strategy that provides the highest expected (mean) return for a given level of risk that is acceptable to the investor.

Alternatively, the strategy provides the lowest level of risks (variance) for a specified level of expected return. Markowitz's paper introduced the concept of the efficient frontier, which represents the set of optimal combinations of risky assets for each level of risk. In the absence of borrowing, rational, risk-averse investors will want to select a strategy that is on the efficient frontier. The actual strategy selected will reflect the investors risk tolerance. Under the Markowitz model, given riskless lending and borrowing rates and all investors working with the same set of inputs, all investors will prefer a single portfolio of risky assets. This is the optimal portfolio. Markowitz (1952,1959) and Tobin (1958) developed a model of investor behavior in a mean-variance framework. In this model, investment portfolios are evaluated in terms of their mean returns and the total variance of their returns. The model can be justified by assuming either those investors have quadratic utility functions or that asset returns are normally distributed. In such a model, investors would choose mean-variance efficient portfolios, that is, portfolios with the highest mean return for a given level of variance of returns. The approach is not limited in its usefulness to asset allocation applications. Indeed, it can be used to evaluate risk versus reward tradeoffs for any asset-liability management decision, such as testing alternative crediting strategies or product designs.

This approach allows the portfolio manager to evaluate risk versus reward tradeoffs of alternative asset allocation. It can also be used to assemble portfolios of asset classes or individual securities that take advantage of the benefits of diversification when asset classes or individual securities that take the advantage of the benefits of diversification when asset class returns do not exhibit perfect correlation. The efficient frontier approach can be used in a credit framework if the risk and return measures are changed to reflect

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the joint effect of assets and liabilities on financial results. For example, an insurance company may want to select an asset allocation strategy that maximizes the expected ending surplus for a given level of risk or that minimizes the probability of its not meeting profit objectives.

2.4 BEGINNING DERIVATES

Derivatives can be powerful tool for hedging portfolio risk because of its valued based on underlying asset or securities. Lakson, Dr. H. (1998). International Managerial Finance; Derivatives securities do not provide an organization with funds, as would a primary bond issue or a primary share issue. Rather they are used by organization to them manage their financial risk. For insurance companies and pension plans, derivatives are usually entered into as hedges against interest rate and equity-exposure risks. Multinationals often hedge their currency exposure as well.

Derivatives are usually utilized to hedge interest rate risk include caps and floors, swaps, puts and calls, along with more exotic combination of these basic instruments. For equities, insurers are often concerned with drops in market value when they have guaranteed a fixed, or ratcheted, return. They may utilize various derivatives that pay off when stock returns are

poor. Fisher Black and Myron Scholes (1973) and Roberts Merton (1973) developed option-pricing theory.

2.5 BASIC RISK MANAGEMENT METRICS

Risk can be defined as a measure of volatility of value, either absolute or relative to a benchmark. Risk management aimed at earning adequate return on profitability whiles keeping a comfortable surplus of assets over liability (www. Business Dictionary.com, 4th April, 2011). Measures of risk can be based on backward-looking empirical realized estimates, forward-looking estimates implied by the market, or both. The following subsections discuss some of the basic risk management methodologies.

2.5.1 GENERAL INTRODUCTION OF DURATION AND CONVEXITY

Duration and convexity are the two most important measures of interest rate risk for fixed-income securities and interest-bearing liabilities. Duration measures the sensitivity of the value of an asset to changes in interest rates, (that is, duration is the negative of the slope of the price function centered at the current price and divided by the price). Convexity measures the curvature of the price profile of the instrument to changes in interest rates. (Convexity is the second derivative of a price with respect to interest rates and is divided by the price). Positive convexity opens upward, like a smile. Negative convexity opens downward, like a frown. Both of these measure sensitivity to small parallel rate changes in the yield curve, not bends or twist in rates.

Duration: for any security, portfolio or liability S with current value P, the duration **DS, r of S with respect to the interest rate r is** DS, r = (-1/p),( ) ( ) denotes the partial derivatives of P with respect to r. in descriptive terms, duration is the (negative of) the percentage change in price P per unit change in interest rate. The negative sign in front of the equation is to signify the fact that price and yield move in opposite directions. A positive duration means that when interest rates go up, the price (or market value) of the instrument

goes down, which is the case for most fixed-coupon, fixed-income instrument goes down. Which is the case for most fixed-coupon, fixed-income instruments and for liabilities with reasonably well defined cash flows, (for example, a bond priced at 100 and with duration of 5 would be worth approximately 105 if rates fell by 1 percent.) Negative duration means that the price (or market value) of the instrument will go up when the interest rate goes up. (If some instrument existed that was priced at 100 and had duration of -5, it would be worth approximately 105 if rates rose by 1 percent.) example of instrument with negative duration are interest rate caps, long position of put options on fixed coupons bonds, and more exotic CMOs whose cash flows may increase faster than the increase in discount rates. Floating rate instruments have very short duration. For both historical and practical reasons, there are variations on the general definition of duration. The most frequently referenced duration definitions are Macaulay duration, modified duration (the fixed cash flow variation of the general duration equation show above), effective duration, and most recently, key-rate duration or partial duration. To capture other risk exposures, financial investment practitioners created new risk sensitivity measures and terminologies such as spread duration, prepayment duration and volatility duration. Of these new measures, spread duration is the one most commonly used to capture the price or market value sensitivity to spread change in the corporate bond area.

Convexity is a second-order term that measures the change in price from the duration estimate for a small change in rates. For a positive duration instrument with no embedded options, positive convexity means that the duration extends (get longer) when interest rates fall (which is good), and the duration shortens when interest rates rise (also good). All fixed cash-flow bonds have positive duration and positive convexity. Securities with embedded

options may have regions with negative or reduced positive convexity. For example, home mortgages can have negative convexity may turn positive from lower likelihood of prepayment or extension resulting in greater duration as rates rise. Some structured products can have very nonlinear price profiles that transition from positive to negative duration and convexity as rates change.(Lakhbir S. Hayre and Hubert March, 1997)

2.5.2 VARIATION OF THE GENERAL DEFINITION OF DURATION

Effective duration is an appropriate measure across a portfolio of debt or liabilities with fixed cash flows or embedded options in one currency only. A problem with any duration measure is that it cannot be aggregated across multiple currencies as it only measures interest rate risk within each currency. Although the classical duration measures, Macaulay duration and Modified duration, may not be applicable to any asset or liability with embedded options, they are discussed for purely historical and theoretical purposes only.

2.5.2.1 MACAULAY DURATION

According to Frank Fabozzi(2003). Macaulay duration measures the "weighted average time-to –maturity of the bond's cash flow." The weightings are the present values of cash flow. These "time weighted, discounted cash flows" tell you, on average, how long it takes to get your money back.

Note however, that Macaulay duration is not an analytic used by many investment practitioners, as it does not adequately capture changes in price sensitivity at different rate

levels. In the special case of a non callable, default-free, zero-coupon bond, Macaulay duration is always equal to the time to maturity.

2.5.2.2 MODIFIED DURATION

Modified duration is a formula that expresses the measurable changes in the value of a security in the respond to a change in the interest rates according to Markouwitze. H.(1952) . For bonds with fixed cash flows, the duration defined by the general definition and the Macaulay duration have a special relationship, D(general) = DMac/(1+r). in this case, the duration defined by the general definition is called modified duration, or Dmod = DMac/(1+r). for a bond with k interest payments per year and interest rate r compound k times per annum, the modified duration is Dmod, k = DMac/(1+r/k). the modified duration of a 10-year, non callable, zero-coupon bond will be slightly less than 10 and depends on the level of rates. If the current level of rates is 3 percent, then the modified duration would be 9.7 (which is the Macaulay duration divided by 1+0.03); if interest rates go up by 1 percent, then the price will drop by approximately 9.7 percent. If rates are at 6 percent the modified duration would be 9.4 and for 1 percent raise in rates the price will drop by approximately 9.4 percent. As rates approach 0 percent, modified duration approaches Macaulay and modified duration are equal for continuous compounding. Macaulay and modified duration should only be applied to fixed and certain cash flows (without embedded options), although the concepts are useful whenever the price function is differentiate. Investment professionals

use the term option-adjusted duration or effective duration to clarify that they are explicitly

considering that the cash flows generated by position may in fact depend on interest rates.

This interest rate dependency is typically true of any security with an embedded option, such

as callable bonds, options, floating rate notes and residential mortgages with prepayment

provisions. If future cash flows differ when rates rise and then fall from when rates fall and

then rise, then the security is termed path dependent. Models are required that use either a

lattice of rates (path independent) or a set of interest rate scenarios (path dependent) for

valuation and are calibrated to the term structure of rates and term structure of volatility to

observed prices.

2.5.2.3 Effective Duration

Effective duration D is defined as the approximation:

D ,where P is the price of the instrument before any parametric shift(for interest rates this

represents the base case unshifted yield curve), P+ is the value for the positive shifted

scenario r+(parallel up shift) and P is the value for the negative shift r(parallel down shift).

Note the denomination is two times the change in rates $(r+-r-)=2*r+=2*\Delta r$. Note: this

measures can be very sensitive to the size of the rate shift, especially if the price function is

nonlinear and asymmetric. As such, it is an approximation for the slope of the price as a

function of rates divided by the price. Note that when cash flows are fixed (not interest rate

dependent) and when the size of the shift used in the effective duration calculation is

sufficiently small, the effective duration definition is equivalent to that of the modified

duration or the general definition of duration. In addition, because the effective duration is

calculated using discrete calculation, it is also applicable to instrument where either the

derivative of a price with respect to interest rate is too complex to calculate, or the price

function is not readily differentiable. In this regard, effective duration should be thought of as

an extension of modified duration.

2.5.3 Other Related Concepts

Key rate duration, or partial duration, is slightly more advanced concept that measures the

local sensitivity to a shift in just a portion of the yield curve. This measures the sensitivity to

the changes in yield curve shape. Key rate shifts are constructed so that their sum equals a

parallel shift and thus the sum of key rate duration is equal to effective duration for fixed

cash flow instruments and is usually very close for most others.

However, key rate durations can be computationally intensive for complex path-dependent

securities such as structured products. By matching partial durations of asset and liability

portfolios it is possible to obtain a degree of protection against nonparallel shifts in the yield

curve. However, one should keep in mind that the rates corresponding to various terms to

maturity are not independent, so additional tools are required to fully quantify the sensitivity

of a portfolio to nonparallel shifts. (Committee of European Banking Supervisors,2006).

SPREAD DURATION OR *OPTIONAL-ADJUSTED SPREAD (OAS) DURATION* measures

a bond or liability product's sensitivity to changes in implicit credit worthiness as measured

by the OAS; similarly, the impact on value due to the changes in the spread can also be

associated with changes in the probability of default or changes in the financial strength

denoted by a rating. Swap spread duration measures a bond's sensitivity to changes in the

spread of the swap curve to the Treasury curve (Golub and Tilman). Empirical duration is a

measure that was in vogue for mortgage-backed securities in the mid-1990s and tried to

quantify the curve shifts that were not exactly parallel. It can be thought to blend yield curve twist, effective duration and implied volatility to measure a combination of parallel sensitivity amplified by the volatility that is, the short end is more sensitive, and in an effective duration calculation the short end is shifted more than the long end. By including volatility, this can be considered a precursor to value-at-risk (VAR).

There is a set of option price sensitivity measures referred to as "the Greeks" that reflect other sensitivities. Risk measures *delta, gamma, vega, theta, rho and other* basic risk metrics are discussed as follows:

Delta, like duration, measures the price sensitivity of a derivative financial instrument to changes in the underlying value.

Gamma, like convexity, measures the price sensitivity to changes in delta resulting from changes in the underlying instrument's price. Said another way, gamma measures the delta's sensitivity to changes in the price of the underlying asset. For a bond option, a positive gamma indicates a position with positive convexity.

Vega measures price sensitivity to changes in the volatility of the underlying asset.

Theta measures sensitivity to time decay.

Rho measures sensitivity to changes in the risk-free interest rate. Equity duration was debated in 1989 when Leibowitz, Sorensen, Arnott and Hanson produced a seminal paper that discussed the effective duration of common stocks. It overthrew the conventional wisdom of the day by well-reasoned analysis. Key rate duration, spread duration, swap spread duration, volatility duration, prepayment duration, lapse duration, "the Greeks" and

other risk sensitivity measures are becoming more useful in both risk management and credit management. Duration is used in hedging since it measures price sensitivity.

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2.5.4 IMMUNIZATION AND DEDICATION

According to Cain. C.L and Treussard (2007) defined immunization as the act of establishing a position such that the value of the position is insensitive to small changes in some specified parameter and this normally enables strategic managers to meet their target profit. The term is most commonly used to describe a liability and supporting portfolio such that the net (surplus) market value of the position is insensitive (immune) to small changes in interest rates, although the term could readily be applied to any business where its profits or values have been protected from changes in the price of an input or output. Immunization is often misinterpreted concept. Some use this term to mean duration matched and others use it to mean cash-flow matched. The latter is called portfolio dedication. A classic form of portfolio immunization is maximizing portfolio yield while subject to present value and dollar duration constraints. Note that for immunization, the larger the change in rates, the larger the drift of duration and hence the larger the risk. A more constrained portfolio concept is dedication, where cash flows are matched explicitly for a portfolio to the liability. Because the dedicated portfolio relative to the liability is so well matched and not just local

sensitivities, it has the same duration and has less credit management risk than an immunized portfolio.

2.6 ADVANCED RISK MANAGEMENT METRICS

Gitman Lawrence J. (2003) explains that Advanced Risk Management Metrics are sophisticated tools that can help measure both absolute and relative exposures and their combined effect on instruments, portfolios, and the complex relationship that different interaction of factors and the changes in those interactions produce. An increasing number of books have covered both basic and advanced risk management theory and applications. Understanding model assumptions and calibration is important in order to provide the best explanatory power. Sometimes there is insufficient historical data, if any and mapping to proxies may be the only option. When data becomes available, adaptive processes can be developed to incorporate the new information. The most conservative aggregation of risk is summation of risks, adding the independent totals of risk from the various risk factors, which may overstate the total risk during normal market condition

2.7 DIVERSIFICATION BENEFIT

This is the reduction in risk from low or negative correlation between each risk factor, Modern Portfolio Theory (MPT) is based on the premise that an investor is better off in a risk versus reward sense by mixing an investment to include other low or negatively correlated assets. From Markowitz's work on the efficient frontier, the expected risk is lower for a portfolio than the average, unless the assets are perfectly correlated. The risk versus return scatter plot of every combination of two low correlation assets will lie on a curve to the left and above the line connecting the risk versus return points of each asset. The main basis of

diversification is that the lower the correlation, the greater the diversification benefits. However, during times of extreme market crisis, this diversification benefit may vanish as correlations tend to 1. (Markowitz, H., 1952)

2.8 FAIR VALUE OF LIABILITIES

Classical economic theory, Diamond Peter (1993) attempts to explain the interactions of buyers and sellers of goods, including capital and labour. These interactions, taken together, are said to form a "market". The transactions occurring in a market permit observations of the amounts of one good that is needed, at a particular instant, to complete an exchange for a given amount of another good. In this way, the market provides an objective valuation of one good in terms of another. However, if market trades for a good are infrequent, or if the market for such a good is known to be inefficient or incomplete, it may be difficult to obtain a market value. In such cases, it may nevertheless be possible to assign value using information known about the market values of other goods with similar characteristics.

Such a value is called a fair value. More precisely, a fair value is an estimate of the price of good provided by a market value model for another good with similar characteristics if the model is potentially valid with respect to observation of prices and other market behaviour of the first good. Liabilities often require use of the concept of "fair Value" because they often do not have market value.

2.9 PERFORMANCES MEASUREMENT AND BENCHMARKING

Performance measurement is a fundamental tool used to determine whether various parts of an organization are meeting or exceeding their objectives, and it is also critical element of ALM. Within an institutional framework, ALM is often practiced under explicit constraints. In order for it to succeed, the organization must be able to measure the extent to which ALM is accomplishing its goals by sustaining target profit or maximizing profitability. While performance measurement is most commonly associated with portfolio managers, it is just as relevant to other decision-making entities in the organization. In many cases, investment related decisions made by other parts of the organization may have a more significant impact on profitability than the portfolio manager.

In most organizations there is a hierarchy of investment related decision-making, which includes:

Liability Driven: the strategic asset allocation, determined by the product manager or investment committee, is driven by the liabilities and this has a direct impact on the profitability of the organization. Firm Driven: the chief investment officer (CIO) may determine the tactical asset allocation. It includes consideration of the timing of portfolio rebalancing, timing of the investment of surplus cash or raising cash in anticipation of payouts, opportunistic investments in application of market moves and hedging decisions and this will indicate the profit margin of the company future.

Style: the selection of investment styles, such as growth or value equity portfolios after considering the external opportunities, and the associated portfolio managers. This decision may include the participation of an outside consultant.

Security selection: the selection, purchased and sales of individual securities by the individual portfolio manager. In order to evaluate the effectiveness of these investment decisions, the related performance must be compared with immediate competitors or benchmark that is appropriate. Some examples of appropriate benchmarks to evaluate the asset allocation decision include: a portfolio that has very similar cash flow characteristics as the liabilities;

Asset index returns allocated according to the strategic asset allocation. The performance for the tactical asset allocation decision can be the market index returns applied to the actual portfolio allocation; The style/manager selection performance can be evaluated by comparing the performance of style-specific or manager-specific benchmarks with the broad market indexes for the asset class chosen for the strategic asset allocation' and Portfolio management can be evaluated against style specific or manager specific benchmarks.

It may also be desirable to compare investment performance of individual managers with appropriate peer group averages to determine the quality of the manager versus others with similar objectives. It may also be desirable to calculate performance relative to other institutions with similar liability profiles in order to compare returns on the actual asset portfolio against a national portfolio that has similar expected cash flow characteristics as the underlying liabilities to assist in competitive evaluation and pricing decisions.

2.10 PORTFOLIO MANAGER EVALUATION

According to Cain C. L and Treussard (2007) the primary responsibility of the portfolio manager is, of course, selection of individual securities. A complete evaluation of a portfolio generally ends with an evaluation of how the choice of individual securities affected the

returns achieved. This is calculated under hypothetical conditions where the influences of cash-flow timing, asset allocation, risk parameters and other factors have been removed. This evaluation typically involves attributing actual portfolio returns to a variety of factors by comparison with an ideal "benchmark" portfolio that represents an optimal strategy. The actual portfolio returns achieved can then be attributed to controllable and uncontrollable factors, with only the controllable factors being used to evaluate the performance of the manager(s). One of the chief uncontrollable factors, from the portfolio manager's view point is the behaviour of the benchmark itself. Security prices fluctuate with interest rates, foreign exchange rates and other macroeconomic values, as well as peculiar characteristics of the benchmark itself. A portfolio manager can often match his benchmark's return exactly by following the benchmark definition in his choice of securities.

Typically, a manager is evaluated on the difference between actual returns and bench mark returns. The timing and amount of non-investment cash flows are additional uncontrollable factors. For example, a need for cash to pay surrender benefits may come at a time when portfolio values are depressed, and after a subsequent recovery, additional cash may be made available for investment. When comparing the actual portfolio returns to those of the benchmark over the same period, the benchmark returns should be adjusted to reflect the invested balances at each point in time. Investment strategies are often defined in terms of analytic parameters and allowable ranges. Fixed-income portfolios typically specify a duration target and an allowable range of durations, while equity portfolios are sometimes constrained to a specific style such as growth or value, capitalization size (large, mid or small) or an allowable range of betas (to measure volatility relative to the market in total).

Additional risk characteristics and ranges may also be specified. These limits are adopted in order to prevent portfolio managers from assuming investment positions that are not consistent with the underlying objectives and overall portfolio strategy. In some cases, constraints are also imposed by regulation, or may be adopted voluntarily in order to achieve various ratings, even if the purpose is neither to reduce risk nor increase profits.

In these situations, evaluation for performance measurement purposes involves determining the extent to which the portfolio manager has deviated from norms (such as target duration), and attribution analysis will be used to determine the extent to which actual profit would have been higher or lower had the norm been followed. Profit or Loss is properly attributable to the manager's skills. Often portfolio managers are evaluated on their returns relative to their defined benchmarks, without regard to the source of the funds they invest, since they may not be aware of the underlying liabilities or are only responsible for a portion of the asset invested. In these cases, the other decision makers, who could include the product manager, investment officer or consultant, must be measured and appropriately benchmarked.

2.11 INVESTMENT INCOME ALLOCATION

On the other hand, it is possible for an organization to do a good job managing its asset and liability functions independently and still perform poorly overall. This may result when investment strategies are poorly defined, improperly designed, or when funding costs exceed expectations due to policyholder behaviour, insured events or mismanagement. A better approach than evaluating asset and liability managers independently is to include a component of overall organization performance in their reviews. This will encourage

portfolio managers to respond to emergent behaviour of the liability, even diverging from the benchmark when new information indicates it is appropriate to do so.

The primary measurement of organizational performance is the statement of profit and loss. Profitability determination depends on measurement or estimation of all marginal impacts of a particular activity. For financial intermediaries, the most important sources of profitability is the investment margin, the measurement of which requires matching liability costs with investment income from the associated assets. A major theme of ALM, explored elsewhere, is that profits may be increased, and earnings variability decreased, when complementary asset and liability positions are maintained. Many organizations have formalized the relationship between assets and liabilities by establishing multiple asset and liability accounts, and matching groups of assets to specific groups of liabilities. In the most common form of segmentation, liabilities are grouped together for the optimal investment strategies for the liabilities share similar characteristics. The match between optimal investment strategies and optimal funding (liabilities) strategies is identified through analysis during the product development and approval process. The portfolio is managed based on these common requirements, compromising when necessary among competing objectives, and investment income from the asset is allocated based on the book values of the assigned liabilities. A common   alternative to segmentation is to use the investment generation method. In this approach, assets are grouped according to the time at which they were required, and liability cash flows are summarized for the same periods. The periods (investment generations) may be identical in length, but it is not required.

 In practice, the primary factor to consider in establishing the periods is that the investment conditions are relatively homogenous within the period, but may differ from those in the

periods immediately before or after. Investment income is summarized for each generation, and the income for each generation is allocated to the various liabilities based on the investment cash flow provided for each product during the generation. Companies that use this approach may also find that the allocations are useful in establishing equitable crediting rates for various groups of policyholders. Generally, asset purchases are tracked for a limited number of years based on the portfolio's liabilities and then rolled into a portfolio segment.

A third method for allocating investment income utilizes transfer pricing. Transfer pricing requires that idealized investment strategies and crediting strategies be developed for each product. Accounting using transfer pricing typically involves establishing an ALM/risk management profit centre. In each reporting period, the investment income would have been earned if the idealized investment strategy is determined and credited to the liability profit centre. Similarly, the cost of funding that would have emerged had the idealized crediting strategy been followed is determined and charged to the investment unit. Any difference between these two amounts is credited as profit or charged as a loss to the ALM/risk management unit. In this way, the investment and liability units are evaluated independently of each other. The ALM/risk management area is free to hedge any mismatch between the asset and liability amounts, and is evaluated based on the marginal contribution to profits associated with its hedging activities. Segmentation and the investment generation m method are commonly used within the insurance industry, while transfer pricing, a relatively new approach, has primarily been applied in the banking sector. The published work on performance measurement using asset-liability benchmark analysis continues to emerge. The references given below should be regarded as introductory in nature.(World Council of Credit Union, October,2002)

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 INTRODUCTION

This chapter presents the research method adopted for the study and discusses the technique applied for the analysis of the data gathered. The study sought to explore the innovative strategies for the management of assets and liabilities and its impact on profitability of national investment bank with special focus on the Ghana business and economic environment.

3.1 STUDY POPULATION

The population of a research applies to the collection of all possible individuals, objects or measurements of interest (Mason *el al,* 1999)[1] .the identification of the population of the research question helps in narrowing down to the specific objects that are the subject matter of the investigation. For the purpose of this research, the study population comprised all the 27 branches of National Investment bank in Ghana.

3.2 STUDY SAMPLE

A study sample refers to a subset of the population that researcher is interested in. In other words, a sample describes the participants selected for a research project. A sample is selected with care to first and foremost ensure that the population under study is fairly represented. In the words of Saunders *et al (*1997), the size of the sample and the way in which it is selected will definitely have implications for the confidence one can have in the data collected and the extent to which one can generalize. For the purpose of this study, purposive sampling technique was used to select 7 branches of National Investment Banks

from Eastern Region and Greater Accra. The operational managers from seven branches were interviewed about their operational strategies because the board of directors' decision is being complied by all the NIB branches in Ghana. This will enable the researcher to find out that apart from the head quarters policies and decisions, what strategies some of the branches apply according to their geographical area.

3.3 RESEARCH DESIGN

The research design used in this study was mixed method approach by using both qualitative and quantitative method in gathering data for the study.

The study made used of public and non public financial information (market and non market) of National Investment Bank for the period covering 2005 to 2009. The analysis has been performed alongside the lines of stakeholder's value maximization through the asset and liability management. From the panel of data for the years 2005 and 2009, a simple goal programming model for assets and liability was developed.

The method employed was Key informant interviews.

3.4 DATA SOURCE

To obtain adequate information for the study, both primary and secondary Data were collected. Most of the fieldwork involved interviews with various categories of respondents from the participating institutions.

These data consisted five years annual financial statements from National Investment Bank for the period 2005 to 2009. To supplement this data and provide further insights, face to face semi structured interview was conducted with the Branch Managers, Credit Managers and

Accountants of the selected branches and extensive review of existing theoretical and empirical work was done.

3.5 METHOD OF DATA ANALYSIS

The data collected was coded and by the use of Microsoft Excel, 2007, the data was analyzed. Frequency distribution tables and graphs were used to help create visual impressions for easy interpretations.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND FINDINGS

4.1 HISTORY OF NATIONAL INVESTMENT BANK

The history of the bank can be traced back to the end of the Second World War. Agitation from the indigenes against foreign imports led to a general boycott by the local population led by Association of West African Merchants (AWAM). The Gold Coast industrial Development Corporation (GCIDC), encouraged entrepreneurship among the indigenes in the areas of furniture making and baking.

After independence, the GCIDC became known as the Ghana industrial corporation (GIDC) became known as the Ghana Industrial Corporation (GIDC) with the Government of Ghana as the controlling body. The government transform the GIDC into the National Investment Bank (NIB) by an ACT of Parliament (Act 163). The NIB was incorporated as an autonomous joint state-private institution on March 22, 1963. It was established primary to promote and strengthen the rapid industrialisation in all sectors of the Ghanaian economy. The National Investment Bank Ltd. was therefore the first development Bank in Ghana.

Currently, NIB is having 27 branches in Ghana and 70% of the bank's portfolio is made up of loans to the Ghanaian private sector such as manufacturing, building and construction and agro processing sectors as well as the service industry.

4.2 DATA PRESENTATION

Financial data from 2005 to 2009 were obtained from the annual reports of NIB. The data included the balance sheet s and income statement s of the bank. Face to face and Semi - structured interviews were carried out with the management staff of NIB to collect data about the company goals and strategies to maximize profit. The information obtained was used to analysed the assets and liability of the company and its relationship with the profitability of the bank, taking into consideration the economic environment of the country.

Fig 4.1 A graph showing profit and loss from 2005 - 2009

	1	2	3	4	5
year	2005	2006	2007	2008	2009
profit	5915	4427	5989	-28574	-22326
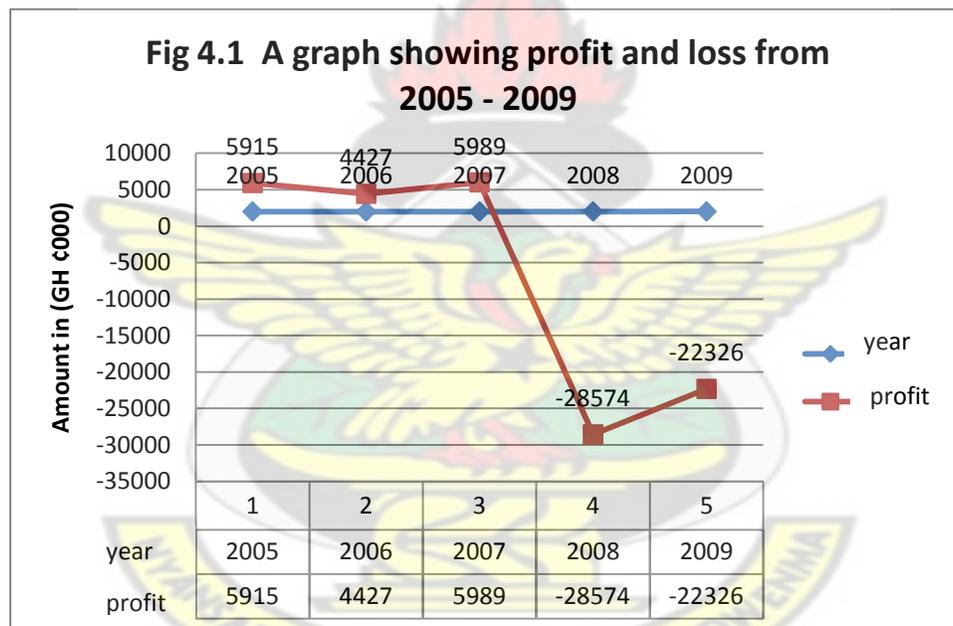
The figure above which shows a graph of the profits made by the bank indicates that the bank made a profit of 5915 (GH ¢000) in the 2005 financial year. It then fell in 2006 to 4427 (GH ¢000) which resulted in a drop of profit margin of 1488 (GH ¢000) representing 25.16%. The profit then increased steadily to 5989 (GH ¢000) which represents a 1.25% rise compared to the 2005 figure which was used as the base year.

There was a massive loss of 28574 to the bank which represents a percentage changed of -377.11% of the preceding year. The loss was then decreased to 104.32 in 2009 as compare to 2007 profit margin. Comparatively, there is clear indication that any time the bank's asset value goes down there is a direct reflection of increased in profitability which means that the liquidity ratio of the bank was very high by taking the risk to sell more loans for profitable years or receiving more revenue from their loan clients .

Fig 4.2 A graph showing Profit and Loss and Assets 2005 - 2009
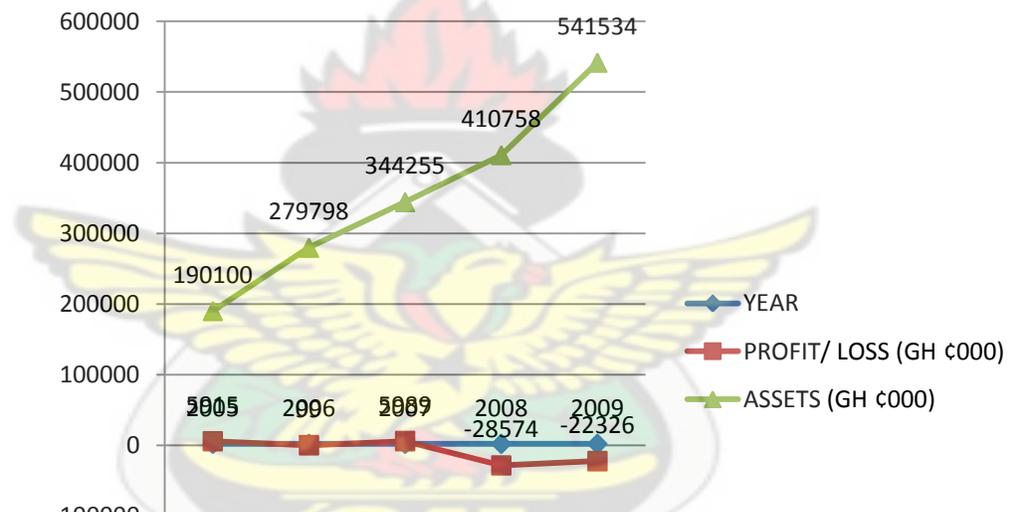
	1	2	3	4	5
YEAR	2005	2006	2007	2008	2009
PROFIT/ LOSS (GH ¢000)	5915	99	5989	-28574	-22326
ASSETS (GH ¢000)	190100	279798	344255	410758	541534

Fig.4.3:A graph showing banks assets from 2005 - 2009

YEAR	2005	2006	2007	2008	2009
ASSET (GH ¢000)	190100	279798	344255	410758	541534
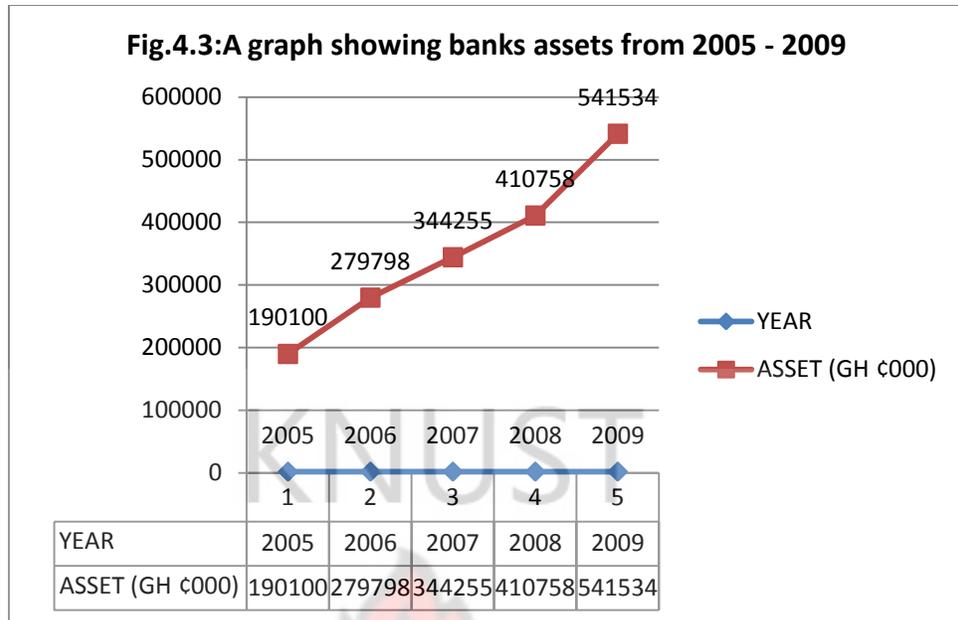
The graph shows that there has always been an increased in the asset of the bank. The asset

of the bank grew from 190100(GH ¢000) in 2005 which was used as the base to 279798 (GH

¢000) which represents a difference of 89698 (GH ¢000) and this represents a percentage

increase of 47.18%. There was another increment of 64457 (GH ¢000) from 279798 to

344255. This represents a percentage increase of 23.04%. Between 2007 and 2008 there was

another increment of 66503 (GH ¢000) from 344255 to 410758. This represents a percentage

increase of 19.32. Lastly between the year 2008 and 2009 there was another increased in the

amount of assets owned by the bank. There was as percentage increment of 31.83. it can

therefore be concluded that there has been almost a fifty percent (50%) increased in the

amount of assets of the bank between the 2005 and 2006 fiscal year and this concludes that

the higher the value of the asset the lower the profit margin. This also justifies the low level

of liquidity rate due to in-effective asset and liability management by the executive

committee. This led to decrease in the profit margin for the affected years since volume and

time of the asset and liability are critical for maximization of profit if they are well manage

but from the chart the ALCO was unable strategies to overcome the high rate of market risk for the stated period.

Fig.4.4 graph showing banks liabilities from 2005 - 2009

	1	2	3	4	5
Year	2005	2006	2007	2008	2009
liability	167200	240558	300757	377207	481228
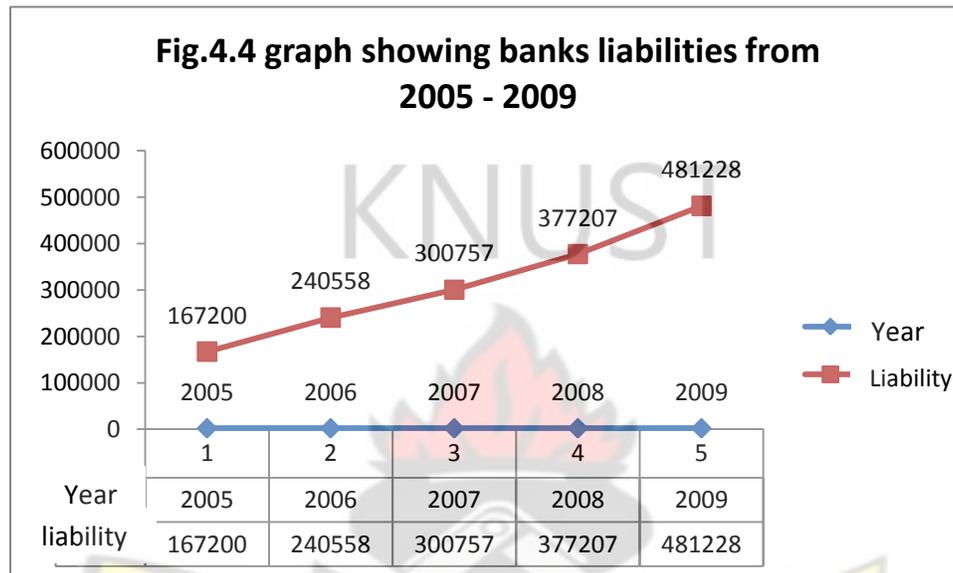
The graph above which shows the changes in the liabilities of the bank shows that there was a 43.87% increase in the amount of liabilities of the bank from 167200 (GH ¢000) in 2005 to 240558 in 2006. This represents a difference of 73358 (GH ¢000). Once again between year 2006 and 2007 there was another increment of 60199 (GH ¢000) from 240558 to 300757. This represents a percentage increase of 25.02%. This indicates that a lot of deposits were made by customers through fixed deposit and savings but customers demand for loan was very low leading to low rate of liquidity ratio. This occurred because the Asset and liability management committee (ALCO) of National Investment Bank was unable to continuously rearrange both side of their asset and liability efficiently to maximised profitability and this led to high rate of liquidity risk faced by the bank.

Fig 4.5:A graph showing Profit and Loss and Base Rates

year	1	2	3	4	5
Prof/loss	5915	4427	5989	-28574	-22326
Rate	28.17	28.63	28.5	27.1	26.4
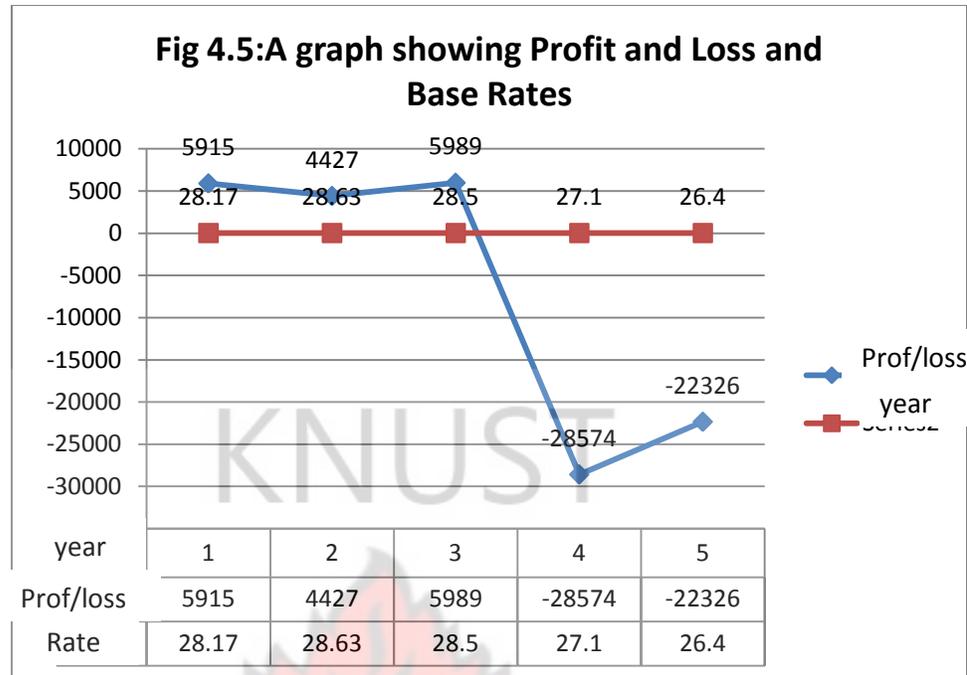
The table above shows that with a base rate of 28.17 the bank was able to make a profit of 5915 (Gh¢000) in 2005 whiles in 2006 with a base rate of 28.63 the bank made a profit of 4427 (Ghs 000). In the third year which was 2007, the bank made a profit of 5989 (Ghs000) with a base rate of 28.5. In the fourth year the bank had a loss of 28574(Ghs000) with a base rate of 27.1 whiles in the final year the bank made another loss of 22326(Ghs000) with a base rate of 26.4. This shows that any time the base rate goes down there is massive negative effect on profitability which means that managers always try as much as possible to reduce risk by reducing long term loans to customers whenever the base rate is low. This result also exposes the poor performance of the ALCO for been unable to minimised their operational risk through effective coordination of both external forces like changes in bank of Ghana base rate and the volume of asset and liability of the bank to maximised profitability.

Fig 4.6:A graph showing Profit and Loss and Average Inflation Rate

	1	2	3	4	5
Series1	5915	4427	5989	-28574	-22326
Series3	2.68	3.39	3.24	2.85	3.85
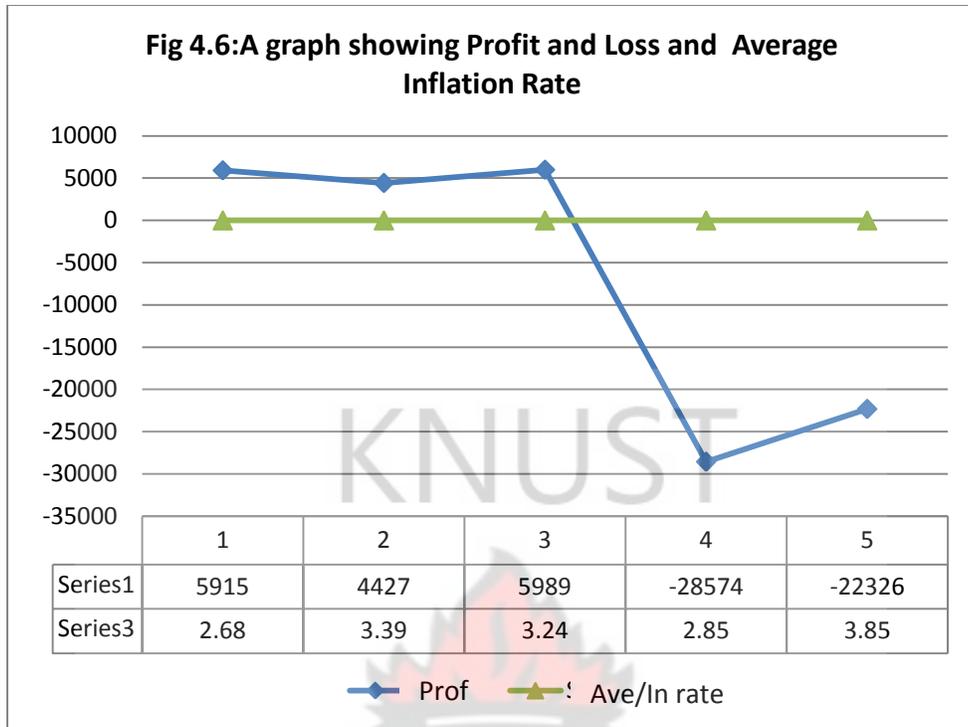
The graph above indicates that with an average inflation rate of 2.68 in 2005 the bank was able to make a profit of 5915 (GHs000) whiles in the second year with an average inflation rate of 3.39 the bank made a profit of 4427 (GHs000). In the third year with an average inflation rate of 3.24% the bank made a profit of 5989 (GHs000) whiles in the following year with a lower rate of 2.85% the bank made a loss of 28574. In the final year which is 2009 which is a quite higher inflation rate of 3.85 the bank 22326 which by their books is a loss. This shows that averagely profit increases when inflation rises since managers turn up to earn more profit for the most of the high inflation years but due to inconsistency in the management of their operational risk, management turned up making losses in some of the high inflation period. This analysis justifies that changes in inflation affect the profitability of the firm and poor managerial strategies in terms of managing operational risk can easily affect the target profit of the company.

CHAPTER FIVE

ANALYSIS AND PRESENTATION OF FINDINGS

5.0 INTRODUCTION

The principal objective of this study was to identify and examine some of the key asset assets/liabilities management strategies employed by national investment bank to either maintain its profit margin or increased it and to propose a multi-objective decision model to manage risk.

Through a survey research and time series therefore, views elicited and the historical financial statements sampled were analysed and the results interpreted in the context of both theoretical and empirical literature as pertains to conventional research requirement.

5.1 MAJOR FINDINGS

Fig.4.2 which explains the **objective of the effect of management strategy on profitability** indicates that any time the company decreases its assets value; the profit margin increases and this indicate that decreases asset value increases profitability**.**

Fig.4.2 and Fig4.3 indicates that anytime the company increases its assets, the liability of the company also increases as the profit margin reduces and this analyse the objective of the **coordination between asset and liability and its effect on profitability.**

From fig.4.4: which visualized the **objective and the effect of Bank of Ghana Base rate on profitability** indicates that increased in average base rate increases profitability of the bank for the stated period.

From fig.4.5 which displays the effect of average inflation rate on profitability, proofs that increase in inflation increases profit margin and this relates to other factors like the value of assets and liability, which justifies the **effect of economic policies on profitability**.

5.2 CONCLUSIONS

From the analysis, it can be concluded that:

- The value of asset and liability has a direct effect on profitability

- Decreased in asset value leads to increase in bank's profit margin

- Assets and liabilities are always correlated

- Inflation rate has a direct effect on profitability

- Bank of Ghana policies affect the strategic decision of NIB.

5.3 RECOMMENDATION

- Board of directors should review their policies periodically.

- Managers should take into account the economic changes in drafting their strategic policies.

- Steps for reinforcing newly developed policies should be encouraged.

- Managers should always look at the trend of the economic variables before strategizing their policies.

- There should be threshed hold for each branch manager in terms of the value of assets liabilities.

- Managers should always take into consideration the economic variables before granting loans to clients.

- In case of risk minimization, proper steps should be taking to identify measure and analyse specific risk factors.

- It is also recommended that in future more studies should be done about causes of non- performing loans.

5.1 MAJOR FINDINGS

Following the analysis of the data and interpretation of the results, the major findings of the study were as follows:

- The value of assets and liabilities of the bank has a direct effect on the profitability of the bank.

- Decreased in assets value leads to increased in banking profitability.

- Decreased in asset leads to increase in profitability.

- Increased or decreased in liability has direct effect on company's profitability.

- Inflation rate has the direct effect on profitability.

- Increased in inflation leads to increase in profitability and decreased in inflation, decreases the profit margin of the firm.

- Bank of Ghana base rate affects the strategic decisions of the banks.

- Changes in the base rate have direct effect on the banking profitability.

- Bank of Ghana policies normally affect the decisions of the bankers.

5.2 RECOMMENDATION

In view of the fact that method and the policies for the management of asset-liability has been formalised by the bank in terms of changes in the economic environment, there is the need for the board of directors and management to review their policies periodically so as to take into account not only the new development in the ALM process, but also the changes in the environmental economic factors such as demand and supply of goods and services, inflation rate, exchange rate. etc. Steps for reinforcing the revised levels for adoption of formal level of ALM should be encouraged.

In the case of risk minimisation, steps should be taken to properly identify measures and analysed the significant risk factors. A careful analysis of the assets and liabilities portfolio would be a crucial first step.
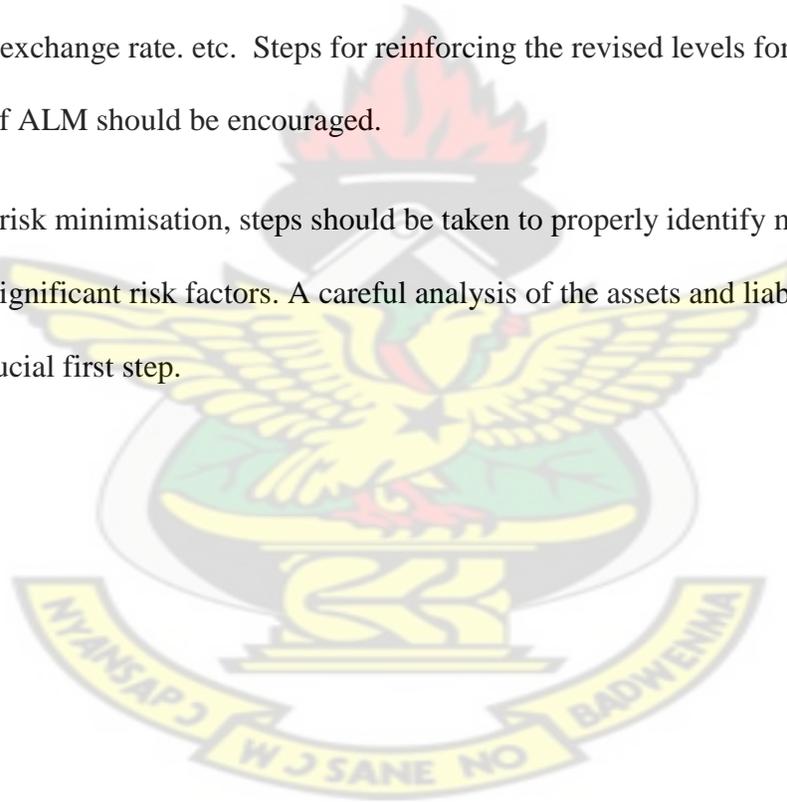
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FINANCIAL STATEMENT FOR NATIONAL INVESTMENT BANK
BALANCE SHEET

	2008 GH¢000	2007 GH¢000
Assets		
Cash and balances with Bank of Ghana	11,655.00	31,260.00
Government securities	21,032.00	27,109.00
Due from other Banks and Financial institutions	37,760.00	36,874.00
Equity investments	24,553.00	21,897.00
Loans and advances to customers	240,232.00	193,871.00
Other assets	49,031.00	27,487.00
	384,263.00	338,498.00
Property,plant and equipment	26,495.00	25,358.00
Total assets	**410,758.00**	**363,856.00**
Liabilities and shareholders' funds		
Customers deposits	254,283.00	244,583.00
Interest payable and other liabilities	19,221.00	12,467.00
Borrowing due within one year	52,589.00	11,516.00
Liability on managed funds	1,439.00	2,226.00
Current taxation	(2,118.00)	(2,975.00)
National reconstruction levy	-	881.00
	325,414.00	268,698.00
Borrowing due after one year		

	50,920.00	33,112.00
Deferred taxation	<u>873.00</u>	<u>457.00</u>
Total liabilities	<u>377,207.00</u>	<u>302,267.00</u>
Stated capital	20,000.00	7,000.00
Statutory reserve fund	6,356.00	6,356.00
Other reserve	35,998.00	33,471.00
Income surplus	<u>(28,803.00)</u>	<u>14,762.00</u>
Total shareholders funds	<u>33,551.00</u>	<u>61,589.00</u>
Total liabilities and Shareholders funds	410,758.00	363,856.00
Managed funds administered on behalf of the government of Ghana	4,923.00	4,923.00

BALANCE SHEET

	2006 GH¢000	2005 GH¢000
Assets		
Cash and balances with Bank of Ghana	298,031.00	120,592.00
Government securities	178,025.00	294,130.00
Due from other Banks and Financial institutions	343,917.00	246,936.00
Investments in other securities	7,214.00	8,164.00
Loans and advances to customers	1,377,366.00	901,633.00
Other assets	<u>352,767.00</u>	<u>246,880.00</u>
	2,557,320.00	1,818,335.00
Fixed assets		

	240,660.00	82,669.00
Total assets	2,797,980.00	1,901,004.00
Liabilities and shareholders' funds		
Customers deposits	1,697,539.00	1,254,527.00
Interest payable and other liabilities	67,634.00	171,675.00
Borrowing due within one year	642,434.00	223,065.00
Liability on managed funds	17,422.00	9,204.00
National reconstruction levy	8,806.00	8,560.00
Taxation	(28,255.00)	4,966.00
Total liabilities	**2,405,580.00**	**1,671,997.00**
Stated capital	70,000.00	70,000.00
Capital surplus	138,154.00	1,728.00
Statutory/other reserve refunds	48,846.00	37,778.00
Income surplus	135,400.00	119,501.00
Total shareholders funds	392,400.00	229,007.00
Total liabilities and shareholders funds	2,797,980.00	1,901,004.00
Managed funds administered on behalf of the government of Ghana	49,231.00	88,402.00

APPENDICES

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY-INSTITUTE OF DISTANCE LEARNING

THESIS TOPIC:

THE EFFECT OF ASSET LIABILITY MANAGEMENT ON

PROFITABILITY OF NATIONAL INVESTMENT IN THE NEW JUABENG MUNICIPALITY

SEMI STRUCTURED QUESTIONNAIRE

The objective of this questionnaire is for academic work only and whatever information provided shall be cared for confidentially.

Please, answer the questions as objectively as possible to assist the researcher to ascertain the relationship between asset liability management and profitability.

INSTRUCTIONS

Please, carefully read through before answering the questions.

For Management:

1. What is the history behind the establishment of the bank?...
.
2. Does the institution has a lay down procedures for management of its assets and liabilities? YES…..   NO………
3. Has it being helping in the running of the bank in terms of profitability? YES……   NO………
4. Who designs the policy for the running of the bank?.......................................

5. What measures have you put in place to manage loan defaulters?...................................

6. How do you minimize the volume of your receivables?..

7. What is the main source of your capital?...

8. Do you borrow from bank of Ghana?..

9. Do you borrow from other branches of your bank? YES…… NO…………..

10. Do you borrow from other banks? YES…………. NO……………….

11. How do you raise short term fund?...

12. How do you manage the excess fund of your institution?..

13. Do you have risk management policy? YES………… NO…………….

14. Does poor loan management affect your profit margin? YES….. NO…….

15. What method do you use to mobilized fund from the public?..

16. What is the maximum loan period for your client?.............................

17. What is the minimum loan period for your client? …………………….

18. Does bank of Ghana policies affect your profit margin? YES…………. NO……….

19. If yes, how does it affect your profit?...

20. Does your interest rate change with inflation rate? YES……. NO…….

21. If yes, what happens when inflation increases or reduces?.. .....

22. How do you avoid risk in your operations?...

23. At what level of risk is it acceptable by the bank?...

THANK YOU VERY MUCH FOR YOUR CO

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