

**A SURVEY OF HEDGING PRACTICES AGAINST INTEREST  
RATE RISK OF COMMERCIAL BANKS IN KENYA**

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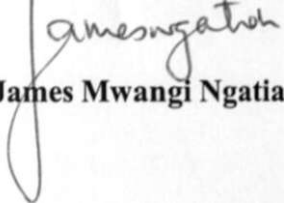
**A MANAGEMENT RESEARCH PROJECT PRESENTED IN PARTIAL  
FULFILMENT OF REQUIREMENTS OF THE DEGREE OF THE MASTERS IN  
BUSINESS ADMINISTRATION OF THE UNIVERSITY OF NAIROBI**

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## DECLARATION

I declare that this is my original work and has not been presented for a degree in any other University

**Signed**

  
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## **DEDICATION**

To my wife Sarah, Sons Martin and Nicholas who were patient and persevered a lot through out the course.

## ACKNOWLEDGEMENT



This piece of work has been very much of a team effort and I owe an outstanding gratitude to so many people.

To start with, I would like to sincerely acknowledge the enormous and immeasurable contribution made by Mrs. Angela Kithinji (my supervisor) whom, without her total commitment and devotion, I would not have gone this far. I strongly commend her critical and focused suggestions that helped me to build on my own effort.

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# TABLE OF CONTENTS

	Page
<b>DECLARATION</b> _____	<b>i</b>
<b>DEDICATION</b> _____	<b>n</b>
<b>ACKNOWLEDGEMENT</b> _____	<b>ni</b>
<b>TABLE OF CONTENTS</b> .....	<b>iv</b>
<b>LIST OF TABLES</b> .....	<b>vii</b>
<b>LIST OF ABBREVIATIONS</b> .....	<b>vm</b>
<b>ABSTRACT</b> .....	<b>ix</b>
<b>CHAPTER ONE</b> :.....	<b>i</b>
<b>1.0: INTRODUCTION</b> .....	<b>1</b>
1.1: BACKGROUND.....	I
1.1.1: Hedging Defined.....	i
1.1.2: Risk Classification.....	i
1.2: STATEMENT OF THE PROBLEM.....	3
1.3 OBJECTIVE OF THE STUDY.....	4
1.4 IMPORTANCE OF THE STUDY.....	5
<b>CHAPTER TWO</b> _____	<b>6</b>
<b>2.0 LITERATURE REVIEW</b> .....	<b>6</b>
2.1 RISK OVERVIEW.....	6
2.2: THEORETICAL EXPLANATIONS OF WHY FIRMS HEDGE.....	8
2.2.1: Tax Incentives to Hedge.....	8
2.2.2: Hedging to Increase Debt Capacity.....	10
2.2.3: Non-tax incentives to Hedge.....	11
2.2.3.1: Expected Costs of Financial Distress.....	11
2.2.3.2: Managerial Compensation, Risk Aversion, and Hedging.....	14
2.2.3.3: Managerial risk aversion and Hedging.....	15
2.2.3.4: Managerial Compensation and Hedging.....	16

2.2.3.5: Competitive Impacts.....	is
2.2.3.6: Facilitation of Internal Contracting.....	19
2.2.3.7: Hedging Against Speculating.....	20
2.2.3.8: Earnings Smoothing.....	21
2.2.4: Other incentives to Hedge.....	22
2.3: EMPIRICAL IMPLICATIONS OF THEORIES OF CORPORATE RISK MANAGEMENT.....	23
2.3.1: Shareholder Maximisation Hypotheses.....	23
2.3.1.1: Taxes.....	23
2.3.1.2: Financial Distress.....	23
2.3.1.3: Investment Policy.....	24
2.3.2: Managerial Utility Maximisation Hypotheses.....	25
2.3.2.1: Managerial Risk aversion.....	25
2.3.2.2: Signaling Managerial Skill.....	25
2.4: ALTERNATIVES TO RISK MANAGEMENT AS CONTROLS.....	26
2.5: HEDGING METHODS AGAINST INTEREST RATE MOVEMENTS.....	27
2.5.1: Forward Rate Agreements (FRAs).....	27
2.5.2: Caps and Floors.....	27
2.5.3: Interest Rate Collars.....	28
2.5.4: Interest Rate Swaps.....	28
2.5.5: Cross Currency Swaps.....	29
2.5.6: Swap Options ("Swaption").....	30
<b>CHAPTER THREE.....</b>	<b>31</b>
<b>3.0: RESEARCH METHODOLOGY.....</b>	<b>31</b>
3.1: RESEARCH DESIGN.....	31
3.2: POPULATION.....	31
3.3: DATA COLLECTION.....	31
3.2: DATA ANALYSIS.....	31
<b>CHAPTER FOUR.....</b>	<b>32</b>
<b>4.0: DATA ANALYSIS AND INTERPRETATIONS.....</b>	<b>32</b>
4.1: PROFILE OF THE RESPONDENTS.....	32
4.2: HEDGING BY BANKS.....	36
4.3: DISCUSSIONS AND INTERPRETATIONS.....	38

## **CHAPTER FIVE**

### **5.0: SUMMARY OF FINDINGS AND CONCLUSIONS, LIMITATIONS OF THE STUDY, RECCOMENDATIONS AND SUGGESTIONS FOR FURTHER RESEARCH**

#### **5.1: SUMMARY OF FINDINGS AND CONCLUSIONS**

##### **5.1.1: Summary of Findings**

##### **5.1.2: Conclusions**

#### **5.2: IMPLICATIONS AND RECOMMENDATIONS**

#### **5.3 : LIMITATIONS OF THE STUDY**

#### **5.4 : SUGGESTION FOR FURTHER RESEARCH**

##### **REFERENCES:**

**APPENDIX 1: FIELD DATA PRESENTED IN A TABULAR FORMART**

**APPENDIX 2: RESEARCH QUESTIONNAIRE**

**APPENDIX 3: LIST OF BANKS AS AT MARCH 2003**

## LIST OF TABLES.

	<b>Page</b>
TABLE 1: Ownership.....	32
TABLE 2: Number of employees.....	33
TABLE 3: Net assets (Assets less liabilities -also known as Owners equity).	33
TABLE 4: Existence of an independent treasury department/section.....	34
TABLE 5: Borrow overseas.....	34
TABLE 6: Investment in interest bearing securities.....	35
TABLE 7: Existence of a manual on determination of future interest rates.	35
TABLE 8: Why banks hedge.....	36
TABLE 9: Risks that banks hedge against.....	36
TABLE 10: Hedging instruments used by banks.....	37
TABLE 11: Size (Net Assets) Vs Hedging instruments.....	37



## **LIST OF ABBREVIATIONS.**

FRAs	-	Forward Rate Agreements
LIBOR	-	London Inter Bank Offer Rate
MM	-	Modigliani and Miller
OTC	-	Over The Counter
CAPM	-	Capital Asset Pricing Model
NOL	-	Net Operating Loss
NPV	-	Net Present Value
R&D	-	Research and Development
Kshs	-	Kenya Shillings

## **ABSTRACT**

This study was on survey of hedging against interest rate risk practices of commercial banks in Kenya.

Data was collected by use of a questionnaire and was analysed by use of excel and descriptive statistics. The results were tabulated in the form of frequencies and percentages.

The research revealed that all except one bank have a hedging programe in place. The hedging practices identified include; Forward Rate Agreements (FRAs) are quite popular with multinational banks, Interest Rate Swaps, Cross Currency Swaps and Swapoptions. No bank in Kenya has either Floors and caps or Interest rate collars as hedging tool. It was further found out that in Kenya, the primary commercial motives that motivate the banks to put a hedging programe in place are reduction of financial distress, increasing of competitive advantage, increasing internal contracting capacity and the desire to comply with the corporate bank investment policy.

# CHAPTER ONE :

## 1.0: INTRODUCTION

### 1.1: Background.

#### 1.1.1: Hedging Defined.

To hedge is to create a position that, once added to an investor's portfolio, will offset the risk of another. The Word "offset" is crucial rather than "eliminate" because hedging attempts to neutralize an exposure on the balance sheet. (Relly and Brown, 2000)

Demirag and Goddard (1994) define hedging as the **partial or total elimination of a risk by some compensating action**. And Buckley (2000) defines hedging as the practice of covering exposure, designed to reduce the volatility of a firm's profit and/or cash generation, and it presumably follows that this will reduce the volatility of the value of the firm. In addition, Arnold (2002) proclaims that to hedge is to enter to transactions that protect a business or asset against changes in some underlying conditions

An increasing number of corporations use financial derivatives each year, to hedge their exposures. The International Swaps and Derivatives Association, for example, reckons that the notional value of outstanding over the counter (OTC) swap contracts increased from \$ 11.3 trillion in 1994 to more than \$60 trillion by mid-2000 ([http:// www.isda.org](http://www.isda.org)). This is interesting because financial theory (e.g., MM propositions) stipulates that corporate risk management enhances value only in the presence of costly market imperfections.

The instruments bought as a hedge tend to have the opposite-value movements to the underlying asset (e.g., the quantity of the currency that forms the unit of the quote). Some of the instruments used in hedging against interest rates include, futures, options, caps and floors, interest rate collars, swaps options or "swaptions" and cross currency swaps.

#### 1.1.2: Risk Classification

According to Gardener, Mills and Cooperman (2000), and Ross, Westerfield and Jaffe (1990), there exists different types of risks that different organizations can face, some

types of risks being more pronounced in organizations like banks while others cut across all the organizations, the fundamental ones being;

**Interest rate risk-** is defined as the potential variation in the returns from an investment or that potential variation in returns caused by unexpected changes in interest rates, this is divided into; reinvestment risk, the risk of interest rates falling and having to re-invest coupon payments at lower rate than the desired ex-ante yield ( $y_0$ ), resulting in a lower post yield and price or market value risk, which is the risk of rates rising and the market price of the bond falling if the bond must be sold prior to maturity, also resulting in a lower ex post yield.

**Exchange rate risk (ERR),** - is the natural consequence of international operations in a world where foreign currency values moves up and down. International firms and firms involved in cross border transactions usually enter into some contracts that require payments in different currencies and thus if there is adverse movement in foreign currency against the home currency, the firm faces the foreign exchange risk in its cash flows, which may bear the component of both the principal and interest if it was borrowed offshore. The treasurer may want to hedge his position against such losses by adopting any or a combination of various techniques that exist in the market. By hedging today, he fixes the cash outflow in the future.

**Technology risk-** occurs when technological investments do not produce the anticipated cost savings in economies of scale or scope. Diseconomies of scale, for example, arise because of excess capacity, redundant technology, and organizational bureaucratic inefficiencies.

**Operational risk-** relates to individual firm's overall business strategy, organization, functioning of internal systems, compliance with internal policies and procedures and measures against mismanagement and fraud. It evolves around inefficiencies and red tape.

**Market value risk-** is risk incurred in the trading of assets and liabilities due to changes in interest rates, exchange rates and other asset prices. It arises when firms (mostly financial institutions) actively trade assets and liabilities rather than holding them for a longer-term investment. Market risk is present when a firm takes an open or unhedged

long (buy) or sell (short) positions in bonds, equities, commodities and derivatives and prices change in direction opposite to that expected.

**Country or sovereign risk-** is the risk that payment from foreign borrowers may be interrupted because of interference from foreign governments.

**Insolvency risk-** is the risk that a firm may not have enough capital to offset a sudden decline in the value of its assets relative to its liabilities

**Liquidity risk-**is the risk that **a firm may** not have enough liquid cash to offset its maturing obligations.

**Credit or default Risk-** is the risk that the promised cash flows may not be paid in full; this means that financial institutions are more exposed to this risk than other firms. Various reporting agencies such as Standard and Poor and Moodys investment services compile and publish ratings of various corporate securities; these ratings are connected to default risk.

Commercial banks are concerned with variation in interest rates as this will have implications on the returns as unexpected changes in interest rates is likely to lead to volatility of banks' income. Managing interest rate risk, both reinvestment risk as well as price and/or market risk is important to minimize on this volatility. Hedging is one alternative for helping against this volatility of interest rates

## **1.2: Statement of the Problem.**

The primary purpose of risk management or hedging is to neutralise price volatility, exchange rate volatility and interest rate volatility, thereby smoothing out and stabilising the cash flows of the company. Since the value of a company is directly related to the net present value of its expected future cash flows, neutralising or 'smoothing out' such volatilities would only make sense if value were thereby added for the existing shareholders of the company.

From the set of financial statements released by various commercial banks to the public, it is evident that the bulk of income (about two thirds) is derived from the interest income and the remaining portion from other fees, therefore the importance of managing the interest rates cannot be over-emphasised. Hedging is a way of reducing some of the risk

involved in holding an investment and there are many different risks against which one can hedge and many different methods of hedging. When someone mentions hedging, think of insurance. A hedge is just a way of insuring an investment against risk.

Most of the banks operating in Kenya are known to invest a lot of their money in various interest earning portfolios, including overseas investments. Most of the banks have specialised investment treasury divisions that operate as profit centres, and a quick interview with treasury managers/chief dealers of various commercial banks reveals that indeed banks hedge against interest rate risks as a measure of reducing cash-flow volatility only that the particular methods adopted are not very well defined/clustered and therefore one would need to do a lot of sieving in order to be able to classify it in one or more of the various methods listed in the financial literature.

While the risk management strategy of non-financial firms has been the subject of intense theoretical and empirical research, very little is known about the actual hedging practices of financial institutions. Using the Kenyan Banking industry as a case in point, this paper will conduct a detailed investigation of banks' hedging practices against risks occasioned by movements in interest rates.

### **1.3 Objective of the Study.**

To determine hedging practices against interest rate movements adopted by commercial banks in Kenya.

## **1.4 Importance of the study.**

The study is;

- 1) of importance to the management of various banking organisations as it gives an insight on hedging practices in the local market against the movements in interest rates.
- 2) useful to scholars who may wish to conduct further research in this area. It is also expected to stimulate interest in this area, which is not adequately researched.
- 3) useful to upcoming and new banking firms who will be able to set up structures within their treasury departments with a view to accommodate this aspect of daily operation.
- 4) useful to potential investors who would be able to determine if the companies they intend to invest in have hedged against interest risk or there is a potential loss should the risk crystallize (for those not hedging against the risk).
- 5) important to potential creditors and financiers as they would be able to determine before hand whether the potential debtor faces the risk of heavy losses, adversely affecting the cash flows and thus the risk of him not being in a position to service the credit.

## CHAPTER TWO :

### 2.0 LITERATURE REVIEW.

#### 2.1 Risk Overview

Indeed, there is an influential body of opinion that risk management (hedging) is not a relevant activity at corporate level at all. The Modigliani and Miller (1958) and Miller and Modigliani (1961) irrelevance propositions suggest that, in the absence of market imperfections, shareholders possess the requisite tools and information to create their desired interest risk profiles; and therefore, there is no reason for a firm to hedge. They argue that shareholders can obtain 'home-made leverage' by borrowing on their personal accounts and so they should obtain 'home-made hedge' by diversifying their investment portfolios.

Adler (1982) argues that in the absence of imperfections such as transaction costs and interest rate risks, the value of the forward contract would be zero at the instant at which it is initiated." Companies could be said to destroy value by entering into forward contracts, that is, forward rate will equate the spot rate according to expectation hypothesis theory, but the company incurred cost (i.e., bid-ask spreads) to achieve the result, which would have been achieved by a do-nothing strategy. This is wastage of resources, which would have better used in other pressing company's requirements.

In addition, the Capital Asset Pricing Model (CAPM) tends to reinforce the previous views and that if exchange rate risk and interest rate risk are envisaged to be unsystematic they can be diversified away by investors in the process of contracting their portfolios.

The critical assumption that underlies this view is that capital markets are perfect. That implies, *inter alia*, there are no taxes; that there is perfect symmetry of information between management and investors and that volatility reduction strategies are costless. When these assumptions do not hold, or are relaxed, the conclusion is not warranted.

If firms are exposed to interest risks in an imperfect environment, however, these exposures can impose costs on the corporation. For example, market imperfections can create an environment in which exposure to volatile interest rates and exchange rates is costly. Hedging helps to reduce these costs.



Hedging is probably the simplest risk management tool next to avoiding risk (e.g., invoicing the customers in home currency). It involves the purposeful taking on another risk that is negatively correlated with the risk being hedged. If a business is exposed to interest risk for instance, that risk can be hedged by taking on another risk (e.g., future, forward or option), which is negatively correlated with the first one. The two risks will neutralise each other. (Modigliani and Miller, 1958).

There is no point in playing the game that cannot be won (except gain of certainty), neither lost. That is the principle of hedging. One does not hedge a risk on which they wish to profit, but rather hedges a risk that one is forced to take for other reasons, but preferably not to take a loss on. In hedging risk, the strategy with derivatives is thus to create or construct a derivative that is negatively correlated with the primary risk being hedged. If the hedging risk has a correlation of negative one (perfect negative correlation) with the primary risk, there is no chance of loss or gain on the transaction, except the gain of certainty allowing better planning, gain in utility for risk averse and financial distress just to mention a few. The downside is that all opportunity for profit has also been lost, or hedged away with most hedging strategies. Hedging with options will prohibit this situation simply from oscillation of an underlying.

A firm can hedge by trading in the particular futures, forward, or option market even though it has no identifiable cash position in the underlying commodity. For example, it can hedge a gold mine by buying futures contract without having perfect information about what the price of gold will be in the future and, perhaps without knowing the actual amount of gold to be produced. Furthermore, a firm can hedge by altering real operating decisions; for instance, a merger can produce effects similar to those of hedging through financial contracts. (Smith and Stulz, 1985)

Thus, a fairly general definition of hedging can be adopted in terms of the market value of the firm, in the sense that, hedging reduces the dependence of firm value on changes in the stated variable (e.g., interest rate, commodity price, and exchange rate).

Hedging against interest risk is possible for each of transaction, translation and economic exposure, but costs (fees and/or transaction costs) are involved in implementing such hedges. Generally speaking, managing interest risk by hedging has an impact and a cost implication for a firm. It impacts on the organisation in terms of staff training, creating a

risk management culture and even by increasing the employee head count. Managing interest risk must also be assessed in terms of the direct cost of the derivatives used, such as premiums, margins and trading costs and fees. The benefits to be gained must be assessed against the costs to be incurred.

Economic exposure and transaction exposure have possible realizable negative effects on cash flows and need to be appropriately dealt with through selective hedging.

We cannot suggest the same strategy for translation exposure unless it is discovered that the possible negative impact of translation exposure is so great that action is imperative. This view is somewhat consistent with Ross, Clark and Taiyed (1987) who argue that as a very general, it is uneconomical to hedge a non-cash item with a cash one. To reinforce this argument, Arnold (2000) argues that it is often unnecessary to hedge for translation exposure because profits lost in translation can often be 'paper loss.'

The goal of the financial manager may be to actively deal with transaction exposure and do so in a manner that is both effective and efficient, paying particular attention to cost.

## **2.2: Theoretical Explanations of Why Firms Hedge.**

### **2.2.1: Tax Incentives to Hedge.**

The structure of the tax code can make it advantageous for firms to take positions in futures, forwards, or options markets. If effective marginal tax rates on corporations are an increasing function of the corporation's pre-tax value then after/ post-tax value of the firm is a concave function of its pre-tax value. If hedging reduces the variability of pre-tax firm values, then the expected corporate tax liability is reduced and the expected post-tax value of the firm is increased as long as the cost of the hedge is not too large.

Smith and Stulz (1985) show that volatility is costly for firms with convex effective tax functions (the firm's average effective tax rate increases as pre-tax profit rises). For instance, assume that a firm is equally likely to lose £1,000,000 or earn £1,000,000 and that profits are taxed at 35 percent.

Without hedging, even though expected income is zero, this firm expects to pay £175,000 in taxes. If the firm can hedge to eliminate income volatility, expected income and taxes are zero. Although this example ignores features of the tax code that can reduce convexity such as the ability to carry current losses forward to shield future profits from taxation, it illustrates how the convexity provides a tax incentive to hedge.

Most empirical derivatives papers measure tax function convexity with a variable based on existing net operating loss (NOL) carry forwards (Nance and Smith (1993), and Tufano (1996)). Such variables imply that firms with existing net operating losses have convex tax functions, although the Smith and Stulz (1985) argument is about losses that firms expect to experience in the future. Graham and Smith (1999) document that existing net operating losses provide disincentive to hedge for companies with expected losses (if a firm expects to lose money, hedging reduces the chance that the firm will use its existing net operating losses) but provide an incentive to hedge for companies that expect to be profitable. Thus, variables based on existing net operating losses are too simple to capture incentives that result from the shape of the tax function, and can work backwards for expected loss firms.

Rather than using a NOL variable to explicitly measure tax function convexity, Graham and Smith (1999) approach can be used. This technique quantifies the convexity-based benefits of hedging by determining the tax savings that result from reducing volatility. For example, we can firstly compute expected tax liability for a 'full volatility' case, and then recalculate expected tax liability with volatility reduced by five percent; the difference between these two numbers represents the convexity-based tax benefit of hedging.

From analysis of more than 80,000 firm-year observations, Graham and Smith (1999) find that in approximately 50 percent of the cases, corporations face convex effective tax functions and thus have tax-based incentives to hedge. In approximately 25 percent of the cases, firms face linear tax functions. The remaining quarter percent of the cases face concave effective tax function, which provide a tax-based disincentive to hedge. Of the cases with convex tax functions, roughly one-quarter of the firms have potential tax savings from hedging that appear material- in extreme cases exceeding 40 percent of the expected tax liability. For the remaining firms, the tax savings are fairly small. Thus, the study concludes that the distribution of potential tax savings from hedging is quite skewed.

Firms are most likely to face convex tax functions when (1) their expected taxable incomes are near the kink in the statutory tax schedule (i.e., taxable income near zero), (2) their incomes are volatile, and (3) their incomes exhibit negative serial correlation

(hence the firm is more likely to shift between profits and losses). Graham and Smith reveal that much of the convexity is induced by asymmetric treatment of profits and losses in the tax code. Carry back and carry forward provisions effectively allow firms to smooth their losses, thereby reducing tax-function curvature at its most convex points and making the function convex a broader range of taxable income. In contrast, the alternative minimum tax and investment tax credits have only a modest effect on the convexity of the tax function.

If a firm's effective tax function is linear (the firm faces a constant effective marginal tax rate), the firm's expected tax liability is unaffected by the volatility of taxable income. However, if the firm faces some form of progressivity, then hedging that reduces the volatility of taxable income reduces the firm's expected tax liability. It is noteworthy arguing that the magnitude and variation of convexity tax savings are sufficient to allow statistical identification if firms hedge in response to tax convexity; however, there are countervailing economic influences against this type of hedging. Graham and Smith (1999) show that firms that are most likely to have convex functions are small, have expected income near zero, and alternate between profits and losses. These firms might find the fixed costs of setting up a hedging program prohibitive, and consequently not hedge. And as for cost of hedging, Bodnar, Hayt, and Marston (1996) find that firms report "costs of establishing and maintaining a derivatives program exceed the expected benefits" as the second most common explanation for not using derivatives. In addition, these firms may be in or near financial distress, thus providing shareholders incentives to increase volatility, opposite the incentive provided by the tax code.

### **2.2.2: Hedging to Increase Debt Capacity.**

Stulz (1996), Ross (1997), and Leland (1998) show that, by reducing the volatility of income and/or reducing the probability of financial distress, hedging increases debt capacity. If firms add leverage in response to greater debt capacity, the associated increase in interest deductions reduces tax liabilities and increases firm value. Thus, the ability to increase debt-capacity provides a tax incentive to hedge. On the same line of argument, Logue and Oldfield (1977) observe that creditors may be concerned with total variability of cash flows where default is possible.... "Gains and losses that a firm experiences due to random currency fluctuations may influence valuation through the

effect of debt capacity. Where variability total is important, hedging in foreign exchange markets may add to the firm's debt capacity."

Specifically, in his presidential address to the American Finance Association, Leland (1998) argues that hedging increases value through two different ways related to debt usage. The principal gain comes from "the fact that lower average volatility allows higher leverage with consequently greater tax benefits." A secondary hedging gain comes from 'lower expected default rates' and distress costs, resulting from unused debt capacity. That is, the majority of the gain comes from increased leverage/tax deductions but a portion of the increased debt capacity goes unused, resulting in lower distress costs, which also increases firm value. And Ross (1997) argues that reduction in expected distress costs is less important than tax shield from increased leverage.

### **2.2.3: Non-tax incentives to Hedge.**

#### **2.2.3.1: Expected Costs of Financial Distress.**

Financial distress (where obligations to creditors are not met or are met with difficulty) is often a long-term process and has an impact on the capital structure, investment policies and performance of many firms even after they emerge from debt restructurings. James (1995) finds that many firms increase their investment expenditures only by very little in the first two years after a debt restructuring. Hotchkiss (1995) shows that in each of the first five years after emerging from bankruptcy, between 35 percent and 41 percent of firms that complete debt restructurings emerge with a leverage ratio that is higher than industry median and most are still significantly leveraged than before the onset of financial distress. Furthermore, between one-quarter and one-third of all distressed firms, re-enter financial distress a few years after completing a debt restructuring (Hotchkiss 1995).

Even if a firm manages to avoid liquidation as a result of financial distress, its relationships with suppliers, customers, employees and creditors may be seriously damaged. Arnold (2002) puts the cost of financial distress into two categories: direct and indirect costs. Direct costs include lawyers' fees, accountant fees, court fees and management time. By contrast, indirect costs involve lost sales, lost profits and goodwill

(due to customers' lack of trust on the firm); lost inputs and more expensive trading terms from suppliers; selling assets may fetch lesser than book value amount as this exercise might be carried out quickly; management may give excessive emphasis to short-term liquidity, e.g. cut research and development and training, reduce trade credit and stock level at the expense of short-term benefits. Other indirect costs include temptation to disinvest by selling healthy businesses to raise cash, loss of staff morale and reduced competitiveness as a result of conserving cash through lower credit terms offered to customers.

If financial distress is costly (as from above), Smith and Stulz (1985) argue that hedging can increase firm value by reducing volatility and the probability of distress. Smith and Stulz (1985) and Shapiro and Titman (1986), show that direct and indirect costs of financial distress lead a firm to adopt hedging strategies. For example, Smith and Stulz (1985) show that a levered firm that hedges can lower expected bankruptcy costs and increase firm value. Shapiro and Titman (1986) suggest that the firm can lower costs in a number of indirect ways by hedging. Specifically, if hedging lowers the probability of financial distress, then risk-averse stakeholders with un-diversified claims, such as employees, suppliers, and customers, will require a lower risk-premium for contracting with the firm. These savings increase firm value.

For hedging to increase shareholders wealth, the firm must convince potential bondholders that it will hedge after the bond sale and hence, that expected bankruptcy costs are not as high as the firms investment policy would otherwise suggest. But potential bondholders recognise that hedging after the sale of the debt is not in the stockholders' best interests. Although hedging increases the value of the firm, it also redistributes wealth from shareholders to bondholders in a way that makes shareholders worse off.

But there at least two ways that market forces create incentives for shareholders to pursue a hedging policy. First, if the firm borrows frequently, it benefits from a reputation for hedging since that reputation increases the price for its new debt. Yet, such reputation is not likely to be sufficient to ensure that the firm will hedge when the probability of bankruptcy is large. Then, the gain from no longer hedging is likely to outweigh the cost of lost reputation, since the reputation is valuable only if the firm successfully avoids

bankruptcy. Second, hedging provides a means whereby the firm can reduce the costs of financial distress imposed by bond covenants (restrictions) that constrain the shareholders to take actions they would otherwise avoid. For example, binding bond covenants can force the firm to alter its investment policy; hedging can reduce the likelihood that covenants become binding.

Froot, Scharfstein, and Stein (1993) recognize distress costs and show that hedging can reduce the under-investment problem resulting from the dead weight costs associated with external financing. Stulz (1996) emphasizes the role of hedging in preventing left-tail outcomes that force firms to bypass investment opportunities. Just to give an example, a company can expend blood, sweat and tears on achieving a 20 percent rise in exports (opportunity cost). But when it converts its foreign income into its home currency, it may be in for nasty shock. If the domestic currency has risen by 20 percent, all the extra profits that would have been re-invested back to the business are wiped out. Hedging can help to reduce this phenomenon (currency risk) and there after enable the firm to take advantage of new emerging opportunities.

Many papers use the debt ratio to measure expected costs of distress and find that hedging increases with the debt ratio (Dolde, 1995; and Haushalter, 2000). Most studies interpret a positive debt coefficient as evidence that greater expected financial distress costs cause greater hedging, which assumes that firms with higher debt ratios face higher probabilities of encountering financial distress. It is important to emphasize that theory indicates that hedging/leverage causality can go both ways: hedging can increase debt-capacity, but higher leverage (to the extent that it increases the probability of distress) can increase the incentive to hedge. Therefore, to model the hedging/capital structure decision as a simultaneous system, which is appropriate if these two corporate policies are jointly determined, is imperative indeed.

Hedging can reduce under-investment problems (Myers, 1977) and Myers and Majluf (1984)). Bessembinder (1991) argues that if a firm can credibly commit to a hedging policy at the time of a financing decision, the under-investment problem is attenuated because the value of debt becomes less sensitive to incremental decisions.

Froot et al. (1993), argue that volatility is costly because positive Net Present Value (NPV) projects may be rejected if internal funds are relatively scarce in some states of

nature. Hedging allows a firm to shift internal funds into states where they would otherwise be scarce. If internal funds are cheaper than external funds, hedging permits the company to finance valuable investment projects and increase firm value.

Tufano (1998) argues that managers might hedge to avoid scrutiny of negative net present value (NPV) - 'Pet Projects' by external capital markets. Providers of external capital would not fund these pet projects. However, if managers use hedging to ensure the availability of internal capital, then the projects might be funded. Tufano thus suggests that hedging can lead to over investment. However, Tufano notes that if 'Pet Projects' agency costs are relatively low, then under-investment concerns will dominate.

Under-investment problem is most severe for firms with valuable investment opportunities, which John and Daniel (2002) quantify with the market-book ratio. Several empirical studies examine the relation between market-book and hedging and find no relation (Mian, 1996 and Allayannis and Ofek 2001).

However, several papers find that hedging increases with Research and Development (R&D) spending (Dolde, 1995).

### **2.2.3.2: Managerial Compensation, Risk Aversion, and Hedging.**

The corporation's managers, employees, suppliers, and customers are frequently unable to diversify risks specific to their claims on the corporation. Because they are risk averse, these stakeholders require extra compensation to bear the non-diversifiable risk of the claims. Employees demand higher wages if the probability of lay off is greater. Managers demand higher salaries (or perhaps an equity stake in the company) if the risks of failure, insolvency and financial embarrassment are great. Suppliers set more unfavourable terms in long-term contracts with companies whose prospects are more uncertain. And customers, concerned about a company's ability to service their products in the future or fulfill warranty obligations, will be reluctant to buy its products.

With limited liability, the amount of risk that can be allocated to the stockholders is restricted by the company's capital stock. But the firm can reduce the risk imposed on other claimholders by hedging. Thus as long as the reduction in compensation of managers and employees and other suppliers plus the increased revenues from customers exceed the costs of hedging, hedging increases the value of the firm.



### **2.2.3.3: Managerial risk aversion and Hedging.**

Shareholders hire managers because they have specialised resources that increase the value of the firm. Managers cannot use their expertise unless they have some discretion in the choice of their actions. Yet, unless faced with proper incentives, managers will not maximise shareholder wealth.

The managerial compensation contract must be designed so that when managers increase the value of the firm, they also increase their expected utility. Stulz (1984) and Smith and Stulz (1985) reveal that if managers have concave utility functions, and the variability of their compensation is related to the volatility of corporate income or cash flows, then corporate volatility can be costly. If managers cannot effectively hedge corporate volatility in their personal accounts, or if it is cheaper for the firm to hedge than it is for managers, then corporate hedging can improve managerial welfare.

Corporate hedging can be optimal if it reduces the risk premium a manager demands, and likewise required compensation. Tufano (1996) and Schrand and Unal (1998) find evidence that hedging increases with managerial shareholdings and decreases with managerial optional ownership. Other studies such as G'eczy et al. (1997) and Haushelter (2000) find no evidence that managerial risk aversion or shareholdings affect corporate hedging.

The solution to the hedging problem has several interesting properties. First, if the manager's end-of-period wealth is a concave function of the end-of-period firm value, the optimal hedging strategy is to hedge the firm completely, if this is feasible.

As the manager is risk averse, he will choose to bear risk only if he is rewarded for doing so by higher expected income. Since his expected income is maximised when the firm is completely hedged, the manager will choose to bear no risk.

Second, if the manager's end-of-period wealth is a convex function of the end-of-period firm value, but the manager's expected utility is still a concave function of the end-of-period value of the firm, the optimal strategy generally will be to eliminate some, but not all, uncertainty through hedging. In this case, the expected income of the manager is higher if the firm does not hedge, since his income is a convex function of the value of the firm. However, because the manager is risk averse, he will want to give up some

expected income to reduce risk. Faced with a trade off between expected income and risk, the manager will not, in general, choose a policy that makes his income risk-less.

Third, if the manager's end-of-period utility is a convex function of the end-of-period firm value, then the manager's end-of-period utility has a higher expected value if the firm is not hedged at all. Bonus or stock option provisions of compensation plans can make the manager's expected utility a convex function of the value of the firm. If manager's expected utility is a convex function of the value of the firm, the manager will behave like a risk-seeker even though his expected utility is a concave function of his end-of-period wealth.

Frequently, compensation packages make the manager's end-of-period wealth a concave function of the firm value in some regions and a convex function in others. This suggests that hedging will take place for some values of the firm and not others.

Furthermore, for values of the firm that manager's end -of-period wealth is a convex function of firm value, the manager may choose to "to reverse-hedge" (make the value of the firm even more dependent on the realisation of some state variable). If expected returns to financial asset vary, the manager faces a trade off between expected income and risk of income. In such cases, he will hedge less if hedging involves going short in a portfolio with a higher expected return. If transactions cost increase, the firm will hedge less, as hedging decreases the manager's expected end-of-period wealth. We also must assume that the firm has a comparative advantage in hedging over the manager. In other words, it should not pay for the manager to hedge his end-of-period wealth on his personal account. The combination of transactions costs, economies of scale and the large number of managers within any firm make this comparative advantage likely. If there is a single manager, scale economies can still induce the manager to hedge through the firm. Note that the size of most future contracts is too large to make them useful to hedge the manager's income.

#### **2.2.3.4: Managerial Compensation and Hedging.**

Managers whose compensation is a concave (or not too convex) function of firm value have incentives to reduce firm cash flow variability. Hence, such managers might reject variance-increasing net present value (NPV) projects. If hedging costs are negligible, it

pays to let managers hedge as this increases incentives to take variance-increasing positive NPV projects. If shareholders instead try to prohibit hedging, managers will focus more on non-priced skills. Still, as long as their compensation depends on firm value, managers have incentives to consider market valuation in evaluating projects.

With costly hedging, shareholders have incentives to devise a compensation plan that discourages managers from devoting excessive resources to hedging. This can be accomplished when computing the manager's compensation by filtering out those changes in firm that are not under the manager's control and by making the manager's compensation a more convex function of firm value. However, it will generally not be efficient to eliminate all incentives to hedge, as hedging can be profitable. Moreover, a compensation plan that eliminates all hedging incentives would be costly to negotiate and implement.

There are empirical implications to hedge. A manager's compensation often includes a payment whose value depends on accounting earnings. It follows that the manager's expected utility depends on both the firm's market value and its accounting earnings. If the manager's utility depends heavily on accounting earnings and is concave function of accounting earnings, one would expect the firm to promptly hedge accounting earnings even if doing so increases the variance of the firm's economic value.

Managers' risk aversion can lead them to hedge, but it does not necessarily do so. If the compensation package of the manager is such that his income is a convex function of the value of the firm, it can be the case that the manager is better off if the firm does not hedge. Hence, the more option-like features in a firm's compensation plan, the less the firm is expected to hedge. For instance, bonus plans that make a payment to managers only if accounting earnings exceed some target number will induce managers to hedge less since this payment is a convex function of accounting earnings.

If a manager owns a significant fraction of the firm, one would expect the firm to hedge more, as the manager's end-of-period wealth is more linear function of the value of the firm. This reinforces the incentive to closely held firms to hedge since the owners are unlikely to hold well diversified portfolios and, thus, have incentives to induce managers to reduce the variance of the firm's returns.

### **2.2.3.5: Competitive Impacts.**

The hedging program can allow firms to undertake competitive pricing in the output market without significantly reducing margins. Maintaining margins is viewed as a primary strategic goal of the firms, taking precedence over sales volume. This is consistent with the findings of a preference for linear 'earnings growth.'

Consequently, short-run adverse foreign exchange movements would, in turn, adversely affect sales through higher prices in foreign markets. Hedging could allow the firm to smooth through exchange rate fluctuations. This would be economically meaningful if maintaining relationships with customers requires consistently competitive product pricing (e.g., undifferentiated products). Similarly, there may be other costs associated with adjusting prices in foreign markets (e.g., updating pricing information and loss of a value reputation).

Finally, there may exist economies of scale, a tendency from repeat business (due to experience learning curve), or other strategic issues that make competitive factors important in the long term. This brings into question whether firm's hedging horizon is sufficient to act as a smoothing mechanism for volatile interest rates. However, hedging in the near-term may allow for the simultaneous stabilisation of margins and preservation of competitive standing while longer-term competitive solutions are implemented, e.g., changing supplier and relocating operations. This would be consistent with Mello, Parsons, and Triantis (1995) and Chowdhry and Howe (1999) and Arnold (2002) who show that a multinational firm with international production flexibility implements a financial hedging program as part of its optimal operating strategy.

Other theoretical work suggests that competitive and strategic factors can lead to optimal hedging strategies. For example, Downie and Nosal (1998) show that under certain conditions a firm that possesses market power in the product market can achieve a first-mover advantage over rival firms through the use of risk management products. Froot, Scharfstein, and Stein (1993) suggest that hedging can be an important part of the optimal investment strategy of multinational corporations, particularly for firms facing product-market competition where investment is a "strategic substitute."

Finally, Allayannis and Weston (1999) find that multinational firms in more competitive industries are more likely to use currency derivatives.

The competitive benefits of a risk management program are primarily short lived. Longer strategic decisions, such as expansion into new markets, and location of manufacturing facilities, are based primarily on other factors. Once a major strategic decision has been made, the decisions regarding foreign currency and risk management are undertaken (e.g., functional currency and hedging strategy). However, interest risk management may enter indirectly into strategic decisions, because the long- term strategic plan may use the longer- term hedge rate extrapolated for at least more than one year.

#### **2.2.3.6: Facilitation of Internal Contracting.**

Hedging with derivatives to establish a hedge rate has several potential benefits. For one, it may improve the senior manager's ability to make value-maximising pricing decisions. If foreign managers feel more certain of the final US \$ margins they will obtain, this could induce them to undertake a more aggressive, and value-increasing, pricing policy. Likewise, if foreign exchange hedging allows the firm to more closely follow its optimal operating policy, they will increase firm value.

For example, it may be beneficial for firm to expand its operations in a particular country, but uncertainty surrounding the decision process increases the chance of rejecting this beneficial project. The ability to use hedge rate decreases the uncertainty surrounding the project decision and increases the chance of accepting the project.

The importance of this rate in internal decision- making is enormous since the hedge rate is used to set product prices in local currency, forecast sales and consequently production, and set goals for division's managers. Stulz (1999) argues that total project risk is important in capital budgeting. This concept is consistent with the findings of Minton and Schrand (1999) that show that firms with lower cash flows volatility have higher levels of investment.

Consistency in the hedge rate may allow for more efficient internal contracting. Decreasing the uncertainty surrounding the terms of contracts can provide for incentives that are more closely related to variables under the control of agents. For example, if using a hedge rate permits a well performing manager from being penalised by changes in the exchange rate over which she has no control, then this could be in the best interest

of the firm (Stulz, 1984). Likewise, risk-averse managers will require less total expected compensation if hedging reduces the volatility of their expected earnings.

In practice, the interest rate group must balance opposing factors when determining the hedge rate. Using put options eliminates downside risk while leaving room for upside potential but does not reduce the variation as much as using forward contracts. Locking in a rate with forward contracts may later turn out to be less favourable. This problem is not lost on regional managers whose operations and compensation are materially affected by the hedge rate.

The interest risk management program has ended up producing some side effects. For example, regional managers lobby the central treasury for better hedge rate. Apparently, the problem can be quite severe. Managers may use more time managing managers instead of managing currencies. A second potential drawback is the extreme amount of attention paid by senior treasury managers to 'hedge rate variance,' or time-series variation in the hedge-rate. For example, considerable regard is paid to the difference between spot rate and hedge rate. In practice, this often results in attempts by the foreign exchange group to have hedge rate better than the spot rate or 'beat the spot rate.'

These drawbacks are of interest since most existing research indicates agency problems may result in risk management, where as this evidence suggests that risk management can be the source of internal agency problems. These findings are similar to a model proposed by Tufano (1998) in which risk managements leads to agency costs when hedging replaces the need to raise funds in the external capital markets.

### **2.2.3.7: Hedging Against Speculating.**

Equity holders are likely to support the use of currency derivatives for speculation if speculation is a profit-making activity and if equity shares are viewed as options in the value of a levered firm (Ljungqvist, 1994). For speculation to be a profit-making activity in rational markets, either a firm must have an information advantage related to prices of the instruments underlying the derivatives, or it must have economies of scale in transactions costs allowing for profitable arbitrage opportunities. This suggests that firm size and the use of other derivatives are possible determinants of the use of currency derivatives speculation.

If equity holders view their shares as options on the value of a levered firm, we would expect them to support any speculation that increases firm volatility when the firm is close to (or in) financial distress so that the option is near-the-money (or out-of-the-money). Managerial option holdings similarly provide incentives for speculation. Therefore, results that are related to the association between currency derivatives use and variables that measure financial distress will also measure the potential motives of equity holders to speculate.

Finally, in a signaling framework, Ljungqvist (1994) assumes that speculation is an unobservable fair gamble with expected profits equal to zero (including no transactions costs), and that there is no penalty for incurring a negative outcome from the speculative activity. If we assume that low expected output implies financial distress, then the model suggests that firms near bankruptcy have greater incentives to speculate and delay the resolution of uncertainty. This result, however, relies heavily on the assumption that speculation is unobservable. This assumption is unnatural, given increased monitoring by outside debt holders as firms near bankruptcy.

#### **2.2.3.8: Earnings Smoothing.**

In a perfect market setting, reducing earnings volatility by hedging is not value enhancing. However, theoretical and empirical research, has suggested possible value-increasing explanations for this behaviour. For example, Dyle (1988) presents a model where current owners wishing to sell shares use accounting reports to signal a higher value of the company. Trueman and Titman (1988), among others, show that a higher-maximising manager may smooth a firm's income stream as the result of information asymmetries between management and investors. Smith and Stulz (1985) and DeMarzo and Duffie (1991, 1995) suggest similar possibilities as they relate to corporate hedging. Consistent with these theories, the concern for 'linearity' stems from perceived adverse impact on the share price from volatility in reported accounting numbers. Specifically, senior management's view is that the market reaction to lower than expected earnings is more negative than the positive reaction to higher-than expected earnings; consequently, lower volatility in earnings increases firm's share price. To analysts, hedging interest risk

is a box that must be checked, that if you do not do it they will penalise you with a higher discounting rate.

Analysts also confirm the importance of smooth earnings. Some analysts explain that the industry generally trades based on price earning ratio (P/E), with points added to the multiple for higher growth, earnings and revenue consistency and so on.

The concern over potential negative effects on earnings is not limited to equity analysts. The Standard and Poor's debt analysts for firms' note that firms cannot afford to not have some risk management program. "If interest had a big impact on earnings we would want to know what happened, and if it could have been managed, why was not it" (Brown, 2000).

#### **2.2.4: Other incentives to Hedge.**

DeMarzo and Duffie (1991) and Breeden and Viswanathan (1998) assume that information asymmetries exist between managers and shareholders. The authors further argue that firms should sometimes hedge based on private information that cannot be conveyed costlessly to shareholders. Breeden and Viswanathan (1998) argue that a high-quality manager has incentive to hedge away uncertainty about her performance so that the market can more precisely infer her ability.

If firms owned primarily by institutions face less informational asymmetry of the type assumed by DeMarzo and Duffie (1991) and Breeden and Viswanathan (1998), their theories imply that high-institution-ownership firms should hedge less. G'eczy et al, (1997) find the opposite, namely that firms with high institutional ownership are more likely to hedge with currency derivatives.

Most prior studies found that the likelihood of using derivatives increases with firm size (firm's size is measured as a natural logarithm of its total assets). A positive size effect is consistent with firms not hedging with derivatives unless the benefits are larger than the fixed costs of establishing a hedging program. Also, Nance et al. (1993) notes that, 'hedging substitutes' can reduce the need for hedging. For example, dividend restrictions might allow a firm to retain sufficient liquidity ratios to make hedging unnecessary.



## **2.3: Empirical Implications of Theories of Corporate Risk**

### **Management**

Theorists have constructed two classes of explanations for managers' choice of risk management activities on behalf of their firms. One class of explanations focuses on risk management as a means to maximise shareholder value, and the second focuses on risk management as a means to maximise managers' private utility. This section describes these theories, and the characteristics of gold mining firms that theories predict will be related to the level of risk management.

#### **2.3.1: Shareholder Maximisation Hypotheses**

##### **2.3.1.1: Taxes**

The tax-induced explanation for risk management, formalised by Smith and Stulz (1985) holds that in the presence of a convex tax schedule, firms would reduce expected taxes by using risk management to fix the level of taxable earnings. Greater convexity of the tax schedule should lead to more risk management.

##### **2.3.1.2: Financial Distress**

Financial distress arguments for risk management, developed by Smith and Stulz (1985), hold that by reducing the likelihood of costly financial distress, risk management can increase the expected value of the firm. This increase in value comes from the reduction in deadweight costs, and an increase in debt capacity, which in turn can benefit the firm through valuable tax shields. Shapiro and Titman (1986) extend the costs of financial distress to include the deterioration of valuable relationships with buyers and suppliers who value long-term access to the firm, for example to provide ongoing service.

Gold mining firms encounter financial distress if the price of gold falls below their costs to produce gold and make fixed financial payments.

### **2.3.1.3: Investment Policy.**

Froot, Scharfstein, and Stein (1993) argue that without risk management, firms will be forced to pursue sub-optimal investment policies. They argue that there is a strong link between cash flow and investment due to capital market imperfections, typically information asymmetries. When the firm's cash flows are low, obtaining additional financing is very costly, inducing the firm to scale back value-maximising investments. Risk management programs that break this dependence of investments on cash flow can maximise firm value. Froot, Scharfstein, and Stein's theory suggests that firms with key planned investment programs and costly external financing would be inclined to use risk management to avert the need to access costly external financing to continue these programs.

A drop in gold prices and cash flow could bring to a halt the major investment programs of mining firms: exploration and acquisition.

However, Tufano (1996) finds that shareholder maximisation notions of corporate risk management have relatively little predictive power in this industry. There is no observable relationship between the extent of risk management undertaken by gold mining firms and either the likelihood of financial distress, the degree to which they face convexities in their tax schedule, or the portion of investment opportunities represented by firm's acquisition programs. Contrary to the simple notion that firms might set up risk management programs to protect large on-going investment programs, there is a negative relationship between historical exploration activities and risk management.

At first glance the theory that firms may use risk management to protect themselves from costly external financing seems supported, in that smaller firms (i.e., those with smaller reserves) manage more risk.

There is some evidence of a positive relationship between leverage and hedging activity, as predicted by theory; a positive relationship between leverage and derivative use is also shown by G'eczy, Minton and Schrand (1995) and by Dolde (1995).

## **2.3.2: Managerial Utility Maximisation Hypotheses**

### **2.3.2.1: Managerial Risk aversion**

Smith and Stulz (1985) and Stulz (1984) focus on managerial risk aversion as a driver of corporate risk management (hedging). Managers whose human capital and wealth are poorly diversified strongly prefer to reduce the risk to which they are exposed. If managers judge that it will be less costly for the firm to manage this risk than to manage it on their own account, they will direct their firms to engage in hedging. Smith and Stulz model predicts that managers with greater stock ownership would prefer more risk management, while those with greater option holdings would prefer less hedging, because stocks provide linear payoffs as a function of stock prices where as options provide convex payoffs. The global convexity of the option contract may induce managers to take on greater risk, because lower risk would reduce the volatility and hence the value of the expected utility of their option contracts.

### **2.3.2.2: Signaling Managerial Skill**

Breeden and Viswanathan (1996) and DeMarzo and Duffie (1995) argument is based upon managers' reputations. In these models, outsiders cannot observe managerial quality, nor can they disentangle profits due to managerial quality as compared to exogenous market stock. As a result, managers may prefer to engage in risk management so as to communicate their skills to the labour market. Models where managers use hedging to signal their abilities presume that investors cannot separate results attributable to risk management from those attributable to ability. Some firms in gold mine industry measure managerial performance using operating measures like cash cost, yield per ton ore, additions to reserves, and accident records. Tufano (1996) finds that, as predicted by Smith and Stulz (1985), firms whose management teams hold more options- and hence face greater convexity in payoffs-tend to manage less gold price risk. In addition, as predicted, firms whose managers have more wealth invested in the firm's stock manage more gold risk. This latter result is somewhat weaker across the board, especially in the annual specification.

## **2.4: Alternatives to Risk management as controls.**

Instead of managing risk with financial contracts, firms could pursue alternative activities that substitute for financial risk management strategies. They could diversify instead of hedging or insuring, or they could adopt conservative financial policies such as maintaining low leverage or carrying large cash balances to protect them against potential hardship (a form of negative leverage). Greater use of these substitute risk management activities should be associated with less financial risk management and a lower delta-percentage (the extent of risk management).

Consequently, Tufano (1996) find that firms that hold greater cash balances manage less risk. However, the data fail to show any negative relationship between the extent of diversification outside the mining industry and the degree of risk management.

Conclusively, Tufano (1996) suggests that hedging practices in the gold mining industry appear to be associated with both firm and managerial characteristics, although theories of managerial risk aversion seem more informative than those of shareholder value maximisation. The evidence shows managers who own more options manage less risk, but those who own more shares of stock manage more risk. He finds virtually no relationship between hedging and firm characteristics that value-maximising risk management theories would predict. In addition, firms with lower cash balances manage more gold price risk and firms with greater percentage held by outside block holders tend to manage less risk

Marketers of corporate risk management products sometimes attempt to prey risk aversion. One risk manager's advertisement, complete with images of stelelysed crocodiles and leopards, warns potential customers; "in the complex financial jungle, you do not dare to make move until you are positioned to survive... because one false step could risk you entire enterprise" (Tufano, 1996). The evidence from the gold mining industry may suggest that some managers may be more receptive to these messages than others. Firms whose managers hold large number of shares of stock may be willing, and those holding options less willing, to commit their firms to higher levels of price risk management, consistent with simple notions of managerial utility maximisation. Thus, in this setting, managers' private preferences seem to affect corporate risk management choices. Given the practical limitations of managers eliminating this risk on their

personal accounts, it appears as if they manage their firms so as to moderate these risks at the corporate level. If risk management is costly one must ensure that corporate resources were devoted to value maximisation and not managers risk reduction.

## **2.5: Hedging Methods Against Interest Rate Movements.**

There is a wide range of methods available to minimise cash flow volatility. It includes both internal and external techniques. Internal techniques use methods of exposure management that may form part of a firm's regulatory financial management (e.g., matching, netting, leading and lagging and avoiding risk by invoicing customers in home currency). This section falls short of explaining internal engineering techniques, but it evaluates critically the external engineering techniques such as futures, options, forwards and swaps but to mention a few. It ends by drawing some guidelines (model frameworks) to help managers make sound decisions about the option mix of hedge/not hedge.

### **2.5.1: Forward Rate Agreements (FRAs)**

Reilly and Brown (2000) define forward rate agreements (FRAs) as a contract, where two parties agree today to a future exchange of cash flows based on two different interest rates. One of the cash flows is tied to a yield that is fixed at the deal's origination (the fixed rate); the other is determined at some later date (the floating rate). On the contract's settlement date, the difference between the two interest rates is multiplied by the FRAs notional principal (the "scale" of transaction) and the prorated to the length of the holding period.

### **2.5.2: Caps and Floors**

Interest rate cap and floor agreements are equivalent to portfolios of interest rate option contracts, (Reilly and Brown (2000)), with each contract corresponding to a different settlement period. A cap agreement is a series of cash settlement interest rate options, typically based on LIBOR. The seller of the cap, in return for the option premium that is usually paid at origination, is obliged to pay the difference between LIBOR and the exercise, or cap rate, whenever that difference is positive. The seller of the floor

agreement makes the settlement Payments only when the LIBOR is below the floor rate. No payment is made if LIBOR is above the floor or below the cap rate.

As with swaps and FRAs, settlement can be either in advance or in arrears. Payment in arrears is more common because these contracts usually are used to hedge exposure floating-rate bank loans and notes, which typically settle in arrears.

### **2.5.3: Interest Rate Collars**

An interest rate collar is a combination of a cap and a floor, a long position in one and a short position in the other. A special interest collar occurs when the initial premiums on the cap and the floor are equal and therefore offset each other.

### **2.5.4: Interest Rate Swaps**

A swap is an exchange of cash payment obligation (Arnold, 2002). It is based upon the simple principle 'I will pay yours if you pay mine'.

A currency swap is an agreement to exchange a principal amount of two currencies and, after a pre-arranged length of time, re-exchange the original principal. An interest-rate swap is where one company arranges with a counter party to exchange interest-rate payments. For example, the first company may be paying fixed-rate interest but prefers to pay floating rates. The second company may be paying floating rates of interest based on LIBOR (London Inter-bank Offered Rate), but would benefit to paying a fixed obligation. Under swap arrangement, the two companies can swap their obligations.

One motive for entering into a swap arrangement is to reduce or eliminate exposure to rises in interest rate or currency rate changes as it is able to hedge long-term exposures (more than two years). Another reason for using swaps is to take advantage of market imperfections, that is, a company can borrow where it has comparative advantage over the other.

A swap that is so structured does not create any interest rate risk in addition to the currency risk. The currency risk exists in the interest payments since there is no longer any currency risk as far as the exchange of principal is concerned (i.e., the rate of exchange was set at the start).

### **2.5.5: Cross Currency Swaps**

Cross currency swaps come in two forms; currency coupon swaps and cross basis swaps. The differentiating feature is the interest determination used in the two cash flows that are swapped. The common features are that all swaps, involving foreign exchange have the same structure regarding the exchange of principal amounts at the maturation of the swap or, at the start and then reversed again at maturation.

Cross currency swaps introduce the element of interest rate risk in addition to the currency risk. The risk in multiple currencies swaps lies in the cash flows that are exchanged, not in the movement of principal. This is due to the fact that the exchange rate of the principal is agreed at the start of the swap and the positions of both parties are thereafter hedged.

In a cross currency coupon swap, the payment streams are swapped fixed- against-floating. The party receiving the floating interest in one currency will be paying a fixed rate of interest in the other currency. This exposes them to currency risk in as much as they risk an appreciation of the currency they are paying against the currency they are receiving, but it also exposes them to interest rate risk. If the rate of interest in the currency they are receiving declines, they will be receiving less money, while they still have to pay the same amount in the currency they are paying.

A cross currency coupon swap arrangement probably leverages the total risk of the counter parties. For example, if the interest rate of the home currency declines, one would expect the foreign currency also to appreciate against the home currency. The receiver of the floating rate would thus experience a decline in income due to the lower rate of interest, whilst at the same time the purchase of the foreign currency is going to become more expensive in terms of the home currency. The same but opposite risk holds true for the party paying the floating rate. Thus the net effect is that both parties are in double jeopardy.

In a cross currency basis swap the two streams of interest payments will each be linked to a floating rate of interest (i.e., floating-against-floating swap). The difference between the two interest rates (e.g., 6months sterling LIBOR and 6months US \$ LIBOR) forms a basis, which will narrow and widen during the term of swap.

It is clear that because 100 percent of the principal is actually exchanged in a swap, they involve as much credit risk as a forward foreign exchange agreement. However, in addition they require regular payments of interest over the period of swap. These payments create more credit risk. In result, currency swaps are treated with heavy weighting of credit risk. For banks and financial institutions, higher capital requirements have been imposed on currency swaps. All of these factors taken together result in the fact that currency swaps are less liquid than other types of swaps.

In practice therefore, it can be difficult to find a counter party for a particular swap. Even though banks and financial institutions usually step into the breach where commercial counter parties cannot be found, they will often be reluctant to do so in currency swaps because they may well be hard-pressed to hedge their own risk assumed.

The problems of lack of liquidity are frequently overcome by creating more complex swap structures (i.e., cocktail swaps) These structures were invented for banks and dealers to give them alternatives to hedge their own risk exposures, but they are equally available to clients who may have difficulty in managing a particular currency risk.

### **2.5.6: Swap Options ("Swaption")**

A swaption gives the holder of the option the right, but not the obligation, to enter into an interest rate swap having a predetermined fixed rate at some later date. Swaptions are most useful to those firms that are not sure if they will be exposed to future interest rate movements.



## **CHAPTER THREE**

### **3.0: RESEARCH METHODOLOGY.**

The research attempts to investigate if banks operating locally do hedge against interest rate risk and if there exists any alternative to hedging as a means of reducing the exposure.

#### **3.1: Research Design.**

The study is a survey of hedging practices against interest rate risk by commercial banks in Kenya.

#### **3.2: Population.**

The population consisted of all commercial banks presently operating in Kenya as at August 31, 2003. At the time of the study, there were 45 commercial banks operating in Kenya excluding the central bank of Kenya, which plays the role of a regulator. (CBK Bulletin)

#### **3.3: Data Collection.**

The data used in this study was both primary and secondary data; which was collected using a semi-structured questionnaire, administered by the researcher. The questionnaires were specifically addressed to the treasury managers or chief dealers within various banks. The interview approach was considered appropriate so that the researcher could be able to probe the respondent, who if left with the questionnaire could take time to fill it due to their busy schedules.

#### **3.2: Data Analysis.**

Descriptive statistics from the questionnaire was used to analyse the data. The data on hedging methods used by commercial banks was then presented in form of tables and charts. A comparative analysis was then used to describe each scenario that was derived from the descriptive statistics.

## CHAPTER FOUR

### 4.0: DATA ANALYSIS AND INTERPRETATIONS.

#### 4.1: Profile of the Respondents.

The study investigated hedging practices against interest rate risk of commercial banks in Kenya. The study relied on testing whether the methods stated in academic literature are used in practice by the commercial banks in Kenya. To do so, a questionnaire was circulated to all the 45 commercial banks in Kenya, of which 38 responded (84% response rate). Additional data was obtained from audited annual reports. It is therefore assumed that findings of these 38 banking companies infer the findings of all 45 commercial banks in Kenya. The data was analysed by use of an excel spreadsheet. It will be appreciated that banks are always reluctant to release information and a likelihood of misinformation cannot be entirely ruled out.

**TABLE 1: Ownership**

Type of ownership	Number	Percentage (%)	Cumulative percentage (%)
Privately owned	32	84	84
Public owned	6	16	100
<b>Total</b>	<b>38</b>	<b>100</b>	

**Source: Research data.**

Table 1 analyses the data in terms of ownership. Out of the 38 banking institutions that responded, 16% are publicly owned and they have their shares listed at Nairobi stock exchange. 84% are private owned and a closer look at most of their prospectuses would indicated very common names in their directorship, perhaps indicating that many of them are owned by family members.

**TABLE 2: Number of employees.**

<b>Number of employees</b>	<b>Number</b>	<b>Percentage (%)</b>	<b>Cumulative percentage (%)</b>
<=300	26	68	68
301-500	6	16	84
501-800	1	3	87
801-1100	2	5	92
>1100	3	8	100
<b>Total</b>	<b>38</b>	<b>100</b>	

**Source: Research data.**

Table 2 indicates that 68% of the banks have up to 300 employees, indicating that indeed, majority of the banks are quite small (and with not more than 5 branches countrywide). 6% have between 300 and 500 employees, only 1% have between 500 and 800 employees, 2% have between 800 and 1,100 employees and 3% have over 1,100 employees.

**TABLE 3: Net assets (Assets less liabilities-also known as Owners equity).**

<b>Net Assets</b>	<b>Number</b>	<b>Percentage (%)</b>	<b>Cumulative percentage (%)</b>
< 0	2	5	5
3-100 million	6	16	21
101-300 million	5	13	34
301-500 million	13	34	68
501-1,000 million	6	16	84
1,001-1,500 million	2	5	89
1,501-2,000 million	1	3	92
>2,000 million	3	8	100
<b>Total</b>	<b>38</b>	<b>100</b>	

**Source: Research data.**

Table 3 indicates that 5% of the banks have a negative capital base, meaning that they are technically insolvent (Zombie institutions) while 68% have a capital base of up to Kshs. 500 million and below. Only 8% have a capital base in excess of Kshs. 2 billion.

**TABLE 4: Existence of an independent treasury department/section**

<b>Have a treasury department?</b>	<b>Number</b>	<b>Percentage (%)</b>	<b>Cumulative percentage (%)</b>
Yes	38	100	100
No	0	0	0
<b>Total</b>	<b>38</b>	<b>100</b>	

**Source: Research data.**

Table 3 indicates that all banks (100%) have an independent treasury department, a strong indicator that in one way or another, there is a form of fund management going on in all the banks.

**TABLE 5: Borrow overseas**

<b>Borrows overseas?</b>	<b>Number</b>	<b>Percentage (%)</b>	<b>Cumulative percentage (%)</b>
Yes	37	97	97
No	1	3	100
<b>Total</b>	<b>38</b>	<b>100</b>	

**Source: Research data.**

Table 5 indicates that 97% of the banks that responded borrow funds from overseas banks; only one bank indicating 3% does not.

**TABLE 6: Investment in interest bearing securities**

<b>Invests in interest earning securities?</b>	<b>Number</b>	<b>Percentage (%)</b>	<b>Cumulative percentage (%)</b>
Yes	38	100	100
No	0	0	100
<b>Total</b>	<b>38</b>	<b>100</b>	

**Source: Research data.**

Table 6 indicates that 100% of the banks that responded invest in interest earning securities, the dominant security being treasury bills

**TABLE 7: Existence of a manual on determination of future interest rates.**

<b>Manual available?</b>	<b>Number</b>	<b>Percentage (%)</b>	<b>Cumulative percentage (%)</b>
Yes	38	100	100
No	0	0	100
<b>Total</b>	<b>38</b>	<b>100</b>	

**Source: Research data.**

Table 7 indicates that 100% of the banks do have a written manual, which acts as a guide to the treasury staff on how to determine future interest rates on new contracts, a clear indication that banks are conscious that there exists a risk in dealing with interest rates and hence a need to have a well thought out company policy and procedure on how to handle the same.

## 4.2: Hedging by Banks.

**TABLE 8: Why banks hedge.**

Reason	Number	Percentage (%)
Tax benefit	0	0
Increases debt capacity	0	0
Reduction of financial distress	38	100
Increases competitive advantage	38	100
Increases internal contracting	38	100
Meets the banks investment policy	38	100

**Source: Research data.**

Table 8 indicates that among the Kenyan banks, none is induced by either tax benefit or the potential to increase debt capacity. All the banks hedge for purposes of reduction of financial distress, increasing competitive advantage, increasing capacity for internal contracting and all in all, to comply with the corporate investment policy.

**TABLE 9: Risks that banks hedge against.**

Type of Risk	Number	Percentage (%)
Interest rate risk	37	97
Foreign exchange/translation risk	37	97
Market risk	37	97
Foreign exchange risk	37	97
Others	0	0

**Source: Research data.**

Table 9 indicates that 97% of the respondent banks hedge against the major risks documented in financial literature. Only 1 bank, representing 3% of the respondents seems not to specifically hedge against any of these risks. Apparently, this is not the same bank that does not borrow interest-earning funds overseas (Appendix 1).

**TABLE 10: Hedging instruments used by banks.**

Hedging instrument	Number	Percentage (%)
Forward rate agreements (FRAs)	8	24
Floors and caps	0	0
Interest rate collars	0	0
Interest rate Swaps	37	97
Cross currency swaps	36	95
Swaptions	37	97
Others	0	0

**Source: Research data.**

Table 10 indicates Forward Rate Agreements (FRAs) are used by 21% of the respondent banks, none use either floors and caps or interest rate collars. Interest rate swaps and Swaptions are each used by 97% of the banks and cross currency swaps are used by 36% of the banks.

**TABLE 11: Size (Net Assets) Vs Hedging instruments**

Type of ownership	Frequency of FRAs	Percentage (%)
Large > Ksh 500 million	8	100
Small =< Ksh 500 million	0	0
Total	8	0

**Source: Research data.**

Table 11 that Forward rate agreements are only used by the large banks (with equity base greater than Kshs. 500 million

### **4.3: Discussions and Interpretations.**

While theorists continue to advance new rationales for interest rates risk management (hedging), empiricists seeking to test if practice is consistent with these theories have been impeded by lack of meaningful data. More importantly, it is extremely difficult to reliably test whether banks interest rate risk management practices conform to existing theories. This section investigates whether theory and practice actually marry each other.

Ceteris paribus, according to modern finance theory, it is cheaper for shareholders to diversify project risks on their own. Thus, a company's need to hedge either the systematic or unsystematic risk of its cash flows is limited (consistent with MM propositions (1958, 1961) and Adler (1982)). But, inconsistent with this standard argument and, using the Kenyan banking industry as a case in point, it was found that banks actually do hedge at corporate level.

There are several reasons why this standard argument may not hold true. Firstly, to avoid costly external financing, banks may need interest risk management programs to maintain their access to cheap capital, that is, internal funds (Froot et al. 1993 and Stulz, 1990). Secondly, in order to reduce the value of the government's implicit call option on firm's assets via taxes, interest rate risk management programs that lead to lower earnings volatility may be optimal (Smith and Stulz, 1985). Thirdly, without some type of risk management at the institutional level, it may not be possible to disentangle business-related profits/losses from profits/losses associated with market exposures (DeMarzo and Duffie, 1995). Fourthly, banking institutions facing risk-based capital requirements may find reducing risk being cheaper than raising additional capital. Fifthly, risk management programs can reduce the costs of financial distress (Smith and Stulz (1985). Finally, the combination of transactions costs, economies of scale, and informational asymmetry between investors and managers, make it advantageous for banks to hedge.

The theories postulate that interest rate risk management activities might be linked to risk aversion of bank managers, and the form in which they hold a stake in the firm. These theories would predict that banks whose managers hold greater equity stakes, as a



fraction of their private wealth would be more inclined to manage market risk, but those whose managers hold options might be less inclined to manage such a risk.

## CHAPTER FIVE

### **5.0: SUMMARY OF FINDINGS AND CONCLUSIONS, LIMITATIONS OF THE STUDY, RECCOMENDATIONS AND SUGGESTIONS FOR FURTHER RESEARCH.**

#### **5.1: Summary of Findings and Conclusions**

##### **5.1.1: Summary of Findings**

Only sixteen percent of the respondent banks are publicly owned. From the study, it was found that most of the banks which are publicly owned "overseas branches" with the parent companies being either in Europe, America or Asia. The publicly owned companies also tend to have a very large asset base and with employees numbers being in excess of 800. Majority of the privately owned banks tend to have family members as directors, with the key management positions also being held by close members of the family. Their capital base is base relatively small compared to the publicly owned banks (Appendix 1)

Only large banks (8 out of the 38 respondents), with equity base in excess of Kshs. 500 million have Forward Rate Agreements as one of the hedging tools. It would appear as if this is a policy dictated from the parent company as nearly all these organizations are local branches of multinationals based in overseas.

**Borrowing of funds overseas :** Only three percent of the respondent banks do not borrow funds from overseas (Appendix 1), the rest are either funded by their parent companies abroad or borrow from commercial banks abroad. Since the interest rates abroad are quite low compared to the rates locally, it would appear that banks operating in Kenya borrow funds abroad for purposes of lending locally, and with sound hedging policies in place, they are able to make profits out of these transactions.

**Ownership and Size :** It was found out that over 50% of the banks are owned by family members, most of them Asian families. These organizations tend to have a small to medium capital (up to Kshs. 500 million) The number of employees in these organizations is also relatively small compared to those found in large banks which are listed at Nairobi Stock Exchange.

**Why banks hedge :** None of the respondent banks hedge for purpose of either tax benefit or for purpose of increasing debt capacity. It will be appreciated that the tax system in Kenya does not give any incentive to warrant the investment funds "for tax gains benefit". In Europe and America, tax regimes are designed such that with very prudent tax planning system in place within the organization, banks are able to save a lot of funds, hedging for purposes of gaining tax advantage therefore acquires greater meaning in both Europe and America than in Kenya. It also appears from the research that no banks hedge for purposes of increasing debt capacity, meaning that the concept of optimal capital structure is yet to be appreciated. For multinationals, how the capital structure looks like seems to be decided and dictated by the parent company and therefore hedging for that purpose does not become a primary reason within the local market. The study reveals that all banks hedge for the purposes of reduction of distress, increasing of competitive advantage, increasing internal contracting and in overall, to meet the banks investment policy, which is in line with the financial literature.

**Hedging instruments:** Out of 38 commercial banks, it was found out that 9 percent use Forward rate Agreements (FRAs), 0 percent use caps and floors, 0 percent use interest rate collars, 97 percent use interest rate swaps and 97 percent use swap options. Furthermore, it was found that all banks primarily hedge in order to reduce financial distress, increase competitive advantage and also to increase internal contracting. It is a policy in all the banks to hedge in one-way or another. Interestingly, all the multinational banks use forward rate agreements as one of the hedging methods. Forward rate agreements and Caps and floors tend to thrive in countries where the stock exchange deals with these specific securities, it will be appreciated that Nairobi Stock Exchange does not have these instruments as over the counter trading securities and it is not very

surprising that these instruments are hardly used by the banks in Kenya for hedging against interest rate risks.

**Specific risks that banks hedge against** : All but one of the respondent banks hedge against interest rate risk, translation risk, market risk and foreign exchange risk. The research therefore reveals that no bank engages in only one hedging practice. It was further found out that all the banks have a distinct treasury department, with clearly written manuals that guide its day to day functions, this tends to rationalize the way hedging is done and since the procedures are very well documented, it is therefore possible to review and update these policies as and when the circumstances warrant that the changes be implemented

### **5.1.2: Conclusions**

This analysis provides insights about the enormous benefits banks would obtain should they decide to hedge at corporate level. There are motivating factors/incentives, which can lead firms to manage their cash flow volatility, caused by changes in the stated variables such as, interest rate, commodity price, or exchange rate. Many common explanations for risk management (minimising expected taxes, avoiding costs of financial distress, managerial risk aversion and coordination of cash flows and investment, smoothing earnings, facilitating internal contracting via the hedge rate, obtaining competitive pricing advantages and, to lessen informational asymmetries) do not fully match the evidence obtained from the case study used in this research.

Interestingly, however, this analysis observes all the banks have mandatory hedging programs. It further reveals that interest rate swaps and swaptions are the most popular hedge methods followed by cross currency swaps

## **5.2: Implications and Recommendations**

Generally, There have been an increasing number of corporations (banks and non-banks) using financial derivatives in recent years, to hedge their exposures. This is despite the fact that hedging does not increase the value of a firm (consistent with MM propositions

(1958, 1961) and Adler (1982). The critical assumption that underlies this fact is that capital markets are perfect. If banks are exposed to interest risk in an imperfect environment, these exposures can impose costs (exposure to volatile interest rates and exchange rates is costly) on the bank. Hedging can help to reduce these costs because it reduces the dependence of bank's value on changes in the state variables such as interest rates, commodity prices, and exchange rates.

One motive for entering into a swap arrangement is to reduce or eliminate exposure to rises in interest rate or currency rate changes as it is able to hedge long-term exposures (more than two years). Another reason for using swaps is to take advantage of market imperfections, that is, it is cheaper for a company to borrow where it has comparative advantage over the other. And one reason for using forwards is to lock in the price the company is going to pay or receive in the near future. Another reason might be because of its simplicity relative to other hedging strategies (generally, many companies may lack expertise to hedge by using other hedging strategies such as options).

A bank might choose to use long-term customised swaps to manage interest rate exposures that extend over multiple periods but are predetermined (e.g., foreign-denominated debt payments). The implication is that this strategy may be the lower cost alternative because it results in a lower level of basis risk than the choice of using a series of short-term forward contracts. On the other hand, short-term forwards might be the lower cost alternative for frequent short-term transactions that are characterised by uncertainty about their timing and quantities (e.g., foreign-denominated sales account). Tufano (1996) indicates that both swaps users and forwards users have significantly higher foreign income and sales than firms that do not use currency derivative instruments.

The key distinction between forwards and options is that the former instrument gives up some of the right tail of the distribution in order to reduce the left tail but, the latter eliminates downside risk while keeping upside potential open, albeit at an initial upfront cost. Because of this distinction, currency options can be the best derivative to use, to hedge the risk of anticipated transactions (tender-to-contract), since they have unlimited

potential profit against limited risk. In the case of an anticipated transaction, there is only a potential position in the cash market.

There are a number of reasons why institutions use options as a hedging vehicle. If the motivations for risk management are external financing, financial distress possibilities, managerial incentives, or tax optimisation, the institution may be willing to take the underlying asset exposure, leading to a partial hedge of its cash flows. Managing interest risk by hedging has an impact and a cost implication for a bank. It impacts on organisation in terms of staff training, creating a risk management culture and even by increasing the employee head-count. If a bank chooses to implement a risk management program, it also must consider the costs associated with particular instrument choices.

### **5.3 : Limitations of the Study**

The attitude of the interviewees and respondents towards the research was quite surprising, most of the respondents have never appreciated the values and benefits of research and regrettably, most of them see the exercise as a waste of time. It is also feared that some of the respondents might have deliberately given some misleading information as banks are always very conscious of the information they release, fearing that it might get into the hands of the competitors. Constraint of the time always denied the researcher an opportunity to return to the respondents to either seek more information and clarification or even pursue the defaulting respondents.

Due to use of the questionnaire to collect primary data, the inherent weaknesses associated with this technique cannot be ruled out.

### **5.4 : Suggestion for Further Research**

The study primarily focused on the hedging practices and the following are the suggested areas for further research:

To determine if there exists a relationship between the hedging practice and the overall bank risk as measured by duration gap, the duration gap being a measure of overall corporate risk. Further research would establish the value of duration gap associated with various classes of banking sector, and would establish some range of figures "the duration gap factor" for different hedging policy or a mix of policies.

To determine the extent to which family ownership/directorship influences the hedging policies within the family owned banks. Most of the small and medium sized banks in Kenya are owned by family members (mostly Asian Community) and therefore the inherent corporate governance weaknesses associated with this type of management becomes an issue of concern.

To determine the extent to which the local branches of the foreign owned multinationals are influenced by their parent companies on their hedging policies, and the extent which such influences would be adversely affecting what would be considered the most suitable hedging policy if such decisions were to be made locally.

To determine the losses suffered by the banking industry due to poor hedging policies and the possibility of insuring the losses and ceding the risk to the insurance industry.

## REFERENCES:

- Adler, M. (1982), "Translation Methods and Operational Foreign Exchange Risk Management" In G.Bergendah (Ed.), *International Finance Management*, Norstedts, Stockholm.
- Alber, R.Z. (1979), *Exchange Risk and Corporate International Finance*, Wiley, Newyork.
- Allayannis, G and E Ofek, (2001), Exchange Rate Exposure, Hedging, and The Use Of Foreign Currency Derivatives, *Journal Of International Money and Finance*, Vol. 20, 273-296.
- Allayannis, G, and JP. Weston, (1999), *The Use Of Foreign Currency Derivatives and Industry Structure*, University Of Virginia Working Paper.
- Allayannis, G, and J Ihrig, (1998), *Exchange Rate Exposure and Industry Structure*, University Of Virginia Working Paper.
- Arnold, G C. (2002), "Corporate Financial Management," 2<sup>nd</sup> Ed. Prentice Hall, Uk.
- Arnold, GC. (1998), " Corporate Financial Management," 1<sup>st</sup> Ed. Prentice Hall, Uk.
- Bessembinder, Hendrik, (1991), Forward Contracts and Firm Value: Investment Incentive and Contracting Effects, *Journal Of Financial Quantitative Analysis*, Vol. 26, 519-532.
- Breeden, D, and S. Viswanathan, (1998), *Why Do Firms Hedge? An Asymmetric Information Model*, Working Paper, Duke University.
- Brown W. Gregory, (2000), *Managing Foreign Exchange Risk With Derivatives*, The University Of North Carolina At Chapel Hill, Version 3.4.
- Buckley, A. (2002), "Multinational Finance," 4<sup>th</sup> Ed., Pearson Educ. Ltd, UK.
- Demirag, I. and Goddard, S. (1994), "Financial Management For International Business," McGraw-Hill, London.
- Downie, David and Ed Nosal, (1998), *Corporate Hedging: A Strategic Approach*, University Of Waterloo Working Paper.
- Dufey, G. and Srinivasulu, S.L. (1983), "The Case For Corporate Management Of Foreign Exchange Risk", *Financial Management*, Winter, 54—62.
- Feizer, G. and Jacquillat, B. (1981), *International Finance: Text and Cases*, Allyn and Bacon, Boston, Ma.



G'eczy et al, (1997), Why Firms Use Currency Derivatives, *Journal Of Finance*, Vol. 52, 1323-1354.

Graham, John R. and Clifford W. Smith Jr. (1999), Tax Incentives To Hedge, *Journal Of Finance*, Vol.54, No.6, 2241-2262.

Haushalter, G. David, (2000), Financing Policy, Basis Risk and Corporate Hedging: Evidence From Oil and Gas Producers, *Journal Of Finance*, Vol. 55, 107-152.

Hotchkiss, Edith S., (1995), Post Bankruptcy Performance and Management Turnover, *Journal Of Finance*, Vol. 50, 3-21.

Jenkins, R.L. (1995), Corporate Management Of Exchange Rate Misalignment- The Experience Of UK Firms 1972-82, 1987-92, Unpublished Phd Thesis, London School Of Economics, London.

Leland, HE., (1998), Agency Co+sts, Risk Management, and Capital Structure, *Journal Of Finance* Vol.53, 1213-1243.

Logue, D.E. and Oldfield, G.S. (1977), "Managing Foreign Assets When Foreign Exchange", *Financial Management*, Summer, 16-22.

Mello, Antonio S., John E. Parsons, and Alexander J. Triantis, (1995), An Integrated Model Of Multinational Flexibility and Financial Hedging, *Journal Of International Economics*, Vol. 39, 27-51.

Miller, Merton H., and Franco Modigliani, (1961), Dividend Policy, Growth, and Valuation Of Shares, *Journal Of Business*, Vol.34,411-433.

Modigliani, Franco, and Merton H. Miller, (1958), The Cost Of Capital, Corporation Finance and Theory Of Investment, *American Economic Review* Vol.48,261-279.

Myers, SC (1977), Determinants Of Corporate Borrowing, *Journal Of Financial Economics*, Vol. 15,47-297.

Nance DR., Clifford W.Smith, Jr., and Charles W.Smithson, (1993), On The Determinants Of Corporate Hedging, *Journal Of Finance* Vol.48, 267-284.

Ross, D, C, I. and Taiyeb, S. (1987), *International Treasury Management*, Woodhead Faulkner, Cambridge.

Ross, P, (1997), *Corporate Hedging: What, Why, and How?* , Working Paper, University Of California, Berkeley.

Schrand, Catherine, and Haluk Unal, (1998), Hedging and Coordinated Risk Management: Evidence From Thrift Conversions, *Journal Of Finance*, Vol. 53, 979-1013.

Shapiro, Alan C., and Sheridan Titman, (1986), An Intergrated Approach To Corporate Risk Management, In Joel Stern and Donald Chew, Eds. : *The Revolution In Corporate Finance* (Basil Blackwell, Ltd. Oxford, England and Basil Blackwell, Inc., Cambridge, Mass.).

Stulz, Ren'e M., (1984), Optimal Hedging Policies, *Journal Of Financial and Quantitative Analysis* Vol.19, 127-140.

Stulz, Ren'e M., (1996), Rethinking Risk Management, *Journal Of Applied Corporate Finance*, Vol.9, 8-24.

Stulz, Ren'e, (1999), What Is Wrong With Modem Capital Budgeting, Ohio State University Working Paper.

Trueman, Brett, and Sheridan Titman, (1988), An Explanation For Accounting Income Smoothing, *Journal Of Accounting Research*, Vol. 26, Supplement, 127-139.

Tufano, Peter, (1996), Who Manages Risk? An Empirical Examination Of Risk Management Practices In The Gold Mining Industry, *Journal Of Finance*, Vol.51, 1097-1137.

Tufano, Peter, (1998), Agency Costs Of Corporate Risk Management, *Financial Management*, Vol.27, 67-77.

**APPENDIX Is FIELD DATA PRESENTED IN A TABULAR FORMART**

Please see overleaf

Appendix 1- Data as collected from the field

S/N		Instruments used by banks to hedge against interest rate risk							Risk that banks hedge against				Why banks hedge							/Borrow Overseas?		Ownership	
		FRAs	Cap* & floors	Interest Rat* collars	Interest rat* Swaps	Cross Currency Swaps	Swaptions	Others	Interest Rate	Translation	Market	Foreign exchange	Tax Benefit	Increase debt capacity	Reduction of distress	Incr*as* Competitive advantage	Increase Internal contracting	MFI the bank's			Private	Public	
																			Yes	No			
1	Infcan Banking Corporation				Y	Y	Y		Y	Y	Y	Y			Y	Y	Y	Y	Y		Y		
2	Wuba Bank				Y	Y	Y		Y	Y	Y	Y			Y	Y	Y	Y	Y		Y		
3	Barclays Bank Of Kenya Ltd	Y			Y	Y	Y		Y	Y	Y	Y			Y	Y	Y	Y	Y			Y	
4	Btashara Bank Of Kenya Ltd				Y	Y	Y		Y	Y	Y	Y			Y	Y	Y	Y	Y		Y		
5	Bullion Bank Ltd				Y	Y	Y		Y	Y	Y	Y			Y	Y	Y	Y	Y		Y		
6	CFC Bank Ltd				Y	Y	Y		Y	Y	Y	Y			Y	Y	Y	Y	Y			Y	
7	Charterhouse Bank Ltd				Y	Y	Y		Y	Y	Y	Y			Y	Y	Y	Y	Y		Y		
8	Chase Bank (Kenya) Ltd				Y	Y	Y		Y	Y	Y	Y			Y	Y	Y	Y	Y		Y		
9	Citibank NA				Y	Y	Y		Y	Y	Y	Y			Y	Y	Y	Y	Y		Y		
10	City Finance Bank Ltd				Y	Y	Y		Y	Y	Y	Y			Y	Y	Y	Y	Y		Y		
11	Commercial bank Of Africa Ltd				Y	Y	Y		Y	Y	Y	Y			Y	Y	Y	Y	Y		Y		
12	Consolidated Bank Of Kenya Ltd				Y	Y	Y		Y	Y	Y	Y			Y	Y	Y	Y	Y		Y		
13	Co-operative Bank Of Kenya Ltd				Y	Y	Y		Y	Y	Y	Y			Y	Y	Y	Y	Y		Y		
14	Co-operative Merchant Bank				Y	Y	Y		Y	Y	Y	Y			Y	Y	Y	Y	Y		Y		
15	Credit bank Ltd				Y	Y	Y		Y	Y	Y	Y			Y	Y	Y	Y	Y		Y		
16	Development Bank Of Kenya Ltd	Y			Y	Y	Y		Y	Y	Y	Y			Y	Y	Y	Y	Y		Y		
17	Diamond Trust bank Ltd				Y	Y	Y		Y	Y	Y	Y			Y	Y	Y	Y	Y		Y		
18	E qui tonal Commercial bank Ltd				Y	Y	Y		Y	Y	Y	Y			Y	Y	Y	Y	Y		Y		
19	Fidelity Commercial Bank Ltd				Y	Y	Y		Y	Y	Y	Y			Y	Y	Y	Y	Y		Y		
20	Fma Bank Ltd				Y	Y	Y		Y	Y	Y	Y			Y	Y	Y	Y	Y		Y		
21	First American bank Ltd	Y			Y	Y	Y		Y	Y	Y	Y			Y	Y	Y	Y	Y		Y		
22	Giro Commercial bank Ltd				Y	Y	Y		Y	Y	Y	Y			Y	Y	Y	Y	Y		Y		
23	Guardwn bank Of Kenya Ltd				Y	Y	Y		Y	Y	Y	Y			Y	Y	Y	Y	Y		Y		
24	HaOb Bank A. G. Zurich	Y			Y	Y	Y		Y	Y	Y	Y			Y	Y	Y	Y	Y		Y		
25	Hatxb Bank Ltd				Y	Y	Y		Y	Y	Y	Y			Y	Y	Y	Y	Y		Y		
26	Housing Finance Co. (K) Lid				Y	Y	Y		Y	Y	Y	Y			Y	Y	Y	Y	Y			Y	
27	Imperial Bank Lid				Y	Y	Y		Y	Y	Y	Y			Y	Y	Y	Y	Y		Y		
28	Industrial Development Bank Ltd				Y	Y	Y		Y	Y	Y	Y			Y	Y	Y	Y	Y		Y		
29	Kenya Commercial bank Lid				Y	Y	Y		Y	Y	Y	Y			Y	Y	Y	Y	Y			Y	
X	Mddto east Bank Kenya Lid	Y			Y	Y	Y		Y	Y	Y	Y			Y	Y	Y	Y	Y		Y		
31	National Bank Of Kenya Lid				Y	Y	Y		Y	Y	Y	Y			Y	Y	Y	Y	Y		Y		
32	National Industrial Cre<* Lid	Y			Y	Y	Y		Y	Y	Y	Y			Y	Y	Y	Y	Y		Y		
33	Pnme Bank Lid				Y	Y	Y		Y	Y	Y	Y			Y	Y	Y	Y	Y		Y		
34	Prime capital & Credit Lid				Y	Y	Y		Y	Y	Y	Y			Y	Y	Y	Y	Y		Y		
38	Southern Credit Banking Corporation				Y	Y	Y		Y	Y	Y	Y			Y	Y	Y	Y	Y		Y		
X	StanbK Bank Kenya Lid	Y			Y	Y	Y		Y	Y	Y	Y			Y	Y	Y	Y	Y		Y		
31	Standard chartered bank (K) Lid	Y			Y	Y	Y		Y	Y	Y	Y			Y	Y	Y	Y	Y			Y	
3	Victoria Commercial bank				Y	Y	Y		Y	Y	Y	Y			Y	Y	Y	Y	Y		Y		
	Total Score	8	0	0	37	36	37	0	37	37	37	37	0	0	38	38	38	38	38	37	1	33	•
	%ecor*	21	0	0	97	95	97	0	97	97	97	97	0	0	100	100	100	100	100	97	i	M	

		Instruments used by banks to hedge against interest rate risk							Risk that banks hedc1* aainst				Why banks hedge							Borrow Ovicim ^		Ownership	
		FRAs	Cap* A	Interact Rat* collars	Interest rat* Swap*	Cro*s Currency Swap*	Swaptions	Others	Rat*	Translation	Market	*xchang*	Tax	debt capacity	of distress	Competitive	≡	ban*.* po'cy	No	PuMc			
	%Score	21	0	0	97	95	97	0	97	97	97	97	0	0	100	100	100	100	100	97	a	M	

Source: Research data

**APPENDIX 2: RESEARCH QUESTIONNAIRE.**

**Hedging Against Interest Rate Movements Risk.**

*(Kindly answer the questions below, they will be highly appreciated)*

- 1) Q. Name of the Bank
- 2) Q. State the amount of total assets in Kshs.
- 3) Q. State the amount of total Liabilities in Kshs.
- 4) Q. How many employees do you have in your bank
- 5) Q. Is your bank publicly listed, or private
- 6) Q. Do you operate an independent treasury department/section?  
Yes [ ] No [ ]
- 7) Q. Does your company invest in any interest earning securities?  
Yes [ ] No [ ]
- 8) Q. Does your company borrow any interest earning loans/deposits from Overseas?  
Yes [ ] No [ ]
- 9) Q. Do you have a written manual on how you determine the future interest rates by the time you are entering into transactions which entail uncertain future interest rates?  
Yes [ ] No [ ]
- 10) Q. Kindly Tick the risks for which your bank specifically hedge against  
Interest Risk [ ]  
Foreign Exchange/Translation Risk [ ]  
Market Risk [ ]  
Foreign Exchange Risk [ ]  
Others [ ]
- 11) Kindly tick the benefits your bank derives as a result of having a hedging process in place  
Tax Saving Benefit [ ]

Ability to increase debt capacity  
Reduction of Financial distress  
Increase competitive advantage  
Increase internal contracting ability  
Meets the banks investment policy  
Others

12) Kindly tick all the sentence(s) which best describes how you approach your hedging decision

a) Two parties (your bank and another) agree today to a future exchange of cash flows based on two different interest rates. One of the cash flows is tied to a yield that is fixed at the deal's origination (the fixed rate); the other is determined at some later date (the floating rate). On the contract's settlement date, the difference between the two interest rates is multiplied by the notional principal and then prorated to the length of the holding period. I I

b) A contract is entered that requires a series of cash settlements for interest portions only based on Inter bank Rate of offer and only when the agreed rate is greater than the inter-bank offer rate. No payment is made if inter bank rate is below the agreed rate. [ ]

c) A contract is entered that requires an interchange of interest rate payments particularly when one is paying a fixed rate interest and the other a floating rate interest when you deem it beneficial for the two parties to do so. I I

d) A contract is entered that requires an interchange fixed-against- floating interest rates where the party receiving the floating in one currency will be paying a fixed rate of interest in a foreign currency. [ I

e) A contract is entered which gives the bank the right, but not the obligation, to enter into an interest rate swap having a predetermined fixed rate at some later date.

Appendix 1- Data as collected from the field

S/N	Bank name	Instruments used by banks to hedge against interest rate risk						Risk that banks hedge against					Why banks hedge						Borrow Overseas? 1		Ownership	
		FRA	Caps & floors	Interest Rate collars	Interest rate Swaps	Cross Currency Swaps	Swaptions	Others	Interest Rate	Translation	Foreign exchange	Tax Benefit	Increase debt capacity	Reduction of distress	Increase Competitive	Increase Internal contracting	Mimic the banks policy	Yes	No		PuMc	
1	African Banking Corporation				Y	Y	Y		Y	Y	Y	Y			Y	Y	Y	Y	Y		Y	
2	Akiba Bank				Y	Y	Y		Y	Y	Y	Y			Y	Y	Y	Y	Y		Y	
3	Barclays Bank Of Kenya Ltd	Y			Y	Y	Y		Y	Y	Y	Y			Y	Y	Y	Y	Y			Y
4	Btashara Bank Of Kenya Ltd				Y	Y	Y		Y	Y	Y	Y			Y	Y	Y	Y	Y		Y	
5	Bullion Bank Ltd				Y	Y	Y		Y	Y	Y	Y			Y	Y	Y	Y	Y		V	
6	CFC Bank Ltd				Y	Y	Y		Y	Y	Y	Y			Y	Y	Y	Y	Y			Y
7	Charterhouse Bank Ltd				Y	Y	Y		Y	Y	Y	Y			Y	Y	Y	Y	Y		Y	
8	Chase Bank (Kenya) Ltd				Y	Y	Y		Y	Y	Y	Y			Y	Y	Y	Y	Y		Y	
9	Citibank NA				Y	Y	Y		Y	Y	Y	Y			Y	Y	Y	Y	Y		V	
10	City Finance Bank Ltd				Y	Y	Y		Y	Y	Y	Y			Y	Y	Y	Y	Y		V	
11	Commercial bank Of Afca Ltd				Y	Y	Y		Y	Y	Y	Y			Y	Y	Y	Y	Y		Y	
12	Consolidated Bank Of Kenya Ltd				Y	Y	Y		Y	Y	Y	Y			Y	Y	Y	Y	Y		V	
13	Co-operative Bank Of Kenya Ltd				Y	Y	Y		Y	Y	Y	Y			Y	Y	Y	Y	Y		V	
14	Co-operative Merchant Bank				Y	Y	Y		Y	Y	Y	Y			Y	Y	Y	Y	Y		*	
15	Credit bank Ltd				Y	Y	Y		Y	Y	Y	Y			Y	Y	Y	V	Y		V	
16	Development Bank Of Kenya Ltd	Y			Y	Y	Y		Y	Y	Y	Y			Y	Y	Y	Y	Y		V	
17	Diamond Trust bank Ltd				Y	Y	Y		Y	Y	Y	Y			Y	Y	Y	Y	Y		Y	
18	Eqmtonal Commercial bank Ltd				Y										Y	Y	Y	Y	Y		Y	
19	Fidelity Commercial Bank Ltd				Y	Y	Y		Y	Y	Y	Y			Y	Y	Y	Y	Y		V	
20	Fma Bank Ltd				Y	Y	Y		Y	Y	Y	Y			Y	Y	Y	Y	Y		Y	
21	First American bank Ltd	Y			Y	Y	Y		Y	Y	Y	Y			Y	Y	Y	Y	Y		V	
22	Giro Commercial bank Ltd				Y	Y	Y		Y	Y	Y	Y			Y	Y	Y	Y	Y		V	
23	Guardian bank Of Kenya Ltd				Y	Y	Y		Y	Y	Y	Y			Y	Y	Y	Y	Y		V	
24	HabO Bank A. G. Zurich	Y			Y	Y	Y		Y	Y	Y	Y			Y	Y	Y	Y	Y		Y	
25	Habab Bank Ltd				Y	Y	Y		Y	Y	Y	Y			Y	Y	Y	Y	Y		Y	
26	Housing Finance Co (K) Ltd				Y	Y	Y		Y	Y	Y	Y			Y	Y	Y	Y	V			Y
27	Imperial Bank Ltd				Y	Y	Y		Y	Y	Y	Y			Y	Y	Y	Y	V		V	
28	Industrial Development Bank Ltd				Y	Y	Y		Y	Y	Y	Y			Y	Y	Y	Y	Y		Y	
29	Kenya Commercial bank Ltd				Y	Y	Y		Y	Y	Y	Y			Y	Y	Y	Y	Y			Y
30	Middle east Bank Kanya Ltd	Y			Y	Y	Y		Y	Y	Y	Y			Y	Y	Y	Y	Y		Y	
31	National Bank Of Kenya Ltd				Y	Y	Y		Y	Y	Y	Y			Y	Y	Y	Y	Y		Y	Y
32	National Industrial CredK Ltd	Y			Y	Y	Y		Y	Y	Y	Y			Y	Y	Y	Y	Y		Y	
33	Prime Bank Ltd				Y	Y	Y		Y	Y	Y	Y			Y	Y	Y	Y	Y		Y	
34	Prime capital & Credit Lid				Y	Y	Y		Y	Y	Y	Y			Y	Y	Y	Y	Y		V	
35	Southern Credit Banking Corporation				Y	Y	Y		Y	Y	Y	Y			Y	Y	Y	Y	Y		Y	
36	Stanbic Bank Kanya Ltd	Y			Y	Y	Y		Y	Y	Y	Y			Y	Y	Y	Y	V		Y	
37	Standard chartered bank (K) Ltd	Y			Y	Y	Y		Y	Y	Y	Y			Y	Y	Y	Y	Y			Y
38	Victori Commercial bank				Y	Y	Y		Y	Y	Y	Y			Y	Y	Y	Y	V		Y	
	Total Score	8	0	0	37	36	37	0	37	37	37	37	0	0	38	38	38	38	37	1	32	●
	%acore	21	0	0	+7	95	97	0	97	97	97	97	0	0	100	100	100	100	+7	3	M	1κ

XScore	Instruments used by banks to hedge against interest rate risk						Risk that banks hedge against					Why banks hedge						Borrow Overseas**		PuMc	
	FRAa	Capet	Rate collars	rate Swaps	Cross Currency Swaps	Others	Rate	Translation	exchange	Tax	debt	of distress	Comp*titiv*	HITS	Yes	Mo					
XScore	21	0	0	+7	95	97	0	97	97	97	97	0	0	100	100	100	100	\$7	3	8	

Source: Research data

0 Others, Please explain briefly

13) Q. Kindly provide the maturity period (in years) for all the following Risk bearing assets and Liabilities appearing in your recently audited balance sheet.

<b>Asset/Liability</b>	<b>Maturity</b>	<b>Amount in Kshs.</b>
Government securities	[ ]	-
Deposits with central bank	[ ]	-
Deposits with other banking institutions	[ ]	-
Taxation recoverable	[ ]	-
Loans and advances to customer	[ ]	-
Customer deposits	[ ]	-
Deposits due to Central bank	[ ]	-
Deposits due to other banking institutions	[ ]	-
Interest payable	[ ]	-
Borrowed funds	[ ]	-
<hr/> Others	[ ]	-
<hr/> Others	[ ]	-



### **APPENDIX 3: LIST OF BANKS AS AT MARCH 2003**

- 1) African Banking Corporation
- 2) Akiba Bank Ltd
- 3) Bank Of Baronda (Kenya) Ltd
- 4) Bank Of India
- 5) Barclays Bank Of Kenya Ltd
- 6) Biashara Bank Of Kenya Ltd
- 7) Bullion Bank Ltd
- 8) CFC Bank Ltd
- 9) Charterhouse Bank ltd
- 10) Chase Bank (Kenya) Ltd
- 11) Citibank N.A,
- 12) City Finance Bank Ltd
- 13) Commercial bank Of Africa Ltd
- 14) Consolidated Bank Of Kenya Ltd
- 15) Co-operative Bank Of Kenya Ltd
- 16) Co-operative Merchant Bank
- 17) Credit Agricole Indosuez
- 18) Credit bank Ltd
- 19) Development Bank Of Kenya Ltd
- 20) Diamond Trust bank Ltd
- 21) Dubai Bank Ltd.
- 22) Equitorial Commercial bank Ltd.
- 23) Fidelity Commercial Bank Ltd.
- 24) Fina Bank Ltd.
- 25) First American bank Ltd.
- 26) Giro Commercial bank Ltd.
- 27) Guardian bank Of Kenya Ltd.
- 28) Habib Bank A. G. Zurich.
- 29) Habib Bank Ltd.

- 30) Housing Finance Co. (Kenya) Ltd.
- 31) Imperial Bank Ltd.
- 32) Industrial Development Bank Ltd.
- 33) Investment & Mortgages Ltd.
- 34) Kenya Commercial Bank Ltd.
- 35)K-Rep bank Ltd.
- 36) Middle east Bank Kenya Ltd
- 37) National Bank Of Kenya Ltd
- 38) National Industrial Credit Ltd.
- 39) Prime Bank Ltd.
- 40) Prime capital & Credit Ltd.
- 41) Southern Credit Banking Corporation
- 42) Stanbic Bank Kenya Ltd.
- 43) Standard chartered bank (Kenya) Ltd
- 44) Transnational Bank Ltd.
- 45) Victoria Commercial bank.