

A SURVEY OF THE FOREIGN EXCHANGE RESERVES RISK MANAGEMENT
STRATEGIES ADOPTED BY THE CENTRAL BANK OF KENYA

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Declaration:

This management project is my original work and has not been submitted for another degree in any other University or Institution of Learning to the best of my knowledge.

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Dedication:

I dedicate this project to my dear wife Naomi and my lovely children John, Stanley, Daniel, Zawadi and Zainabu. Your support and forbearance inspired me all the way.

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Abstract

The purpose of this study was to survey the various types of foreign exchange reserves risks faced by the Central Bank of Kenya and the strategies adopted by the Bank to manage these risks.

The research was a case study of the Central Bank of Kenya. A questionnaire to seventeen technical staff working in the reserves management department of the Central Bank of Kenya was used to collect the relevant data. The collected data was analysed for content using SPSS Software and the results were presented using tables and pie charts.

The study found that the key foreign exchange reserves risks faced by the Central Bank of Kenya were; credit risk, liquidity risk, sovereign/political risk, operational risk and market risk. The risk management strategies adopted by the Bank in managing these risks included but were not limited to; internal control procedures, portfolio construction, tranching of reserves and strategic asset allocation.

The study recommends establishment of a framework that identifies and assesses the risks of reserves management operations that allows the management of risks within acceptable parameters and levels. The framework should seek to identify the possible risks that may impact on portfolio values and to manage these risks through the measurement of exposures, and where necessary, supporting internal control procedures to mitigate effects of these risks. The study also recommends the determination of risk parameters that include the minimum acceptable credit ratings for the counterparties to deal with. The study further recommends the continuous monitoring of risk exposures to determine whether exposures have been extended beyond acceptable limits. Value at Risk (VaR) or other simulation methodologies may be adopted as part of the risk management and monitoring framework.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

In today's environment of globalized operations, volatile economic conditions and changing political landscapes, an organization's ability to effectively manage its risks could mean the difference between its success and failure. Risk management is a key element of sound corporate governance in any financial institution. Central Bank of Kenya is not an exception to this statement. One of the major functions of the Central Bank of Kenya is the management of foreign exchange reserves. The Bank holds foreign exchange reserves for a variety of reasons, one of which is to service the country's foreign debt or make external government payments. Another is to pay for non-government debt including purchase of foreign goods and services. Foreign exchange reserves also provide the Bank with the capacity to intervene in exceptional circumstances in the foreign exchange market to smoothen exchange rate movements of the national currency as and when the need arises. Under the Central Bank of Kenya Act section 26(1) the Bank is required to hold and manage prudently official foreign exchange reserves amounting to not less than the value of four months' imports. Claessens and Kreuser (2004) documented that official foreign exchange reserves could also be held to support a range of central bank's objectives including; limiting external vulnerability by maintaining foreign currency liquidity to absorb shocks during times of crises or when access to borrowing is curtailed, providing the backing of domestic currency by external assets and maintaining a safety recourse for national disasters or emergencies.

In performing their policy tasks, central banks are exposed to a variety of risks, which they may want to manage. One such key risk concerns foreign exchange reserves, because central banks' main activity, namely ensuring price stability, needs to be backed by an adequate financial position. Risk management framework in a central bank involves the identification, monitoring and management of events that would frustrate the

achievement of the bank's objectives. A Risk management function facilitates the ability to identify and manage risks in a proactive manner and this is a key feature in defining an effective risk management framework. There is need to have in place a framework that identifies and assesses the risks of reserve management operations and that allows the management of risks within acceptable parameters and levels. Risk management has become increasingly beneficial through a more efficient use of resources thus enhancing the credibility and financial independence of central banks.

The management of foreign exchange reserves risks in the Central Bank of Kenya is of particular interest. This is because of the sensitivity of the foreign exchange reserves in its balance sheet (by far the biggest component - about Kshs. 277 billion by end of March 2010) and the fact that the reserves are invested with institutions in different countries of the world. Moreover, most central banks today are subject to intense scrutiny by the general public and interested government bodies. This makes it important for central banks to efficiently manage their balance sheet and the implied financial risks. Thus a transparent and accountable reserves risk management framework ought to be put in place. Weak or risky reserve management practices would restrict the ability of a country to effectively adapt to financial crisis which may have accentuated the severity of these crises in the recent world economic crisis. Appropriate portfolio management policies concerning the currency composition, choice of investment instruments, choice of depository banks and acceptable duration of the reserves portfolio which reflect a country's specific policy settings and circumstances, serve to ensure that assets are safeguarded, readily available and support market confidence. Management of foreign exchange reserves risks also ought to be done carefully in order to avoid any chances of giving unintended policy signals to the financial markets (Frowen, S.F. Pringle, R. & Weller, B, 2000).

Section 26 of the Central Bank of Kenya Act (CAP 491) allows the Central Bank of Kenya to manage foreign exchange reserves. In executing this mandate and according to its reserves management policy guidelines, the Bank is guided by three cardinal principles.

The first principle is the safety of the foreign exchange reserves, that is, the need to preserve value of the reserves and ensure that they are in safe custody. Secondly, the Bank is concerned about the liquidity, that is, the timely availability of adequate resources at a reasonable price for daily requirements. Thirdly, the need to maximize returns within a framework of acceptable levels of risk and subject to safety and liquidity considerations. Central Bank of Kenya has invested these foreign exchange reserves with various banks in other countries. The Bank is exposed to various risks relating to the management of foreign exchange reserves mainly emanating from the globalized market that it operates in, the counterparties it engages with and the political environment of the states in which these reserves are placed in.

According to Bernadell C, Cardon P, Coche J, Brigham F. X. and Manganelli S (2004), management of foreign exchange reserves risks in a central bank seeks to ensure that; adequate foreign exchange reserves are available to meet a defined range of objectives, liquidity, market and credit risks are controlled in a prudent manner and, subject to liquidity and other risk constraints, reasonable earnings are generated over the medium and long term on the funds invested. This would ensure that the capacity to intervene in the foreign exchange market exists when needed, while simultaneously minimizing the costs of holding reserves. Management of foreign exchange reserve risks contributes to these objectives by strategically managing and controlling the exposure to financial and operational risks. Beck (1992) argued that it is possible that the globalization of financial markets has led to a proliferation of financial risks. In fulfilling a central bank's mandate of managing foreign exchange reserves Bernadell et al, (2004) observed that foreign exchange reserves serve as a store of national wealth and an indicator of a country's financial health, thus supporting external investors' confidence of a country's ability to meet external obligations and argued that naively importing general risk management principles in making investment decisions on a central bank foreign exchange reserves may be misguided.

Risk management is defined as a process of identifying events that could have adverse financial consequences and then taking actions to prevent or minimize the damage caused by these events (Eugene, 1989). The Risk Management Standard developed and published in UK (2002) by the Institute of Risk Management (IRM), the Association of Insurance and Risk Managers (AIRMIC) and the National Forum for risk management in the Public Sector defines risk management as the process whereby organizations methodically address the risks attaching to their activities with the goal of achieving sustained benefit within each activity and across the portfolio of all activities. The Standard further, states that the focus of good risk management practice is the identification and treatment of risks with the objective of maximizing sustainable value to all activities of an organization. The process of risk management marshals the understanding of the potential upside and downside of all factors which can affect the organization in the past, present and in particular, future. Risk Management protects and adds value to the organization and its stakeholders by providing a framework to enable future activities to take place in a consistent and controlled manner and improving decision making, planning and prioritization of business activities.

Central Bank of Kenya while managing its foreign exchange reserves is faced with risks brought about by globalization and hence the need to adopt more appropriate risk measures to contain such risks. Leibowitz (1996) argued that one of the most important policy decisions for a central bank is the determination of the level of risk that is appropriate given its investment objectives, that is, the adequate risk/ return ratio. The management of interest rate and credit risk in the Bank is under a double constraint of liquidity and safety. The Bank could therefore adopt a very conservative and very curious strategy (only invest in 'safe' currencies and high quality shorter dated assets and deal with highly rated counterparties and so on). In pursuit of this argument, the Central Bank of Kenya's ultimate objective of foreign exchange reserves risk management will therefore be to preserve the value of the Bank's assets by limiting the probability of significant losses over a predefined period while earning an acceptable rate of return. Risk management must evolve in order to meet challenges presented by the changing

markets, together with challenges of increased coordination and monitoring and be capable of responding to changes and resilient in order to be able to track all relevant risks effectively.

Increased volatility, greater interdependence and new risks have made the structures of risk exposure of central banks quite complex. Appropriate risk management framework ought therefore, to respect this unique central banking environment, characterized by a high degree of risk aversion, conservatism and institutional constraint. Central Bank of Kenya operates within a highly volatile and unpredictable global market and it would be expected to encounter certain types of traditional risks including; credit risk, market risk, sovereign/ political risk, litigation risk and operational risks.

1.2 Statement of the Problem

Financial disasters in organizations in the recent past point out the need for risk management. Major failures in organizations including banks have occurred due to unidentified or unmitigated risks within the institutions. According to Dowd (1998) the desire for effective risk management was sparked by some high-profile risk management disasters in the 1990's that affected financial institutions. Orange County lost about 1.7 billion dollars due to rising interest rates, Barings Bank lost about 1.3 billion dollars due to adverse movements in futures and options market, Sumitomo Corporation lost about 1.8 billion dollars due to unauthorized trades by its chief copper trader and the list is long. In addition, the corporate failures of 2008 and 2009 mainly in the USA (e.g. Lehman Brothers, Fannie Mae and Freddie Mac) culminating to the world economic crisis witnessed in the recent past is a pointer to the need for development of more robust risk management frameworks to counter future occurrence.

Li (2003) observes that the economic environment in which firms operate is highly volatile and unpredictable. Central Bank of Kenya operates within a highly volatile and

unpredictable global market and it would be expected to encounter certain types of traditional risks including; credit risk, market risk, sovereign/ political risk, liquidity risk and operational risks. Due to costs of financial distress and managerial risk aversion, Crabb (2003) strongly suggests that firms should practice corporate risk management.

Studies by various researchers in their unpublished MBA projects of the University of Nairobi mainly focused on risk management in foreign owned banks (Omagwa, 2005), Forex Bureaus in Kenya, (Ubindi, 2006), banks operating in Kenya (Oduor, 2007), pharmaceutical manufacturing companies operating in Kenya (Muteru, 2007), insurers in Kenya (Salesio, 2006), microfinance institutions in Kenya (Mwirigi, 2006), institutional investors at the Nairobi Stock Exchange (Mwaura, 2006) and operational risk management practices by commercial banks in Kenya (Idarus, 2005).

Risk management has remained a controversial subject with some scholars arguing that it is not justified (Noyer, 2000), (Modigliani & Miller, 1961). Other scholars have argued that it is worthy practicing, (Leibowitz, 1996), (Li, 2003), (Dowd, 1998), (Stulz, 1996), (Glaum, 2000), (Blommesten, 2000) and (Crabb, 2003). Glaum (2000) found discrepancies between academic literature and corporate risk management practices and contends that there are no clear-cut answers as to how corporate risk management should be organized. Hull (1998) argues that empirical studies have shown that there are no formal corporate approved financial risk management practices. The practices adopted depend on the industry of operation and organizational characteristics. These studies on balance indicate that there is need to put in place a robust risk management framework to manage risks in an organization.

Local studies have not covered this area of study as no study is known to the researcher that has been done on the foreign exchange reserves risk management in the Central Bank of Kenya though the Bank is actively involved in managing foreign exchange reserves risks. Thus, the researcher sought to close the knowledge gap by seeking responses to the following questions;

- (i) What are the risks that the Central Bank faces while managing its foreign exchange reserves?
- (ii) What risk management strategies are adopted by the Central Bank of Kenya in managing these foreign exchange reserves risks?

1.3 Objectives of the study

The study will attempt to;

- (i) Determine the types of foreign exchange reserves risks faced by the Central Bank of Kenya.
- (ii) Investigate the foreign exchange reserves risk management strategies adopted by the Central Bank of Kenya.

1.4 Importance of the study

The study will be valuable to the following parties;

- (i) Central Bank of Kenya: The Bank may draw some lessons to inform improvement of the risk management framework at the Bank.
- (ii) Government policy makers: To formulate policies on the safety and adequacy of the country's foreign exchange reserves aimed at cushioning the country from unforeseen financial crisis.
- (iii) The scholars: Scholars who would want to do further research on foreign exchange reserves risk management strategies adopted by the Central Bank of Kenya.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter contains a review of the theoretical and empirical literatures relevant to the area of study. It sets out the theoretical rationale that guides the entire research including; theories of risk management, review of empirical studies and an evaluation of these studies against the research problem.

2.2 Theories of Risk Management

According to Brinder (1997) the process of risk management comprises of the fundamental steps of incident identification, risk analysis, risk assessment and risk treatment. The primary components of a sound risk management process are: a comprehensive system for identifying and measuring different types of risk, a framework for governing risk taking, individual limits guidelines and other relevant parameters, and an adequate management information system for monitoring, reporting and controlling risks (Li, 2003). Eugene (1989) defines risk management as a process of identifying events that could have adverse financial consequences and then taking actions to prevent or minimize the damage caused by these events. Glaum (2000) observes that in the recent past, risk management has received increased attention in both the corporate world and literature. This greater attention has been spurred by the developments of global markets for derivative financial instruments.

Risk has been addressed from various perspectives (Shah, 2004). These include individual preferences and attitudes to risk, portfolio theory (Markowitz, 1952), risk as variance of return, risk reduction through diversification, Beta risk and the Capital Asset Pricing Model (Sharpe, 1964). Others include; measuring risk using probability theory, risk management-hedging strategies, bond duration and volatility, portfolio insurance,

different types of asset risks, for instance, interest rate risk, market risk, credit/default risk and so on. These perspectives have addressed various facets of risk. Asaf (2004) contends that there is no uniform approach to financial risk management among organizations today. Many companies do not have formal risk management policies or strategies in place to manage these risks.

An important and significant turn in the direction and focus in risk management occurred in the 1970's when senior management in insurance recognized that by accepting a greater level of risk in all their business activities it was necessary to introduce measures to protect the firm's assets and control these risks. Organizations then quickly moved beyond insurance buying as a single solution to their financial and technical risk exposures, adopting alternative methods of risk treatment such as loss prevention, loss control and the implementation of the risk management concept (Beck, 1992).

By 2001, risk management in its numerous forms, had great difficulty in establishing its role and identity as a management practice, its meaning was unclear to the public and also at many levels of management both in the private and public organizations. Asaf (2004) observes that due to different perceptions and definitions placed on risk management by individual specialists from varying professional disciplines; their focus was still considered limited since it did not provide the total framework for managing risk in all business functions of an organization. Since then, risk management has witnessed more financial innovations and better strategies and tools. With development in IT (telecommunication and computing) firms will be in a position to devise better approaches to risk management due to the benefit of hindsight. Future technological developments will lead to more effective classification of corporate risks hence improvements in corporate risk management (Li, 2003).

Although the classical financial models of Modigliani and Miller (1966) suggest that there is no need for firms to control risks since investors can accomplish this task themselves in a perfect market, the situations prevailing in the real world are compelling enough to

require firms to practice risk management. A number of high-profile risk management disasters and corporate failures of the 1990's created need for better risk management practices: organizations lost billions of dollars due to poor risk management decisions (Dowd, 1998). Moreover, the corporate failures of 2008 and 2009 mainly in USA culminating to the world economic crisis witnessed in the recent past is a pointer to the need for development of more robust risk management frameworks to counter future occurrence.

In traditional more practically oriented literature, it was generally assumed that firms should adopt a strictly risk averse attitude to financial risks. Theoreticians belonging to the neo-classical school of thought took up a very different view. They argued that management of financial risks is unnecessary and potentially harmful. This spurred a lot of debate with some scholars such as Blommesten (2000) making a case for corporate risk management. In the recent past, a more detailed discussion of the arguments for and against corporate hedging activities has developed.

Stulz (1996) records four types of gains emanating from financial risk management; reduction of bankruptcy and distress costs, reduction in expected tax payments, reductions in expected payments to stakeholders and reduction in costs of raising funds. He argues that if a firm can implement a risk management policy that eliminates the risk of bankruptcy, it essentially sets the present value of these real resource costs to zero and therefore increases the value of the firm accordingly. To the extent that risk management reduces the risk of financial distress, it reduces the present value of the costs of financial distress and hence increases the value of the firm. Since tax rates differ depending on taxable income, firms would like more income when their tax rates are low and less income when tax rates are high. Since tax rates increase with taxable income, a risk management program that reduces the risk of taxable income ends up decreasing expected taxes as well.

Stakeholders and costs of raising funds can also necessitate financial risk management. Whereas shareholders can diversify risks, stakeholders who have a large stake in the success of a firm cannot typically do so. If firm specific investments are lost due to financial distress, stakeholders like workers will consider jobs in the firm to be less attractive and hence will require a higher wage. They will not be able to create their own risk management program to hedge this risk due to lack of economies of scale but the firm will be able to do so for them. If the firm undertakes a risk management program that reduces financial distress, it will with this reasoning have a lower wage bill. Firms that find themselves in positions where they have to raise funds when highly levered may be unable to undertake projects they would undertake if they had less leverage. In this case leverage imposes a real cost on the firm when there are bad cash flow realizations (Stulz, 1996). Therefore, since we do not live in a perfect world, there exist sound theoretical reasons as to why firms including central banks should seek to control risks hence a variance from the ideas of Modigliani and Miller.

2.3 Portfolio Theory

The path breaking work of Harry Markowitz (1952) brought in a major breakthrough in finance in terms of risk measurement and management. He suggested that risk can be measured in standard deviation, and assuming asset returns are normally distributed, this opened up a whole series of techniques of risk management using standard statistical and mathematical methods. Markowitz concluded that individuals could reduce the risks on the returns of their assets by holding a portfolio whose securities returns are not positively correlated. He went further to prescribe the basic principles of portfolio construction. According to the portfolio theory, it is possible to construct an “efficient frontier” of optimal portfolios offering the maximum possible expected return for a given level of risk.

2.4 Capital Asset Pricing Model (CAPM)

Markowitz had demonstrated how efficient portfolios could be constructed by the use of mean-variance analysis. Drawing on these insights and their implications, the Capital Asset Pricing Model (CAPM) of Sharpe (1964) and Lintner (1965) was formulated. Only systematic risk is priced in the equation for measuring the required return to an individual security is measured by the covariance of its returns with the returns on the market portfolio. Despite its poor empirical record, CAPM is quite useful in practice; mainly in the valuation of businesses, in pricing assets, in determining cost of capital and in capital budgeting decisions. Of importance to the Central Bank of Kenya is the use of CAPM when making investment decision on foreign exchange reserves where an asset will be chosen if its expected rate of return is equal to the required rate of return.

2.5 Arbitrage Pricing Theory (APT)

Arbitrage pricing theory (APT), in finance, is a general theory of asset pricing. The theory holds that the expected return of a financial asset can be modeled as a linear function of various macro-economic factors or theoretical market indices, where sensitivity to changes in each factor is represented by a factor-specific beta coefficient. The model-derived rate of return will then be used to price the asset correctly - the asset price should equal the expected end of period price discounted at the rate implied by the model. If the price diverges, arbitrage should bring it back into line.

The Arbitrage Pricing Theory was developed primarily by Ross (1976a, 1976b). It is a one-period model in which every investor believes that the stochastic properties of returns of capital assets are consistent with a factor structure. Ross argues that if equilibrium prices offer no arbitrage opportunities over static portfolios of the assets, then the expected returns on the assets are approximately linearly related to the factor loadings. (The factor loadings, or betas, are proportional to the returns' covariances with the factors.)

APT is a substitute for the Capital Asset Pricing Model (CAPM) in that both assert a linear relation between assets' expected returns and their covariance with other random variables. (In the CAPM, the covariance is with the market portfolio's return.) The covariance is interpreted as a measure of risk that investors cannot avoid by diversification. The slope coefficient in the linear relation between the expected returns and the covariance is interpreted as a risk premium. Unfortunately, the APT does not necessarily preclude arbitrage opportunities over dynamic portfolios of the existing assets. Therefore, the applications of the APT in the evaluation of managed portfolios contradict at least the spirit of the APT, which obtains price restrictions by assuming the absence of arbitrage.

2.6 Attitudes to Risk

There are various aspects that address risk in the broader area of Finance (Shah, 2004). These include individual preference and attitudes to risk and categorize attributes as risk averse, risk neutral and risk seeker.

Douglas and Wildavsky (1982) state that one of the oldest and most accepted generalizations in decision theory are that people are generally risk averse. People are assumed to prefer certainty to uncertainty. In practice however, and against this established theory, people are not risk averse for negative prospects but only for positive ones. Refusing to take all dangers into account is therefore, not behaving irrationally. According to Pickford (2002) when people are in a position of gain, they become increasingly risk averse and unwilling to accept gambles because they wish to hold on to their gains. Equally, when people are in a position of loss and as losses increase, they become more risk takers since they have nothing very much to lose.

Central banks have unique investment needs particularly relating to foreign exchange reserves. Due to the nature and the role that central banks play in regulating the financial

system and helping to ensure low inflation and a stable currency, it can be argued that the investment objectives for the management of central bank foreign exchange reserves portfolios must weigh the needs of liquidity during difficult market environments and the needs of capital preservation over both short and long-term time horizons as paramount concerns, rather than focus solely on return objectives. Straight-forward risk return performance objectives have great appeal as demonstrated in the path-breaking portfolio optimization work of Harry Markowitz (1952) and the investment theory work of William Sharpe (1964) among others. Unfortunately, straight forward return-to-risk measures fail to address the issues of market liquidity and capital preservation during short-term periods. The times of financial stress are when central banks may have critical national duties and special needs.

2.7 Central Bank Foreign Exchange Reserves Risk Exposure

Butterworths (1990) reported that there are numerous risks facing today's financial institutions. According to an IMF study carried on management of foreign exchange reserves risks in central banks in Europe and America released in 2001, central banks are faced with a myriad of risks emanating from their holding of foreign exchange reserves including but not limited to;

- (i). Liquidity Risk:-**The risk that counterparties will be unable to settle due to lack of liquid funds even though the parties may be financially healthy. The (IMF, 2001) study found that liquidity risks may also arise if a central bank is not able to sell an instrument or close a position when required without facing significant costs. Emery (1998) defines liquidity risk as the inability to buy or sell commodities at quoted prices.
- (ii). Credit Risk:-**The risk that losses may arise from the investment of reserves in high-yielding assets that were made without due regard to the credit risk associated with the issuer of the asset. The (IMF, 2001) study found that credit risks mainly

arise from default by counterparties where a central bank may have placed the funds in time deposits, current accounts, investments in certificates of deposit and foreign currency operations. A counter party will be unable or unwilling to meet a commitment that it has entered into with the bank (Hempel, G.H., Simson, D.G. & Coleman, A.B., 1994).

(iii). Market Risk:-The risk that losses and opportunity costs may arise from adverse market movements usually in interest rates, currency exchange rates and asset prices. Excessive interest rate risk may erode a central bank's earnings and capital base (Hempel, et al 1994). The (IMF, 2001) study found that losses may also arise from operations involving derivative financial instruments including the taking of large positions, which have been subject to the effects of sharp and large adverse movements in market yields. Opportunity cost arises in a scenario where funds are invested for a fixed term and interest rates subsequently rise. According to Emery (1998), market risk refers to unexpected changes in interest rate, exchange rate, stock prices or commodity prices.

(iv). Sovereign/Political risk: - The (IMF, 2001) study found that disruptions stemming from political or economic upheavals in the country where reserves are invested may lead to default on external obligations. This is the risk that a foreign sovereign government may restrict the ability of the holder to gain access to their assets or the proceeds from the sale of such assets. Sovereign risk is an inevitable feature of reserve management since assets are necessarily held in foreign countries, often in sovereign government securities of major investment currencies (Asaf, 2004). Emery (1998) states that political risk refers to new regulations and expropriation. He avers that an organization's financial future can be dramatically altered by unpredictable events such as war and political unrest.

(v). **Operational risk:** - This type of risk arises from inadequacies, failures or non-compliance with internal controls and procedures (Greuning & Bratanovic, 1999). It will include risks such as;

- a. **Control System Failure Risk:-** The (IMF, 2001) study state that this would involve cases of outright fraud, money laundering and theft of reserve assets that were made possible by weak or missing control procedures, inadequate skills, poor separation of duties, and collusion among foreign exchange reserve management staff members.
- b. **Loss of Potential Income:** - The (IMF, 2001) study found that the risk of failure to reinvest funds accumulating in clearing (nostro) accounts with foreign banks in a timely manner may have given rise to loss of significant amounts of potential revenue. This problem arises from the inadequate procedures for monitoring and managing settlements and other cash flows, and for reconciling statements from counterparties with internal records.
- c. **Financial Error Risk:** - The (IMF, 2001) study defines this as the risk of incorrect measurement of the net foreign currency position thus exposing reserve management entities to large and unintended exchange rate risks, and led to large losses when exchange rate changes have been adverse.
- d. **Legal Risk:** - The (IMF, 2001) study states that this type of risk may arise from the potential disputes between a central bank and its depository banks on matters relating to terms and conditions of doing business. Legal risk may also arise from a possibility of losses from contracts/ dealings that are not legally enforceable or not properly documented.
- e. **Reputation Risk:** - A central bank's reputation may be called into question as a result of inappropriate reserve management actions, or unauthorized release of information. Reputation risk arises as a result of failure to manage any or

all the other types of risk. Reputation risk is perhaps one of the greatest risk that the a central bank faces. The concern about reputation flows from the fact that a central bank is a public institution with important responsibilities for management of foreign exchange reserves, stability in the value of money, the soundness and efficiency of the financial system and the issue of currency (notes and coins) among others.

2.8 Measurement of Risks

The Value at Risk (VaR) is a popular measure of risk among financial institutions. This technique describes risk succinctly. It is intuitively understandable. It is a percentile of a profit-and-loss distribution over a specified horizon; it tries to determine how much the company's underlying cash flows are affected, that is, if the foreign exchange rate moves to a certain level. VaR indicates how much profit/loss the firm makes (Dowd, 1998). VaR therefore captures the nature of bad outcomes in a single number and it was initially designed to avoid bank disasters (Pickford, 2002). Although extremely attractive, VaR (the magnitude of loss that occurs with more probability) is not consistent with the theory of risk management either (Stulz, 1996). The measure captures the nature of bad outcomes in a single number.

Crabb (2003) indicates that both economics and finance research have attempted to accurately measure risk and determine the appropriate response of firms to risk. In general, economics literature focuses on the strategic response of the firm to exchange risk, while the finance literature focuses on securities and hedging techniques that firms use to deal with exchange risks. Ultimately, the most important part of a firm's exchange risk management practice is its hedging strategy. Some of these firms have been found to follow the strategy to hedge all open positions immediately (Glaum, 2000).

2.9 Risk Mitigation Strategies

There exist practical costs that arise from the risk of doing business: these risks can be reduced by adopting risk mitigating processes. Large firms have many ways of mitigating risk as compared to small firms that lack the wide variety of risk management options at the disposal of large firms. By their nature, small firms are unable to diversify extensively. One of the readily available financial risk management approaches available to all small firms is the strategy of taking specific financial positions that offset the risk of loss in the firm's business and financial operations (Kenyon, 1981).

The main aim of understanding and communicating risk is to identify and impose priorities and take appropriate actions to minimize risks (Asaf, 2004). Risk mitigation is therefore actions aimed at reducing the severity or impact of risk. In order to mitigate risks, one must first assess the potential impact of risk. Dowd (1998) avers that accepting the notion that the volatility of performance has some negative impact on the value of the firm leads managers to consider risk mitigation which includes four generic types which can be coined as the 4T's; tolerate, transfer, treat and terminate.

Baldoni (2001) argues that there is a class of assets or activities where the risk inherent in the activity must and should be absorbed (tolerated) by the firm. There are also some risks that can be eliminated or at least substantially reduced through the technique of risk transfer. If the institution has no comparative advantage in managing the attendant risk, there is no reason for the firm to absorb and/or manage such risks, rather than transfer them.

Moreover, there are cases whereby revealing information about customers may give competitors an undue advantage. In addition, moral hazard may exist such that it is in the interest of stakeholders to require risk management as part of standard operating procedures. In this case, the organization puts in place appropriate business procedures and policies to treat the attendant risks. This is part of the cost of doing business since it absorbs management attention (Baldoni, 2001).

In the fourth T, denoting terminate, an organization may find the class of assets held as unprofitable under the prevailing conditions and may therefore opt to divest from that line of investment. Regardless of outcome, these investments could not help shareholders unless management had means of converting them into profitable holdings, and as such owners of the firm's stock could make investments on their own (Hull, 1989).

According to an IMF study carried on management of foreign exchange reserves risks in central banks in Europe and America released in 2001, central banks employ a number of strategies in mitigating risks associated with foreign exchange reserves. These include the following;

(i).Portfolio construction: - According to the (IMF, 2001) study, central banks need to specify strategic long term portfolio that represents the best available trade-off between the different risks that it is facing. The central bank's investment benchmark is made operational through the construction of actual benchmark portfolios that include the chosen currencies with desired weights, investment instruments with appropriate credit characteristics and duration that reflects the desired level of interest rate risk. A clearly defined benchmark is required so that deviation from the target can be detected. Each individual portfolio benchmark is established to see the actual portfolio management on the path to aligning with the central bank's strategic objectives of the foreign exchange reserves. The benchmarks do not usually include transient factors or reflect short-term market expectations and their appropriateness is reviewed regularly. Changes to the benchmark would be triggered by changes in market structures or characteristics that alter the investment environment.

The benchmark strategy is used to manage currency risk through quantitative limits on how much each individual currency, or all currencies in the benchmark taken together, may deviate from the benchmark structure. Interest rate risk can be managed by

establishing benchmarks with a given duration and by limiting the actual portfolios' deviation both in terms of duration and yield curve mismatches. Credit (default) risk has been managed by placing limits on eligible issuers or counterparties based on their capital and ratings. Value at Risk (VaR) methodology can also be used to provide a quantifiable estimate of the maximum potential loss with a given probability and time horizon, resulting from deviations from the benchmark portfolio.

The benchmark therefore establishes the reference point for the reserve management accountability in terms of choice of risk tolerance. Where reserve managers are allowed to deviate from the benchmark portfolio, performance assessment and accountability is measured by comparing actual performance against what could have been generated by holding the benchmark portfolio. Where managers seek to replicate the benchmark, assessment of performance would be based on comparison of actual performance versus the benchmark.

(ii).Tranching the reserves portfolio: - The (IMF, 2001) study found that central banks subdivide their reserves portfolio into “tranches” according to liquidity and investment objectives and policy requirements. A liquidity tranche would reflect transaction and or intervention needs based on the assessment of potential need for liquidity on demand. Such a portfolio would be invested in the most liquid and risk-averse instruments. For reserves that are held to provide an additional cushion but are less likely to be drawn upon, an investment tranche may be seated where greater emphasis is placed on return as well as safety and liquidity.

The relative size of each tranche may be determined as part of an assessment of reserves adequacy, and each tranche would have a separate benchmark reflecting the different objectives. In other cases, tranching is used to immunize market and foreign exchange risks on the reserves balance sheet, by establishing characteristics for a particular asset portfolio that match those of a group of counterpart foreign liabilities.

(iii).Strategic asset allocation: - According to the (IMF, 2001) study strategic asset allocation denotes the long-term allocation of capital (wealth) to different asset classes such as bonds, equity and real estate in order to optimize the risk-reward trade-off based on an institution's goals. For central banks foreign exchange reserves portfolios, the asset allocation takes the form of currency composition and within each currency on the allocation to various fixed income asset classes, mainly government bonds and highly liquid, highly secure instrument types.

The strategic asset allocation process transforms goals and risk return preferences into long-term optimal proportions of individual asset classes. In recent years, studies have pointed on the need to broaden the strategic asset allocation towards a more comprehensive risk budgeting approach. When establishing asset class weights, the risk budget approach simultaneously determines the optimal leeway for active management, and thereby explicitly accounts for diversification effects between benchmark risk and active management risk (Chow & Kritzman, 2001).

(iv).Use of external fund managers: - The (IMF, 2001) study found that there has been a trend by central banks to upgrade their portfolios and employing fund managers to manage part of their reserves as a result of increasing costs of maintaining their systems in tune with modern sophisticated markets and the increasing difficult of retaining staff of the calibre required to manage portfolios actively. The move has also been driven by the central banks' desire to optimise their returns on the invested reserves. In pursuing this investment avenue, however, central banks have expressed concern; first over the security of the reserves. Central banks require their reserves to be absolutely secure, and have in the past been nervous about committing their reserves into the hands of external fund managers. Secondly, central banks often require their funds to be available as and when required to meet liquidity requirements. Thirdly, is the concern of confidentiality especially when the funds have to be used as tool to influence a country's monetary policy. This has remained a

serious concern, and some central banks will not even consider external fund managers for this reason.

(v). Internal control procedures:- According to the (IMF, 2001) study this entails the establishment of a proper organizational structure with proper segregation of duties between front, middle and back offices and establishment of an oversight committee to provide policy guidelines. This approach is applied mainly to manage the various operational risks that result from inadequacies, failures, or non-observance of internal controls and procedures.

2.10 Empirical Studies

A number of studies have been carried out on foreign exchange reserves risk management in central banks but mainly in the USA and Europe. There is specifically no documented literature on management of foreign exchange reserves risks in the Central Bank of Kenya. The following are some of the relevant studies that have been carried out in the financial sector both locally and internationally;

Noyer (2000) argued that extensive and costly investment and research in management of risks in central banks are not justified, especially when a financial system is strong and stable. It can, however, be argued that, as world markets are extensively integrated, volatility and shocks are easily transferred between markets and central banks cannot claim to be immune. The application of risk management is therefore a valuable technique that central banks can use to aid them manage this problem of volatility and shocks and ensure stability and reliability. Sound reserves risk management practices are important because they can increase a country's overall resilience to shocks.

Glaum (2000) observed that firms are exposed to foreign exchange risk if the results of their operations depend on future exchange rates and if exchange rate changes cannot be fully anticipated. He argued that measurement of exchange risk is an important aspect of foreign

exchange risk management. The academic literature generally distinguishes three concepts for measuring the effects of exchange rate changes on the firm. First, the accounting concept that measures the impact parity changes have on accounting profits and on owners' equity. The accounting effects of exchange rate changes do not have any direct impact on firm's cash flows. Therefore, it has long been argued that firms should not actively manage their accounting exposures (Dufey, 1972).

Secondly, the transaction exposure concept that concentrates on contractual commitments, which involve the actual conversion of currencies. Transaction exposure can be neutralized ("hedged") fairly easily by setting up counterbalancing positions. Academic literature has however pointed out that this exposure concept has its shortcomings too. A number of empirical studies have shown that the theory of purchasing power parity does not hold over the short and medium run (Taylor, 1995). This means that exchange rate changes can lead to changes in the relative prices of inputs and outputs. The relative price changes can affect a firm's cashflows and hence its value. An exchange risk management approach that limits itself to transaction exposure ignores these fundamental, long-term effects of exchange rate changes.

Thirdly, the economic exposure that encompasses all cash flows no matter whether a currency conversion is involved and regardless of their timing. The exposure can be measured by sensitivity analysis, simulation or by regressing the firm's cash flows on the foreign exchange rates (Stulz & Williamson, 1997). Although the above-mentioned approaches provide answers to the question of whether firms should manage financial risks at all, they do not provide managers with clear-cut theoretical guidelines on how the firm's risk management should be organized in terms of strategies to adopt.

Central banks foreign exchange reserves risk management concerns balancing many objectives and issues from broad macro-economy policy objectives such as monetary policy and foreign exchange management to micro-aspects, such as the definition of portfolio benchmarks and the evaluation of investment managers (Stijn & Kreuser, 2004). They argue

that approaches to reserves risk management vary along a wide spectrum. At opposite ends of the spectrum lie the traditional, pure macro-economic-only oriented approach and the pure micro-based risk-return only oriented approach. The traditional reserves risk management objectives have mostly been formulated with respect to monetary policy and exchange rate management. These macro-economic concerns are most relevant in the context of fixed or managed exchange rate regimes with some degree of capital mobility. In that case, foreign exchange reserves need to buffer against capital outflows in excess of the trade balance (and reserves will increase as capital flows exceed the trade deficit and vice-versa). Reserves management is then secondary to the macro-economic objectives and mainly involves liquidity management, which is assuring the availability of sufficient free reserves at each moment in time to intervene in the foreign exchange market.

Central banks have to choose an appropriate strategic asset allocation of the foreign exchange reserves in agreement with their general policy objectives. Empirical studies have indicated that the consequence of the chosen asset allocation is its impact on overall performance and risk over time. For instance, Ibbotson and Kaplan (2000) show that asset allocation decisions explain about 90% of the variability of returns over time. Although it is to be expected that a strategic asset allocation decision will be effective over the medium to long term the allocation might be reviewed and revised in the light of changing investment opportunities. Despite these revisions, studies have shown that strategic asset allocation does not generate superior returns compared to a market timing strategy by moving in and out of asset classes at the most beneficial time.

In traditional more practically oriented literature, it was generally assumed that firms should adopt a strictly risk averse attitude to financial risks. Theoreticians belonging to the neo-classical school of thought took up a very different view. They argued that management of financial risks is unnecessary and potentially harmful. This spurred a lot of debate with some scholars making a case for corporate risk management. In the recent past, a more detailed discussion of the arguments for and against corporate hedging activities has developed (Blommestein, 2000).

Measurement of exchange risk is an important aspect of foreign exchange risk management. The academic literature generally distinguishes three concepts for measuring the effects of exchange rate changes on the firm. The accounting concept measures the impact parity changes have on accounting profits and on owners' equity. The accounting effects of exchange rate changes do not have any direct impact on firm's cashflows. Therefore, it has long been argued that firms should not actively manage their accounting exposures (Dufey, 1972).

Cashflow exposure should be of more concern. The transaction exposure concept concentrates on contractual commitments, which involve the actual conversion of currencies. Transaction exposure can be neutralized ("hedged") fairly easily by setting up counterbalancing positions. Academic literature has however pointed out that this exposure concept has its shortcomings too. A number of empirical studies have shown that the theory of purchasing power parity does not hold over the short and medium run (Taylor, 1995). This means that exchange rate changes can lead to changes in the relative prices of inputs and outputs. The relative price changes can affect a firm's cashflows and hence its value.

An exchange risk management approach that limits itself to transaction exposure ignores these fundamental, long-term effects of exchange rate changes. The economic exposure encompasses all cashflows no matter whether a currency conversion is involved and regardless of their timing. The exposure can be measured by sensitivity analysis, simulation or regressing the firm's cashflows on the foreign exchange rates (Stulz & Williams, 1997). Although the above-mentioned approaches provide answers to the question of whether

firms should manage financial risks at all, they do not provide managers with clear-cut theoretical guidelines on how the firm's risk management should be organized in terms of strategies to adopt.

Oduor (2007) studied credit card risk assessment practices in banks operating in Kenya and found that most banks had credit assessment policies to guide them in mitigating credit risks in their operations; and they used credit manuals to sensitize their staff on credit risks. Muteru (2007) carried out a survey of credit risk management practices by pharmaceutical manufacturing companies in Kenya. She found that majority of the companies were exposed to liquidity risk, market risk and interest rate risk and had credit policies in place to guide them in mitigating these risks. Salesio (2006) studied risk mitigation strategies adopted by insurers in Kenya and found that economic risks were mainly mitigated using the following strategies; transfer (insure) reduction (control) retention (accept) or avoidance (terminate). He also found that other practices such as frequent staff training, empowerment of risk managers, identifying and training internal risk experts were being used to manage risks. Mwirigi (2006) studied the assessment of credit risk management techniques adopted by microfinance institutions in Kenya and found that the microfinance institutions had credit management policies as a basis for objective credit risk appraisal. Credit risk was rated as the most important risk facing the microfinance institutions followed by interest rate and then technological risk, market risk and foreign exchange risk. He also found that the microfinance institutions used followed swaps, forwards, futures and options as strategies for managing their risks.

Mwaura (2006) studied mitigation of risks by institutional equity investors at the Nairobi Stock Exchange and found that investors practiced Know Your Customer-customer due diligence to manage risks and avoid risky stocks. He also found that investors practiced portfolio diversification and invested in different stocks with different risk-return profiles. Idarus (2005) surveyed operational risk management practices by commercial banks in Kenya. He found that operational risk management was an integral part of risk management in commercial banks in Kenya and the risks facing them mainly arose from human risks and

errors, fraud, litigations and weaknesses in operating processes. He also found that the banks widely used the transfer strategy (insurance) to manage risks.

Omagwa (2005) studied the foreign exchange risk management practices by foreign owned commercial banks in Kenya. The results of the study indicated that most banks employed a number of conventional foreign exchange risk management practices, bank-specific practices based on their views of what constitutes exchange risk best practice. The documented risk management practices include: forecasting, speculating and taking individual positions in the currency markets with an aim of making financial gains, carrying out training programs on financial risk management and use of specific instruments to hedge against foreign exchange risk. Most banks carried out regular and systematic assessment of exposure measurement strategies and their risk management policies in general. Although some scholars have expressed reservations about the use of Value at Risk (VaR) as a risk estimate technique, the study found out that most banks used it extensively.

Ubindi (2006) carried out a survey on foreign exchange risk management practices by Forex Bureaus in Kenya. His findings were not very different from those of Omagwa (2005) in that most forex bureaus employed a number of conventional foreign exchange risk management practices including: forecasting, speculating and taking individual positions in the currency markets with an aim of making financial gains, carrying out training programs on financial risk management and use of specific financial instruments to hedge against foreign exchange risk. The forex bureaus too carried out regular and systematic assessments of exposure measurement strategies and their exchange risk management policies in general.

2.11 Conclusion from Literature Review

The classical financial models of Modigliani and Miller (1966) suggest that there is no need for firms to control risks since investors can accomplish this task themselves in a perfect market. Noyer (2000) seems to support this view and argued that extensive and costly

investment and research in management of risks in central banks are not justified, especially when a financial system is strong and stable. Glaum (2000) found discrepancies between academic literature and corporate risk management practices and contends that there are no clear-cut answers as to how corporate risk management should be organized. Hull (1998) documents that empirical studies have shown that there are no formal corporate approved financial risk management practices. The practices adopted depend on the industry of operation and organizational characteristics.

Scholars belonging to the neo-classical school of thought took up a very different view and have advanced arguments in favour of a formal risk management framework (Li, 2003), (Crabb, 2003), (Dowd, 1998), (Blommesten, 2000). Similarly, local studies on risk management in various institutions in Kenya by (Omagwa, 2005), (Ubindi, 2006), (Oduor, 2007), (Muteru, 2007), (Salesio, 2006), (Mwirigi, 2006), (Mwaura, 2006) and (Idarus, 2005) support the need for a formal risk management framework at the corporate level and document a number of risk mitigation strategies adopted by these institutions in managing the risks.

Both overseas and local studies do point to a growing need to put in place a risk management framework to manage the various risks facing organizations. Local studies have not covered the management of foreign exchange reserves risks in the Central Bank of Kenya. There exists a knowledge gap and this study will attempt to fill this gap by investigating the theory and what is practiced at the Central Bank of Kenya.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter documents the design and methodology of the study. It examines in detail the research design, target data source, data collection procedures and finally the data analysis approach.

3.2 Research Design

The research is a case study carried out at the Central Bank of Kenya. A case study involves a research design where data is collected from one or a few study units only. The researcher conducting a case study attempts to analyze the variables relevant to the subject under study (Polit & Hungler, 1983). A case study focuses on the individual case and not the whole population of cases. A case study also focuses on a bounded system, usually under natural conditions, so that the system can be understood in its own habitat (Stake, 1988).

For this study the case is at organizational level and the results will be generalized to represent the types of foreign exchange reserves risks and the risk management strategies adopted by the Central Bank of Kenya in managing these risks.

3.3 Data collection

Primary data will be collected for the study. Qualitative data will be collected through detailed self-administered questionnaires (Appendix B) comprising of open-ended, closed-ended and scale-type questions. The questionnaire will be administered to 17 respondents who work in the Foreign Exchange Reserves Management Department of the Central Bank

of Kenya using the drop-and-pick-later technique. Further, telephone contacts will be made for follow up purposes to enhance response rate.

The 17 respondents will be selected purely on purposive and judgmental basis mainly focusing staff that work in the Foreign Exchange Reserves Management Department of the Central Bank of Kenya and have some knowledge in risk management. The key reason for this form of selection is validity- the extent to which the interpretations of the results of the study follow from the study itself and the extent to which results may be generalized to other situations with other people (Shavelson, 1988).

Data will be assessed for validity as follows; for face validity, which refers to the likelihood that a question may be misunderstood or misinterpreted, the questionnaire will be pre-tested with a few respondents. For content validity, which refers to whether an instrument provides an adequate coverage of a topic, a pre-test with open ended questions will be done. Further corroboration will be done by obtaining further information from brochures and further direct interviews with respondents to clarify answers to the questionnaire. The researcher intends to use internal consistency method to test the reliability of data. The research instrument contains a scale of terms all attempting to measure the same construct, and therefore a degree of coherence is expected on the way the respondents answer.

3.4 Data Analysis

On receiving the responses, the collected data will be thoroughly screened to ensure completeness, consistency, reliability and validity. The data will be labelled, coded and analyzed for content using Statistical Package for Social Sciences (SPSS) version 16. The results will be presented in form of narration that describes the study unit (Mugenda & Mugenda, 2003).

Factor analysis will be employed as a strategy to examine how the underlying constructs influence the responses on a number of measured variables. According to DeCoster (1998)

exploratory factor analysis is used if one does not have a strong theory about the constructs underlying responses to the measures and confirmatory factor analysis is used if one has. He states that factor analysis is performed by examining the pattern of correlations between the observed measures. Measures that are highly correlated (either positively or negatively) are likely influenced by the same factors, while those that are relatively uncorrelated are likely influenced by different factors.

Data will be summarized in a meaningful narrative format using descriptive statistics technique. Descriptive technique portrays an accurate profile of persons, events or situation (Robson, 2002). This technique is suitable for a case study and for qualitative data that will be collected. Mean and mode calculations will be used to assist in deriving conclusions. The research findings will be put through further content analysis and results presented in tables, bar graphs and pie charts.

CHAPTER FOUR

DATA ANALYSIS AND FINDINGS

4.1 Introduction

This chapter presents the analysis of the data collected and interpreted on the types of foreign exchange reserves risks faced by the Central Bank of Kenya and the management strategies adopted by Bank in managing the risks.

4.2 Data Analysis

Seventeen questionnaires were distributed to the respondents out of which sixteen responded by completing and returning the questionnaires. This response rate (94percent) is a fair representation of the study unit.

4.3 Background Information of the Respondents

Background information of the respondents considered in the study included the duration one had been working in the Foreign Exchange Reserves department office and the seniority in terms of grade.

4.3.1 Position Held at the Risk Management Department

The respondents were to indicate the position held at the Reserves Management department.

Table 4.3.1 Positions Held by the Respondents

Management Level	Position	Frequency	Percentage	Percentage
Middle management	Assistant Director	1	6.25	56.25
	Manager	5	31.25	
	Assistant Manager	3	18.75	
Lower level management	Senior Bank Officer	4	25.00	43.75
	Bank Officer	1	6.25	
	Dealer	2	12.50	
	TOTAL	16	100.00	

Source: Research Data

Table 4.3.1 shows that 56.25 percent or more than half of the respondents were relatively senior people implying that information used in this study is very credible or was from reliable sources.

4.3.2 Offices Where the Respondents Work

The respondents were to indicate the office under which their duties and responsibilities fall under.

Table 4.3.2 Offices under Which Respondents Worked

Office	Frequency	Percentage
Front Office	7	43.75
Middle Office	3	18.75
Back Office	6	37.5
TOTAL	16	100.00

Source: Research Data

Table 4.3.2 indicates that 43.75 percent of respondents were from the front office while 18.75percent and 37.5 percent were from middle and back office respectively. Thus the respondents were well spread over the whole operations of reserves management at the Central Bank of Kenya.

4.3.3 Duration Worked in the Reserves Management Department

Respondents were asked to indicate how long they had worked in the Reserves Management Department.

Table 4.3.3 Duration Worked in the Reserves Management Department

No. of Years	Frequency	Percentage
Less than 2 Years	2	12.50
2-5 Years	3	18.75
5-10 Years	4	25.00
Over 10 Years	7	43.75
TOTAL	16	100.00

Source: Research Data

Table 4.3.3 indicates that 87.5 percent of the respondents had worked in the Reserves Management Department of the Central Bank of Kenya for 2 years and above. The respondents, therefore, had adequate experience in the operations of the department and were in a position to give reliable responses.

4.4 Foreign Exchange Reserves Risk Exposures to Central Bank of Kenya

Respondents were asked to record to indicate the type of transactions that expose the Central Bank of Kenya to foreign exchange reserves risks.

Table 4.4.1 Cited Sources of Risks for the Central Bank of Kenya

Item No.	Source of Risk	Frequency	Percentage
1	Government payments	3	10.70
2	Central bank payments	2	7.20
3	Investments/Market risk	11	39.30
4	Currency conversion / Foreign exchange dealings	6	21.40
5	Time deposit transactions	3	10.70
6	Fixed income securities	3	10.70
	TOTAL	28	100.00

Source: Research Data

Table 4.4.1 indicates that the main source of foreign exchange reserves risks is the transaction involving investment of reserves at 39.3 percent chance followed by currency conversion at 21.4 percent, time deposit transactions, fixed income securities, government payments and the central bank's payments at 10.7 percent and 7.2 percent respectively.

4.5 Foreign Exchange Reserves Risks Faced by the Central Bank of Kenya

Respondents were asked to indicate the types of foreign exchange reserves risks that the Central Bank of Kenya faces.

Table 4.5.1 Cited Types of Forex Risks Faced by the Central Bank of Kenya

Item No.	Type of Risk	Frequency	Percentage
1	Market risk	8	14.00
2	Credit risk	16	28.10
3	Country/ Sovereign risk	10	17.40
4	Liquidity risk	12	21.10
5	Operational risk	9	15.80
6	Litigation risk	2	3.60
	TOTAL	57	100.00

Source: Research Data

Table 4.5.1 indicates that the major type of foreign exchange reserves risk that the Central Bank of Kenya faces is credit risk at 28.1 percent chance followed by liquidity risk at 21.1 percent, market risk at 18.2 percent, country/sovereign risk at 17.4 percent, operational risk at 15.8 percent then market risk and litigation risk at 14 percent and 3.6 percent respectively.

4.6 Risk Management Strategies Adopted by the Central Bank of Kenya

Respondents were asked to indicate the risk management strategies that the Central Bank of Kenya uses to manage foreign exchange reserves risks.

From the responses received, the strategies for foreign exchange reserve risk management cited include;

Table 4.6.1 Cited Risk Management Strategies

Item No	Risk Management Strategy	Frequency	Percentage
1	Use of laid down internal control procedures-with guidelines governing reserves investment decisions.	14	87.5
2	Currency mix (Determination of a neutral long-term currency mix and maintaining this mix within low deviations) thus investing in various currencies	7	43.8
3	Duration/Maturity profiling of deposits	8	50.0

Item No	Risk Management Strategy	Frequency	Percentage
4	Portfolio creation, diversification, asset allocation, rebalancing and choice of products	8	50.0
5	Benchmark selection (against market risk)	7	43.8
6	Limits on investment amount on each institution/ Credit exposure limits to counter parties	7	43.8
7	Credit rating in selecting banks for investment	8	50.0
8	Investment in many continents to counter political risk	7	43.8
9	Segregation of duties in reserves management operations	8	50.0
10	Structuring of investments to mitigate liquidity risk	7	43.8
11	Tranching of reserves – with a tranche being managed with assistance of the World Bank	6	37.5

Source: Research Data

Table 4.6.1 indicates that the major strategy adopted by the Central Bank of Kenya in managing its foreign exchange reserves risk is use of laid down internal control procedures with guidelines that govern the making of reserves investment decisions. The success of these strategies was reported as being measured on a monthly and quarterly basis by the central bank.

4.7 Independence of the Foreign Exchange Reserves Management Function

Respondents were asked to indicate their view on the independence of the foreign exchange reserves management function, mainly from the World Bank.

Table 4.7.1 Independence of Reserves Management Function

Item No	Independence of Reserves Management Function	Frequency	Percentage
1	The function is independent particularly from the World Bank.	14	87.5
2	The function is not independent.	2	11.5

Source: Research Data

Table 4.7.1 indicates that the Central Bank of Kenya foreign exchange risk management function is viewed as being independent by 87.5 percent of the respondents while 12.5 percent felt that it was not independent. This is an indication that most of the risk management strategies adopted by the Bank are free from influence of a third party and are therefore attributable to the Bank.

4.8 Rating of Foreign Exchange Reserves Risks by Order of Criticality

Respondents were asked to rate the following foreign exchange reserves risks in order of criticality from the Central Bank of Kenya's standpoint.

Table 4.8.1 Rating of Foreign Exchange Reserves Risks by Importance

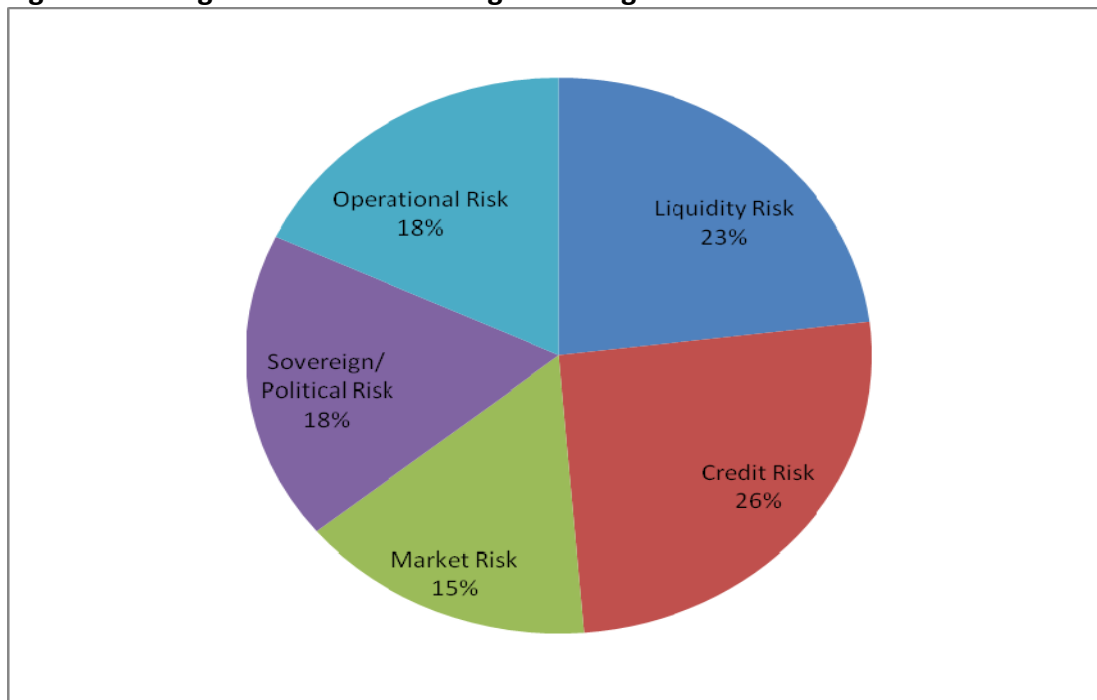
Type of Risk	Most critical		Critical		Not critical	
	No.	percent	No.	percent	No.	percent
Liquidity Risk	10	60.0	6	40.0	0	0
Credit Risk	11	66.7	5	33.3	0	0
Market Risk	7	40.0	9	60.0	0	0
Sovereign/ Political Risk	8	46.7	7	46.7	1	6.7
Operational Risk	8	46.7	6	40	2	13.3

Source: Research Data

Table 4.8.1 indicates that credit risk was rated highest with 66.7 percent of respondents rating it as most critical followed by liquidity risk at 60 percent, sovereign/political risk, operational risk and market risk at 46.7 percent and 40 percent of respondents rating them as most critical respectively.

The same results are supported by the figure below which presents the overall rating by the respondents.

Figure 1: Rating of most critical foreign exchange reserves risks



4.9 Risk Management Strategies Adopted by the Central Bank of Kenya

Respondents were asked to indicate the extent of use of the following foreign exchange reserves risk management strategies by the Central Bank of Kenya.

Table 4.9.1 Use of foreign exchange reserves risks management strategies

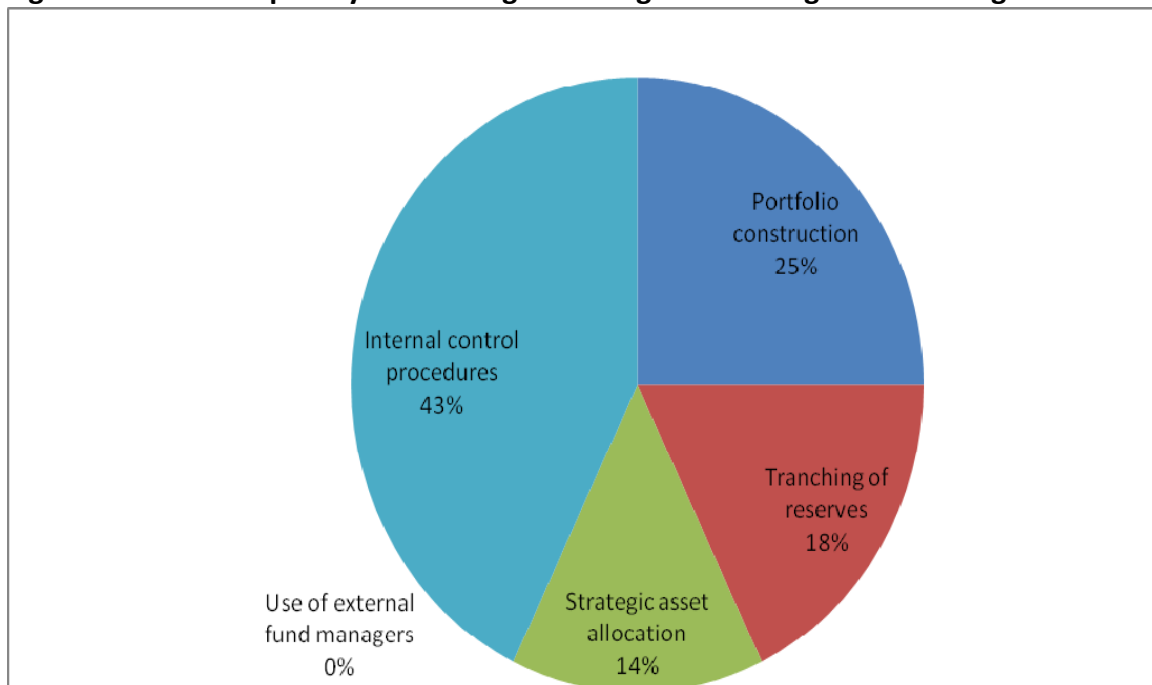
Risk Management Strategy	Most frequently used		Moderately Used		Occasionally Used		Not Used at all	
	No.	percent	No.	percent	No.	percent	No.	percent
Portfolio construction	8	50.0	7	43.8	1	6.2	0	0
Tranching of reserves	6	37.5	5	31.3	4	25.0	1	6.2
Strategic asset allocation	5	31.3	9	56.2	2	12.5	0	0
Use of external fund managers	0	0.0	4	25.0	3	18.8	9	56.2
Internal control procedures	14	87.5	2	12.5	0	0	0	0

Source: Research Data

Analysis of responses received (table 4.9.1) indicated that internal control procedures was the most preferred strategy for mitigating foreign exchange risks with a rating of 87.5 percent chance followed by Portfolio construction at 50 percent and tranching of reserves and strategic asset allocation with 37.5 percent and 31.3 percent respectively. The analysis indicates that 56.2 percent of the respondents felt that the Bank did not prefer use of external fund managers at all.

The same results are supported by Figure 2 below which presents the most frequently used strategy in overall terms;

Figure. 2: Most- frequently used foreign exchange risk management strategies



4.10 Foreign Exchange Risk Management Processes

Respondents were asked to indicate the extent of use of the following risk management processes by the Central Bank of Kenya.

Table 4.10.1 Risk management processes adopted by the Central Bank of Kenya

Statement	Very large extent	Large extent	Some extent	Small extent	Not at all	Total
Diversification strategy involves diversifying investments by making use of funds in more than one capital market and in more than one country.	8	3	5	0	0	16
Management of foreign exchange reserves risks goes through three distinct phases: identifying risk, measuring risk and managing risk.	12	2	1	1	0	16
The main reason for practicing risk management on foreign exchange reserves is to achieve the bank's objectives.	10	6	0	0	0	16
The bank has in place foreign exchange reserves risk management guidelines that govern the operations	14	1	1	0	0	16
Currency markets are information efficient: the bank cannot make speculative gains through predicting future exchange rates.	8	6	1	0	1	16
The bank measures its foreign exchange reserves risks using the Value at Risk (VaR) method.	0	0	4	3	9	16

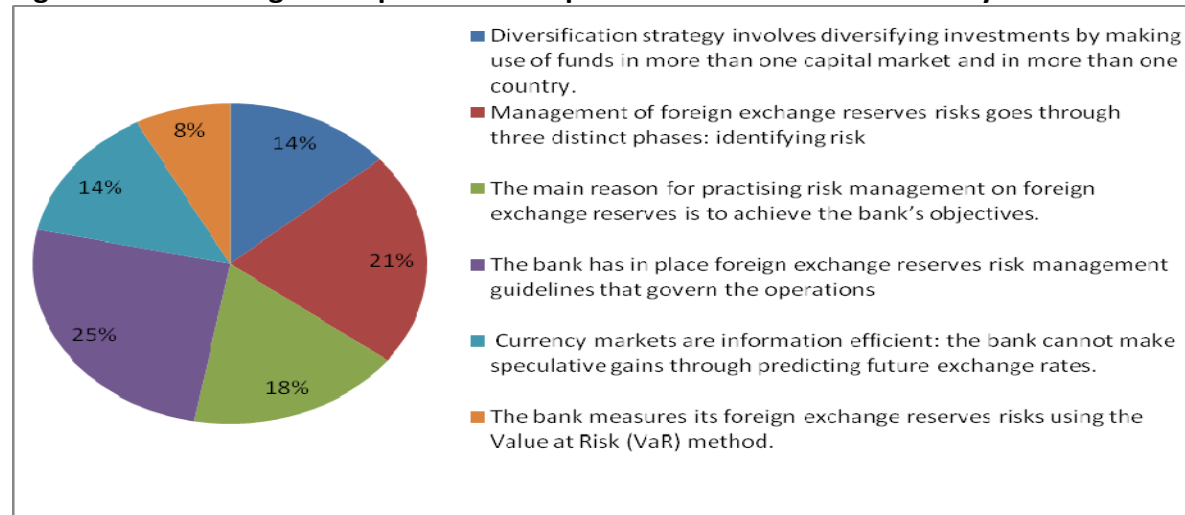
Source: Research Data

Table 4.10.1 indicates that to a very large extent Central Bank of Kenya; diversifies its foreign exchange reserves investments into more than one capital market and country, the management of foreign exchange reserves go through three distinct phases: identifying risk, measuring and managing risk. To a very large extent the Bank's main reason for managing foreign exchange risks is to enable it achieve its objectives, the Bank has put in place foreign exchange reserves risk management guidelines to govern its operations and currency markets are information efficient: the Bank cannot make speculative gains through predicting future exchange rates.

The table also shows that the Bank does not use the Value at Risk (VaR) method to measure its risks.

Figure 3 below presents the same findings in overall terms.

Figure 3: Risk management processes adopted in the Central Bank of Kenya



4.11 Summary of Findings and Implications

The objectives of this study were to identify the types of foreign exchange risks faced by the Central Bank of Kenya and to determine the risk management strategies adopted by the Bank in managing these risks.

With respect to the response rate, 16 out of 17 (94%) respondents completed and returned the questionnaires. Most of the respondents were not new in the Reserves Management Department of the Central Bank of Kenya and were senior and knowledgeable enough to respond to the questions.

From the study, credit risk was rated as the most critical foreign exchange reserves risk faced by the Central Bank of Kenya. Credit risk is the threat that losses may arise from the investment of reserves in high-yielding assets that were made without due regard to the credit risk associated with the issuer of the asset. Credit risks mainly arise from default by counterparties where the Central Bank of Kenya may have placed the funds in time deposits,

current accounts, investments in certificates of deposit and foreign currency operations and the counterparty will be unable or unwilling to meet a commitment that it has entered into with the Bank. The implication of this finding is that Central Bank of Kenya has to set up a sound counterparty eligibility criteria, adhere to it and have it re-evaluated from time to time. This will ensure that the Bank deals only with credit worthy counterparties.

According to the study the other types of foreign exchange reserves risks faced by the Central Bank of Kenya in order of criticality after credit risk were; liquidity risk, sovereign/political risk, operational risk and market risk. These risks ought to be managed effectively if the Bank is to achieve its foreign exchange reserves management objectives of ensuring safety of the reserves, liquidity that is, ensuring timely availability of funds for daily requirements and maximizing returns from the reserves within a framework of acceptable levels of risk and subject to meeting safety and liquidity requirements.

Internal control procedures was rated as the most preferred strategy of managing foreign exchange reserves risk at the Central Bank of Kenya. Internal control procedures entails the establishment of a proper organizational structure with proper segregation of duties between front, middle and back offices and establishment of an oversight committee to provide policy guidelines. The Bank's policy guidelines lay out the quality of counterparties (credit rating) that the Bank will deal with, the mix of currencies invested and the desired political climate of the investment destinations. The guidelines broadly cover the approach and procedures followed by the Bank when making investment decisions on the reserves. The Bank therefore ought to have these guidelines regularly audited and if need be reviewed to conform to international best practice.

The study also indicated that the Bank adopts other strategies to manage the foreign exchange reserves risks and these in order of importance included; portfolio construction, tranching of reserves and strategic asset allocation. The Bank sets targets for controlling critical portfolio variables, namely currency mix, investment instruments, choice of commercial banks to deal with, the bank's exposure limits and maturity profiles. These

portfolio variables are reviewed from time to time to respond to circumstances prevailing in the market. The study revealed that the Central Bank of Kenya does not prefer the use of external fund managers in managing its foreign exchange reserves risks and the Bank does not use the Value at Risk (VaR) to measure its risks.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary

The purpose of this study was to survey the various types of foreign exchange reserves risks faced by the Central Bank of Kenya and the strategies adopted by the Bank to manage these risks.

The research was a case study of the Central Bank of Kenya. A questionnaire was sent out to seventeen technical staff working in the reserves management department of the Central Bank of Kenya and relevant primary data was collected. The data was analysed for content using SPSS Software and the results were presented using tables and pie charts.

The study found that the key foreign exchange reserves risks faced by the Central Bank of Kenya in order of criticality were; credit risk, liquidity risk, sovereign/political risk, operational risk and market risk. The main sources of these risks were indicated as transactions involving investment of reserves, currency conversion, time deposits, fixed income securities and government payments.

The study documented the key risk management strategies adopted by the Central Bank of Kenya in managing the foreign exchange reserves risks. These included; internal control procedures, portfolio construction, tranching of reserves and strategic asset allocation. In addition, the Bank utilises credit ratings when selecting counterparties to deal with, invests in many continents and structures the maturity of its investments in order to mitigate liquidity risk. The effectiveness of these strategies was reported as being evaluated on a monthly and quarterly basis by the Bank.

The study further found that the Central Bank of Kenya, to a great extent, manages its foreign exchange reserves independent of the World Bank. The Bank does not prefer the use

of external fund managers in managing its foreign exchange reserves risks and it does not measure its foreign exchange reserves risks using the Value at Risk (VaR) method.

5.2 Conclusions

The study sought to identify the types of foreign exchange reserves risks facing the Central Bank of Kenya and survey the risk management strategies adopted by the Bank in managing these risks. It identified the key types of foreign exchange reserves risks facing the Bank as credit risk, liquidity risk, sovereign/political risk, operational risk and market risk. Credit risk was rated as the most critical foreign exchange reserves risk faced by the Central Bank of Kenya. Credit risk mainly arise from default by counterparties where the Central Bank of Kenya may have placed the funds in time deposits, current accounts, investments in certificates of deposit and foreign currency operations and the counterparty will be unable or unwilling to meet a commitment that it has entered into with the Bank. The Bank would require setting up a sound counterparty eligibility criteria, adhering to it and having it re-evaluated from time to time. This will ensure that the Bank deals only with credit worthy counterparties.

The study determined the risk management strategies adopted by the Bank in managing the foreign exchange reserves risks as; internal control procedures, portfolio construction, tranching of reserves and strategic asset allocation. All these risk management strategies are subjected to regular monthly review to ascertain their effectiveness in mitigating the risks.

Internal control procedures was rated as the most preferred strategy of managing foreign exchange reserves risk at the Central Bank of Kenya. Internal control procedures entails the establishment of a proper organizational structure with proper segregation of duties between front, middle and back offices and establishment of an oversight committee to provide policy guidelines. The Bank's policy guidelines lay out the quality of counterparties (credit rating) that the Bank will deal with, the mix of currencies invested and the desired

political climate of the investment destinations. The guidelines broadly cover the approach and procedures followed by the Bank when making investment decisions on the reserves.

Central Bank of Kenya requires its foreign exchange reserves to be absolutely secure, and has in the past been nervous about committing its reserves into the hands of external fund managers. Secondly, the Bank often requires funds to be available as and when required to meet liquidity requirements. This has remained a serious concern, and the Bank, for this reason, does not use external fund managers. The study suggests the regular re-evaluation of credit risk to determine whether it remains the most critical foreign exchange reserves risk among other identified risks; liquidity risk, sovereign/political risk, operational risk and market risk as risk profiles mutate over time. Following such evaluation, it would be appropriate to put in place risk mitigation strategies to mitigate the identified risks. Value at Risk (VaR) methodology may be used to shape up the adoption of the portfolio construction strategy as the method would provide a quantifiable estimate of the maximum potential loss with a given probability and time horizon, resulting from deviations from the benchmark portfolio.

5.3 Recommendations

The study recommends active management of the Bank's foreign exchange reserves risks as a critical activity that will enable the Bank achieve its objectives. The Bank should consider drawing lessons from financial disasters in other organizations including banks that have occurred due to unidentified or unmitigated risks within the institutions. In this regard, the Bank should put in place a framework that identifies and assesses the risks of reserves management operations that allows the management of risks within acceptable parameters and levels. The framework should seek to identify the possible risks that may impact on portfolio values and to manage these risks through the measurement of exposures, and where necessary, supporting internal control procedures to mitigate effects of these risks.

Foreign exchange reserves risks management typically involves the establishment of parameters for; the currency holding and mix necessary to maintain the ready availability of convertible currencies, and also to maintain cross rate exposures within acceptable limits, the permissible range of investment instruments that meet liquidity and security requirements and maturity or duration requirements for limiting exposure to interest rate or market price risks. In this regard, the study recommends the determination of risk parameters that include the minimum acceptable credit ratings for the counterparties to deal with.

The Bank should specify a strategic long-term portfolio that represents the best available trade-off between the different risks that it is facing. The study recommends the construction of the Bank's actual benchmark portfolio that include the chosen currencies with desired weights, investment instruments with appropriate credit characteristics, and duration that reflects the desired level of interest rate risk. The benchmark should not include transient factors or reflect short-term market expectations, but their appropriateness should be reviewed regularly as the changes in the benchmarks may be triggered by changes in market structures or characteristics thus altering the investment environment.

Tranching of reserves into liquidity and investment tranche came out as one of the strategies that Central Bank of Kenya adopts in managing its foreign exchange reserves risks. The study will recommend for an upward revision of the investment tranche in order to maximize the returns from the invested reserves. This will, however, will have to be subjected to safety and liquidity considerations. Appropriate risk management framework ought to respect the unique central banking environment, characterized by a high degree of risk aversion, conservatism and institutional constraint.

Finally, the study recommends the continuous monitoring of risk exposures to determine whether exposures have been extended beyond acceptable limits. Monitoring is essential whether the Bank adopts passive or active reserves management approach. Value at Risk

(VaR) or other simulation methodologies may be adopted as part of the risk management and monitoring framework.

5.4 Limitations of the study

The study dealt with internal strategies of the Bank, which are always confidential to the Bank's management and this could have influenced the responses given by the respondents. Not all information sought was obtained, that is, owing to confidentiality reasons there was deliberate lack of response on certain information.

The number of technical staff working in the Reserves Management Department at the Central Bank of Kenya is limited, reducing the scope of the study. However, the high response rate mitigated this to some extent.

Inadequate research time limited the degree of analysis of the data that could have improved the conclusions reached in the study.

5.5 Suggestions for Further Research

With the integration of countries within the East Africa Community, a study on foreign exchange reserves risk management strategies adopted by the East Africa Community central banks is recommended.

A comparative study can also be carried out between the Central Bank of Kenya and another central bank (either within the region or elsewhere) based on the results of this study.

Further, as the business environment changes, the need for research on the changing risk profiles and the attendant risk mitigation strategies at the Central Bank of Kenya emerges. In particular, the causal relationship between currency mix and portfolio returns can be

examined with an emphasis on the trend over a period of time. The study dealt with the risks and risk management strategies on the Central Bank of Kenya foreign exchange reserves. This provides a base for an enhanced research on other areas such as risk management on the Bank's currency circulation operation.

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APPENDIX A: COMPLIMENTARY LETTER TO THE RESPONDENT

University of Nairobi
School of Business
P.O. Box 30197
Lower Kabete,
NAIROBI

28th June, 2010

Dear Sir/Madam,

I am gathering data for my Research Project towards fulfilment of a Master of Business Administration Degree majoring in Finance.

My project focuses on ***“A Survey of Foreign Exchange Reserves Risk Management Strategies Adopted by the Central Bank of Kenya”***. To achieve this objective, below is a questionnaire to enable me gather the information.

Kindly take a few minutes to fill it up;

1. Give your answer briefly in the space provided for the open-ended questions.
2. Put a tick in the box provided against the correct answer.
3. Answer the questions honestly and provide any other information in the space provided.

Any information given will be treated in confidence.

Yours faithfully,

JOSHUA N. KIMORO

APPENDIX B: QUESTIONNAIRE

Section A: General information

1. Your Name:------(optional)

2. Your position:-----

3. Under which office does your duties and responsibilities fall under?

Front office ☐

Middle office ☐

Back office ☐

4. How long have you been in the Reserves Management Department?

Less than 2 years ☐

2-5 years ☐

5-10 years ☐

Over 10 years ☐

Section B: Types of Risks and Risk Management Strategies

5. Which transactions expose the Bank to foreign exchange reserves risks?

6. What risks does the Bank face while dealing with foreign exchange reserves?

7. Which risk management strategies do your bank use to mitigate foreign exchange risks emanating from foreign exchange reserves investment?

8. How independent is your foreign exchange risk management function-i.e. are your foreign exchange risk management strategies governed by guidelines set by the World Bank or do you make foreign exchange risk mitigation decisions independently?

9. Please rate the following foreign exchange reserves risks in order of criticality from your bank's standpoint.

Type of Risk	Most Critical	Critical	Not Critical at all
	(3)	(2)	(1)
Liquidity Risk			
Credit Risk			
Market Risk			
Sovereign/ Political Risk			
Operational Risk			
Any other (please specify)			

10. Kindly indicate the extent to which the following strategies are used by your bank to mitigate against the foreign exchange reserves risks. Please rank them on the scale 4 to 1.

Risk Management Strategy	Most frequently Used	Moderately Used	Occasionally Used	Not Used at all
	(4)	(3)	(2)	(1)
Portfolio construction				
Tranching of reserves				
Strategic asset allocation				
Use of external fund managers				
Internal control procedures				

11. Below are statements relating to foreign exchange reserves risk management strategies. Kindly indicate on a scale of 5 to 1 (by ticking) the extent to which the statements apply to your bank.

Statement	Very large extent	Large extent	Some extent	Small extent	Not at all
	(5)	(4)	(3)	(2)	(1)
1. Diversification strategy involves diversifying investments by making use of funds in more than one capital market and in more than one country.					
2. Management of foreign exchange reserves risks goes					

Statement	Very large extent	Large extent	Some extent	Small extent	Not at all
	(5)	(4)	(3)	(2)	(1)
through three distinct phases: identifying risk, measuring risk and managing risk.					
3. The main reason for practising risk management on foreign exchange reserves is to achieve the bank's objectives.					
4. The bank has in place foreign exchange reserves risk management guidelines that govern the operations.					
5. Currency markets are information efficient: the bank cannot make speculative gains through predicting future exchange rates.					
6. The bank measures its foreign exchange reserves risks using the Value at Risk (VaR) method.					