THE RELATIONSHIP BETWEEN FOREIGN EXCHANGE TRADING AND FINANCIAL PERFORMANCE OF COMMERCIAL BANKS IN KENYA

BY

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DECLARATION

This research project proposal is my original work and has never been presented in any other university or college for an award of degree, diploma or certificate.

Signed…………………………………   **Date…………………………………**

KALSI SARABJIT SINGH - D61/63425/2010

This research project proposal has been submitted for examination with my approval as the university supervisor.

Signed…………………………………   **Date…………………………………**

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DEDICATION

The research is dedicated first to my dear parents who were a great source of inspiration to my education and without their foresight, sacrifice and support I would not have gone this far.

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I am indebted to many individuals for their support and contributions towards the successful and timely completion of this research work. And above all else, my Heavenly Father for immeasurable gift, talent, good health and courage. I cannot conclude this acknowledgement without once again by expressing my deepest gratitude to God for blessing me with good health, clarity of mind and focused attention without which, successful completion of this work would not have been possible. His name is glorified forever.

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ABSTRACT

Exchange rate movements have been a big concern for investors, analyst, managers and shareholders in commercial banks. However, little is known, at least in Kenya, of how foreign exchange trading influences commercial banks' financial performance and the direction of the relationship. The objective of the study was to establish the relationship between Foreign exchange trading and financial performance of commercial banks in Kenya. The study adopted a survey research design where all 42 commercial banks were the focus of the study. Data was collected from secondary sources: annual financial reports of commercial banks and foreign trading data (currency forwards and swaps, and spot trading) reported to CBK. Pearson correlation, descriptive statistics and multiple linear regression analysis were used. The study established that from the multiple regression analysis, the coefficients for spot trading was 13.491 (p<.001), currency forwards 3.113 (p = .057) and currency swaps 4.820 (p = .095). The study concludes that: currency swaps and forwards are negatively related with ROA while currency spot is positively related with financial performance. Thus, currency swaps, forwards and spots are significantly related with commercial banks' financial performance. From the determination coefficients, it can be noted that there is a strong relationship between dependent and independent variables given an R^2 values of 0.856 and adjusted to 0.801. This shows that the independent variables (spot trading, currency forwards, and currency swaps) accounts for 80.1% of the variations in profitability as measured by ROA. The study recommends that commercial banks foreign trading variables currency options, currency forwards, and spot trading are very crucial in determining financial performance of commercial banks in Kenya, however, efforts should be concentrated on spot trading as it maximizes returns.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF ABBREVIATIONS

CBK   **-**   Central Bank of Kenya

CCY   -   Currency

FX/Forex   -   Foreign Exchange

NSE   -   Nairobi Securities Exchange

ROA   **-**   Return on Assets

ROC   **-**   Return on Capital

ROCE   **-**   Return on Capital Employed

ROE   -   Return on Equity

ROI   -   Return on Investments

CHAPTER ONE:

INTRODUCTION

1.1 Background to the Study

In a corporate risk management framework, speculation is the extent to which financial positions are established based upon the firm's own view or forecast of future market prices. Current financial theory does not provide a consensus on the optimal hedge ratio and as such any view that can have an impact on hedging behavior can be regarded as speculative (Brown, 2001). Despite the spread of the efficient financial markets doctrine, there is an abundance of managers who are convinced of their own ability to predict future interest rates, exchange rates, and commodity prices (Stulz, 1996). In addition, the desire to gamble is deeply rooted in the human psyche Kumar (2009) raising the possibility that managers would often choose to take speculative positions.

Stulz (1996) argues that speculative actions by firms are only rational in the case of financially distressed firms near bankruptcy (when managers choose to add risk at the expense of debt holders) or in the case of firms with specialized information (e.g. a major producer or consumer of a specific commodity) According to Stulz (1996) there is no reason for mainstream firms that are not in financial distress to speculate. Furthermore, as noted by Brown et al (2006) non-financial firms are unlikely to have superior information in the highly liquid markets for foreign exchange. Thus, for the majority of firms, speculation is a zero-sum game at best and in most cases a value reducing game for the exact same reasons that various market imperfections are argued to make foreign exchange hedging value increasing for non-financial firms, e.g. reduce financial distress.

1.1.1 Foreign Exchange Trading

Foreign exchange business means any facility offered, business undertaken or transaction executed with any person involving a foreign currency inclusive of any account facility, credit extension, lending, issuance of guarantee, counter-guarantee, purchase or sale by means of cash, cheque, draft, transfer or any other instrument denominated in a foreign currency (CBK, 2011). Speculation is the backbone of foreign exchange business, in this line of reasoning; Géczy et al (2007) argue that a major motivation behind speculation is the belief that it is profitable. Foreign exchange exposure refers to the sensitivity of a firms cash flows, real domestic currency value of assets, liabilities, or operating incomes to unanticipated changes in exchange rates (Adler & Dumas, 1984). The adoption of a floating exchange rate regime, the rapid globalization of national economies and the attempts by multinationals to seek investment opportunities and markets beyond their immediate borders account for the increasing exposure of firms to foreign exchange risk in recent times. Consequently and according to CBK, authorized banks are licensed to buy, sell, borrow or lend in foreign currency or transact any other business involving foreign currency. "Foreign currency" means a currency other than legal tender of Kenya (CBK, 2011).

1.1.2 Financial Performance

To establish performance one must measure what is expected to be managed and accomplished. One-way of establishing performance and managing the financial affairs of an organization is to use ratios. By applying ratios to a set of financial statements, we can better understand financial performance. The performance of business organizations is affected by their strategies and operations in market and non-market environments (Baron,

2000). Sizable, long-term investments in tangible and intangible assets have long-term consequences. Financial measures are regarded as "lag" indicators of performance whereas Intellectual capital measures (like non-financial measures) are regarded as "lead" indicators since they are mainly intended to generate future earnings power (Kaplan & Norton, 2001) and (Canibano et al, 2000) While all future earnings are uncertain, it is greater for intellectual capital than for tangible assets.

Holland (2003) discusses that fund managers in forecasting their valuation of firms use financial information. Traditionally, firms relied on their tangible assets to drive their performance and firm-level strategy. The use of financial ratios for business analysis is common, and hence, almost cliché. Considering these facts, encouraging industry operators to apply the techniques of ratio analysis to assess their performance requires a simple framework that compresses a large amount of data into a small set of performance indicators. These performance indicators must include intangible, non-financial elements that are often critically important to operators (Mongiello & Harris, 2006)

1.1.3 Relationship between Foreign Exchange Trading and Financial Performance

Commercial Banks partake in the Forex market to assist in international trade and investment hence they are exposed to FX risk which is simply the risk that profit will change if forex rates change. Exchange rate fluctuations affect operating cash flows and firm value through translation, transaction, and economic effects of exchange rate risk exposure (Choi & Prasad, 1995). Based on this FX risk that banks trade in the forex market to hedge themselves against such adverse volatility.

Chamberlain et al (1995) argued that Foreign exchange rate fluctuations affect banks both directly and indirectly. The direct effect comes from banks' holdings of assets (or

liabilities) with net payment streams denominated in a foreign currency. Foreign exchange rate fluctuations alter the domestic currency values of such assets. This explicit source of foreign exchange risk is the easiest to identify, and it is the most easily hedged.

The indirect sources of risk are more subtle but just as important. A bank without foreign assets or liabilities can be exposed to currency risk because the exchange rate can affect the profitability of its domestic banking operations. For example, consider the value of a bank's loan to a Kenyan importer. An appreciation of the dollar might make it more difficult for the importer competes against foreign firms. If the appreciation thereby diminishes the importers profitability, it also diminishes the probability of timely loan repayment and, correspondingly, the profitability of the bank. In this case, the bank is exposed to foreign exchange risk: a stronger dollar decreases its profitability. Any time the value of the exchange rate is linked to foreign competition, to the demand for loans, or to other aspects of banking conditions; it will affect even "domestic" banks. Therefore there exists a positive relationship between Forex trading and financial performance

Several theories have been put forward by different theorists with conclusions on the subject matter. Allayannis & Weston (2001) indicate that firms that use derivatives have a higher market value whereas Graham & Rogers (2002) also allude that firms that use derivatives are highly leveraged. Modigliani-Miller paradigm (Miller & Modigliani, 1958) states conditions for irrelevance of financial structure for corporate value. This approach stipulates also that hedging leads to lower volatility of cash flow and therefore lower volatility of firm value. Rationales for corporate risk management were deduced from the irrelevance conditions. The ultimate result of hedging, if it indeed is beneficial to the firm,

should be higher value- i.e. a hedging premium. Thus Forex trading as portfolio risk diversification has no effect on financial performance.

Chamberlain et al (1995) argued that assessing banks' foreign exchange risks can be obtained from an analysis of banks' equity returns. Equity returns reflect changes in the value of the firm as a whole. So, if the value of a bank as a whole is sensitive to changes in the exchange rate, the bank's equity returns will mirror that sensitivity. Whether from direct or indirect sources, foreign exchange exposure will be reflected in the behavior of returns. Thus, the exchange rate sensitivity of a bank's equity returns provides a positive comprehensive measure of its foreign exchange exposure.

Empirical studies done locally show both negative and positive relationships among the variables under study. Muriithi (2011) did a study on the relationship between the performance of manufacturing companies listed at the NSE and foreign exchange rate movements. His study showed that exchange rates had a positive influence on market performance.

Mongeri (2011) did a study on the impact of foreign exchange and foreign exchange reserves on the performance of NSE share index. Results showed a positive relationship between forex rates and stock market performance.

Irene (2011) did a study on relationship between foreign exchange risk and financial performance of Kenya Airways. From her findings, there is a negative relationship between forex risk and financial performance. Currency fluctuations impact on prices hence negative impact on revenues and expenses denominated in foreign CCY

Last but not least to reinforce the above theories that there is a positive relationship between forex trading and financial performance, Commercial banks grew their foreign exchange income by 73 per cent in the first three months of the year 2011 helped by a volatile Shilling that has seen importers count billions in losses while exporters pocketed gains (Business Daily,2011) . Income based on fair values reflects income volatility more than historical cost-based income. This means forex trading contributes greatly to most commercial banks income.

1.1.4 Commercial Banks in Kenya

Commercial banks are licensed and regulated under the Banking Act, Cap 488 and Prudential Regulations issued there-under. There are 44 Commercial Banks in Kenya (CBK, 2011). The role of commercial banks in an economy cannot be emphasized. Commercial banks play an important role in facilitating economic growth. Banks deposits represent the liquid form of money. On a micro economic level, commercial banks represent the primary source of credit to most small businesses and many individuals. Omotunde (2002) asserts that a sound financial system will contain, predominantly, banks with adequate capital to withstand the most probable adverse shocks, and will have staff skilled in assessing conditions and coming up with solutions to manage liquidity, credit, market and other risks.

A process of financial liberalization was initiated in the 90s to make the banking system profitable, efficient, and resilient. The liberalization measures consisted of deregulation of entry, interest rates, and branch licensing, as well as encouragement to state owned banks to get listed on stock exchanges. With the liberalization came risks that banks needed to manage. It is therefore a suitable time to perform an analysis of foreign exchange trading

and financial performance among Commercial Banks in Kenya. The Basel-II norms, which include a move towards better risk management practices, also necessitate such a study (CBK, 2011).

Exchange rate movement in Kenya has been variable with periods of rapid depreciation of the domestic currency Kenya Shilling, which adversely affect the Kenyan economy and in turn banks income. Commercial banks in Kenya grew their foreign exchange income by 73 per cent in the first three months of the year 2011 helped by a volatile Shilling that has seen importers count billions in losses while exporters pocketed gains (Business Daily, 2011)

1.2 Research Problem

Exchange rate movements have been a big concern for investors, analyst, managers and shareholders since the abolishment of the fixed exchange rate system of Bretton Woods in 1971. This system was replaced by a floating rates system in which the price of currencies is determined by supply and demand of money. Given the frequent changes of supply and demand influenced by numerous external factors, this new system is responsible for currency fluctuations (Arbor, 2005). The classic paper of Modigliani & Miller (1958) and Modigliani & Miller (1963) showed that under conditions of perfect capital markets, and some other conditions, the financial decisions of a firm are irrelevant in the sense that they do not change the total value of the firm. This follows from the fact that shareholders can reverse engineer the financing decisions of the firm on their own account at fair market prices. Corporate risk management with derivatives is part of the financial decisions of the firm, so it is also irrelevant under these conditions. Consequently commercial banks typically participate in derivatives markets because their traditional lending and borrowing activities expose them to financial market risk. This conclusion calls for an investigation of

7

the economic significance of foreign exchange trading by commercial banks as well as large firms in emerging economies like Kenya.

The following studies have been done locally. Irene (2011) did a study on the relationship between foreign exchange risk and financial performance of Airlines in Kenya whose objective was to establish the relationship between foreign exchange risk and financial performance. Muriithi (2011) studied the relationship between foreign exchange rate and market performance for manufacturing companies.

In addition, Mongeri (2011) did a study on the impact of foreign exchange rates and foreign exchange reserves on the performance of NSE share index. Finally, Onyancha (2011) did a study on the impact of foreign exchange gains and losses in the financial performance of international Non-governmental organizations.

Much of the early work done has been on foreign exchange risk and foreign exchange risk management techniques. There is a gap as far as studying foreign exchange trading and financial performance among commercial banks in Kenya is concerned. It is evident that this has not been done fully especially in the emerging markets. In addition, most of the studies conducted have been in developed countries and they are not conclusive. The study therefore sought to answer the following research question: What is the relationship between foreign exchange trading and financial performance of commercial banks in Kenya?

1.3 Research Objective

The objective of the study was to establish the relationship between Foreign exchange trading and financial performance of commercial banks in Kenya.

1.4 Value Of The Study

The study is of help to Commercial Banks' policymakers who seek to have a clear understanding of how foreign exchange trading affects financial performance of commercial banks. The study makes multiple contributions to the literature on foreign exchange trading through investigation of optimal investment decisions in continuous-time downside risk-based foreign exchange system. In addition, study paves the road for further research on continuous-time downside risk in foreign exchange investment decisions. Students interested in finance as a subject can find the study useful and build on the existing body of knowledge.

Finally, the study comes in handy to support the Government and CBK as regulators in their quest to streamline operations in the banking sector putting in mind that the economy as a whole inches on how the banking sector performs. Inappropriate resource allocation can hinder growth in the economy. There is a contagion effect between banks performance and economic performance, which have a direct impact on employment levels, economic growth, inflation levels etc.

CHAPTER TWO:

LITERATURE REVIEW

2.1 Introduction

This chapter examines the literature on foreign exchange trading and financial performance among commercial banks.

2.2 Theoretical Review

The following theories are relevant in foreign exchange trading and financial performance and are therefore discussed. These are Efficient Market Hypothesis, Portfolio theory and Financial Economics approach.

2.2.1 Portfolio Theory

In the 1950s, Markowitz (1959) described the theoretical framework for modern portfolio theory and the creation of efficient portfolios. The solution to the Markowitz's theoretical models revolves around the portfolio weights, or the percentage of asset allocated to be invested in each instrument. Sharpe (1963) developed the single-index model, which relates returns on each security to the returns on a common index − abroad market index of common stock returns such as S&P 500 is generally used for this purpose. When given probability forecasts of returns, one can obtain the optimal investment ratio. Markowitz tells us that an efficient portfolio is either a portfolio that offers the highest expected return for a given level of risk, or one with the lowest level of risk for a given expected return.

The author found that incremental entropy, one of the generalized entropies, could be used to optimize portfolios. The new portfolio theory based on incremental entropy carries on

some aspects of Markowitz's (1959) and Markowitz's (1991) theory, but it emphasizes that the incremental speed of capital is a more objective criterion for assessing portfolios. Given probability forecasts of returns, we can obtain the optimal investment ratio. Combining the new portfolio theory and the general theory of information, we can approach a meaning-explicit measure, which represents the increment of capital-increasing speed after information is provided.

2.2.2 Efficient Market Hypothesis

An "efficient" market is defined as a market where there are large numbers of rational, profit-maximizers actively competing, with each trying to predict future market values of individual securities, and where important current information is almost freely available to all participants (Fama, 1965). On the average, competition will cause the full effects of new information on intrinsic values to be reflected "instantaneously" in actual prices (Fama, 1965). A market is said to be efficient if prices in that market reflect all available information.

In an efficient market, share prices reflect all information available to market participants and that, by implication, share prices cannot be predicted, thus precluding any abnormal profit opportunities. However, long memory in equity data confounds market efficiency since it implies that past prices can be used to predict future price changes. This in turn means then investment strategies based on historical returns can generate subsequent risk-adjusted normal returns (Lasfer et al., 2003). Therefore, long memory in stock return data provides evidence against the weak-form version of the EMH. This result has important implications for portfolio management strategies and risk diversification. In addition, the

efficiency of an equity market in processing information also affects its allocative capacity and therefore its contribution to output growth.

2.2.3 Financial Economics Approach

Financial economics approach to corporate risk management has so far been the most prolific in terms of both theoretical model extensions and empirical research. This approach builds upon classic Modigliani-Miller paradigm Miller & Modigliani (1958) which states conditions for irrelevance of financial structure for corporate value. This paradigm was later extended to the field of risk management. This approach stipulates also that hedging leads to lower volatility of cash flow and therefore lower volatility of firm value. Rationales for corporate risk management were deduced from the irrelevance conditions and included: higher debt capacity (Miller & Modigliani, 1963), progressive tax rates, lower expected costs of bankruptcy (Smith & Stulz, 1985), securing internal financing (Froot et al, 1993), information asymmetries (Geczy et al, 1997) and comparative advantage in information (Stulz, 1996). The ultimate result of hedging, if it indeed is beneficial to the firm, should be higher value- i.e. a hedging premium. Evidence to support the predictions of financial economics theory approach to risk management is poor. Although risk management does lead to lower variability of corporate value (Jin & Jorion, 2006) which is the main prerequisite for all other effects, there seems to be little proof of this being linked with benefits specified by the theory. One of the most widely cited papers by Tufano (1996) finds no evidence to support financial hypotheses, and concentrates on the influence of managerial preferences instead. On the other hand, the higher debt capacity hypothesis seems to be verified positively, as shown by (Faff & Nguyen, 2002); (Graham & Rogers, 2002) and (Guay, 1999).

2.3 Empirical Studies

In addition, earlier studies used a monthly, contemporaneous horizon to measure exposure. Beginning with the seminal study by Jorion (1990), initial research in this area focused on whether corporations are exposed to foreign exchange risk (Bodnar & Gentry 1993), (Bartov & Bodnar 1994, 1995) and (Chow, Lee & Solt 1997). Allayannis & Ofek (2001) investigate the effect of financial hedging on foreign-exchange exposure. More recently, Pantzalis et al (2000) examine the ability of operational hedges to reduce exposure. However, few studies thus far have examined the combined influence of financial hedges and operational hedges on foreign exchange exposure.

Several studies have examined the use of derivatives by banks. Deshmukh et al, (1983) show that there is a positive relationship between profitability and interest rate risk. They argue that an increase in interest rate uncertainty encourages depository institutions to decrease their lending activities, which entail interest rate risk thus, if interest rate risk can be controlled by derivatives, then perhaps banks that use derivatives would experience less interest rate uncertainty and can increase their lending activities which result in greater returns relative to the return on fixed fee for service activities. Thus their overall profitability would be higher compared to those banks that do not use derivatives to control for interest rate uncertainty (Brewer et al, 1996).

In addition, Jason & Taylor (1994) found that trading derivatives for profit is risky and may expose firms to large losses hence there is a negative relationship between forex trading and financial performance. Brewer et al (1996) found that there exists a negative correlation between risk and derivative usage for savings and loan institutions. In fact, it was found that S&Ls that used derivatives experienced relatively greater growth in their

fixed rate mortgage portfolios (Brewer et al, 1996). These results indicate that financial institutions use derivatives for hedging purposes, which would explain the reduction in the volatility risk with an increase in derivative use. Simmons (1995) found that banks with weaker asset quality tend to use derivatives more intensely than banks with better asset quality although her study provided no indication as to whether banks use derivatives to increase or reduce interest rate risk and whether use of derivatives increases profitability or not.

Empirical studies have been done locally. Irene (2011) did a study on the relationship between foreign exchange brisk and financial performance of Airlines in Kenya whose objective was to establish the relationship between foreign exchange risk and financial performance of Kenya Airways She used a case study design. From her findings, there is a negative relationship between fx risk and financial performance. Currency fluctuations impact on prices hence negative impact on revenues and expenses denominated in foreign CCY.

Muriithi (2011) did a study whose objective was to establish the relationship between foreign exchange rate and market performance for manufacturing companies. The study used a descriptive research design. His study showed that exchange rates had a positive influence on market performance

 In addition, Mongeri (2011) did a study on the impact of foreign exchange rates and foreign exchange reserves on the performance of NSE share index whose objective was to determine the impact of foreign exchange rates and foreign exchange reserves on the performance of NSE index. The study used a longitudinal study design. Results showed a

positive relationship between forex rates and stock market performance. Differences in forex rates had a direct impact on stock market performance.

Finally, Onyancha (2011) did a study on the impact of foreign exchange gains and losses in the financial performance of international Non-governmental organizations. The study used a survey research design. His findings showed that exchange rate risk can reduce project quality. Also, exchange rate movements have an impact on financial performance of NGOs. Huge fx loss reduces asset quality.

2.4 Financial Derivatives

Typically, derivatives are traded within national and international markets and are commonly used in relation to currency, interest rates and commodity prices. For investors, derivatives provide a method of managing risk and uncertainty in the investment process. They include the below:

Currency Spots/Spot Trading are the most traded type of foreign exchange transaction and are traded for immediate exchange. Currencies are bought and sold for immediate delivery and payment (Ngene & Mudida, 2010).

A Currency forward is a made-to-measure agreement between two parties to buy/sell a specified amount of a currency at a specified rate on a particular date in the future. The depreciation of the receivable currency is hedged against by selling a currency forward. If the risk is that of a currency appreciation (if the firm has to buy that currency in future say for import), it can hedge by buying the currency forward. The main advantage of a forward is that it can be tailored to the specific needs of the firm and an exact hedge can be

obtained. On the downside, these contracts are not marketable, they can't be sold to another party when they are no longer required and are binding.

A Currency swap is a contract between two parties to exchange cash flows for a specified period of time and normally involves either interest rates or currencies. Basically, two parties enter an agreement in which each undertakes to pay the other's liabilities, although a wide number of variations are possible. Kolb (1995) defines swaps as contracts to exchange cash flows on or before a specified future date based on the underlying value of currencies/exchange rates, bonds/interest rates, commodities, Securities or other assets. Swaps are generally over the counter contracts with a longer duration than futures and options and satisfy the need of a single client of the bank, a firm or financial institution. They tend to create new investment opportunities in order to hedge against any type of risk or speculation. In these contracts the notional value of the contract does not represent the risk taken by the two or more counterparts by periodical payments.

2.5 Measures of Financial performance

Profitability measures the extent to which a business generates a profit from the use of land, labor, management, and capital. It is measured by net firm income from operations (NFIFO), rate of return on firm assets (ROA), rate of return on firm equity (ROE) and operating profit margin (OPM) (Miller et al, 2000). Net revenues available from normal operations after fixed and variable expenses have been deducted and for accuracy, it is calculated on an accrual basis. Operating profit reflects ability to generate revenues and control costs. It is revenue available to compensate debt and equity capital.

Return on Assets measures the profitability of the firm in relation to total assets employed. Is the net income generated by all assets, after labor has been compensated but before interest payments. The higher the return on assets the better the firm's performance. Return on Equity commonly used to measure bank profitability. It shows how banks reinvest earnings to generate future profit. Foong (2008) indicated that the efficiency of banks can be measured using ROE which illustrates to what extent banks use reinvested income to generate profits.

According to Dobbins et al (2000), liquidity (cash flow) is the ability of a firm to meet financial obligations as they come due in the short term, without disrupting the normal operations of the business. It is measured by the Current ratio which is Current assets divided by the Current liabilities. It is a basic indicator of short-term debt servicing and/or cash flow capacity and also indicates the extent to which current assets, when liquidated, will cover current obligations. According to Miller et al (2000) solvency gauges the firm's ability to pay all financial obligations if all assets are sold and to continue viable operations after financial adversity. It is measured by Debt to asset ratio, Debt to equity ratio and Equity to asset ratio.

In evaluating the hypotheses of whether local or global capital investment viewpoints are more profitable, the standard financial measures are: net profit, return on investment, and cash flow. Net profit is an absolute measure of profit (or loss), but it is not relative to the investment that was made to obtain that level of profit (or loss). Return on investment is a relative measure. It correlates the firm's investment to its level of earnings, but says nothing about the actual size of the profit (or loss). Cash flow refers to the amount of money available to meet the financial obligations of the company. When manufacturing

firms make decisions that result in improvement to the financial measurements, the firm is obviously moving toward the goal of the firm. Banks have to comply with the controls applied by the Central Bank, these are currently mainly financial. The bank have however developed a number of non-financial measures,

Some examples of the bank's non-financial measures are efficiency measures, such as turnaround time, loan processing time, counter service (customer queuing time), and customer complaints' processing time. Balanced Score Card was introduced by the bank's consultant in 2002, and has been implemented since January 2003, starting with the marketing department. It is still too early to assess the progress of the BSC implementation.

2.6 Summary of Literature

In modern financial management, managers are required to allocate pre-determined capital among multiple projects to diversify corporate risk. Thus, an optimal investment allocation strategy among these projects is critical in a corporate investment decision-making process. While the mean-variance approach is considered a cornerstone of the modern investment theory, Markowitz (1959) points out the importance of the downside risk measure in his seminal work. For typical economic agents including managers, downside risk is also more accurate to measure the uncertainty with respect to projects' payoff distributions since they are more concerned with the loss than with extra return.

Derivatives markets can facilitate the management of financial risk exposure, since they allow investors to unbundle and transfer financial risk. Such markets contribute to a more efficient allocation of capital and cross-border capital flow, create more opportunities for

diversification of portfolios, facilitate risk transfer, price discovery, and more public information (Adelegan, 2009).

The classic paper of Modigliani & Miller (1958 & 1963) showed that under conditions of perfect capital markets, and some other conditions, the financial decisions of a firm are irrelevant in the sense that they do not change the total value of the firm. This follows from the fact that shareholders can reverse engineer the financing decisions of the firm on their own account at fair market prices. Corporate risk management with derivatives is part of the financial decisions of the firm, so it is also irrelevant under these conditions.

A study was done by Mutende (2010) on factors hindering derivatives trading at the NSE. Guay & Kothari (2003) conclude that for most firms, derivatives use is of minor economic significance. In their sample of large firms, slightly more than half report use of derivatives. Among the derivative users, the authors estimate that the median firm hedges only about 3% to 6% of exposures to interest rates and exchange rates risks. This conclusion calls for an investigation of the economic significance of use of derivatives by commercial banks as well as large firms in emerging economies like Kenya.

Allayannis & Weston (2001) indicate that firms that use derivatives have a higher market value whereas Graham & Rogers (2002) also allude that firms that use derivatives have more leverage leading. In addition commercial banks typically participate in derivatives markets because their traditional lending and borrowing activities expose them to financial market risk.

Existing empirical evidence is mainly based on developed countries whereas a few empirical investigations had been undertaken in African countries like Kenya. There is therefore a gap as far as studying Forex trading versus financial performance by

commercial banks in Kenya is concerned. It is evident that it has not been done fully especially in the emerging markets. In addition, most of the studies conducted have been in developed countries and they are not conclusive.

CHAPTER THREE:

RESEARCH METHODOLOGY

3.1 Introduction

This chapter discusses the research design and methodology of the study; it highlights a full description of the research design, the research variables and provides a broad view of the description and selection of the population. The research instruments, data collection techniques and data analysis procedure have also been pointed out.

3.2 Research Design

A Descriptive design was used in this study. In this case, the relationship between foreign exchange trading and financial performance of all commercial banks was determined. The dependent variable was financial performance while the independent variables were spot trading, currency options and Swaps.

3.3 Target Population

The population of interest in this study composed of all commercial banks in Kenya as at 2012. Currently, there are 44 commercial banks as at 2012 and it was possible to get reliable financial statements on all the banks from the CBK Bank Supervision Reports. Hence, the population of the study was all commercial banks in Kenya.

3.4 Data Collection

3.4.1 Secondary Data

This included data that had been collected by other people for other purposes but which are still usable in this type of research study. Secondary data was collected from annual reports submitted to the CBK by the banks form the CBK website. Annual reports of the banks were analyzed for the period between 2008 and 2012, which was the study period. All the banks under study were continually in business between 2008 and 2012 and were included to ensure that the sampling frame is current and complete.

3.5 Data Analysis

Regression analysis was used to analyze the data that was collected. Data was analyzed through the Statistical Package for Social Sciences (SPSS) package version 17. The analysis was on the financial performance versus foreign exchange trading among Commercial Banks and ranked according to severity.

3.6 Models Specification

3.6.1 Conceptual Model

Financial performance= $f(X_1+X_2+X_3$ …………………Eq (i)

Where X_1= Spot Trading, X_2=Forwards, X_3 =Swaps,

     e = Random error term

NB: - Financial performance is the dependent variable while foreign exchange trading is the independent variable. Foreign exchange trading is described by Spots, Swaps, and Forwards which are the independent variables while financial performance, for the sake of

the paper conceptualization is described by Return on Asset (ROA) an ROA to forex trading /income.

3.6.2 Analytical Model

This was derived from the conceptual model depicted in equation (i) above:

$$ROA = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon$$

Whereby:

ROA = financial performance as measured by return on assets

β_0 = Regression constant

$\beta_1 - \beta_3$ = regression coefficients

X_1 = spot trading

X_2 = currency forwards traded

X_3 = currency swaps traded

ε = error term

The above variables were measured as follows:-

Profitability was measured by subtracting total expenses from the total gross income. The profit figures were taken from the financial statements especially the income statement. Foreign exchange income figures were extracted from the banks income statement. Financial performance was measured using the bank's profitability measured as the ratio of net profit to total assets (ROA), ROA to forex trading/income while foreign exchange trading figures on the other hand were explained by spot trading, currency swaps and forwards.

CHAPTER FOUR:

DATA ANALYSIS, RESULTS AND DISCUSSION

4.0 Introduction

This chapter presents analysis and findings of the study as set out in the research objective and research methodology. The general objective of the study was to establish the relationship between Foreign Exchange trading on one hand and financial performance on the other among commercial banks in Kenya. The data was gathered exclusively from the secondary source which included records at Central Bank of Kenya and commercial banks audited financial report. Data was collected from a total of 42 banks.

4.1 Descriptive statistics

The study first found it necessary to determine the trend of foreign exchange trading and financial performance of commercial banks in Kenya for the year 2008-2012. This was to determine the overall financial performance as a result of foreign exchange trading over a range of time period.

By determining the overall performance of the foreign trade variables under the study from 2008-2012 i.e. currency forwards, currency swaps, spot trading and the financial performance measure Return on Assets (ROA). Their mean, median, maximum, minimum, skewness and kurtosis were taken in to account. The findings were as indicated in Table 4.1.

Table 4.1: Descriptive Statistics

	ROA	Currency Forwards	Spot Trading	Currency Swaps
observations	206.000	208.000	208.000	202.000
Range	23.090	0.140	0.093	0.154
Minimum	-12.690	0.001	0.001	0.000
Maximum	10.400	0.140	0.093	0.154
Mean	2.164	0.034	0.027	0.031
Std. Deviation	2.601	0.032	0.020	0.030
Skewness	-1.475	1.033	1.095	1.117
Kurtosis	6.465	-0.042	0.762	0.865

4.2 Correlation

The study used correlation matrix to establish if linear relationship exists between foreign exchange trading and profitability or financial performance of commercial banks. From Table 4.2, there were very good, positive and significant linear association between spot trading and financial performance in: Consolidated Bank (.887; p = .045); Co-operative Bank (.911; p = .032); Dubai Bank (.986; p = 0.002). Negative and significant relationship was established in: Standard Chartered Bank (-.806; p = .10); NIC Bank (-.906; p = .034); K-Rep Bank (-.854; p =.066); KCB Bank (-.854; p=.066); Giro Bank (-.930 = p=.022); Development Bank (-.908; p=.033).

The study established a very good but negative and significant relationship between financial performance and currency forwards as displayed in Table 4.2: Bank of Baroda (-.924; p=.025); Dubai Bank (-.966; p = .008); and, Ecobank (-.829; p=.083). Very good and significant linear relationships were established between currency forwards and financial performance in: Giro Bank (.878; p=.05); and, ABC Bank (.864; p=.059).

From Table 4.2 the study further established a very good but negative and significant relationship between financial performance and currency swaps in: Development Bank (-

.897; p=.039); First Community (-.901; p<.001); Standard Chartered (-.895; p=.04); and Transnational Bank (-.833; p=.08). Very good, positive and significant relationship between financial performance and currency swaps in Bank of India (.935; p=.02).

Table 4.2: Correlation Matrix

	Spot Trading	**Currency Forwards**	**Currency Swaps**
ABC Bank	-.578	.864*	-.316
	.307	.059	.605
Bank of Africa	-.696	.339	-.104
	.192	.577	.867
Bank of Baroda	-.669	-.924**	-.642
	.217	.025	.243
Bank of India	-.044	-.642	.935**
	.943	.243	.020
Barclays Bank	-.366	-.486	-.666
	.545	.406	.220
CBA	.570	-.006	-.799
	.316	.992	.105
CFC STANBIC	-.012	-.094	-.202
	.985	.881	.745
Chase Bank	-.791	.444	-.202
	.111	.454	.745
Citibank N.A	-.052	.265	-.500
	.934	.666	.391
City Finance Bank	-.702	.383	-.603
	.186	.525	.282
Consolidated Bank	.887**	.272	-.005
	.045	.658	.994
CO-OP BANK	.911**	-.003	.341
	.032	.996	.574
Credit Bank	.374	-.568	-.745
	.535	.318	.149
Development Bank	-.908**	-.091	-.897**
	.033	.884	.039
Diamond Trust Bank	-.003	.651	-.167
	.996	.234	.788
Dubai bank	.986***	-.966***	-.277
	.002	.008	.652
Ecobank	-.050	-.829*	.290
	.937	.083	.635
Equity Bank	.499	-.331	-.691

	.392	.587	.196
Equitorial bank	.400	-.363	-.540
	.504	.549	.347
Family Bank	.496	-.552	.654
	.395	.335	.231
Fidelity Bank	-.086	.562	.075
	.890	.324	.904
Fina Bank	-.367	.439	.555
	.544	.459	.331
First Community	-.636	.418	-.901***
	.249	.484	.000
Giro Bank	-.930**	.878**	-.736
	.022	.050	.156
Guardian Bank	.545	-.534	-.415
	.342	.354	.487
GulfAfican Bank	.115	-.883	-.682
	.885	.117	.205
Habib bank	-.041	.641	-.269
	.948	.244	.662
Habib AG Zurich	-.174	.498	-.501
	.779	.393	.390
I & M Bank	-.162	.512	.270
	.794	.378	.660
KCB Bank	-.854*	-.104	.505
	.066	.868	.385
K-Rep	-.854**	-.104	.505
	.066	.868	.385
MIDDLE EAST	.722	.312	-.760
	.168	.609	.136
National Bank	.722	.312	-.760
	.168	.609	.136
NIC Bank	-.906**	-.646	.651
	.034	.238	.234
Oriental Bank	.431	.539	-.298
	.469	.349	.627
Paramount Bank	-.051	-.546	.294
	.935	.341	.631
Prime Bank	.483	-.344	-.758
	.410	.571	.137
United Bank of Africa	.435	.416	.116
	.565	.584	.265
Stan-Chart	-.806*	-.710	-.895**
	.100	.179	.040
Trans National	.243	-.437	-.833*
	.694	.462	.080

| Victoria Bank | .767 | -.341 | -.076 |
| | .130 | .574 | .903 |

*. Correlation is significant at the 0.1 level (2-tailed).
**. Correlation is significant at the 0.05 level (2-tailed).
***. Correlation is significant at the 0.01 level (2-tailed).

4.3 Regression Analysis

In the endeavor, the study sought to determine the goodness of fit of the regression equation using the coefficient of determination between the overall independent variables and financial performance. Coefficient of determination established the strength of the relationship.

Table 4.3 illustrates that the strength of the relationship between financial performance and independent variables. From the determination coefficients, it can be noted that there is a strong relationship between dependent and independent variables given an R^2 values of 0.856 and adjusted to 0.801. This shows that the independent variables (spot trading, currency forwards, and currency swaps) accounts for 80.1% of the variations in profitability as measured by ROA.

The study also used Durbin Watson (DW) test to check that the residuals of the models were not autocorrelated since independence of the residuals is one of the basic hypotheses of regression analysis. Being that the DW statistic were close to the prescribed value of 2.0 (2.006) for residual independence, it can be concluded that there was no autocorrelation.

Table 4.3: Model Goodness of Fit

R (Correlation)	R Square (Coefficient of Determination)	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
.925ᵃ	.856	.801	2.40187	2.006

a. Dependent Variable: ROA
b. Predictors: (Constant), Currency Swaps, Spot Trading, Currency Forwards

Analysis of Variance (ANOVA) was used to make simultaneous comparisons between two or more means; thus, testing whether a significant relation exists between variables (dependent and independent variables). This helps in bringing out the significance of the regression model. The ANOVA results presented in Table 4.4 shows that the regression model has a margin of error of $p = .008$. This indicates that the model has a probability of 0.8% of giving false prediction. This points to the significance of the model.

Table 4.4: Analysis Of Variance

	Sum of Squares	df	Mean Square	F	Sig.
Regression	17.937	3	5.979	1.036	.008b
Residual	1136.488	197	5.769		
Total	1154.425	200			

a. Dependent Variable: ROA
b. Predictors: (Constant), Currency Swaps, Spot Trading, Currency Forwards

The regression analysis established was:

ROA = 1.627 + 13.491*Spot Trading + 3.113*Currency Forwards + 4.820*Currency Swaps

From the finding in Table 4.4, the study found that holding spot trading, currency forwards, and currency swaps at zero profitability ratio (ROA) will be 1.627.

It was established that a unit increase in spot trading, while holding other factors (currency forwards, and currency swaps) constant, will lead to an increase in ROA by 13.491 (p<.001). Further, unit increase in currency forwards, while holding other factors (spot trading and currency swaps) constant, will lead to an increase in ROA by 3.113 (p = .057). Besides, unit increase in currency swaps, while holding other factors (spot trading and currency forward) constant, will lead to an increase in ROA by 4.820 (p = .095).

Table 4.5: Regression Model

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Multicollinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	1.627	.404		4.024	.123		
Spot Trading	13.491	8.714	12.110	1.548	.000	.983	1.017
Currency Forwards	3.113	5.292	3.042	.588	.057	.992	1.008
Currency Swaps	4.820	5.656	3.060	.852	095	.992	1.009

a. Dependent Variable: ROA

The study conducted a multicollinearity tests to determine if two or more predictor (independent) variables in the multiple regression model are highly correlated. The study used tolerance and variance inflation factor (VIF) values for the predictors as a check for multicollinearity. Tolerance indicates the percent of variance in the independent variable that cannot be accounted for by the other independent variable while VIF is the inverse of tolerance. Table 4.5 shows that tolerance values ranged between 0.983 and 0.992 while variance inflation factor ranged between 1.008 and 1.017. Since tolerance values were above 0.1 and VIF below 10, then were was no multicollinearity in the model.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents summary of the research findings, conclusions drawn and recommendations. The study attempted to determine the relationship between foreign exchange trading and financial performance.

5.2 Summary of Findings

The study provided two types of data analysis; namely descriptive analysis and inferential analysis. The descriptive analysis helps the study to describe the relevant aspects of the phenomena under consideration and provide detailed information about each relevant variable. For the inferential analysis, the study used the Pearson correlation and Regression analysis statistics. While the Pearson correlation measures the degree of association between variables under consideration, the panel data regression estimates the relationship between the dependent and independent variables. Pearson correlation coefficient was also used to test if there exist any relationship between foreign exchange trading and financial performance of commercial banks in Kenya.

The study first found it necessary to determine the trend of foreign exchange trading and financial performance of commercial banks in Kenya for the year 2008-2012. This was to determine the overall financial performance as a result of foreign exchange trading over a range of time period.All the banks financial statements analysed in this study showed that banks undertake forex trading like currency forwards, currency swaps and spot trading

which impact significantly on their income. Tier I banks exhibit more of forex trading than most Tier II and Tier III banks may be due to huge capital base. 100% of the banks had carried out forex trading. This serves to show that majority of the banks income comes from other sources in addition to interest income from the loans.

5.3 Conclusions

The findings show that the mean of currency forwards is relatively high at as compared to other variables. It shows that there was significant variability or high volatility (Risk) in the financial performance during 2008-2012. High volatility indicated that there was a higher risk in financial performance of the commercial banks. While the standard deviation of currency swaps is relatively very low as compared to other variables. Currency swaps has highest range as compare to other variables. From skewness, the study observed that spot trading, currency swaps, currency forwards are positively skewed while ROA is negatively skewed which clarified that the variables are asymmetrical. Skewness value of ROA is less than zero so it is relatively asymmetrical. Kurtosis values indicated that all independent variables have platy-kurtic distribution and it is concluded that variables are not normally distributed.

The correlation matrix indicates that currency forwards is highly and negatively correlated with Rate of return. Currency swaps is also highly and negatively correlated with Rate of return. Finally Currency spot are also highly and positively correlated with Rate of return. This implies that the foreign trading variables currency options, currency forwards, and spot trading are very crucial in determining financial performance of commercial banks in Kenya.

5.4 Policy Recommendations

The study investigated the relationship between foreign exchange trading and financial performance of commercial banks in Kenya and aim to shed some additional light on the topics of foreign exchange trading and risk. The study recommends that the issues related to foreign exchange trading should always be taken in to account to improve the banks foreign exchange transactions and hence performance.

The study recommends that Forex trading among commercial banks should be continued and capital should be invested in projects that maximize returns. The governance structures need to be put in place so as to enhance returns on capital and assets and in turn maximize returns to the commercial banks.

The study also suggest that despite concerns that Forex trading among banks entail new market risks that need regulatory intervention, the profitability and generally performance of the banks has not changed so much. However, market risk does vary considerably across the banks. Therefore a better way of assessing the risks associated with Forex trading and how these risks affect the banking sector in general must be undertaken.

Our evidence suggests that Forex trading does improve the performance of the banks in terms of their gross income. We recommend that this study be carried out further and the whole banking industry to be studied under categories of listed and not listed and a proper study on all the Tiers. This should also extend to other firms listed at the NSE and not just the banking industry. From a broader perspective, we note that there was a great improvement in most ratios like the ROA profitability ratios among other variables that were considered in the study. Most items on the balance sheets showed an increasing trend during the study period.

Policy makers should undertake to understand why Forex trading among commercial banks is not as robust in Kenya as compared to other developed countries and what should be done to improve capital investments to maximize returns.

5.5 Limitations of the Study

The researcher encountered various limitations that may have affected the findings of this study. For instance, the study relied on secondary data sources. Secondary data can, however, be unreliable as they are intended for other purposes. This could include convincing external stakeholders that the business performs well. To curb this, the study sought audited financial results of the commercial banks to collect data on performance and data reported to CBK's Bank Supervisory Department.

The sample for this study might have been small and could have the drop-back of not being representative of the population reality. To mitigate this, the researcher carried the study on banks that had traded consistently for five years. Moreover, the study intended to conduct a study at individual bank level to determine the relationship between profitability and financial performance which improved the accuracy of results. Further, other factors might have effect on the financial performance of banks which might moderate the relationship between foreign trading and financial performance. In cognizance of this, the study tested the significance of the established relationship to mitigate this. In addition, information on forex trading is sensitive and access to such information proved a challenge.

5.6 Suggestions for Further Study

The study suggests that another research be done on other independent variables that explain financial performance under forex trading. All the aspects of forex trading in the banking sector should be studied so that better results can be obtained.

This study covers a shorter period. A study should be done covering a longer period say 10 years which may give different results than the one obtained in this study. Also, Commercial banks should put more emphasis on investment and project appraisal for a proper cost benefit analysis. Proper project appraisal is key in any investment like in forex trading hence another study can be done on each aspect of forex trading and its effect on financial performance. In addition, the study also suggests that further studies should be conducted on long-term and short term capital investments for the better option to be selected which maximizes the shareholders' value.

The study also suggests that broader areas of study like the economy in general and a much bigger population be covered so that bigger and better results can be obtained on other variables that can explain whether there is a relationship between forex trading and financial performance or economic performance . This study was only limited to the banking sector.

It addition, the study suggests that the qualitative aspects must also be introduced so that firsthand information can be obtained from the bankers and even management of the various banks. Questionnaires must be administered and one on one interview with bank officers be held so that the qualitative aspects can also be measured. This study centers more on quantitative aspects only and fails to capture the qualitative aspects.

Finally, forex trading among Kenyan banks should also be compared to other banks in the developed and undeveloped economies. Policy makers must come up with better policies governing foreign exchange trading.

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APPENDICES

Appendix I: Foreign Exchange Trade as a Proportion of Revenue 2008-2012

		ROA	Spot Trading	Currency Forwards	Currency Swaps
ABC Bank	2008	2.46	0.0377	0.0131	0.0215
	2009	1.86	0.0268	0.012	0.0062
	2010	3.25	0.0208	0.0803	0.0018
	2011	4.12	0.0194	0.0817	0.0029
	2012	2.9	0.0184	0.0216	0.0282
Bank of Africa	2008	1.16	0.0499	0.0679	0.0075
	2009	1.14	0.0293	0.0181	0.0214
	2010	1.33	0.0293	0.0034	0.0348
	2011	1.43	0.018	0.1006	0.0019
	2012	1.3	0.0351	0.0212	0.0241
Bank of Baroda	2008	2.36	0.0104	0.0227	0.0597
	2009	2.39	0.0119	0.0281	0.0084
	2010	4.31	0.0058	0.0111	0.0078
	2011	4.57	0.0097	0.0141	0.0017
	2012	3.6	0.0103	0.0165	0.0149
Bank of India	2008	3.13	0.0169	0.0105	0.0648
	2009	2.6	0.0107	0.0291	0.0117
	2010	3.49	0.0192	0.0152	0.0524
	2011	4.18	0.0022	0.0197	0.1284
	2012	2.4	0.004	0.0909	0.023
Barclays Bank	2008	3.28	0.0362	0.0574	0.0483
	2009	3.69	0.0312	0.0561	0.0087
	2010	6.14	0.03	0.0897	0.0097
	2011	7.18	0.0355	0.0152	0.0069
	2012	7	0.0275	0.0139	0.0095
CBA	2008	2.45	0.0506	0.0806	0.0561
	2009	2.13	0.0594	0.0151	0.0535
	2010	2.94	0.064	0.0693	0.0717
	2011	3.58	0.0538	0.0903	0.0213
	2012	4	0.0753	0.0139	0.0087
CFC Stanbic	2008	2.08	0.0639	0.0463	0.0048
	2009	0.82	0.025	0.0205	0.002
	2010	1.38	0.0388	0.0713	0.0278
	2011	2.23	0.016	0.1148	0.0037
	2012	3.5	0.0295	0.0156	0.0065
Chase Bank	2008	1.64	0.0484	0.0649	0.0103
	2009	1.62	0.037	0.0126	0.0014
	2010	1.74	0.028	0.0131	0.0211
	2011	2.33	0.0352	0.0825	0.0033

	2012	2.7	0.0027	0.0463	0.0084
Citibank N.A	2008	3.94	0.0109	0.0021	0.0041
	2009	3.62	0.0801	0.0023	0.0083
	2010	2.79	0.0109	0.0031	0.0602
	2011	6.43	0.0933	0.0052	0.0073
	2012	10.4	0.0144	0.0029	0.0047
City Finance Bank	2008	-0.6	0.0189	0.0066	0.0108
	2009		0.0022	0.095	0.0013
	2010	-4.88	0.0497	0.0511	0.0284
	2011	-3.74	0.0235	0.0067	0.0134
	2012	-3.74	0.0103	0.0007	0.0017
Consolidated Bank	2008	2.07	0.0147	0.0549	0.063
	2009	1.17	0.0047	0.0226	0.064
	2010	1.65	0.0058	0.0065	0.0032
	2011	1.61	0.0123	0.0501	0.0002
	2012	1	0.0018	0.042	0.0311
CO-OP Bank	2008	2.83	0.017	0.0726	0.0045
	2009	2.68	0.0135	0.0971	0.07
	2010	2.84	0.0094	0.0146	0.0661
	2011	3.68	0.0186	0.0162	0.0083
	2012	4.8	0.0276	0.0751	0.0908
Credit Bank	2008	1.49	0.0384	0.0467	0.0088
	2009	1.58	0.0146	0.0374	0.0073
	2010	0.75	0.0064	0.025	0.0029
	2011	0.95	0.0557	0.0239	0.0183
	2012		0.0079	0.0805	0.0327
Development Bank	2008	1.82	0.0108	0.0363	0.0072
	2009	1.68	0.0068	0.0256	0.0094
	2010	1.5	0.0096	0.0322	0.005
	2011	1.37	0.0115	0.0036	0.0249
	2012	0.8	0.0654	0.0382	0.0356
Diamond Trust Bank	2008	2.01	0.0497	0.0106	0.0088
	2009	2.42	0.0574	0.0242	0.0224
	2010	3.51	0.0379	0.0111	0.0441
	2011	4.19	0.015	0.0133	0.0095
	2012	4.9	0.0736	0.0836	0.0065
Dubai Bank	2008	0.2	0.0437	0.0168	0.0076
	2009	0.17	0.0415	0.0174	0.0025
	2010	0.1	0.0452	0.0142	0.0441
	2011	0.9	0.0719	0.0069	0.041
	2012	-1.2	0.0084	0.0593	0.0472
Ecobank	2008	0.66	0.0169	0.0057	0.0096
	2009	-5.71	0.0188	0.0453	0.0106
	2010	0.47	0.0137	0.0017	0.0767
	2011	0.45	0.007	0.0179	0.0263
	2012	-4.8	0.0059	0.0942	0.0372

Equitorial Bank	2008	0.09	0.0256	0.0024	0.0468
	2009	1.15	0.0192	0.0233	0.0554
	2010	-1.03	0.0353	0.0157	0.0201
	2011	0.55	0.0246	0.0918	0.0403
	2012	-4.6	0.0137	0.0771	0.078
Equity Bank	2008	4.96	0.0199	0.0878	0.0884
	2009	4.2	0.0098	0.0133	0.061
	2010	5.64	0.0224	0.0106	0.0506
	2011	6.84	0.0046	0.0123	0.0031
	2012	7.4	0.0468	0.0168	0.0409
Family Bank	2008	3.52	0.0022	0.0214	0.124
	2009	1.66	0.0027	0.0288	0.0227
	2010	1.94	0.0029	0.0147	0.0217
	2011	2.01	0.0011	0.0386	0.0625
	2012		0.0008	0.0377	0.0452
Fidelity Bank	2008	0.97	0.0381	0.0017	0.0017
	2009	0.88	0.0155	0.0016	0.0033
	2010	3.31	0.0153	0.0152	0.0074
	2011	2.79	0.0295	0.0475	0.0851
	2012	0.9	0.0157	0.0217	0.0893
Fina Bank	2008	0.44	0.0163	0.0396	0.0105
	2009	0.6	0.0235	0.0305	0.0687
	2010	0.95	0.0383	0.0121	0.0161
	2011	2.12	0.0142	0.1015	0.0625
	2012	2	0.0177	0.0157	0.0626
First Community	2008	-7.07	0.0145	0.0016	0.0521
	2009	-2.53	0.0223	0.0018	0.0049
	2010	-1.53	0.0102	0.024	
	2011	1.28	0.0052	0.0687	
	2012	2.9	0.0064	0.0038	
Giro Bank	2008	1.35	0.0157	0.0067	0.0054
	2009	2.15	0.0122	0.0397	0.0069
	2010	5.02	0.0058	0.0983	0.003
	2011	2.79	0.0123	0.0228	0.007
	2012	1.7	0.0117	0.043	0.0087
Guardian Bank	2008	0.53	0.0578	0.0167	0.0773
	2009	0.57	0.0388	0.0989	0.0075
	2010	0.94	0.038	0.0012	0.0025
	2011	1.92	0.0506	0.0108	0.0034
	2012	1.9	0.0745	0.0019	0.0218
GulfAfican Bank	2008	-5.63	0.0176	0.0408	0.0614
	2009	-1.59	0.0247	0.0025	0.0202
	2010	0.77	0.034	0.0069	0.0506
	2011	1.2	0.0093	0.005	0.0322
	2012	2.8			0.0061
Habib Bank	2008	2.19	0.0202	0.0281	0.0157

	2009	2.73	0.0134	0.0279	0.0764
	2010	2.75	0.0305	0.0422	0.0705
	2011	4.62	0.0372	0.0181	0.0974
	2012	6.5	0.015	0.0705	0.0045
Habib AG Zurich	2008	2.4	0.0228	0.0958	0.0296
	2009	2.51	0.0161	0.0548	0.0545
	2010	1.96	0.012	0.0183	0.0686
	2011	1.91	0.0302	0.0138	0.0126
	2012	4.2	0.0185	0.0678	0.0086
I &M Bank	2008	2.6	0.03	0.0138	0.0733
	2009	2.75	0.0246	0.0495	0.0747
	2010	3.39	0.0146	0.0101	0.0023
	2011	5.8	0.0259	0.0928	0.0771
	2012	5.2	0.0195	0.0144	0.0791
Imperial Bank Ltd	2008	3.47	0.0253	0.0723	0.0659
	2009	3.62	0.0033	0.1074	0.0573
	2010	4.62	0.0087	0.0101	0.0752
	2011	6.37	0.0382	0.0116	0.0402
	2012	5.5	0.0097	0.0015	0.0812
KCB Bank	2008	2.19	0.032	0.0785	0.005
	2009	2.71	0.0374	0.0528	0.0201
	2010	3.95	0.0334	0.0689	0.0414
	2011	4.98	0.0188	0.0103	0.0046
	2012	5.2	0.018	0.103	0.0606
K-Rep Bank	2008	-4.26	0.0701	0.006	0
	2009	-2.92	0.0011	0.0005	0.0006
	2010	0.66	0.0029	0.0013	0.0017
	2011	2.75	0.0126	0.0069	0.0057
	2012	3.2	0.0075	0.0032	0.0043
Middle East Bank	2008	0.55	0.0374	0.0256	0.0134
	2009	0.92	0.0294	0.0513	0.0678
	2010	3.5	0.0104	0.0276	0.0441
	2011	1.99	0.0337	0.0335	0.053
	2012	0.8	0.0163	0.0582	0.0096
National Bank	2008	2.91	0.0273	0.1403	0.0191
	2009	4.2	0.0255	0.1075	0.0101
	2010	3.37	0.0193	0.0999	0.0196
	2011	3.56	0.0134	0.1127	0.0095
	2012	1.7	0.0011	0.0864	0.0207
NIC Bank	2008	2.43	0.0403	0.0199	0.0049
	2009	2.38	0.048	0.0198	0.0361
	2010	3.16	0.0443	0.0058	0.0878
	2011	4.57	0.0265	0.0127	0.0736
	2012	4.2	0.0251	0.0048	0.0607
Oriental Bank	2008	2.12	0.0216	0.0092	0.0319
	2009	1.25	0.0172	0.0282	0.0023

	2010	3.42	0.0048	0.0544	0.0258
	2011	3.83	0.0708	0.0303	0.0043
	2012	1.8	0.0336	0.0209	0.0921
Paramount Bank	2008	1.39	0.027	0.0116	0.0041
	2009	1.11	0.0189	0.0564	0.0794
	2010	5.71	0.0292	0.0125	0.0677
	2011	2.39	0.0443	0.0196	0.0325
	2012	1.2	0.0466	0.0849	0.0489
Prime Bank	2008	1.66	0.0167	0.0588	0.0263
	2009	1.71	0.017	0.0101	0.0092
	2010	1.87	0.0134	0.0118	0.0184
	2011	3.07	0.0194	0.0217	0.0009
	2012	2.7	0.0719	0.0058	0.0107
Uba	2008	0.04	0.0471	0.0204	
	2009	-12.69	0.0199	0.0085	
	2010				
	2011	0.65	0.0307	0.0125	
	2012	0.65	0.0189	0.0081	
Stan-Chartered	2008	3.28	0.0877	0.0642	0.01435
	2009	3.82	0.0712	0.014	0.0166
	2010	3.76	0.0524	0.0837	0.0094
	2011	5.03	0.0544	0.0016	0.0054
	2012	5.9	0.0427	0.0079	0.0018
TransNational Bank	2008	3.88	0.0731	0.0022	0.0015
	2009	2.68	0.0499	0.0039	0.0322
	2010	2.99	0.025	0.0681	0.0094
	2011	4.05	0.0499	0.006	0.0052
	2012	3.7	0.0154	0.0027	0.0078
Victoria Bank	2008	2.62	0.0213	0.0091	0.0636
	2009	2.93	0.0256	0.0064	0.1543
	2010	3.46	0.0174	0.0108	0.0075
	2011	1.31	0.0206	0.0088	0.0774
	2012	4.8	0.0739	0.0064	0.084

Source: Central Bank of Kenya (2013)

Appendix II: Analysis of Variance – Per Bank

		Sum of Squares	df	Mean Square	F	Sig.
ABC Bank	Regression	2.571	3	.857	2.738	.412c
	Residual	.313	1	.313		
	Total	2.884	4			
Bank of Africa	Regression	.053	3	.018	2.877	.403c
	Residual	.006	1	.006		
	Total	.059	4			
Bank of Baroda	Regression	4.208	3	1.403	11.683	.211c
	Residual	.120	1	.120		
	Total	4.328	4			
Bank of India	Regression	1.896	3	.632	4.357	.335c
	Residual	.145	1	.145		
	Total	2.041	4			
Barclays Bank	Regression	7.742	3	2.581	.435	.773c
	Residual	5.936	1	5.936		
	Total	13.678	4			
CBA	Regression	2.392	3	.797	147.758	.060c
	Residual	.005	1	.005		
	Total	2.397	4			
CFC Stanbic	Regression	.178	3	.059	.015	.996c
	Residual	3.908	1	3.908		
	Total	4.086	4			
Chase Bank	Regression	.927	3	.309	23.276	.151c
	Residual	.013	1	.013		
	Total	.940	4			
Citibank N.A	Regression	22.735	3	7.578	.491	.751c
	Residual	15.431	1	15.431		
	Total	38.167	4			
City Finance Bank	Regression	15.047	3	5.016	1.429	.536c
	Residual	3.510	1	3.510		
	Total	18.557	4			
Consolidated Bank	Regression	.636	3	.212	2.562	.424c
	Residual	.083	1	.083		
	Total	.718	4			
CO-OP Bank	Regression	3.184	3	1.061	182.227	.054c
	Residual	.006	1	.006		
	Total	3.190	4			
Credit Bank	Regression	1.311	3	.437	1.365	.545c
	Residual	.320	1	.320		
	Total	1.631	4			
Development Bank	Regression	.619	3	.206	369.846	.038c
	Residual	.001	1	.001		

	Total	.620	4			
Diamond Trust Bank	Regression	5.739	3	1.913	48.816	.105c
	Residual	.039	1	.039		
	Total	5.779	4			
Dubai Bank	Regression	2.323	3	.774	10822.196	.007c
	Residual	.000	1	.000		
	Total	2.323	4			
Ecobank	Regression	37.124	3	12.375	3.607	.365c
	Residual	3.430	1	3.430		
	Total	40.554	4			
Equitorial Bank	Regression	18.581	3	6.194	2.665	.417c
	Residual	2.324	1	2.324		
	Total	20.905	4			
Equity Bank	Regression	6.892	3	2.297	57.087	.097c
	Residual	.040	1	.040		
	Total	6.932	4			
Family Bank	Regression	5.411	3	1.804	2.080	.462c
	Residual	.867	1	.867		
	Total	6.278	4			
Fidelity Bank	Regression	4.800	3	1.600	1.999	.470c
	Residual	.801	1	.801		
	Total	5.601	4			
Fina Bank	Regression	.967	3	.322	.212	.882c
	Residual	1.517	1	1.517		
	Total	2.484	4			
First Community	Regression	10.306	1	10.306		.c
	Residual	0.000	0			
	Total	10.306	1			
Giro Bank	Regression	8.445	3	2.815	127.641	.065c
	Residual	.022	1	.022		
	Total	8.467	4			
Guardian Bank	Regression	1.681	3	.560	2.368	.438c
	Residual	.237	1	.237		
	Total	1.918	4			
GulfAfican Bank	Regression	29.367	3	9.789		.c
	Residual	0.000	0			
	Total	29.367	3			
Habib Bank	Regression	6.449	3	2.150	.339	.816c
	Residual	6.344	1	6.344		
	Total	12.793	4			
Habib AG Zurich	Regression	3.390	3	1.130	10.916	.218c
	Residual	.104	1	.104		
	Total	3.494	4			
I &M Bank	Regression	5.319	3	1.773	.547	.731c
	Residual	3.242	1	3.242		
	Total	8.561	4			

Imperial Bank Ltd	Regression	5.609	3	1.870	3.705	.361c
	Residual	.505	1	.505		
	Total	6.113	4			
KCB Bank	Regression	7.094	3	2.365	38.802	.117c
	Residual	.061	1	.061		
	Total	7.155	4			
K-Rep Bank	Regression	42.876	3	14.292	7.252	.265c
	Residual	1.971	1	1.971		
	Total	44.847	4			
Middle East Bank	Regression	5.563	3	1.854	4.726	.323c
	Residual	.392	1	.392		
	Total	5.955	4			
National Bank	Regression	3.324	3	1.108	7.138	.267c
	Residual	.155	1	.155		
	Total	3.479	4			
NIC Bank	Regression	4.034	3	1.345	15665.194	.006c
	Residual	.000	1	.000		
	Total	4.034	4			
Oriental Bank	Regression	3.101	3	1.034	.604	.711c
	Residual	1.710	1	1.710		
	Total	4.811	4			
Paramount Bank	Regression	11.791	3	3.930	1.198	.572c
	Residual	3.281	1	3.281		
	Total	15.072	4			
Prime Bank	Regression	1.302	3	.434	1.258	.562c
	Residual	.345	1	.345		
	Total	1.647	4			
Stan-Chartered	Regression	4.523	3	1.508	13.033	.200c
	Residual	.116	1	.116		
	Total	4.638	4			
TransNational Bank	Regression	1.339	3	.446	6.158	.286c
	Residual	.072	1	.072		
	Total	1.411	4			
Victoria Bank	Regression	6.383	3	2.128	30.013	.133c
	Residual	.071	1	.071		
	Total	6.454	4			

Appendix III: Regression Model Coefficients – Per Bank

		Unstandardized Coefficients		Stand. Coefficients	t	Sig.
		B	Std. Error	Beta		
ABC Bank	(Constant)	1.274	1.704		.747	.591
	Spot Trading	-.208	44.250	-.002	-.005	.997
	Currency Forwards	28.770	13.061	1.221	2.203	.271
	Currency Swaps	37.024	33.096	.522	1.119	.464
Bank of Africa	(Constant)	.625	.474		1.320	.413
	Spot Trading	-3.537	3.869	-.338	-.914	.528
	Currency Forwards	8.162	4.150	2.728	1.967	.299
	Currency Swaps	23.194	12.622	2.526	1.838	.317
Bank of Baroda	(Constant)	5.550	.786		7.059	.090
	Spot Trading	92.772	136.466	.204	.680	.620
	Currency Forwards	-147.394	47.739	-.971	-3.087	.199
	Currency Swaps	-14.578	8.038	-.329	-1.813	.321
Bank of India	(Constant)	2.456	1.154		2.128	.280
	Spot Trading	7.617	45.069	.080	.169	.893
	Currency Forwards	-4.099	11.224	-.190	-.365	.777
	Currency Swaps	13.536	6.926	.867	1.954	.301
Barclays Bank	(Constant)	8.287	12.835		.646	.635
	Spot Trading	-27.903	410.306	-.056	-.068	.957
	Currency Forwards	-21.005	39.659	-.365	-.530	.690
	Currency Swaps	-57.622	87.722	-.553	-.657	.630
CBA	(Constant)	-1.099	.423		-2.599	.234
	Spot Trading	67.300	5.652	.842	11.908	.053
	Currency Forwards	15.886	1.416	.753	11.220	.057
	Currency Swaps	-19.318	1.527	-.654	-12.650	.050
CFC Stanbic	(Constant)	2.217	2.771		.800	.570
	Spot Trading	.470	57.545	.009	.008	.995
	Currency Forwards	-1.260	26.027	-.051	-.048	.969
	Currency Swaps	-18.272	97.704	-.193	-.187	.882
Chase Bank	(Constant)	2.472	.170		14.573	.044
	Spot Trading	-25.652	3.438	-.902	-7.461	.085
	Currency Forwards	8.670	1.992	.556	4.353	.144
	Currency Swaps	-7.880	7.960	-.126	-.990	.503
Citibank N.A	(Constant)	4.044	5.440		.743	.593
	Spot Trading	-52.613	64.297	-.701	-.818	.563
	Currency Forwards	1679.539	2003.262	.671	.838	.556
	Currency Swaps	-97.098	90.379	-.763	-1.074	.477
City Finance Bank	(Constant)	.111	2.168		.051	.967
	Spot Trading	-484.206	377.224	-4.056	-1.284	.421
	Currency Forwards	1.816	26.889	.034	.068	.957

Bank						
	Currency Swaps	662.619	612.246	3.402	1.082	.475
Consolidated Bank	(Constant)	1.092	.310		3.524	.176
	Spot Trading	87.398	33.019	1.117	2.647	.230
	Currency Forwards	-8.218	9.052	-.393	-.908	.531
	Currency Swaps	.334	4.792	.024	.070	.956
CO-OP Bank	(Constant)	1.334	.109		12.236	.052
	Spot Trading	128.978	5.914	.981	21.811	.029
	Currency Forwards	-9.447	1.113	-.397	-8.491	.075
	Currency Swaps	6.912	1.031	.303	6.707	.094
Credit Bank	(Constant)	.680	.947		.718	.604
	Spot Trading	18.973	16.845	.642	1.126	.462
	Currency Forwards	17.235	24.325	.624	.709	.608
	Currency Swaps	-66.317	43.601	-1.233	-1.521	.370
Development Bank	(Constant)	-.054	.174		-.308	.810
	Spot Trading	-61.223	4.937	-3.886	-12.400	.051
	Currency Forwards	54.647	5.023	1.949	10.878	.058
	Currency Swaps	77.777	8.557	2.622	9.089	.070
Diamond Trust Bank	(Constant)	4.121	.278		14.808	.043
	Spot Trading	-61.421	6.778	-1.122	-9.062	.070
	Currency Forwards	61.324	5.143	1.595	11.923	.053
	Currency Swaps	22.097	7.052	.289	3.133	.197
Dubai Bank	(Constant)	-.880	.038		-23.432	.027
	Spot Trading	27.853	.610	.825	45.682	.014
	Currency Forwards	-5.785	.701	-.158	-8.255	.077
	Currency Swaps	-4.478	.255	-.127	-17.588	.036
Ecobank	(Constant)	5.073	3.813		1.331	.410
	Spot Trading	-301.873	195.998	-.549	-1.540	.367
	Currency Forwards	-90.172	28.790	-1.083	-3.132	.197
	Currency Swaps	-3.923	37.318	-.034	-.105	.933
Equitorial Bank	(Constant)	49.060	20.825		2.356	.256
	Spot Trading	-1126.009	497.429	-3.965	-2.264	.265
	Currency Forwards	-34.456	23.393	-.599	-1.473	.380
	Currency Swaps	-451.265	181.181	-4.180	-2.491	.243
Equity Bank	(Constant)	6.502	.208		31.186	.020
	Spot Trading	56.603	6.338	.701	8.931	.071
	Currency Forwards	19.107	4.334	.485	4.409	.142
	Currency Swaps	-49.259	4.733	-1.164	-10.408	.061
Family Bank	(Constant)	-2.683	5.261		-.510	.700
	Spot Trading	1175.581	1123.007	.887	1.047	.485
	Currency Forwards	29.398	100.394	.243	.293	.819
	Currency Swaps	25.327	12.625	.850	2.006	.294
Fidelity Bank	(Constant)	1.988	1.138		1.747	.331
	Spot Trading	-33.903	43.980	-.300	-.771	.582
	Currency Forwards	103.654	42.639	1.654	2.431	.248
	Currency Swaps	-33.787	17.643	-1.301	-1.915	.306
Fina Bank	(Constant)	.385	2.847		.135	.914

	Spot Trading	.225	82.532	.003	.003	.998
	Currency Forwards	6.524	21.274	.300	.307	.811
	Currency Swaps	12.972	23.948	.466	.542	.684
Giro Bank	(Constant)	15.304	1.724		8.876	.071
	Spot Trading	-773.581	105.387	-1.904	-7.340	.086
	Currency Forwards	-50.736	11.106	-1.207	-4.568	.137
	Currency Swaps	-264.355	42.152	-.388	-6.271	.101
	(Constant)	-.040	1.094		-.037	.976
Guardian Bank	Spot Trading	33.191	20.020	.724	1.658	.346
	Currency Forwards	-5.132	6.710	-.306	-.765	.584
	Currency Swaps	-16.826	8.510	-.768	-1.977	.298
GulfAfican Bank	(Constant)	-1.261	0.000			
	Spot Trading	-109.064	0.000	-.366		
	Currency Forwards	-290.301	0.000	-1.678		
	Currency Swaps	153.014	0.000	.901		
Habib Bank	(Constant)	-.528	5.734		-.092	.942
	Spot Trading	44.918	156.507	.258	.287	.822
	Currency Forwards	76.399	84.396	.872	.905	.532
	Currency Swaps	7.308	48.073	.166	.152	.904
Habib AG Zurich	(Constant)	7.451	1.184		6.294	.100
	Spot Trading	-164.559	37.543	-1.224	-4.383	.143
	Currency Forwards	3.150	5.121	.116	.615	.649
	Currency Swaps	-49.888	10.281	-1.396	-4.852	.129
I &M Bank	(Constant)	6.232	3.787		1.646	.348
	Spot Trading	-218.617	225.713	-.893	-.969	.510
	Currency Forwards	23.217	28.108	.563	.826	.560
	Currency Swaps	30.801	41.464	.696	.743	.593
Imperial Bank Ltd	(Constant)	9.590	3.156		3.038	.202
	Spot Trading	-21.574	40.835	-.251	-.528	.691
	Currency Forwards	-27.578	9.652	-1.044	-2.857	.214
	Currency Swaps	-52.956	36.170	-.689	-1.464	.381
KCB Bank	(Constant)	6.784	.466		14.565	.044
	Spot Trading	-94.481	15.107	-.630	-6.254	.101
	Currency Forwards	-23.318	5.292	-.601	-4.406	.142
	Currency Swaps	42.596	7.702	.775	5.530	.114
K-Rep Bank	(Constant)	-2.983	1.381		-2.160	.276
	Spot Trading	81.990	98.267	.710	.834	.557
	Currency Forwards	-1170.978	1006.735	-.985	-1.163	.452
	Currency Swaps	2242.591	1017.954	1.640	2.203	.271
Middle East Bank	(Constant)	4.988	1.325		3.765	.165
	Spot Trading	-82.993	27.977	-.788	-2.966	.207
	Currency Forwards	-54.399	22.001	-.653	-2.473	.245
	Currency Swaps	21.545	12.442	.447	1.732	.333
National Bank	(Constant)	5.578	1.429		3.902	.160
	Spot Trading	79.239	29.086	.900	2.724	.224
	Currency Forwards	-20.547	15.052	-.439	-1.365	.403

		B	Std. Error	Beta	t	Sig.
	Currency Swaps	-98.471	37.227	-.582	-2.645	.230
	(Constant)	4.974	.027		183.895	.003
NIC Bank	Spot Trading	-81.150	.513	-.845	-158.294	.004
	Currency Forwards	32.256	1.183	.234	27.255	.023
	Currency Swaps	18.191	.242	.593	75.276	.008
Oriental Bank	(Constant)	.460	2.023		.227	.858
	Spot Trading	26.331	27.345	.606	.963	.512
	Currency Forwards	45.162	42.910	.684	1.052	.484
	Currency Swaps	-1.497	19.005	-.050	-.079	.950
Paramount Bank	(Constant)	-.578	3.640		-.159	.900
	Spot Trading	78.934	89.722	.482	.880	.541
	Currency Forwards	-61.038	34.173	-1.021	-1.786	.325
	Currency Swaps	55.362	37.561	.847	1.474	.380
Prime Bank	(Constant)	2.404	.668		3.598	.173
	Spot Trading	12.216	12.921	.472	.945	.518
	Currency Forwards	12.724	18.691	.428	.681	.619
	Currency Swaps	-62.224	39.142	-.935	-1.590	.357
	(Constant)	6.337	.758		8.357	.076
Stan-Chartered	Spot Trading	-8.250	18.160	-.136	-.454	.729
	Currency Forwards	-12.725	4.926	-.439	-2.583	.235
	Currency Swaps	-108.752	53.592	-.619	-2.029	.291
TransNational Bank	(Constant)	4.153	.383		10.832	.059
	Spot Trading	-.791	6.567	-.030	-.121	.924
	Currency Forwards	-10.676	5.209	-.518	-2.050	.289
	Currency Swaps	-42.970	11.212	-.875	-3.832	.162
Victoria Bank	(Constant)	323.384	56.998		5.674	.111
	Spot Trading	-1071.896	197.929	-20.031	-5.416	.116
	Currency Forwards	-27375.892	4856.252	-40.834	-5.637	.112
	Currency Swaps	-763.915	134.544	-31.585	-5.678	.111

Appendix IV: Regression Model Goodness of Fit

	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
ABC Bank	.944b	.891	.566	.55949	3.118
Bank of Africa	.947b	.896	.585	.07832	.817
Bank of Baroda	.986b	.972	.889	.34651	2.479
Bank of India	.964b	.929	.716	.38088	1.288
Barclays Bank	.752b	.566	-.736	2.43639	2.465
CBA	.999b	.998	.991	.07346	1.808
CFC Stanbic	.209b	.044	-2.826	1.97688	1.173
Chase Bank	.993b	.986	.944	.11522	1.486
Citibank N.A	.772b	.596	-.617	3.92828	1.578
City Finance Bank	.900b	.811	.243	1.87361	1.737
Consolidated Bank	.941b	.885	.539	.28760	3.315
CO-OP Bank	.999b	.998	.993	.07631	3.104
Credit Bank	.896b	.804	.215	.56583	3.205
Development Bank	1.000b	.999	.996	.02363	2.877
Diamond Trust Bank	.997b	.993	.973	.19797	3.153
Dubai Bank	1.000b	1.000	1.000	.00846	2.373
Ecobank	.957b	.915	.662	1.85215	2.413
Equitorial Bank	.943b	.889	.555	1.52443	2.109
Equity Bank	.997b	.994	.977	.20061	2.829
Family Bank	.928b	.862	.448	.93117	2.157
Fidelity Bank	.926b	.857	.428	.89477	3.427
Fina Bank	.624b	.389	-1.443	1.23179	1.187
First Community	1.000b	1.000			.900
Giro Bank	.999b	.997	.990	.14851	2.400
Guardian Bank	.936b	.877	.506	.48647	3.111
GulfAfrican Bank	1.000b	1.000			.530
Habib Bank	.710b	.504	-.983	2.51866	2.196
Habib AG Zurich	.985b	.970	.881	.32176	3.245
I &M Bank	.788b	.621	-.515	1.80048	2.056
Imperial Bank Ltd	.958b	.917	.670	.71037	1.812
KCB Bank	.996b	.991	.966	.24687	2.993
K-Rep Bank	.978b	.956	.824	1.40384	2.840
Middle East Bank	.966b	.934	.736	.62641	1.241
National Bank	.977b	.955	.822	.39398	2.062
NIC Bank	1.000b	1.000	1.000	.00927	2.684
Oriental Bank	.803b	.645	-.422	1.30777	2.854
Paramount Bank	.884b	.782	.129	1.81142	3.561
Prime Bank	.889b	.791	.162	.58742	2.248
Stan-Chartered	.987b	.975	.900	.34011	2.277
TransNational Bank	.974b	.949	.795	.26921	2.214
Victoria Bank	.994b	.989	.956	.26626	1.333

Appendix V: Descriptive statistics per bank

African Banking Corporation

	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
ROA	1.8600	4.1200	2.9180	0.8492	0.3354	0.1646
SPOT Currency	0.0184	0.0377	0.0246	0.0080	1.4694	1.6601
Forwards	0.0120	0.0817	0.0417	0.0360	0.5626	-3.2700
Currency Swaps	0.0018	0.0282	0.0121	0.0120	0.7028	-2.2521

Bank of Africa

	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
ROA	1.1400	1.4300	1.2720	0.1215	0.1060	-1.7195
Spot Trading Currency	0.0180	0.0499	0.0323	0.0116	0.6541	1.4477
forwards	0.0034	0.1006	0.0422	0.0406	0.8314	-1.1806
Currency Swaps	0.0019	0.0348	0.0179	0.0132	-0.0354	-1.4591

Bank of Baroda

	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
ROA	2.3600	4.5700	3.4460	1.0402	-0.1443	-2.8876
Spot Trading Currency	0.0058	0.0119	0.0096	0.0023	-1.5071	3.0475
forwards	0.0111	0.0281	0.0185	0.0069	0.5958	-1.0939
Currency Swaps	0.0017	0.0597	0.0185	0.0235	2.0190	4.2314

Barclays Bank

	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
ROA	3.2800	7.1800	5.4580	1.8492	-0.4460	-2.9822
Spot Trading Currency	0.0275	0.0362	0.0321	0.0037	0.0344	-2.0997
forwards	0.0139	0.0897	0.0465	0.0321	0.2267	-1.4036
Currency Swaps	0.0069	0.0483	0.0166	0.0177	2.2141	4.9245

Commercial Bank of Africa

	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
ROA	2.1300	4.0000	3.0200	0.7742	0.2031	-1.8974
SPOT Currency	0.0506	0.0753	0.0606	0.0097	0.8605	0.3506
forwards	0.0139	0.0903	0.0538	0.0367	-0.4268	-3.0713
Currency Swaps	0.0087	0.0717	0.0423	0.0262	-0.4026	-2.0099

CFC stanbic

	Minimum	Maximum	Mean	Std.	Skewness	Kurtosis

	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
ROA	0.8200	3.5000	2.0020	1.0107	0.5980	0.5528
SPOT	0.0160	0.0639	0.0346	0.0183	1.1967	1.6126
Currency forwards	0.0156	0.1148	0.0537	0.0408	0.8679	-0.1535
Currency Swaps	0.0020	0.0278	0.0090	0.0107	2.1052	4.5366

Chase Bank

	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
ROA	1.6200	2.7000	2.0060	0.4849	0.8880	-1.4824
SPOT	0.0027	0.0484	0.0303	0.0171	-1.2219	2.1619
Currency forwards	0.0126	0.0825	0.0439	0.0311	0.0990	-2.2769
Currency Swaps	0.0014	0.0211	0.0089	0.0077	1.1039	1.2365

Citi

	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
ROA	2.7900	10.4000	5.4360	3.0890	1.3492	1.2412
SPOT	0.0109	0.0933	0.0419	0.0412	0.6614	-2.9873
Currency forwards	0.0021	0.0052	0.0031	0.0012	1.6367	2.9296
Currency Swaps	0.0041	0.0602	0.0169	0.0243	2.2071	4.8961

city Finance **City Finance**

	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
ROA	-4.8800	0.0000	2.5920	-2.1539	0.4301	-2.6708
SPOT	0.0022	0.0497	0.0209	0.0180	1.1412	1.6901
Currency forwards	0.0007	0.0950	0.0320	0.0406	1.2025	0.1097
Currency Swaps	0.0013	0.0284	0.0111	0.0111	1.0444	0.8936

Consolidated

	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
ROA	1.0000	2.0700	1.5000	0.4238	0.1585	-1.0024
SPOT	0.0018	0.0147	0.0079	0.0054	0.3789	-2.1372
Currency forwards	0.0065	0.0549	0.0352	0.0202	-0.7271	-1.2465
Currency Swaps	0.0002	0.0640	0.0323	0.0309	0.0432	-2.9764

Co-op Bank

	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
ROA	2.6800	4.8000	3.3660	0.8930	1.3795	1.0806

	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
SPOT	0.0094	0.0276	0.0172	0.0068	0.7853	1.1139
Currency forwards	0.0146	0.0971	0.0551	0.0375	-0.3018	-2.7203
Currency Swaps	0.0045	0.0908	0.0479	0.0391	-0.3405	-2.7796

Credit Bank

	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
ROA	0.0000	1.5800	0.9540	0.6385	-0.7641	0.0165
SPOT	0.0064	0.0557	0.0246	0.0216	0.8681	-1.2967
Currency forwards	0.0239	0.0805	0.0427	0.0231	1.4056	1.8979
Currency Swaps	0.0029	0.0327	0.0140	0.0119	1.1991	0.8584

Development Bank

	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
ROA	0.8000	1.8200	1.4340	0.3937	-1.2458	1.7562
SPOT	0.0068	0.0654	0.0208	0.0250	2.2069	4.8997
Currency forwards	0.0036	0.0382	0.0272	0.0140	-1.6402	2.6672
Currency Swaps	0.0050	0.0356	0.0164	0.0133	0.8996	-1.2636

Diamond Trust Bank

	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
ROA	2.0100	4.9000	3.4060	1.2019	0.0332	-1.9488
SPOT	0.0150	0.0736	0.0467	0.0220	-0.4694	0.3464
Currency forwards	0.0106	0.0836	0.0286	0.0313	2.0732	4.3431
Currency Swaps	0.0065	0.0441	0.0183	0.0157	1.5188	1.7900

Dubai Bank

	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
ROA	-1.2000	0.9000	0.0340	0.7621	-1.1506	2.6815
SPOT	0.0084	0.0719	0.0421	0.0226	-0.4360	2.0350
Currency forwards	0.0069	0.0593	0.0229	0.0208	2.0011	4.2833
Currency Swaps	0.0025	0.0472	0.0285	0.0216	-0.5934	-3.0825

Eco Bank

	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
ROA	-5.7100	0.6600	1.7860	-3.1841	-0.6519	-3.0590
SPOT	0.0059	0.0188	0.0125	0.0058	-0.2159	-2.7353
Currency forwards	0.0017	0.0942	0.0330	0.0382	1.3212	1.1450

	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
Currency Swaps	0.0096	0.0767	0.0321	0.0275	1.3577	1.7404

Equitorial Bank

	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
ROA	-4.6000	1.1500	-0.7680	2.2861	-1.6151	2.6506
SPOT	0.0137	0.0353	0.0237	0.0081	0.3937	0.5028
Currency forwards	0.0024	0.0918	0.0421	0.0398	0.5225	-2.6403
Currency Swaps	0.0201	0.0780	0.0481	0.0212	0.2011	0.8264

Equity Bank

	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
ROA	4.2000	7.4000	5.8080	1.3165	0.0660	-1.8570
SPOT	0.0046	0.0468	0.0207	0.0163	1.1849	1.6570
Currency forwards	0.0106	0.0878	0.0282	0.0334	2.2107	4.9069
Currency Swaps	0.0031	0.0884	0.0488	0.0311	-0.4431	1.1380

Family Bank

	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
ROA	0.0000	3.5200	1.8260	1.2528	-0.2594	1.8202
SPOT	0.0008	0.0029	0.0019	0.0009	-0.3619	-2.7107
Currency forwards	0.0147	0.0386	0.0282	0.0103	-0.3184	-1.9381
Currency Swaps	0.0217	0.1240	0.0552	0.0420	1.4184	1.9257

Fidelity Bank

	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
ROA	0.8800	3.3100	1.7700	1.1833	0.7137	-2.6978
SPOT	0.0153	0.0381	0.0228	0.0105	0.9741	-1.2375
Currency forwards	0.0016	0.0475	0.0175	0.0189	1.1724	1.1897
Currency Swaps	0.0017	0.0893	0.0374	0.0456	0.6040	-3.2920

Fina Bank

	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
ROA	0.4400	2.1200	1.2220	0.7880	0.3883	-2.9899
SPOT	0.0142	0.0383	0.0220	0.0097	1.6192	2.4974

	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
Currency forwards	0.0121	0.1015	0.0399	0.0362	1.7355	3.1837
Currency Swaps	0.0105	0.0687	0.0441	0.0283	-0.5941	-3.1440

First Community Bank

	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
ROA	-7.0700	2.9000	-1.3900	3.8443	-0.6362	0.1961
SPOT	0.0052	0.0223	0.0117	0.0069	0.9645	0.1809
Currency forwards	0.0016	0.0687	0.0200	0.0288	1.7296	2.7537
Currency Swaps	0.0049	0.0626	0.0396	0.0272	-0.5982	-2.6831

Giro Bank

	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
ROA	1.3500	5.0200	2.6020	1.4549	1.5362	2.4176
SPOT	0.0058	0.0157	0.0115	0.0036	-1.0562	2.5330
Currency forwards	0.0067	0.0983	0.0421	0.0346	1.2660	2.1828
Currency Swaps	0.0030	0.0087	0.0062	0.0021	-0.7177	0.6963

Guardian Bank

	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
ROA	0.5300	1.9200	1.1720	0.6924	0.3879	-3.1170
SPOT	0.0380	0.0745	0.0519	0.0151	0.8112	-0.1193
Currency forwards	0.0012	0.0989	0.0259	0.0413	2.1028	4.5108
Currency Swaps	0.0025	0.0773	0.0225	0.0316	1.9315	3.7415

Gulf African Bank

	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
ROA	-5.6300	2.8000	-0.4900	3.2748	-1.1234	0.9915
SPOT	0.0000	0.0340	0.0171	0.0132	-0.0454	-0.8285
Currency forwards	0.0000	0.0408	0.0110	0.0168	2.1032	4.5363
Currency Swaps	0.0061	0.0614	0.0341	0.0224	0.0072	-1.5816

Habib Bank

	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
ROA	2.1900	6.5000	3.7580	1.7884	1.1139	-0.0232
SPOT	0.0134	0.0372	0.0233	0.0103	0.5922	-1.8434
Currency forwards	0.0181	0.0705	0.0374	0.0204	1.3568	1.7756

	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
Currency Swaps	0.0045	0.0974	0.0529	0.0405	-0.3651	-2.5652

Habib A.G

	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
ROA	1.9100	4.2000	2.5960	0.9346	1.8062	3.4795
SPOT	0.0120	0.0302	0.0199	0.0070	0.6882	0.2361
Currency forwards	0.0138	0.0958	0.0501	0.0345	0.2147	-1.6081
Currency Swaps	0.0086	0.0686	0.0348	0.0262	0.4041	-2.2006

I & M

	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
ROA	2.6000	5.8000	3.9480	1.4630	0.5286	-2.6297
SPOT	0.0146	0.0300	0.0229	0.0060	-0.4492	-0.6112
Currency forwards	0.0101	0.0928	0.0361	0.0355	1.3561	0.8878
Currency Swaps	0.0023	0.0791	0.0613	0.0331	-2.2107	4.9101

Imperial

	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
ROA	3.4700	6.3700	4.7160	1.2363	0.3870	-1.7306
SPOT	0.0033	0.0382	0.0170	0.0144	0.9046	-0.7537
Currency forwards	0.0015	0.1074	0.0406	0.0468	0.8849	-1.5343
Currency Swaps	0.0402	0.0812	0.0640	0.0161	-0.7153	-0.0840

Kenya Commercial Bank

	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
ROA	2.1900	5.2000	3.8060	1.3374	-0.2102	-2.5544
SPOT	0.0180	0.0374	0.0279	0.0089	-0.3820	-2.8901
Currency forwards	0.0103	0.1030	0.0627	0.0345	-0.7644	1.0634
Currency Swaps	0.0046	0.0606	0.0263	0.0243	0.6769	-1.3582

K-Rep Bank

	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
ROA	-4.2600	3.2000	-0.1140	3.3484	-0.3664	-2.5733
SPOT	0.0011	0.0701	0.0188	0.0290	2.1075	4.5237
Currency forwards	0.0005	0.0069	0.0036	0.0028	0.1800	-2.5728
Currency Swaps	0.0000	0.0057	0.0025	0.0024	0.5249	-2.0630

Middle East Bank

	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
ROA	0.5500	3.5000	1.5520	1.2202	1.3285	0.9794
SPOT	0.0104	0.0374	0.0254	0.0116	-0.4904	-2.2016
Currency forwards	0.0256	0.0582	0.0392	0.0147	0.5644	-2.4641
Currency Swaps	0.0096	0.0678	0.0376	0.0253	-0.1157	-2.3679

National Bank

	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
ROA	1.7000	4.2000	3.1480	0.9326	-0.9269	1.3447
SPOT	0.0011	0.0273	0.0173	0.0106	-0.9738	0.3240
Currency forwards	0.0864	0.1403	0.1094	0.0199	0.8792	1.5299
Currency Swaps	0.0095	0.0207	0.0158	0.0055	-0.5643	-3.2130

NIC Bank

	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
ROA	2.3800	4.5700	3.3480	1.0043	0.3110	-2.6591
SPOT	0.0251	0.0480	0.0368	0.0105	-0.3201	-2.8474
Currency forwards	0.0048	0.0199	0.0126	0.0073	-0.0288	-2.9523
Currency Swaps	0.0049	0.0878	0.0526	0.0328	-0.7095	-0.4153

Oriental Commercial

	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
ROA	1.2500	3.8300	2.4840	1.0967	0.3195	-2.2924
SPOT	0.0048	0.0708	0.0296	0.0252	1.3575	2.1416
Currency forwards	0.0092	0.0544	0.0286	0.0166	0.8556	1.6468
Currency Swaps	0.0023	0.0921	0.0313	0.0364	1.5635	2.6335

Paramount Bank

	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
ROA	1.1100	5.7100	2.3600	1.9412	1.8894	3.5401
SPOT	0.0189	0.0466	0.0332	0.0119	0.1370	-2.2333
Currency forwards	0.0116	0.0849	0.0370	0.0325	0.9834	-0.9502
Currency Swaps	0.0041	0.0794	0.0465	0.0297	-0.5405	-0.5477

Prime Bank

	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
ROA	1.6600	3.0700	2.2020	0.6418	0.7292	-2.2068

	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
SPOT	0.0134	0.0719	0.0277	0.0248	2.1944	4.8545
Currency forwards	0.0058	0.0588	0.0216	0.0216	1.8610	3.5219
Currency Swaps	0.0009	0.0263	0.0131	0.0096	0.2600	-0.2641

United Bank of Africa

	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
ROA	-12.6900	1.8700	-1.8960	6.0705	-2.1679	4.7703
SPOT	0.0134	0.0471	0.0260	0.0134	1.2085	0.9461
Currency forwards	0.0081	0.0204	0.0123	0.0049	1.4235	2.1885
Currency Swaps	0.0009	0.0263	0.0131	0.0096	0.2600	-0.2641

Standard Chartered Bank

	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
ROA	3.2800	5.9000	4.3580	1.0769	0.7833	-1.1028
SPOT	0.0427	0.0877	0.0617	0.0178	0.7729	-0.4429
Currency forwards	0.0016	0.0837	0.0343	0.0371	0.6994	-2.3663
Currency Swaps	0.0018	0.0166	0.0095	0.0061	-0.1051	-1.8749

Trans National Bank

	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
ROA	2.6800	4.0500	3.4600	0.5940	-0.5667	-2.2315
SPOT	0.0154	0.0731	0.0427	0.0228	0.1119	-1.0461
Currency forwards	0.0022	0.0681	0.0166	0.0288	2.2218	4.9478
Currency Swaps	0.0015	0.0322	0.0112	0.0121	1.8926	3.8934

Victoria Commercial

	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
ROA	1.3100	4.8000	3.0240	1.2702	0.1184	0.9507
SPOT	0.0174	0.0739	0.0318	0.0237	2.1526	4.6961
Currency forwards	0.0064	0.0108	0.0083	0.0019	0.1558	-1.6377
Currency Swaps	0.0075	0.1543	0.0774	0.0525	0.3227	1.6763