

**THE EFFECT OF FOREIGN EXCHANGE RATE  
VOLATILITY ON PROFITABILITY OF INSURANCE  
INDUSTRY IN KENYA**

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## **DECLARATION**

I declare that this Research Project is my original work and has not been submitted for examination in any other university or institution of higher learning .

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This Research Project has been submitted for examination with my approval as the University Supervisor

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## **DEDICATION**

This research work is dedicated to my husband Clarence Maikuri and my parents Mr. and Mrs. Nyairo for their love and support which have assisted me greatly throughout my Master of Science program. My prayers are that God may continue to abundantly bless you.

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## **ABBREVIATIONS**

<b>ADF</b>	Augmented Dickey-Fuller Test
<b>AKI</b>	Association of Kenya Insurers
<b>ANOVA</b>	Analysis of Variance Technique
<b>ARIMA</b>	Auto Regressive Integrated Moving Average
<b>ASEAN</b>	Association of South East Asian Nations
<b>CBK</b>	Central Bank of Kenya
<b>DOTs</b>	Direction of Trade Statistics
<b>GDP</b>	Gross Domestic Product
<b>IRA</b>	Insurance Regulatory Authority
<b>KNBS</b>	Kenya National Bureau of Statistics
<b>MSEs</b>	Medium and Small Enterprises
<b>NSE</b>	Nairobi Securities Exchange
<b>PPP</b>	Purchasing power of parity
<b>RER</b>	Real Exchange Rate
<b>ROA</b>	Return on assets
<b>ROE</b>	Return on Equity
<b>ROS</b>	Return on Sales
<b>SPSS</b>	Statistical Package for the Social Sciences
<b>WDI</b>	World Development Indicators

## **ABSTRACT**

The volatility in the foreign exchange rate can become a source of risk for firms. The risk is that adverse volatility in exchange rates may result in a loss to an institution especially those which trade their shares on the money market and those engaging in international business as they are naturally exposed to currency rate jeopardies. The study thus sought after examining the effects of foreign exchange rate volatility on profitability of insurance industry in Kenya. Further the study investigated whether GDP growth rate, interest rate, annual growth rate of productive workforce (age 15 to 64 years) and inflation as control variables affect the profitability of insurance industry in Kenya. The study used a descriptive research design on 49 insurance companies in Kenya. The study covered a period of ten years from 2005-2014. Secondary data was collected from the CBK, World Bank the annual reports of each insurance company under study. Data was then analyzed using a regression model, SPSS and Microsoft Excel statistical soft wares. The results of analysis were then interpreted using tables and graphs to show the relationships. The findings show that Foreign exchange rate volatility negatively impacts on the ROA of the insurance industry. GDP growth rate and inflation also negatively affects ROA. Finally, interest rate has a positive effect on the ROA of the insurance firms. At 5% level of significance, all the independent variables are not statistically significant. The study concludes that exchange rate volatility, GDP growth rate, annual growth rate of productive workforce (age 15 to 64 years), inflation and interest rates have insignificant effect on the profitability of insurance industry in Kenya. This implies that macroeconomic environment is responsible but only to a small extent in determining the profitability of the insurance companies in Kenya. The study therefore recommends that the regulatory authorities of macroeconomic environment should regulate them in such a way that they lead to favor of companies increased profitability and eventually economic growth.

# **CHAPTER ONE**

## **INTRODUCTION**

### **1.1 Background of the Study**

Exchange rate is a macroeconomic element of concern in Kenya as it has a direct significant effect on the cost of production hence affecting domestic selling price level, profitability, allocation of resources, investment decisions, export sales and the overall competitiveness in the industries. The fluctuation or volatility in the foreign exchange rate can become a source of risk for firms. These fluctuations pose a threat to firms especially those which trade their shares on the money market and those engaging in international business as they are naturally exposed to currency risks. The risk is that adverse volatility in exchange rates may result in a loss to an institution. Foreign exchange risk is the exposure of an institution to the potential impact of movements in foreign exchange rates. According to Mbogo (2015), the management of companies therefore should incorporate a wider array of the hedging tools available and should not only rely on forward and spot contracts, but look into other intricate methods like swaps and options and this should help mitigate against the adverse effects in currency movements.

There has always been some controversy about the most suitable exchange rate policy in the developing countries. Kenya experienced a fixed exchange rate regime since 1966. The central banks used to determine and fix the exchange rates. In the world over, 1971, saw the fixed rate system getting replaced by floating or flexible rates determined by the market forces of supply and demand. Kenya did not adopt these exchange rate arrangements. In 1992, when the multiparty system and devolved trade came into play, it adopted a dual exchange rate system, which lasted only until

late 1993. After that year, the official exchange rate was matched to the official interbank rate and the shilling was allowed to float, Adler and Dumas (2010).

Scholars internationally and locally have been empirically investigating the exchange rates exposures of firms and have made divergent conclusions. Some find significant effects and others no effects of exchange rate on firms' financial health. This study intends to investigate the actual effect of foreign exchange rate volatility on the profitability in insurance industry of Kenya.

### **1.1.1 Foreign Exchange Rate Volatility**

Exchange rate can be a conversion factor, a multiplier or a ratio, depending on the direction of conversion. It is the price of one currency in relation to another which expresses the national currency's quotation in respect to foreign currencies. Volatility on the other hand is a measure of risk, usually simply referred to as "instability, fickleness or uncertainty". According to Mulwa (2013), volatility of exchange rates describes uncertainty in international transactions both in goods and in financial assets. Foreign exchanges rates help fill the domestic revenue-generation gap in a developing economy (Cote, 2005).

Initially, central banks in an economy used to determine the exchange rate by fixing it such that international transactions were never subjected to exchange rate fluctuations risk. This arrangement was known as the fixed exchange rate system of Bretton. However, in 1971 the system was replaced by a foreign rates system in which the price of currencies was and continues to be determined by the market forces of supply and demand. Kenya like many other developing countries has adopted a floating exchange rate regime which means that the price of the Kenya Shilling with respect to

other currencies is set by market forces of demand and supply. This explains the everyday exchange rate fluctuations in the money market in Kenya (Kituku, 2014)

According to Hales (2005), exchange rate movements are transmitted to domestic prices through three channels. One is through prices of imported consumption goods whereby exchange rate fluctuations affect domestic prices directly. Second is through prices of imported intermediate goods whereby exchange rate movement affects production cost of domestically produced goods. Lastly, is through prices of domestic goods priced in foreign currency.

### **1.1.2 Profitability**

Profitability is the capability of a business to remain with excess of the revenue after all the expenses related to production have been paid for. A profitability measurement baseline is one of the most valued time-phased tools used by firms to determine their growth and overall financial health over a given period of time and can also be used to compare similar firms across the same industry or to compare industries or sectors in aggregation.. The set standard application of financial health enables the evaluation of the profitability to determine whether variances exist based on different non-interest factors. Profitability is core of any institution's long and short-term strategy and in today's global economic climate and regulatory environment. The management of any firm should be able to identify its strength and weakness, likewise exploit opportunities and tackle threats if it is determined to make profits. (Taylor, 2008).

The importance of firms' profitability has made scholars, managers and regulatory authorities to develop considerable interest on the firm specific, industry specific and macro factors that determine firm profitability. Molyneux and Thornton (1992),found that internal factors like capital size, size of deposit liabilities, size and composition of

bank's credit portfolio, interest rate policy, exposure to risk, management quality, labor productivity, bank size, bank age affect profitability. Industry specific factors like market power and insurance sector development also influences firm profitability. Macro factors believed to affect profitability include inflation, GDP, exchange rates and interest rates (Brinson, 1991). Past literature has measured, firm profitability using several ratios. For instance, return on sales (ROS) has been used and it reveals how much a company earns in relation to its sales, return on assets also measures profitability by explaining a firm's ability to make use of its assets and return on equity. Return on equity (ROE) reveals what return investors take for their investments (Almajali et al., 2012). This study will measure Profitability using (ROA) which will be calculated as the ratio of net income to total assets.

### **1.1.3 Effect of Foreign Exchange Rate Volatility on Profitability**

Foreign exchange rate volatility has a positive and negative impact on firms' profitability. It impacts negatively to firms when it leads to losses which therefore affect the profitability and positively when it leads to foreign exchange gain which leads to gains that increase the profitability of firms. Empirical evidence by Bartov & Bodnar (1994), suggest that there is a lagged relation between changes in exchange rates and firm values due to mispricing. In similar view, a study by Kituku (2014), indicate that foreign exchange rate fluctuation has significant negative effect on firms' financial performance and profitability. Mwanza (2014), found that Foreign exchange rate does not have a significant effect on the profitability in his study on the firms listed at the NSE.

High exchange rate volatility has implications for business and policy decisions. Foreign exchange rate volatility could be an important source of risk for commercial

firms. Standards of sound business practices on foreign exchange risk management define foreign exchange risk as the exposure of an institution to the potential impact of movements in foreign exchange rates. The risk is that adverse volatility in exchange rates may result in a loss to an institution. Li (2003), describes financial risk as a risk that emanates from the uncertainty of such factors as interest rates, exchange rates and stock price volatility and volatility in commodity prices. In the worst case, even for a mild scenario, foreign exchange losses could cause huge burdens on firms' profitability. Due to their serious implications for risk management and banking sector stability, measuring firms' foreign exchange exposure has long been a core interest of risk management professionals, academics, and central banks.

#### **1.1.4 Insurance Companies in Kenya**

The insurance industry in Kenya operates under an authority body called the Association of Kenya Insurers (AKI), which was established in 1987. Its membership is open to all registered insurance company. At the apex of the insurance sector are two reinsurance companies, the quasi-public Kenya Reinsurance Corporation (Kenya Re) and East African Reinsurance Company. The Kenyan insurance industry is governed by the Insurance Act (1984) administered by the Insurance Regulatory Authority (IRA), a semi-autonomous regulator, set up in 2008 (Kenya Insurance Outlook report, 2013).

As at December 2014, there were 155 licensed insurance companies' players in Kenya comprising of 49 insurance companies, 22 medical insurance providers and 84 insurance brokers. In the financial year 2012 Kenya was ranked 4th in Africa, in terms of insurance penetration growth behind South Africa (14.6%), Namibia (8.0%) and Mauritius (5.94%). Individuals and their families look to insurance companies to provide life insurance, retirement income, health insurance, and automobile and

homeowners property and liability coverage. Businesses rely on insurers for similar coverage as well as workers compensation and more specialized products like marine insurance. Inefficient insurers cannot survive long in a competitive market (Pervan, 2014).

The insurance industry in Kenya has undergone a series of changes through financial reforms, advancement of communication and information technologies, globalization of financial services, economic development and online service provision. Those changes have had a considerable effect on efficiency, productivity change, market structure and performance in the insurance industry. However, Low dissemination of insurance in the Kenyan market, relative to other more developed markets is attributable to factors like: general lack of a savings culture among Kenyans, low disposable incomes for the majority of the population, with close to 50% of Kenyans living below the poverty line, inadequate tax incentives that could encourage the middle classes to purchase life insurance products and a perceived credibility crisis of the industry in the eyes of the public particularly with regard to settlement of claims (Mwanza, 2014).

## **1.2 Research Problem**

Exchange rate stability is imperative for Kenya in maintaining the value of the shilling and reduces the impact of international capital shocks. Across the economic spectrum the sectoral and economy wide consequence of foreign exchange rates may ultimately be reflected in the stock prices. Exchange rate plays an increasingly significant role in Kenyan firms as it directly affects domestic selling price level, profitability, allocation of resources and investment decisions. Exchange rate stability according to Onyango (2014), is in fact, one of the main factors that promote total investment, price stability and stable economic growth.



In his study, Demir (2013), found that exchange rate volatility has a significant growth reducing effect on manufacturing firms. Similarly, Musyoki et al. (2012) found a negative relationship between exchange rate volatility and economic growth in Kenya. Also, Khosa et al, (2015), results showed that exchange rate volatility had a significant negative effect on the performance of exports, regardless of the measure of volatility used. On contrary, the result differed with those of Onyango (2014), who found that exchange rate volatility positively impacts on economic growth but is not significant in affecting the growth rate. Startlingly, Mwanza (2014), found foreign exchange rate to have an insignificant relationship, such that it does not have a significant effect on the performance of firms.

Existing literature shows contrasting conclusions as some scholars found a positive while others a negative significant effect in the nexus. This means that there is a deficiency of steady evidence specifically in insurance industry, on the topic of exchange rate volatility and profitability. Since the exchange rate fluctuations affects profitability and investment decisions in firms, especially by increasing risk and uncertainty, it means that the insurance industry in Kenya is also part of the firms experiencing these diverse effects that fluctuations in the currency exchange brings about. Whilst the reports have been showing an increasing trend in insurance firms' profits for the last decade, they do not clearly indicate if the volatility of exchange rates has contributed to these profits. Therefore this study will seek to precisely answer the question: What is the effect of foreign exchange rate volatility on profitability of insurance industry in Kenya?

### **1.3 Objective of Study**

To examine the effects of foreign exchange rate volatility on profitability of insurance industry in Kenya.

### **1.4 Value of Study**

This study will be beneficial to insurance company managers and forex dealers as it will help them better recognize the effects of foreign exchange rate volatility on their companies' performance. This will help them take the necessary actions to mitigate against the adverse effects of exchange rates on profitability, that is, to manage foreign exchange losses and profits brought about by foreign exchange rate volatility.

This research provides policy makers of insurance companies like the IRA and the government of Kenya with new evidence pertaining to the relationship between foreign exchange rate volatility and profitability. This study will help them in coming up with policies which will manage exchange rates volatility and spur growth and profitability in this sector.

On prospective investors in the insurance industry, the study will be helpful in making investment decisions as it will shed light on the effects of foreign exchange rate volatility on profitability of the intended firm. It will also help the existing investors take advantage of the investment opportunities available when these exchange rates fluctuate.

Lastly, this study is a useful guide for carrying out further studies in the area and future development of theories by researchers and academicians in the field of finance, economics and banking. This research will contribute to the existing knowledge on the relationship between exchange rate volatility.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

This chapter will discuss theories and empirical studies both internationally and locally on exchange rate and profitability.

#### **2.2 Theoretical Review**

This section will portray different theoretical foundations of exchange rate and profitability. This study is grounded on Purchasing Power Parity theory, Balance of payment Theory and Expectations theory of forward exchange rates

##### **2.2.1 Purchasing Power Parity Theory**

Cassel proposed the Purchasing Power of Parity (PPP) theory in the year 1921 which states that in an ideal efficient market, identical goods should have one price. That is to say, that a bundle of goods in one country should cost the same in another country after exchange rates are taken into account. The foreign exchange market is considered to be in equilibrium when the deposits of all the currencies provide equal rate of return that was expected. The PPP theorem propounds that under a floating exchange regime, a relative change in purchasing power parity for any pair of currency calculated as a price ratio of traded goods would tend to be approximated by a change in the equilibrium rate of exchange between these two currencies. This means that, when exchange rates are of a fluctuating nature, the rate of exchange between two currencies in the long run will be fixed by their respective purchasing powers in their own nations (Cassel, 1924).

PPP is both a theory about exchange rate and also a tool to make more accurate comparisons of data between countries. This theory is probably more important in its

comparison role than the determination role. When it is a tool for across the border comparisons of incomes and wages it means it's helpful as the data is applicable in real world, for example, by the World Bank in presenting international data. On the other hand, it performs poorly as an exchange rate determinant because it depends on several assumptions that are not likely to hold in the real world. For example, Purchasing power parity theory assumes the absence of the trade barriers and transactions cost which in reality is impossible, as each economy has a set of trading conditions.

### **2.2.2 Balance of Payment Theory of Exchange Rates**

The balance of payments theory of exchange rate also known as “The Demand and Supply Theory of Exchange Rate” holds that the price of foreign money in terms of domestic money is determined by the free forces of demand and supply on the foreign exchange market. According to the theory, a deficit in the balance of payments leads to fall or devaluation in the rate of exchange, while a surplus in the balance of payments strengthens the foreign exchange reserves, causing an appreciation in the price of domestic currency in terms of foreign currency. The balance of payments theory simply embraces that the exchange rates are determined by the balance of payments, implying demand and supply positions of foreign exchange in the country concerned.

If the balance of payments of a country is unfavorable, the rate of foreign exchange declines. On the other hand, if the balance of payments is favorable, the rate of exchange will go up. The domestic currency can purchase more amounts of foreign currencies. When the exchange rate of a country falls below the equilibrium exchange rate, it is a case of adverse balance of payments. The exports increase and eventually the adverse balance of payment is eliminated. The equilibrium rate is restored. When the balance of payments of a country is favorable, the exchange rate rises above the

equilibrium exchange rate resulting in the decline of exports (Kanamori and Zhao, 2006).

The theory has some advantages in that it is compatible with the general theory of value. Furthermore, it shows the determination of the equilibrium rate of exchange under the span of the general equilibrium theory. Secondly, the theory stresses the fact that there are many predominant forces besides merchandise items included in the balance of payments which influence the supply of and demand for foreign exchange which in turn determine the rate of exchange. Thus, the theory is more realistic in that the domestic price of foreign money is seen as a function of many significant variables, not just the purchasing power expressing general price levels. The theory has, however, the following limitations, for example, it assumes perfect competition and non-intervention of the government in the foreign exchange market which is not very realistic in the present day of exchange controls, it does not explain what determines the internal value of a currency therefore one has to resort to purchasing power parity theory, it unrealistically assumes the balance of payments to be at a fixed quantity, there is no causal connection between the rate of exchange and the internal price level, and the theory is indeterminate at a time.

### **2.2.3 Expectations Theory of Forward Exchange Rates**

The Expectations theory argues that the expected spot foreign exchange rates at a future date in time is the same as current forward exchange rate for the same maturity. That is to say that forward rates quoted in the market for foreign exchange are useful in forecasting future exchange rates. In particular, the Expectations theory argues that forward rates are exactly equal to the spot exchange rate that is expected on the delivery date specified in the forward contract say 30, 60, 90 or 180 days in the future.

Thus, the Expectations theory implies that the forward exchange rates quoted in the foreign exchange market are unbiased forecasts of the exchange rates are the expected in the future (Muth, 1961).

While the exact economic circumstances under which the Expectations theory holds are complex to describe, empirical evidence suggests that the Expectations theory is a fairly good description of the true relation between forward exchange rates and expected future exchange rates. One major disadvantage of the theory is that it is rare to achieve the perfect results of this theory where today's predicted rates over different maturities exactly match future realized spot rates. Also, any mistake in future estimation today may lead to wrong conclusions about the future which could lead to losses.

## **2.3 Factors Affecting Profitability**

Profitability of firms is influenced several factors both micro and macro (internal and external variables). With empirical proof, selected variables will be discussed and how they affect profitability.

### **2.3.1 Exchange Rates**

Exchange rate is the value of one currency in relation to another. According to Mulwa (2013), the exposure to foreign exchange rate fluctuations usually manifests itself as an impact on first the value of net monetary assets with fixed nominal payoffs' and secondly the value of real assets held by the firm. Robustness tests by Demir (2013), suggested that exchange rate volatility has a significant growth reducing effect on manufacturing firms. In addition. Odili(2015), recommends the pursuance of sound exchange rate management system and policies that will lead to increase in domestic production.

### **2.3.2 Interest Rates**

Interest rate is a percentage of the principal amount borrowed, charged by the lender, which is paid by the borrower over the total term of the credit. According to Mutwiri (2014), Interest rates, inflation and exchange rates are all highly correlated. By manipulating interest rates, Central Banks exert influence over both inflation and exchange rates, and changing interest rates impact inflation and currency values. Higher interest rates offer lenders in an economy a higher profitability relative to other countries. Increasing interest rate and capital flow volatility are found to raise inflation uncertainty and encourage financial investments while discouraging fixed investments by real sector firms (Felix, 1998).

### **2.3.3 Inflation**

Inflation is the rate at which the general price level of for commodities is rising and consequently, the purchasing power is falling. A country with a constantly lower inflation rate exhibits an escalating currency value. This is because its purchasing power increases relative to other currencies, leading to increased economic growth (Mishkin, 2008). In their study, Chen and Haung, (2001) confirmed that a relationship exists among macroeconomic factors like inflation and premium receipts in the life of insurance industry.

### **2.3.4 Demographic Change**

Demographic change does not only imply a decrease or increase in the population size but also an ageing population. For a long time, Kenya has experienced a growing population. A World Bank 2015 statistics show that the Kenyan population as at 31<sup>st</sup> December, 2014 was 45.6 million compared to 8.1million in the year 1960. Businesses are very sensitive to changes in the size and composition of the local

customer base. Demographic change with an increasing and ageing population in Kenya has changed the business perspective, especially strategies of firms aimed mostly at gaining customers in a growing market. Firms generally experience a competition for a shrinking local population, which can be a serious threat to the profitability of the financial sector (Berlemann & Thum, 2010).

### **2.3.5 Gross Domestic Product**

Gross Domestic Product is an indicator used to gauge the size and health of a country's economy in terms of the total dollar value of all goods and services produced over a specific time period. Doumplos and Gaganis, (2012) estimated the performance of non-life insurers and found that macroeconomic indicators such as gross domestic product (GDP) growth, inflation and income inequality influence the profitability of firms.

## **2.4 Empirical Review**

The empirical review discusses the studies done both internationally and locally in the recent past in relation to exchange rate and profitability.

### **2.4.1 International Evidence**

Demir (2013), explores the effects of exchange rate volatility on the growth performances of domestic versus foreign, and publicly traded versus non-traded private manufacturing firms in a major developing country, Turkey. Employing a matched employer-employee dataset, this paper seeks to answer the question: Does Access to Foreign or Domestic Equity Markets Matter? The empirical results using dynamic panel data estimation techniques and comprehensive robustness tests suggested that exchange rate volatility has a significant growth reducing effect on manufacturing firms. However, having access to foreign, and to a lesser degree,



domestic equity markets is found to reduce these negative effects at significant levels. These findings continue to hold after controlling for firm heterogeneity due to differences in export orientation, external indebtedness, profitability, productivity, size, industrial characteristics, and time-variant institutional changes.

Héricourt and Nedoncelle (2015), examined how firm-level export performance is affected by Real Exchange Rate (RER) volatility and investigated the way this effect is shaped by firm size and more specifically, the number of destinations. Their analysis relied on a French firm-level database that combined the statement of financial position and product-destination-specific export information over the period 1995-2009. Findings showed that export performance is affected by both bilateral and multilateral real exchange rate volatility. Further, they find that firm size and the number of destinations seem to exacerbate the impacts of both bilateral and multilateral RER volatilities on export performance: firms tend to reallocate exports away from destinations characterized by higher, relative RER volatility, and are even more prone to do so when the scope of possible reallocations is extended. Results suggest that more destination diversified firms are better able to handle exchange rate risks, with significant implications for exports at the macro level.

Khosaet.al, (2015), analyzed the effect of exchange rate volatility on emerging market exports. The study used a sample of nine emerging countries from 1995 to 2010. Panel data analysis was conducted. Volatility was measured by Generalized Autoregressive Conditional Heteroscedasticity and conventional standard deviation in order to determine whether the relationship between exchange rate volatility and exports. The results showed that exchange rate volatility had a significant negative effect on the performance of exports, regardless of the measure of volatility used. It

was also evident that a long-run relationship did exist. The study concluded that the policy mix that will reduce exchange rate volatility such as managed exchange rate regimes and relatively competitive exchange rates were essential for emerging markets in order to sustain their exports performance.

Mohammed and Ahmed (2015), examines the impact of exchange rate volatility, real GDP of China, and real exchange rates on the bilateral exports of ASEAN member countries to China using the generalized method of moments. This study employs annual panel data of original Association of South East Asian Nations (ASEAN) five member nations' exports to China from 1992 to 2011. The sources of data include the Direction of Trade Statistics (DOTs) of International Monetary Fund, ASEAN statistics and World Development Indicators (WDI) by the World Bank. The dependent variable is the exports of each original 5-ASEAN member countries to China. The results showed that all the coefficients of these variables had the expected signs and are statistically significant. The findings suggested that the ASEAN member nations should maintain the stability of their bilateral exchange rates with Chinese Yuan as a means to boost their exports to China.

Odili (2015), investigated the impact of exchange rate volatility and stock market performance on the inflow of foreign direct investment to Nigeria. Time series data was used from the year 1980 to 2013. The study employed the ordinary least square technique and error correction mechanism in its estimations. The result revealed that exchange rate volatility has negative and significant effect on the inflow of foreign direct investment to Nigeria both in the long run and in the short run. It further revealed that market capitalization, proxy for stock market performance was positively signed and statistically significant. The study recommends the pursuance of

sound exchange rate management system and policies that will lead to increase in domestic production of export commodities. The study further recommends deepening of the capital market to provide the needed funds for investment and avoidance of dollarization of the economy to reduce the stress on foreign exchange earnings.

#### **2.4.2 Local Evidence**

Mukopi (2013), set out to determine the relationship between interest rates and foreign exchange rates in Kenya. The study used data from June 2006 to June 2013. This was secondary data collected from the Central Bank of Kenya website. Regression analysis was used to analyze the data. Further, the t-statistic and F significance ANOVA were used to test the hypothesis. The research findings revealed an insignificant positive relationship between interest rate and foreign exchange rate. This was however contrary to the general understanding that interest rate and foreign exchange rates have indirect relationship.

Mulwa (2013), sought to investigate the effect of exchange rate volatility on inflation rates in Kenya. The study used descriptive research design covering a period between 2003 and 2013. Secondary data was collected from Central Bank of Kenya. Average USA Dollar exchange rates and inflation rates for the years of study were used. The analysis used Auto Regressive Integrated Moving Average (ARIMA) models describe the current behavior of variables in terms of linear relationships with their past values. A regression model was applied to determine the relative relationship between exchange rate volatility and Inflation rate. The test indicated that there was moderate relationship between foreign exchange rates volatility and inflation rates. On carrying out an Analysis of Variance tests (ANOVA) and at 95% confidence level, it was

found out that there was an insignificant relationship between exchange rates volatility and inflation rates.

Mwanza (2014), examined the effect of foreign exchange rates on performance of Nairobi Securities Exchange NSE. The period of study was January 2011 to December 2013. The study used a multiple regression model of NSE 20share index dependent on three variables, which were; foreign exchange rate, inflation and interest rate. The main source of data was NSE and the Central Bank of Kenya statistics. The regression results showed that foreign exchange rates, inflation and interest rates explain 72.9% changes in stock prices. Foreign exchange rate has insignificant relationship. So it does not have a significant effect on the performance of the NSE.

Kituku (2014), determined the effect of foreign exchange rate fluctuation on the financial performance of motor vehicle firms in Kenya. Secondary data was collected from the Companies Financial Report. Regression analysis was done for a 10 year period of study from year 2003 to 2012. The study revealed that there was negative relationship between translation exposure using sales, translation exposure using raw material cost, transaction exposure using accounts receivable, transaction exposure using accounts payable, total machinery and equipment, economic exposure and firm financial performance. This was an indication that foreign exchange rate fluctuation significant negative effect on firms' financial performance. The study concluded that foreign exchange rate fluctuation negatively affect financial performance of motor vehicle firms in Kenya. The study recommended that companies in motor vehicle industry should apply various hedging techniques which are most effective in order to reduce the risk by foreign exchange rate fluctuation.

Onyango (2014), aimed at identifying the effect of exchange rate volatility on economic growth in Kenya. Using secondary time series data for the period 1980 to 2012, the study employed OLS estimation method to identify the effect of exchange rate volatility on GDP growth rate. Augmented Dickey-Fuller test (ADF) was used in unit root testing to determine whether the series was stationary or non-stationary and establish their order of integration. The study found that exchange rate volatility positively impacts on GDP growth but is not significant in affecting GDP growth rate. The study recommended that policy makers should find equilibrium on the devaluation and appreciation of exchange rate since devaluation of domestic currency provides important opportunity for economic growth, it promotes exports capacity and reduces volume of imports.

## **2.5 Summary of Literature Review**

As defined in the literature, exchange rate volatility entails random movements of the exchange rate. These unpredictable movement increases both the operational environment and profit uncertainties. This call for industries to apply various hedging techniques which are most effective in order to mitigate the risk brought about by foreign exchange rate fluctuation. A study by Khosa et al., (2015), recommends that the policy mix that will reduce exchange rate volatility such as managed exchange rate regimes and relatively competitive exchange rates are essential for emerging markets in order to sustain their exports performance and increased profitability of firms which consequently leads to economic growth.

The debate on exchange rate volatility and profitability is still having an underprovided empirical deduction yet it is a topic of unlimited importance. According to Onyango (2014), exchange rate stability one of the key elements that

promote total investment, price stability and stable economic growth because exchange rate volatility affects profitability and investment decisions. Added to this, there are fewer studies in the literature review which studied the effect of exchange rate on profitability or have a consistent conclusion. In fact, none of them focused on the insurance companies. A compelling conclusion on the nexus of exchange rate and profitability cannot be drawn through a simple perfunctory overview of the data. Econometric analysis is therefore necessary in order to make empirical assessment, precisely on the effect of exchange rate volatility on profitability of insurance companies.

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

This chapter explores in detail how research for the study was conducted. This chapter explained the different methods, strategies and procedures to be used in conducting the research. Specifically, it entailed research design, study population, data collection techniques, sampling method and sample size, analytical model and significance test

#### **3.2 Research Design**

Robson (2012) defines research design as the plan and structure through which the answers to research questions are obtained. A research plan is the general scheme of the research. Hakim (2000) also describes research design as the general plan employed in data collection necessary for the fulfillment of research objectives. A descriptive design was used in this study. Saunders and Thornhill (2003), define a descriptive research as one that precisely describes profile of the target population. This design is advantageous since it allows the researcher to cost-effectively collect volumes of data from considerable population.

Descriptive statistics is based on summarizing data in a way that enables a particular pattern be observed from the data (Asadoorian & Kantarelis, 2005). Its primary purpose is to describe data as collected from the population. It enables a meaningful way of data presentation for easy interpretation. Descriptive research design can be used to describe the relationships between various variables. In their researches, Mulwa and Okoth (2011) successfully used descriptive research design and so its applicability in this study. Descriptive statistics tools include measures of central tendency and measures of spread. Moreover, if the data collected is not in numerical

form, then it has to be analyzed qualitatively. The validity and reliability of the information produced from the analysis are crucial (Golafshani, 2003).

### **3.3 Population**

Mugenda and Mugenda (2003) define research population as group of objects from which the information is collected to enable researcher fulfill the research objectives. They narrow the definition by stating that the research population must have some shared characteristics. The population for this study was all the 49 insurance companies in Kenya as at December 2014. (See Appendix I).

### **3.4 Data Collection**

Kothari (2004) defines data collection as the process of gathering empirical evidence to gain fresh insight into the situation and to answer research questions. In this research, secondary data will be used. The data was obtained from Central Bank of Kenya (CBK) and National Bureau of Statistics (KNBS). Annual reports of the insurance companies were also analyzed to find the correlation between the variables. Mugenda and Mugenda define secondary data as information already collected by other sources or researchers. This research covered five years from 2009 to 2013 on the Insurance companies operating in Kenya. After the collection of the data, a precise and elaborate analysis was undertaken to ensure that the data collected was translated to results and further analyzed to get the best out of that data.

### **3.5 Data Analysis**

Mugenda and Mugenda (2003) define data analysis as the process through which the collected data is sorted, classified and coded to produce units of measure for analysis. It involves summarizing grouping data based on the study theme and objectives to be fulfilled. Linear regression model was used for analysis and the study analyzed data



using the Statistical Package for Social Sciences (SPSS) version 21. The data analysis involved the use of tables and charts to make inferences among different variables using the Excel software. Linear regression was used since it allows for concurrent analysis of the relationships among more than one variable.

### **3.5.1 Analytical Model**

There were five independent variables against one dependent variable used in this study. The independent variables were Foreign exchange rate volatility, Interest Rates, Inflation (CPI) index, GDP annual growth rate and demographic changes in Kenya. The dependent variable was Profitability of the insurance companies in Kenya.

It was as follows:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \varepsilon$$

Where:

$Y =$  Profitability which was measured as (ROA) using the ratio of net profit to total assets.

$X_1 =$  Foreign exchange rate measured as the standard deviation of the exchange rate of Kenya Shilling price to U.S. dollar. The exchange rate values were derived from Central Bank of Kenya

$X_2 =$  Inflation was calculated as the percentage change in Consumer Price Index (CPI) on a year-on year basis and data was obtained from the World Bank annual analysis.

$X_3 =$  GDP annual growth in % ratio (GDP).

$X_4$  = Demographic Change which was measured as the annual growth rate of productive workforce (age 15 to 64 years) Population in Kenya is reported by the Kenya National Bureau of Statistics.

$X_5$  = Interest Rates which was obtained from the World Bank annual analysis.

$\alpha$  = Regression constant

$\varepsilon$  = Error term normally distributed about the mean of zero.

$\beta_1\beta_2\ldots\beta_5$  were the coefficients of the variation to determine the volatility of each variable to profitability the in regression model.

### **3.5.2 Test of Significance**

Robinson (2002), defines research validity as the extent to which research results represent actual trends in the study population. The use of reliable and accurate data from credible sources like CBK and KNBS will ensure that consistent and reliable data is obtained for analysis.

The study used statistical significance of 95% confidential level. This accurately affirmed whether the gathered information was an exact representation of the study population. It employed analysis of variance ANOVA to determine 95% confidential level. The test falling within the 5% confident level, meant the chosen data was a true representation of the population.

## **CHAPTER FOUR**

### **DATA ANALYSIS, RESULTS AND DISCUSSION**

#### **4.1 Introduction**

This chapter discusses the interpretation and presentation of the findings obtained from the field. Descriptive and inferential statistics was used to discuss the findings of the study. The study targeted all the 49 insurance companies in Kenya. The study used linear regression model models, descriptive statistics and correlation analysis. Correlation analysis shows the strength of the relationships between the variables used in the model.

#### **4.2 Response Rate**

The researcher studied the insurance industry in Kenya represented by insurance companies and data was obtained from 47 insurance companies for a period of 5 years making a response rate of 95.92.00% which is excellent for analytical inference (Mugenda and Mugenda, 2003).

**Table 4.1: Response Rate**

<b>Response Rate</b>	<b>Frequency</b>	<b>Percentage</b>
Response	47	95.92.00%
Unresponse	2	4.08.00%
Total	49	100.00%

**Source: Resource findings**

#### **4.3 Data Analysis and Findings**

Descriptive statistics, inferential analysis, graphical techniques were used to analyze the data and the findings were presented in table and graphical form. Descriptive statistics analyzed mean, minimum, maximum and the standard deviation of the

variables while inferential statistics looked at the regression analysis, model summary and the analysis of variance. Correlation analysis was also used to assess the strength of the relationship between the dependent and each explanatory variable.

#### 4.4 Descriptive Statistics

The descriptive statistics and the distribution of the variables were presented in Table 4.2 presents. The mean value, minimum, maximum and the standard deviation of Return on assets, exchange rate volatility, GDP growth rate, population, inflation and interest rate were analyzed and the result presented in table 4.2 below.

**Table 4.2: Descriptive Statistics**

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
ROA	235	-23.852	48.182	4.60520	6.961492
Exchange rate volatility	235	.260	13.600	8.69800	4.816798
GDP growth (annual %)	235	2.740	5.800	4.80000	1.124465
Population ages 15-64 (% of total)	235	54.770	55.010	54.89000	.085270
Inflation, consumer prices (annual %)	235	3.960	9.420	7.35400	2.136870
Interest rate	235	6.530	15.430	9.39400	3.120838
Valid N (listwise)	235				

**Source: Research Findings**

On the average (ROA) had a mean of 4.60520 with standard deviation of 6.961492 with a maximum and minimum values of 48.182 and -23.852 respectively. GDP had a mean of 4.80000 between 2009 and 2013 with a standard deviation of 1.124465. On the average, inflation rate recorded a mean of 7.354 with standard deviation of 2.136870. Annual growth rate of productive workforce measured as a percentage total population (15-64 of total population) had a mean of 54.89 with a standard deviation of .085270. Kenya also experienced high levels of inflation in the study period as indicated by a maximum overall annual inflation rate of 9.420 percent with a

minimum inflation rate reaching 3.960 percent. Interest rate registered an average rate of 9.394% with a standard deviation of 3.120838.

## **4.5 Inferential Statistics**

The inferential statistics involved the use of multiple linear regression analysis to determine the significance of the coefficients of the explanatory variables in explaining the variation in dependent variables. Model summary was used to determine the proportion of the dependent variable explained by the explanatory variables while analysis of variance was used to determine the fitness of the model used in the analysis. Correlation analysis established the direction of the relationship between the dependent and independent variables.

### **4.5.1 Correlation Analysis**

The Pearson product-moment correlation coefficient is a measure of the strength of a linear association between two variables and is denoted by  $r$ . The Pearson correlation coefficient,  $r$ , can take a range of values from +1 to -1. A value of 0 indicates that there is no association between the two variables. A value greater than 0 indicates a positive association, that is, as the value of one variable increases so does the value of the other variable. A value less than 0 indicates a negative association, that is, as the value of one variable increases the value of the other variable decreases. Table 4.3 below gives a summary of the correlation between the dependent variables and the explanatory variables. The relationship between foreign exchange rate volatility and ROA is weak and negative ( $R = -0.045$ ). Growth rate of productivity of workforce has a weak positive association with the ROA of the insurance firms ( $R = 0.093$ ). Interest rate has a weak and positive relationship with ROA of insurance firms ( $R = 0.031$ ).

The relationship between inflation rate and ROA is weak and negative ( $R=-0.118$ ).

Population ages of the firms show weak positive relationship with ROA ( $R=0.088$ ).

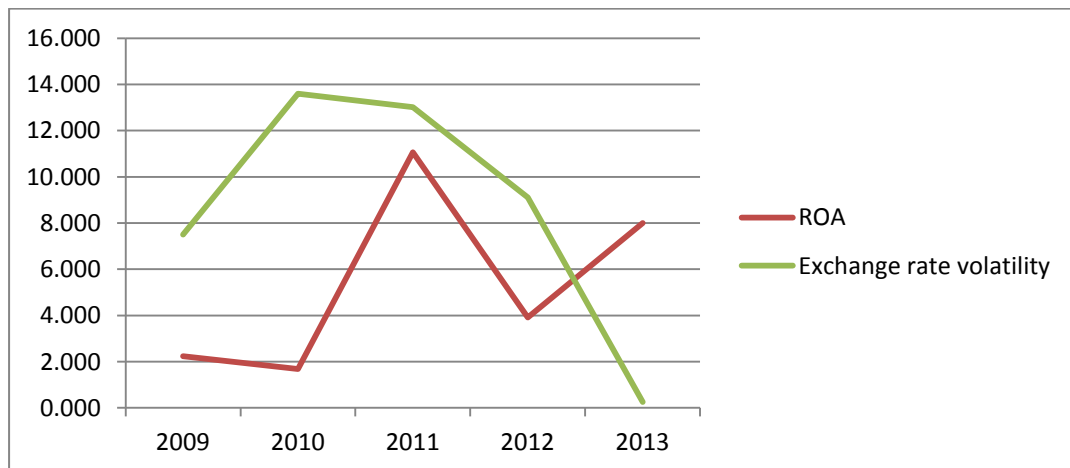
**Table 4.3: Correlation Analysis**

		ROA	Exchange rate volatility	GDP growth (annual %)	Population ages 15-64 (% of total)	Inflation, consumer prices (annual %)	Interest rate
ROA	Pearson Correlation	1					
Exchange rate volatility	Pearson Correlation	-0.045	1				
GDP growth (annual %)	Pearson Correlation	0.093	.329**	1			
Population ages 15-64 (% of total)	Pearson Correlation	0.088	-.521**	.499**	1		
Inflation, consumer prices (annual %)	Pearson Correlation	-0.118	-0.011	-.585**	-0.067	1	
Interest rate	Pearson Correlation	0.031	-0.109	-0.1	.401**	.580**	1

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

Figure 4.1 below shows that ROA and exchange rate volatility fluctuates up and down between 2009 and 2013.

**Figure 4.2 Relationship between ROA and Foreign Exchange Rate Volatility (2009-2013)**



## 4.5.2 Regression Analysis

Regression analysis looked at the model summary, analysis of variance and regression coefficients. The estimated model as explained in chapter three is given by:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \varepsilon$$

### 4.5.2.1 Model Summary

Determination coefficient ( $R^2$ ) was carried out to determine the proportion of the total variation in dependent variable that is attributed to the changes in the explanatory variables.

**Table 4.4 Model Summary**

model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.173 <sup>a</sup>	.030	.013	6.916111

a. Predictors: (Constant), Interest rate, GDP growth (annual %), Exchange rate volatility, Inflation, consumer prices (annual %)

The study established  $R^2$  of 0.030 which illustrates that 3.0% of the total variation in changes in return on assets of the insurance firms is attributed to the changes in independent variables (Interest rate, Population ages 15-64 (% of total), GDP growth (annual %), Exchange rate volatility, Inflation, consumer prices (annual %))

### 4.5.2.2 Analysis of Variance

The study used ANOVA statistics to establish the significance of the relationship between value of the ROA of the insurance firms and the independent variables. The regression model is not significant given the level of significance 0.136 which is greater than 0.05; therefore the model is not fit for estimation.

**Table 4.5 Analysis of Variance**

ANOVA <sup>a</sup>					
Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	338.699	4	84.675	1.770	.136 <sup>b</sup>
Residual	11001.495	230	47.833		
Total	11340.194	234			

a. Dependent Variable: ROA

b. Predictors: (Constant), Interest rate, GDP growth (annual %), Exchange rate volatility, Inflation, consumer prices (annual %)

#### 4.5.2.3 Model Coefficients

Table 4.6 shows the regression coefficients of independent variables that explains the changes in ROA.

**Table 4.3: Regression Coefficients**

Coefficients <sup>a</sup>					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	6.834	4.031		1.695	.091
Exchange rate volatility	-.045	.108	-.031	-.422	.674
GDP growth (annual %)	-.004	.606	-.001	-.007	.994
Inflation, consumer prices (annual %)	-.661	.369	-.203	-1.791	.075
Interest rate	.325	.201	.146	1.617	.107

a. Dependent Variable: ROA

It is important to note that the analysis of variance dropped one variable namely Population ages 15-64 (% of total). This only means that the variable is insignificant.



## 4.6 Interpretation of the Findings

The regression results in table 4.6 above show that each of the predicted parameters in relation to the independent factors was not significant at 5% level of significance except. Foreign exchange rate volatility negatively impacts on the ROA of the insurance firm. This implies that an increase in foreign exchange rate volatility will lead to 0.031 unit decrease in ROA of the insurance firms. However, at 5 % level of significance, exchange rate is not statistically significant ( $t = -0.422$ ,  $p\text{-value} = 0.674$  which is greater than  $\alpha = (0.05)$ ). GDP growth rate has a negative coefficient which implies that one unit increase in GDP growth rate will result to 0.001 unit decrease in ROA for the insurance firms though the effect is not statistically significant at 5% level of significance ( $t = -0.007$ ,  $p\text{-value} = 0.994$ ,  $p\text{-value}$  greater than 0.05). The regression table also shows that ( $t = -1.791$ ,  $p\text{-value}=0.075$  which is greater than  $\alpha=0.05$ ) which indicates that inflation is not statistically significant at 5% level of significance. Therefore a unit increase in inflation will result to 0.203 unit increase in ROA of the insurance firms. Finally, interest rate has a positive effect on the ROA of the insurance firms though the effect is insignificant at 5% level of significance.

## **CHAPTER FIVE**

### **SUMMARY, CONCLUSIONS AND RECOMMENDATION**

#### **5.1 Introduction**

This chapter presents the summary of finds, conclusion, recommendations and suggestions for further research derived from the findings. The chapter also presents the limitations that were encountered with suggestions for further research.

#### **5.2 Summary of the Findings**

Statistical analysis in chapter four above provided various results which can be summarized in terms of descriptive statistics and inferential statistics. On the average (ROA) had a mean of 4.60520 with standard deviation of 6.961492 with a maximum and minimum values of 48.182 and -23.852 respectively. GDP had a mean of 4.80000 between 2009 and 2013 with a standard deviation of 1.124465. On the average, inflation rate recorded a mean of 7.354 % percent with standard deviation of 2.136870. Annual growth rate of productive workforce measured as a percentage total population (15-64 of total population) had a mean of 54.89 per cent with a standard deviation of .085270. Kenya also experienced high levels of inflation in the study period as indicated by a maximum overall annual inflation rate of 9.420percent with a minimum inflation rate reaching 3.960 percent. Interest rate registered an average rate of 9.394% with a standard deviation of 3.120838

The regression results showed that all the predicted parameters in relation to the independent factors was not significant at 5% level of significance except. Foreign exchange rate volatility negatively impacts on the ROA of the insurance firm. However, at 5% level of significance, exchange rate is not statistically significant. ( $t = -0.422$ ,  $p\text{-value} = 0.674$  which is greater than  $\alpha = 0.05$ ). GDP growth rate had a

negative coefficient which implied that one unit increase in GDP growth rate will result to 0.001 unit decrease in ROA for the insurance firms though the effect is not statistically significant at 5% level of significance ( $t = -0.007$ ,  $p\text{-value} = 0.994$ ,  $p\text{-value}$  greater than 0.05). Inflation is not statistically significant at 5% level of significance. Finally, interest rate has a positive effect on the ROA of the insurance firms though the effect is insignificant at 5% level of significance

### **5.3 Conclusions**

The objective of the study was to establish the effects of foreign exchange rate volatility on profitability of insurance industry in Kenya. The findings show that Foreign exchange rate volatility negatively impacts the ROA of the insurance industry. GDP growth rate and inflation also negatively affects ROA of the insurance firms. However, annual growth rate of productive workforce (age 15 to 64 years) was excluded by ANOVA showing it's highly insignificant in determining the profitability of insurance firms profitability. Finally, interest rate has a positive effect on the ROA of the insurance firms though the effect is insignificant at 5% level of significance. The study concludes that exchange rate volatility, GDP growth rate and inflation and interest rates have insignificant effect on the profitability of insurance industry in Kenya. This implies that macroeconomic environment is responsible but only to a small extent in determining the profitability of the insurance companies in Kenya.

### **5.4 Policy Recommendations**

The regulatory authorities of macroeconomic variables should regulate them in such a way that they lead the economy towards the growth and also lead to favor of insurance companies good profitability. Interest rates for instant, are seen to positively affect ROA while inflation negatively ROA of the insurance industry. This study also

established that 3.0% of the total variation in changes in return on assets (ROA) of the insurance firms is attributed to the changes in independent variables

Management of insurance companies should come up with profit risk management policies that will guide them in maintaining or achieving a good profitability even when macroeconomic variables fluctuate unfavorably. As the findings illustrated, profitability of insurance in Kenya is dependent on the macroeconomic environment.

The Insurance Regulatory Authority (IRA) as the insurance companies' regulator should ensure every insurance company has strategies formulated to react to various changes in the macro environment to avoid losses.

### **5.5 Limitations of the Study**

This study could have been limited by secondary data. Quantitative information was obtained from the annual reports, electronic journals and websites belonging to the target insurance companies, the Central Bank of Kenya, World Bank, Association of Kenya Insurers (AKI) and Insurance regulatory Authority (IRA), to help evaluate the effect of general foreign exchange rate volatility on profitability of insurance industry in Kenya. Credibility, accuracy, validity and dependability of the data are matters of concern. Secondary data may be subject to errors, being out of date and even creative accounting from insurance company management.

Time was limited given that there was a set deadline to complete the research project. Data collection involved obtaining and reading relevant materials, visiting the various insurance companies for the unavailable information. Data analysis as well needed time. Future researchers will need to allocate more time to the project work.

Completing the entire research was costly. It involved internet fees, printing and binding costs, transport fees to various insurance companies to gather data, among others. Future researchers will need to prepare financially for an empirical study.

A five year period of study from 2009-2013 is not fully adequate to make conclusions about the effect of foreign exchange rate volatility on profitability of the insurance industry. A longer period with could have yielded different and more reliable results.

## **5.6 Suggestions for Further Research**

Forthcoming studies on the profitability of insurance industry in Kenya should incorporate more macro-economic variables. This study used only five elements as independent variables. More variables will help the stakeholders of insurance companies to identify more determinants of profitability and how their fluctuations will affect the performance so that appropriate measures will be put forward for improved performance in the industry.

Equivalent studies can be done on other firms in and outside the finance sector investigating the effect of foreign exchange rate volatility on profitability of those firms. This can help identify how changes in the macro environment will react to these firms performance.

The researcher recommends that further studies on the effect of foreign exchange rate volatility on profitability of insurance industry in Kenya be done using a longer period which can reveal more sufficient and conclusive information about the relationship. This study used five years, a period of study which though helpful, may not quite be adequate to make incontestable conclusions.

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## APPENDICES

### APPENDIX I: LIST OF LICENSED INSURANCE COMPANIES IN KENYA

- |   |  |
|---|--|
| 1. AAR Insurance Kenya Limited                | 26. Kenya Reinsurance Corporation Limited        |
| 2. APA Insurance Limited                      | 27. Liberty Life Assurance Ltd                   |
| 3. Africa Merchant Assurance Company Limited  | 28. Madison Insurance Company Kenya Ltd          |
| 4. Apollo Life Assurance Limited              | 29. Mayfair Insurance Company Limited            |
| 5. AIG Kenya Insurance Company Ltd            | 30. Mercantile Insurance Company Limited         |
| 6. British-American Insurance Company (K) Ltd | 31. Metropolitan Life Kenya Limited              |
| 7. Cannon Assurance Limited                   | 32. Occidental Insurance Company Limited         |
| 8. CIC General Insurance Limited              | 33. Old Mutual Life Assurance Company Limited    |
| 9. CIC Life Assurance Limited                 | 34. Pacis Insurance Company Limited              |
| 10. Continental reinsurance limited           | 35. Pan Africa Life Assurance Limited            |
| 11. Corporate Insurance Company Limited       | 36. Phoenix of East Africa Assurance Company Ltd |
| 12. Direct line Assurance Company Ltd         | 37. Pioneer Assurance Company Limited            |
| 13. East Africa Reinsurance company ltd       | 38. REAL Insurance Company Limited               |
| 14. Fidelity Shield Insurance Company Limited | 39. Shield Assurance Company Limited             |
| 15. First Assurance Company Limited           | 40. Takaful Insurance of Africa                  |
| 16. GA Insurance Limited                      | 41. Tausi Assurance Company Limited              |
| 17. GA life assurance Ltd                     | 42. The Heritage Insurance Company Ltd           |
| 18. Gateway Insurance Company Limited         | 43. The Jubilee Insurance Company of Kenya Ltd   |
| 19. Geminia Insurance Company Limited         | 44. The Kenyan Alliance Insurance Co Ltd         |
| 20. ICEA LION General Insurance Company Ltd   | 45. The Monarch Insurance Company Ltd            |
| 21. ICEA LION Life Assurance Company Ltd      | 46. Trident Insurance Company Limited            |
| 22. Intra Africa Assurance Company Ltd        | 47. UAP Insurance Company Limited                |
| 23. Invesco Assurance Company Limited         | 48. UAP Life Assurance Limited                   |
| 24. Kenindia Assurance Company Limited        | 49. Xplico Insurance Company Limited             |
| 25. Kenya Orient Insurance Limited            |  |

**Source: IRA (2014)**

## APPENDIX II: ROA OF INSURANCE COMPANIES STUDIED

% ROA: (NET PROFIT/TOTAL ASSETS) X100(000')					
YEARS	2009	2010	2011	2012	2013
AAR Insurance Kenya Limited	2.235	1.683	11.065	3.911	7.996
Africa Merchant Assurance Company	4.443	4.336	2.326	2.914	2.354
AIG Kenya Insurance Company Limited	5.88	10.395	11.138	8.197	9.951
APA Insurance Limited	2.841	2.677	3.466	1.508	2.048
APA Life Assurance Limited	0	4.139	0.249	2.636	1.908
British American Insurance Co	1.554	3.454	2.317	2.56	2.76
Cannon Assurance Company Ltd	7.827	8.301	2.774	8.752	8.004
CFC Life Assurance Limited	-4.535	1.42	-2.137	1.83	0.657
CIC General Insurance Limited	1.7016	1.6692	2.5878	4.584	3.8868
CIC Life Assurance Limited	1.1344	1.1128	1.7252	3.056	2.5912
Continental Reinsurance Limited	2.836	2.782	4.313	7.64	6.478
Corporate Insurance Company	6.373	6.197	1.828	10.134	7.438
Directline Assurance Company Ltd	3.055	2.395	6.076	6.794	6.72
East Africa Reinsurance Company Ltd	4.573	48.182	2.695	6.027	5.928
Fidelity Shield Insurance Company	9.406	11.151	3.584	6.192	6.65
First Assurance Company	5.247	6.029	6.273	6.856	6.63
GA Life Assurance Limited	3.279	2.8446	2.0178	2.6454	3.6516
GA Insurance Limited	2.186	1.8964	1.3452	1.7636	2.4344
Gateway Insurance Company Ltd	2.235	1.683	32.065	0.911	13.996
Geminia Insurance Company	24.085	3.586	4.939	11.62	9.202
ICEA Lion General Insurance Co	3.5232	8.9544	5.985	4.476	5.1264
ICEA Lion Life Assurance Co Ltd	2.3488	5.9696	3.99	2.984	3.4176
Intra Africa Insurance Company Ltd	4.943	10.519	15.587	7.143	13.01
Invesco Assurance Company Ltd	0	2.415	6.958	1.097	0
Kenindia Assurance Company Ltd	2.272	10.472	-0.964	0.775	0.323
Kenya Orient Insurance Ltd	5.842	0.328	3.13	4.119	3.453
Kenya Reinsurance Corporation Ltd	0.731	8.75	6.714	7.804	7.242
Madison Insurance Company Ltd	1.858	10.36	0.954	2.296	2.686
Mayfair Insurance Company Ltd	0.218	2.194	0.207	1.347	0.467
Mercantile Insurance Company Ltd	4.35	7.328	4.113	7.837	7.495
Metropolitan Life Insurance	-19.646	-10.346	-23.852	-16.947	11.535
Occidental Insurance Company Ltd	9.22	3.639	4.928	5.875	4.807
Old Mutual Life Assurance Co Ltd	-6.559	0	4.579	-0.216	1.854
Pacis Insurance Company Ltd	4.257	7.469	3.349	4.464	4.815
Pan Africa Life Assurance Ltd	-0.541	1.177	-0.172	-0.027	-0.254
Phoenix of East Africa Insurance Co	3.172	7.73	1.192	3.769	3.858
Pioneer Assurance Co Ltd	4.307	5.547	2.918	3.167	3.893
Resolution Insurance Company Ltd	1.858	10.36	0.954	2.296	2.686
Tausi Insurance Company Ltd	0	0	-8.001	-1.824	-4.224
The Heritage Insurance Company Ltd	0.853	4.903	10.732	11.29	14.314
The Jubilee Insurance Company Ltd	3.4	15.168	3.089	2.546	3.308

The Kenyan Alliance Insurance Co Ltd	11.358	11.018	4.515	2.502	4.388
The Monarch Insurance Company	-0.141	11.486	5.405	13.26	13.728
Trident Insurance Company Ltd	15.06	3.195	2.08	21.789	16.216
UAP Insurance Company	2.55	4.785	12.608	12.44	15.297
UAP Life Assurance Limited	-5.125	-1.812	-11.496	0	-6.538
Xplico Insurance Company	0	0	1.615	38.771	28.7
<b>AVERAGE</b>	<b>2.90351</b>	<b>5.69238</b>	<b>3.44179</b>	<b>5.18221</b>	<b>5.80611</b>

**Source: Research Findings.**

### APPENDIX III: RAW DATA ON EXTERNAL VARIABLES

<b>YEARS</b>	<b>Exchange rate volatility</b>	<b>GDP growth (annual %)</b>	<b>Population ages 15-64 (% of total)</b>	<b>Inflation, consumer prices (annual %)</b>	<b>Interest rate</b>
<b>2009</b>	7.50	2.74	54.77	9.23	7.78
<b>2010</b>	13.60	5.76	54.82	3.96	6.53
<b>2011</b>	13.02	5.80	54.92	8.36	8.48
<b>2012</b>	9.11	4.60	54.93	9.42	15.43
<b>2013</b>	0.26	5.10	55.01	5.80	8.75

Source: <http://data.worldbank.org>