

**EFFECT OF CURRENCY DERIVATIVES ON VALUE OF  
NON-FINANCIAL CORPORATIONS IN KENYA**

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## DECLARATION

I hereby declare that this research project is my original work and has not been presented for award of a degree in this or any other university.

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This research project has been submitted for examination with my approval as the University supervisors.

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## **DEDICATION**

In memory of my late mum Alice and dad Benjamin.

You inspire us to do great things!

## **ACKNOWLEDGEMENTS**

I give all Glory and Honor to our Almighty God for enabling me to pursue and complete this Masters Degree. None of this would be possible without him.

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## **LIST OF ABBREVIATIONS**

**BIS** – Bank International Settlements

**EBIT** –Earnings before interest and tax

**EPS** – Earnings per share

**IMF** - International Monetary Fund

**LIBOR** –London Interbank Offered Rate

**NSE** –Nairobi Securities Exchange

**ROA**-Return on Assets

**ROE** –Return on Equity



## **ABSTRACT**

Despite the rise in the uptake of currency derivatives by corporations worldwide, there is no consistent view on the effect that currency derivative has on the value to a non financial firm. Current events in the non financial sector in Kenya have also questioned the effect of the use of currency derivative as a hedging alternative. The study was conducted to investigate the effect of currency derivatives on the value of non financial firms in Kenya. The descriptive study was conducted on 26 non financial firms in Kenya for the period between 2011 and 2015. A regression test was done to investigate the relationship between all the variables in the general model. The study results indicate that there is a negative relationship between tobins Q and use of currency derivatives which implies that a unit increase in the use of currency derivatives will result to -0.130 unit decrease in the value of firm and a unit increase in the proportion extent of use will result to a -0.42 decrease in the value of the firm. An F test was done to investigate the relationship between currency derivative and tobins Q and also to investigate the relationship between the extent of currency derivative use and firm value and the results of the F test were significant with significance level less than 0.05.

# CHAPTER ONE

## INTRODUCTION

### 1.1 Background of the study

Many businesses are engaged in the international markets arena at different levels. Some engage in activities (import-export). Others have deeper engagement in relation to investment and financing. International business involvements necessarily expose the business firms to exchange rate fluctuations which in turn affect cash flows and minimize shareholders wealth. After the failure of the Bretton woods fixed currency system in 1971 there was increased volatility leading to the Nixon shock, which led to a realization to effectively manage foreign currency volatility. In 1976 the IMF members changed existing laws to change to a floating rate and abandon gold as reserve assets (Kallianionis, 2013). Introduction of derivatives began as early as the 14<sup>th</sup> century in the form of loans combined with forward contracts. Options can be traced back to the 16<sup>th</sup> century. These agreements were however limited to private deals which were not structured and had minimal regulation. Use of derivatives increased in the mid 17<sup>th</sup> century after it became a major financial instrument in the London exchange alley. However after the 2008 financial crisis arising from heightened use of derivatives there has been controversy on the effectiveness of derivatives as a hedge instrument (Zuchi, 2010). According to the opinion of (Snyder, 2015) derivatives can be translated to legalized gambling with no real benefits.

BIS statistics indicate that global market activity for currency market derivatives has been on the decline since 1998 (Eduardo, 2011). The common thought that derivatives are effective to hedge against currency exchange losses, if not properly analyzed and understood can increase risk by having firms increase leverage, manipulate accounting rules and

misinforming investors and shareholders and in effect reducing financial supervision (Mobius, 2011). Derivatives can improve the value of a firm if used based on good judgment and understanding of the construction, price risk transfer. This is has not however been the case because of their complexity (Jobst & Sole', 2012). Derivatives are controversial to both academicians and practitioners because they seem to encourage speculative behavior that is closely related to gambling. This is because derivative users tend to report supernormal profits or abnormal losses not necessarily profit or loss earned from operations (Jobst & Sole', 2012).

Local and multinational firms all over the world are increasingly recognizing their exposure to foreign exchange rates and are increasing their uptake of derivative products in intentional risk management. The idea of identifying ,analyzing and hedging economic risks is being taken up by managers as a way to stabilize earnings and in effect enhancing the value of the firm (Kallberg & Parkinson, 1993). According to (Ketzi, Kriel, & Verhoef, 2013) managing financial risks for corporations in sub-Saharan Africa still remains a high priority (Poitras, 2002). This has necessitated the need for corporations locally to hedge against currency volatility using currency derivatives. In addition, several empirical studies on effectiveness of currency derivatives as in managing foreign currency exposure have mixed results (Peek & Rosengren, 1997). The primary objective of this study is to empirically investigate whether the use of derivatives by non –financial firms has been effective.

### **1.1.1 Currency Derivatives**

A derivative is defined by (McDonald, 2006) as a financial instrument that has value determined by the price of something else. He further explains the reason why we use derivatives: as a risk management tool for companies and other users, speculation for investment purposes, reduce transaction costs to effect a particular financial transaction, as a regulatory arbitrage, to reduce taxes and to meet accounting guidelines. The value of derivatives can be measured based on the underlying asset and commodity prices of other derivative products. E.g. Equity prices, stock prices, interest rates, loans, fixed income securities, foreign currency, commodity prices and other derivative products (Chui, Tittman, & Wei, 2010).

There are various derivatives commonly used to hedge foreign currency by Kenyan corporations: They include the forwards and futures, swaps, options and hybrids of the derivatives. Forward and future contracts are commitments to buy or sell currencies at predetermined price in a future rate. For futures there are requirements to pay a margin and daily settlements of profit or loss are recognized. Forwards are basically priced by multiplying spot rate by LIBOR rate to forecast forward rate. Forwards have no premium requirements (McDonald, 2006). Currency Swap is a hedging agreement where two parties exchange different currency payments based on some predetermined principle amount. Swaps have a maturity of one to 20 years. They are also more conversion efficient which means that in one transaction it can establish a more equivalent payoff to a number of forward contracts because forward contracts have to be negotiated separately (Eun & Resnick, 2009).

An option is whereby the owner is given the right but not the obligation to buy or sell a particular asset at a fixed price (strike or exercise price) within a period of time. (Fabozzi &

Modigliani, 2009) The swap is flexible such that the owner can take advantage of favorable market movements and at the same time avoid the worst case scenario (Clark, 2002) .Types of options include European, Bermudan, American, Path dependent and Asian (SwapskillsLLC, 2016).Hybrids product is a combination of different derivative products tailored together to minimize negative effects of the various derivatives and maximize on the hedge cover. Tailored hybrid products include forward participation contracts (Hodges, 1990), Contract for difference which is a hybrid for options, stock and forex markets and exchange traded funds which have is a hybrid with the benefit that it has no expiration date, no commissions or premium (Staar, 2011).Another innovation is the over the counter derivatives which requires less premium costs, quick negotiations, settlement and date that best suit the trading partners (Ignatio& saa-Requejo, 1995).

Worldwide use of currency includes reduction of probability of financial distress(Giddy, 1983), speculative purposes to earn an abnormal profit , to transfer risk to other economic agents (Tsetsekos & Varangis, 1997) ,as tools to increase information on earnings and a demonstration of management ability of managing risks especially on instances where stakeholders question profits(Dermarzo& Duffie, 1995).

### **1.1.2 Firm Value**

Value is defined as relative worth, utility or importance (in Merriam-Webster.com). According to (Lankoski, Smith, & Vanwassenhove, 2016) total and economic value can arise from use of a resource (use value), possible future use, non-use related considerations (existence value), appreciating outcome (intrinsic value),pleasure of others(altruism) and for future generations (bequest value).In consideration of firm value, we can broadly categorize value into market value measured by EPS/EBIT versus book value measured by Net worth

=Assets at balance sheet /liquidation/market value - Liabilities and value of equity measured by common stock + retained earnings. According to(Hirschey, 2006)firm value is defined as the present value of firms expected cash flows. The formula is determined as:

$$PV(\text{firm}) = p_0 + \frac{p_1}{1+i} + \frac{p_2}{(1+i)^2} + \frac{p_3}{(1+i)^3} \dots \dots \dots \frac{P_n}{(1+i)^t}$$

According to (Hirschey, 2006) free cash flows can be used for investing activities increasing firm value. According to According to (Tempel, 2011) debt can be used for investing activities yet still it reduces free cash flow. Debt can also be result in overinvestment which could impact firm value. High leverage may expose a firm to financial distress costs which result to erosion of firm value (Ross, Westerfield, & Jaffe, 2002). According to Glen (2007) firm value can also be created by economic profit which can be measured by accounting concept of profit after tax, ROA and ROE. The more the economic profit the more valuable the firm. According to Baye ( 2006) firm value can be measured even after profits have been paid out to shareholders in the dividend equation:  $PV(\text{ex-dividend firm}) = p_0 + \frac{1+g}{1-g}$ .According to (Kodongo, Mokoteli, & Maina, 2014)firm size is also an important consideration in evaluating firm because firm size has a negative relationship with profitability and ultimately firm value Firm size can also an indicator of overinvestment or high leverage.

### **1.1.3 Currency Derivatives and Firm Value**

If management of foreign currency risk is not done properly and in the right way, it can become a serious source of risk, it can lead to serious financial loss to the firm and consequently erode firm value. The general assumption is that derivatives hedge currency exchange exposure, however there has been catastrophes of using hedging like the case of

Australian Baring bank 1995 and Metallgesellschaft in 1994, which have shown that derivatives can destroy firm value (Al-Shboul & Alison, 2009). The type of derivative chosen also has a different outcome on managing exposure. This is because swaps derivatives are charged higher hedging premiums while forwards and futures may not. This is because swaps for example have a higher default risk while futures and forwards may be exchange traded through daily marking to market which lessens the default risk. The higher the cost of the hedge the lower the value of the firm (Bodnar M. , 2013).

Bodnar, Jong, & Macrae (2008) have it that outcome on use of derivatives to manage currency risk vary from country to country. This is largely dependent on the type of foreign currency hedged, variety of derivative products available, type of currency and level of volatility, institutions and regulatory environment and the economic environment. For example results of United States studies show that use of derivatives is consistent with the theoretical literature which suggests that derivatives are effective in currency exposure management. Dutch firms on the contrary only hedge the financial risk were more exposed to volatility, they mainly use banks for derivative transactions and the level of effectiveness is seemingly lower. There are factors to be considered while considering a currency derivative product to be used to effectively manage foreign exchange exposure for example the absence and presence of a natural hedge should form the basis of deciding what level of exposure to hedge (Raddatz, 2011) .Necessary regulatory requirements such as contract design and market surveillance, market transparency, safeguarding of customer funds and assets, market transparency, financial integrity of the trading process and protecting customers from fraud ,manipulation and trading abuses (Tsetsekos & Varangis, 1997).

According to Kolb (1991) there are three forms of exposure that a firm needs to manage to prevent erosion of value: transaction exposure which results from having an asset or liability position requiring settlement in foreign currency during the accounting period, translation exposure which results from an accounting requirement to consolidate the records of a multinational company and economic exposure resulting from changes in the value of the firm resulting from foreign exchange –induced changes in the projected future cash flows of a business entity (Watson & Head, 2007).Categorize foreign exchange management into internal and external methods. Internal techniques include Matching, Netting, Leading and Lagging. External techniques include Euro currency markets and derivatives

Most companies have an internally developed procedure and risk management policy which offers guidelines to the financial manager on the limits and type of hedge that can be taken at a given time, timings and sizes allowed for a firm to effectively manage ,report and effective control (Brown, 1999).A firm has different objectives to risk management. Some firms manage risk to reduce return on volatility (hedging) while some hedge to increase return on volatility (speculation).Much literature is not available on hedging for speculative purposes even though there exists empirical evidence that firms have made unexpected profits on hedging strategies.(Hentschel & Kothari, 2001). There is empirical evidence that non financial firms use derivatives for both hedging and speculation (Geczy, Minton, & Schrand, 1997).Speculative use of derivatives however leads to increased exposure and the risk of reducing firm value.



### **1.1.4 Non-Financial Corporations in Kenya**

Companies in Kenya are regulated and registered under the Companies Act Cap 486 of the Laws of Kenya. There are essentially four types of companies that may exist in Kenya today. These are: Companies limited by shares, Companies limited by guarantee, unlimited companies and representative Offices.

According to the Kenya Bankers Association, commercial banks are offering a number of derivatives including foreign currency-denominated forward contracts, interest rates and cross-currency swap. Derivatives in Kenya are mainly used by non financial firms keen on protecting profit margins by buying and selling currency at certain rates or maintaining volatility risks at a particular level to avoid decline of financial performance (Irungu, 2016). A recent development in derivative markets with the NSE scheduled to introduce the trading of financial instruments such as derivatives by end of June 2016 where market that will allow investors to bet on the direction of the price movement (Mwaniki, 2016)

Despite the uptake of derivatives contracts by companies, most corporations reported huge losses attributed to fluctuations in the currency markets. Some of the companies hardest hit by the weakening shilling between 2011 to date include, Oil marketer KenolKobil reporting 1.2B foreign exchange loss, motor vehicle dealer CMC Holdings 11.9M and cement maker Athi River Mining recording 685M loss. (Mugambi, 2016). Most common would be Kenya airways fuel and foreign currency derivatives deal that plunged it to a loss of 26 billion shillings in the 2014/2015 financial year (Kiragu, 2015). The Horticulture industry however has experienced a positive result when the companies took up derivatives to hedge the slump in sterling and euro after brexit in July 2016 (SwapskillsLLC, 2016).

## 1.2 Research Problem

The Period between June 2015 to December 2015 the Kenya shilling slumped against currencies like the US dollar for example the month of September 2015, Kenya shilling was at its lowest since 2011 with commercial banks quoting 105.60 -106 for the dollar. With the volatile dollar rates companies that traded in foreign exchange particularly corporations recorded high foreign exchange losses resulting to either a net loss after tax or drop in profits as compared to similar period the prior year. Notably non-financial corporation's suffered the highest loss compared to financial institutions and investment firms which traded high volumes foreign exchange currencies (Kiragu, 2015).

Changes in currency rates affect firm's cash flows as well as its accounting profits (Grinblatt & Tittman, 2002). According to Granger (2000) for a multinational firm, volatility in exchange rates causes changes in the value of the firm's foreign operations. Adler and Dumas (1984) show that even firms whose whole operations are domestic may be affected by exchange rates, if the movement of in currency influence their input and output prices and in effect the demand for goods and services. Frequent fluctuations in cash flows as a result of currency exchange differences may hinder a firms growth and because of this it becomes necessary to regularize the situation by using derivatives. In practice multinational companies or companies that trade big volumes foreign exchange fluctuations are more likely to protect themselves against losses by hedging. (Geczy, Milton & Schrand, 1997)

Several studies have been done on foreign exposure and derivatives by (Brown, 1999) and results indicate that the many commonly mentioned reasons for corporate hedging are not the primary motivation for why companies undertake a risk management program. The real reasons are access to different information, access to derivative facilities, and pricing of

derivatives motivate hedging.( Figenbaum & Thomas ,1990) found out that management centralization and organization structure, the strategy of currency risk management may not always turn out to be optimal for financial performance.(Giddy & Gaunter,1992) add that in the tradition of Modigliani-Miller theorem that translates that the firm cannot improve shareholder value by manipulating financial reporting therefore managing foreign exchange economic or translation exposure cannot be considered a legitimate concern for management. While studying foreign currency risk management in the general insurance industry in Australia Laing (2008) found out that despite having a unified approach to managing risk exposure there was no specific management strategy for dealing with foreign exchange risk. The conclusion being that centralized control does not always equate to an efficient management of foreign exchange risk.

Locally, Mumoki (2009) did a study of foreign exchange risk management strategies and techniques used by banks to manage foreign exchange rate risk exposure and found that forward contracts were the most frequently used instrument. Futures contracts, foreign currency options and leading and lagging techniques were occasionally used. In a study done on exchange rate fluctuations on tea export among shareholder tea factories in Kenya, Cherop (2010)concluded that exchange rate exposure has some effect on their earnings and identified positive correlations between appreciation of the Kenya shilling and earnings performance. A study done by Kimani (2014)on effect of currency derivatives on the value of listed commercial banks states that derivatives use by banks reduce the likelihood of financial distress by decreasing the variability in firm value, thus reducing the expected costs of financial distress. Studies conducted on foreign exchange exposure on firms listed by NSE indicate that foreign exchange exposure can be minimized where firms are able to

match their foreign currency revenues and costs leaving them with little net exposure (Ngari, 2011). A study conducted by Wekesa, (2012) on the relationship between foreign exchange risk management and profitability of airlines in Kenya and found out that airlines fully hedged using forwards, futures and money markets but based the argument on foreign exchange gained by Kenya airways in 2012 failing to consider other derivative implications like a substantial gain in foreign currency against the Kenya shilling/domestic currency and the prohibitive contract exit clause.

It is clear that most studies have been conducted on foreign exchange rate risk and exposure but little has been done on the effectiveness of hedging instruments particularly derivatives as a method of foreign exchange risk management in non-financial institutions.

The study will therefore seek to answer the following questions: Is there sufficient information on the availability of foreign exchange risk management techniques? To what extent are these techniques used to manage foreign exchange exposure? Are there any limitations to the effectiveness of risk management techniques available for Kenyan corporate companies?

### **1.3 Objectives of the Study**

The objective of this study is to assess the effect of currency derivatives on value of non-financial corporations in Kenya. It will also aim to establish how foreign exchange risk management tools are used to manage risk in Kenyan corporations and to examine the effectiveness of the foreign risk management approach taken by Kenyan corporate and alternatives available for better management.

## **1.4 Value of the Study**

This study will help companies to identify the most appropriate foreign exchange risk management tool that will help them reduce on their foreign exchange losses in the future. It will also highlight challenges with the conventional foreign risk management approach and suggest alternatives that could be more effective.

The study will also help regulators with a deeper understanding that will be used to facilitate best practices, policy formulation and regulation to enable non-financial companies to participate fully and effectively in the consideration of risk management products available in the market.

The study will also contribute to the existing body of knowledge on the subject matter, form a basis on improved practices and provide input for further research.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

This chapter considers literature relevant to the topic under study. The issues under review are the theoretical review, management of foreign exchange risk, empirical review, and measurement of derivative usage.

#### **2.2 Theoretical Review**

There are four theories that are analyzed in this chapter: Random walk theory, unbiased forward rate theory, Purchasing power parity theory and International fisher effect.

##### **2.2.1 Random Walk Theory**

Random walk theory concept can be traced back to Jules & Bachelier (1863). The theory implies that yield or price changes are independent and identically distributed. A testable assumption of that the expected return in a given period is non-zero is based on the fact that in an efficient market no strategy based on the information set can deliver more than a normal market return (Baillie and McMahon, 1989). It is based on the assumption that there are large number of profit maximizing participants concerned with the analysis and valuation of securities and they are all operating independently of one another. A second assumption is that new information regarding securities comes to the market in a random manner. Third information is that investors adjust security prices rapidly to reflect new information. The combined effects of new information being obtained by market participants in a random and independent fashion plus the presence of numerous investors who adjust stock prices rapidly to reflect new prices would mean prices are likely to be

independent and random. Numerous studies over the years proven that there are certain trends that are rather predictable with regards to movements in the market.

### **2.2.2 Unbiased Forward Rate Theory**

This theory is also known as the unbiased expectations theory. Its author Irvin (1930) asserts that the forward exchange rate is the best estimate of the expected future spot rate.

The theory can be simplified as follows:

Expected exchange rate = forward exchange rate

Given sufficient time competitive forces and arbitrage neutralize the impact of foreign exchange rate on returns to assets due to the relationship between rates of devaluation and inflation differentials. The Theory also suggest that locking in the forward exchange rate offers the same expected return as remaining exposed to the ups and downs of the currency. On average it can be expected to move as much above and below. This theory suggests that hedging is a futile affair since exchange rate fluctuations will eventually even out. The theory however has not considered all the relevant information reflected in prices that can introduce a bias in forward price of foreign exchange. In the absence of such factors it is difficult to claim that forward rate would be exactly future spot rate.(Choi, 2003).

### **2.2.3 Purchasing Power Parity Theory**

Purchasing power theory by Gusstav (1918) states that in the long run, the exchange rate between the currencies of two countries should be equal to the ratio of the countries price levels. It holds that the purchasing power of a unit of currency is exactly equal in the domestic economy and in a foreign economy once it is converted to the foreign exchange at the market exchange rate. According to Ullrich (2009) the formulae can be derived by:

$$R_t = S_t + p_t^* - p_t$$

Where:

$P_t$  = price of standard commodity in domestic terms

$P_t^*$  = price of the same commodity in a foreign country

$S_t$  = nominal exchange rate

$R_t$  = real exchange rate

Based on this principle, the PPP the exchange rate will change to offset price changes due to inflation. For example, suppose that prices in the Kenya are expected to increase by 4% over the next year while prices in United States are expected to rise by only 2%. The inflation difference between the two countries is  $4\% - 2\% = 2\%$ . This means that the purchasing power parity approach would forecast that the Kenya shilling would have to depreciate by 2% to keep prices between both countries relatively equal. The implication of this theory is that the purchasing power in any country remains relatively equal and therefore there is no need to worry about fluctuations in exchange rates (Pike and Neale, 2009). The theory generally assumes other factors that play a role in determining purchasing power for example tariffs and speculation.

## **2.2.4 International Fisher Effect**

The theory is named after economist Irvin (1930). It presumes the normal interest rate have two components: the expected inflation rate and the real rate of interest. The real rate of interest is defined as the return of investment after accounting for expected inflation. If the rate of interest of a country is constant over time then the nominal rate of interest must adjust to changes in expected rate of inflation. (Madura, 2014). The Fisher theory implies that all countries have the same real interest rate and if so any security of the same risk offers the



same yield even though nominal and market interest rates will differ due to expected inflation. This theory implies that a successful hedging strategy should focus on expected future inflation (Pike and Neale, 2009).

## **2.3 Determinants of Firm Value**

Hedging with derivatives has an effect on the value of a firm. The factors determining the value of the firm are discussed as follows

### **2.3.1 Leverage**

Borrowing from the theories of Durand (1985) and Modigliani and Miller (1958 and 1963) that holds that there is a relationship between firm value and capital structure, value is created by investing and reinvesting free cash flows into profitable and high return ventures which in return generate cash flows in the form of revenue that grow with time. Volatility of foreign currency does have an effect on firm's cashflows and in turn an impact on the value of the firm (Yamini, 2013). Hedging will increase firm value if it ensures greater availability of funds generated internally to take advantage of investment opportunities. (Panaretou, Shackleton, & Taylor, 2013). conducted a study on the effect of hedging on a firm's leverage position and found out that firms that hedge are more leveraged than firms that do not. He also found out that hedgers have 5% more tangible assets than those that don't. He also used regression analysis to analyze the effect of hedging on cost of debt financing and found out that hedging lowers findings suggest that increase in debt capacity and leverage increases firm value by 1.1% (Graham & Rodgers, 2002).

### **2.3.2 Profitability**

Vickers (1985) synergies theory held that the determinants of the value of the firm are financial position and the equity position. According to Palepu, Healy, Benard, & Peek, (2007) return on Equity is the beginning of measurement of firm's value and performance. ROE is defined as net profit divided by shareholders equity. A firm's value is best analyzed by comparing return of investment with the cost of capital. We can also use the traditional approach on return on assets ROA method. A study conducted by (Jin & Jorionne (2006) on the effect of hedging on a firm on 119 gas and oil producing companies in the United States. Using Tobin's Q ratios and measures of market to Book value of assets and found out that contrary to the Allayanis & Weston (2001) findings that firms hedging position does not alter the profitability position of a firm.

### **2.3.3 Firm Size**

Allayanis & Weston (2001) findings suggest that the size of the firm is significant determinant of firm value. Renault 1991 resource based theory infers that the Larger the firm the more superior competitive advantage which translates to higher returns and increased firm value (Barney & Clark, 2007). According to the findings of (Bartram, Brown, & Conrad(2011) in a study to assess the effect of derivatives on firm risk and value, firm size can be defined as the total of assets, equity and debt considering preferred stock. Larger firms are most likely to have more stable sales, lower cash flow and equity risk. Firm value is however reducing with age and size since the larger the firm the less new large profit opportunities. There analysis concluded that was a negative correlation between firm size and derivative hedging.

## **2.4 Empirical review on usage of foreign currency derivatives**

(Allayanis & Weston, 2001) Investigated the impact of using foreign currency derivative has on the firm value. They used 720 largest U.S. non-financial firms between 1990 and 1995 as a sample and used Tobin's Q as an approximation for firm's market value and robustness tests. They also measured the market-to-book ratio (simple Q) and the market-to-sales ratio. Their results concluded that foreign currency derivative was positively and significantly correlated with the firm value. The researcher also found that the firm value would be increased and if they performed hedging activities and vice versa.

In a study of in a study of 366 UK firms Clark & Judge (2008) with foreign currency exposure also demonstrate that leverage variables are significantly related to the Foreign Currency hedging decision for firms that use foreign currency debt either in isolation or in combination with Foreign Currency derivatives but not for firms that only use Foreign Currency derivatives. In another study of 412 UK firms Clark & Judge (2009) show that Foreign Currency swaps generate more value than short-term derivatives.

Bodnar (2013) Conducted a research on Italian non-financial firms currency and interest rate risk management found out that risk management decisions were influenced by factors such as currency, firm size, geographical location, rating, industry, education management, international trade and access to capital markets.

In a study conducted by Hentschel & Kothari (2001) on 425 largest retail firms in the United States to assess the risk and potential impact of firms using derivatives. Using regression analysis to compare the value of a hedged firm and an unhedged firm, they found out that

derivatives only alter 5% of a firm's return volatility. He also noted that firms that hedge had a very minimal effect on their volatility as compared to unhedged firms.

Kimani (2014) conducted a study on the effect of currency derivatives on the value of the financial firms. Using Tobin's Q method to analyze the value of a firm and regression on a sample of 10 commercial banks, his findings were that there was a significant increase in firm value with the use of derivatives.

Wamuhoma (2013) conducted a study to analyze the effect of foreign exchange rate volatility on horticultural earnings. Using regression analysis, she found out that the results are indeed positive, which was rather likely. She however did not incorporate in her research the well-known hedging strategies to be employed to minimize the effects of the currency volatility.

Wekesa (2012) conducted a study on the relationship between foreign exchange risk management and profitability of airlines in Kenya and found out that airlines fully hedged using forwards, futures, and money markets, concluding that there was a positive relationship between foreign exchange risk and the hedged positions. She however based her research on the shorter-term results of hedging and did not capture the derivative exit costs in her analysis.

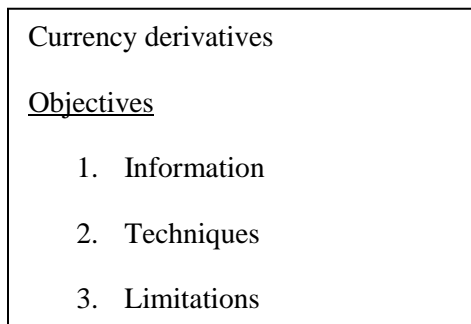
Ogutu (2008) conducted a study on the Asian pricing of options. Using the Black-Scholes model and an option pricing model, seven samples and a set of functions, she found out that Asian options are better priced than ordinary currency options. Her comparison, though excellent, does not offer a wider comparison on other derivatives and their general pricing.

Nasurutia (2013) also conducted a study to assess effectiveness of derivatives in managing foreign exposure in listed commercial banks. Using a sample size of 10 and a regression model to assess the relationship between the extent of a firm's derivative usage and foreign exchange exposure and concluded that the relationship was positive and significant.

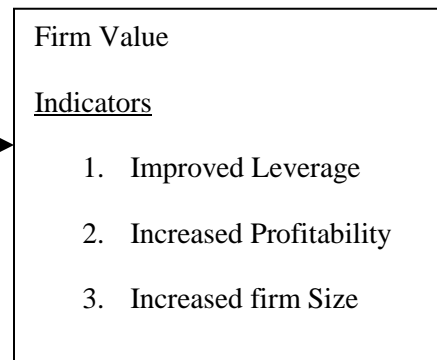
## 2.5 Conceptual Framework

Conceptual framework is a narrative or graphical presentation of e.g. factors, concepts and variables and the relationship between them (Miles & Huberman, 1994). The framework is put together as follows:

### Independent variable



### Dependent Variable



## **2.6 Summary of literature review**

In the literature review, three theories have attempted to explain the interaction of currencies in the foreign exchange market. They include the Random walk theory, unbiased forward rate theory, purchasing power parity theory and International fisher effect. The use of currency derivatives is aimed at eliminating the negative effects of currency fluctuations on the balance sheet and income statement values. The literature is inconclusive with regards to whether or not derivative use is the most effective method of foreign currency management. For instance Bartram, Brown, & Conrad (2011) on one hand suggest that the effect of derivatives used on firm value is positive, Judge (2006) Clark & Judge (2008) shows that in the hedging actually increases the potential financial distress of companies that employ such strategies while on the other hand Hentschel & Kothari (2001) indicated that there was no significant relationship between the volatility of a firm's stock prices and the size of the firm's derivative position. Local studies also contradictory, a good example being Wekesa (2012) evidenced a positive relationship between foreign currency and performance, only to be proven contrary by the current events at the Kenya airways airline which involve heavy losses on the currency and interest rate hedge. A number of studies have been conducted internationally and locally on the impact of currency derivatives on the value of the financial corporation's but there is very little literature on the impact on non-financial corporations. Furthermore most results suggest that there is a positive relationship between hedging with derivatives and firm value but the recent developments on local non-financial firms that have local and international derivatives contracts like KenolKobil and Kenya airways just to mention a few suggest otherwise.

The research gap therefore exists in the analysis of the effectiveness of the strategies of foreign exchange risk management currently in use and its effect on the value of non-financial companies.

## **CHAPTER THREE**

### **METHODOLOGY**

#### **3.1 Introduction**

A case study as an empirical enquiry that investigates a contemporary phenomenon within its real life content where boundaries between phenomenon and context are not clearly evident (Yin, 1994).

This chapter involves investigation of the application of foreign risk management strategy chosen by Kenyan corporate and the effectiveness thereon.

#### **3.2 Research design**

The method of study is descriptive approach .Secondary data was used for this study. The approach taken was the application of multiple regression. Aim of the study was to evaluate the relationship between the use of currency derivatives and firm value. The research used regression analysis to test the extent to which currency derivatives impacts on the value of the firm.

#### **3.3 Target Population**

This study was carried out on corporations in Kenya listed in the Nairobi Stock Exchange that trade foreign exchange. The company's financial reports and other relevant information are readily available in the NSE website. Firms were classified into two: derivatives user or non derivatives user. A dummy variable 1 code for firms that use derivatives and 0 for firms those don't.



### **3.4 Sample**

Since there are only 44 non financial firms listed in the NSE as at 31/12/2015.

### **3.5 Data collection**

The study relied on information based on Secondary data. Information was obtained from the company annual reports available at the NSE website and central bank of Kenya reports. According to the International Accounting Standards 32 and 39, it is mandatory for firms to disclose their usage of hedging instruments and their respective fair value in the notes of their annual reports in a uniform manner (Afza & Atia, 2011). The data considered was for 5 financial years 2011 to 2015.

### **3.6 Data Analysis**

SPSS was used to analyze the data. Data analysis was conducted by synthesizing the forex exposure and derivative usage into a multiple regression model. Multiple regression analysis was used to determine the relationship of the variables. Kothari (2004) describes regression as the determination of a statistical relationship between two or more variables.

### **3.7 Analytical Model**

Model used is a multiple regression model. The regression method will be useful for its ability to test the nature of influence of independent variables on the dependent variable. Cooper & Schindler (2003) regression makes it possible to estimate the co-efficient of the equation, involving one or more independent variables, which best predicted the value of the dependent variable. Multiple regression model adopted for this study is as follows:

$$\text{Tobin's } Q_{it} = \beta_0 + \beta_1 (\text{Dvit}) + \beta_2 (\text{Edit}) + \varepsilon$$

Dvit = Derivatives = Dummy variable equal to 1 for firm using derivatives, otherwise 0

$\beta_0$  = Constant

$\beta$  = Estimated coefficient of corporate hedging alternative.

Edit = Individual effect of firm = Firm's outstanding amount of derivatives scaled by firm size

$\varepsilon$  = Error term

## CHAPTER FOUR

### DATA ANALYSIS, RESULTS AND DISCUSSION

#### 4.1 Introduction

In this chapter we discuss the findings and their interpretation. The aim of this study was to establish whether currency derivative had an effect on the value of non financial firms in Kenya. The researcher used descriptive analysis and quantitative data for this research.

#### 4.2 Response Rate

The study targeted all the 44 non- financial listed firms in Kenya. 26 of the 44 firms were analyzed in this study. 10 firms were recently incorporated or listed and therefore data obtained was not sufficient for this study. Financial statements for 8 firms were not available on the NSE website and the request for data was unresponsive. According to (Mugenda & Mugenda, 2003) 50% of the sample is sufficient for conducting a study analysis.

#### 4.3 Descriptive Analysis

In descriptive analysis we look at the minimum and maximum values, standard deviation and mean of the variables in discussion.

**Table 4.1 Descriptive Statistics**

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Q	130	.000	6.932	1.09714	1.616728
Dvit	130	0	1	.13	.338
Edit	130	.0	.7	.019	.0841
Valid N (listwise)	130				

Table 4.1 shows the mean, standard deviation, minimum and maximum values of the non financial firms listed on the Nairobi Securities Exchange, study carried out for the period 2011 to 2015. The average value of listed firms in Kenya is 1.097 with a standard deviation of 1.617 which means that these firms are on average over valued in the stock market. The maximum firm value as measured under tobins Q is 6.932 and the minimum value placed is zero. The average of firm's that use derivatives a value of 1 and those that do not use derivatives a value of 0 with a standard deviation of 0.338. The choice for whether to use derivatives is a minimum value of zero for firms that do not use derivatives and 1 for firms that use derivatives. The extent of derivative (total value of derivatives divided by total assets) is 0.019 with a maximum of 0.7 and a minimum of 1.

#### 4.4 Regression Coefficients

Regression analysis was done to investigate the relationship between the tobins Q and the predicting variables currency derivative and extent of use of currency derivatives for data obtained for the period 2011 to 2015. The findings are as follows:

#### Table 4.2 Regression Model for Derivative usage and extent of derivative use on tobins Q

The regression analysis done to investigate the relationship between tobins Q and the predictors currency derivative and the extent of use, model is as follows:

$$\text{Tobin's } Q_{it} = \beta_0 + \beta_1 (\text{Dvit}) + \beta_2 (\text{Edit}) + \varepsilon$$

#### Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.158 <sup>a</sup>	.025	.010	1.608863

a. Predictors: (Constant), Ed, Dv

**Table 4. 3 Anova for Currency Derivative Usage and Extent of Use on Tobins Q**  
**ANOVA<sup>b</sup>**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	8.450	2	4.225	1.632	.200 <sup>a</sup>
	Residual	328.732	127	2.588		
	Total	337.182	129			

a. Predictors: (Constant), Ed, Dv

b. Dependent Variable: Q

**Table 4.4 Coefficients of the General Model**  
**Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.194	.151		7.887	.000
	Dv	-.620	.517	-.130	-1.199	.233
	Ed	-.813	2.081	-.042	-.391	.697

Table 4.2 regression analysis for the general model  $R^2$  was done to reveal how much of the dependent variable tobins Q is attributed to a change in use of currency derivatives. The study has realized 2.5% for  $R^2$  and 1.1% for adjusted  $R^2$ . This implies that the model only explains 2.5% of the changes in the variables. Table 4.3 The Anova test investigates the significance of the relationships of the general model. The results of the Anova at 5% significance level, results are consistent with the null hypothesis that suggest that currency derivative and extent of use has a negative effect on the value of non financial firms in

Kenya. The coefficient test findings in Table 4.4 show that the test of coefficients of the general model are negative implies that a unit increase in the use of currency derivatives will result to -0.130 unit decrease in the value of firm and a unit increase in the extent of use will result to a -0.42 decrease in the value of the firm. The model can be summarized as below:

$$\text{Tobin's } Q_{it} = 1.194 - 0.13 (\text{Dvit}) - 0.042 (\text{Edit}) + \varepsilon$$

#### 4. 5 Regression Model for Currency Derivative usage and extent of use on tobins Q

A second regression test was carried out to ascertain the relationship between tobinsQ and currency derivative. The model used is as follows:  $\text{Tobin's } Q_{it} = \beta_0 + \beta_1 (\text{Dvit}) + \varepsilon$

**Table 4.5 Regression Model for Currency Derivative usage on tobins Q**

##### Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.155 <sup>a</sup>	.024	.016	1.603528

a. Predictors: (Constant), Dv

**Table 4. 6 Anova for Currency Derivative Usage on Tobins Q**

##### ANOVA<sup>b</sup>

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	8.055	1	8.055	3.133	.079 <sup>a</sup>
	Residual	329.127	128	2.571		
	Total	337.182	129			

b. Predictors: (Constant), Dv

**Table 4.7 Regression Coefficients of tobins Q and currency derivatives**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	1.194	.151		7.913	.000
Dv	-.738	.417	-.155	-1.770	.079

a. Dependent Variable: Q

The study was further assessed to check the relationship between tobins Q and currency derivatives only. Table 4.5 results show that R<sup>2</sup> is 24% implying that only 24% of the variables are explained by the model. Compared to results of the general model more variables are explained in this model than the latter. Table 4.6 Anova test shows F statistic p value is consistent with the null hypothesis that currency derivative and extent of use has a negative effect on the value of non financial firms in Kenya. The study results of coefficients, Table 4.7 results are negative implying that a unit increases in use of currency derivatives will result to -0.155 a unit decrease in the value of firm. The model can therefore be summarized as follows:

$$\text{Tobin's } Q_{it} = 1.194 - 0.155 (\text{Dvit}) + \varepsilon$$

## 4.6 Regression model for derivative coefficients

A third regression test was carried out to ascertain the relationship between tobins Q and currency derivative. The model used is as follows:  $Tobin's\ Q_{it} = \beta_0 + \beta_1 (Ed) + \varepsilon$

**Table 4.8 Regression Model for extent of currency Derivative usage on tobins Q**

### model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.118 <sup>a</sup>	.014	.006	1.611614

a. Predictors: (Constant), Ed

**Table 4.9 Anova for extent of currency Derivative Usage on Tobins Q**

### ANOVA<sup>b</sup>

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4.727	1	4.727	1.820	.180 <sup>a</sup>
	Residual	332.454	128	2.597		
	Total	337.182	129			

a. Predictors: (Constant), Ed

b. Dependent Variable: Q



**Table 4.10 Regression Coefficients of tobins Q and extent of currency derivatives usage**

**Coefficients<sup>a</sup>**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	1.141	.145		7.868	.000
Ed	-2.277	1.688	-.118	-1.349	.180

a. Dependent Variable: Q

The study was also investigated the relationship between tobins Q and extent of use of currency derivatives. Table 4.8 results show R<sup>2</sup> is 14% implying 14% of the variables are explained by the model. When we compare R<sup>2</sup> results to the R<sup>2</sup> results of the general model at 2.5%, R<sup>2</sup> at 14% is higher meaning more variables are explained than the latter. Table 4.9 Anova test shows p value 1.820 > 0.05 which is also consistent with the null hypothesis that currency derivative. Table 4.10 investigation on coefficients results are negative meaning a unit increase in extent of use of currency derivatives will result to -0.118 unit decrease in the value of firm.

$$\text{Tobin's } Q_{it} = 1.141 - 0.118 (\text{Edit}) + \varepsilon$$

## **CHAPTER FIVE**

### **SUMMARY, CONCLUSION AND RECOMENDATIONS**

#### **5.1 Introduction**

In this chapter we discuss the findings, conclusion, limitations and suggestions of further research resulting from the study.

#### **5.2 Summary**

The main objective of the study was to find out the effect of currency derivatives on the value of non financial firms in Kenya. The data was generated from 26 non financial firms in Kenya for the period of 2011 to 2015. The study findings show that 13% of non financial firms in Kenya use currency derivatives. The extent of use of currency derivatives (ratio of currency derivative to total assets) is 1.9%. The study also shows that the average value of a non-financial firm in Kenya is 1.097%.

#### **5.3 Conclusion**

An analysis of the coefficients between tobins Q and predictor variables currency derivatives and extent of use of currency derivatives show that there is a negative coefficient. An additional analysis on the coefficients of tobins Q to individual variables produced negative results as well. This implies that using currency derivatives decreases the value of a non financial firm. The findings also indicate that there is no significance in the relationship between tobins Q and the variables (currency derivative and extent of use).

#### **5.4 Limitations of study**

Very few companies in Kenya take up currency derivatives and therefore there was very little data to work with. Further to this contrary to IAS 39 that requires that companies

disclose the value of all derivatives used in the financial year some companies only chose to disclose derivatives that qualified for hedge accounting. Derivative contracts with a term of less than 1 year did not sufficiently reflect on the financials and are therefore not sufficiently captured by data in this study. The full annual report for the years 2008, 2009 and 2010 for many companies were unavailable in the NSE website and also on request therefore the study was confined to the period ranging from 2011 to 2015.

### **5.5 Recommendations**

These study findings show that currency derivative reduces the value of a non-financial firm. The study recommends that non-financial firms reduce on their use of currency derivatives as it erodes the value of the firm.

### **5.6 Suggestions for further studies**

A comparative study can also be conducted on non-financial firms in Kenya and Non financial firms in other countries to understand the general weaknesses with the structuring of derivative contracts and access to information on derivatives and pricing. A further analysis could be done to assess whether reporting on derivative use and other financial instruments every financial year as required by IFRS is adequate to influence decision making and proper reporting of the same.

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## **Appendix 1: List of listed non financial firms**

1. Safaricom Ltd
2. KenGen Co. Ltd
3. Kenya Power & Lighting Co Ltd
4. Umeme Ltd
5. Mumias Sugar Co. Ltd
6. Kenya Airways Ltd
7. KenolKobil Ltd
8. East African Breweries Ltd
9. ARM Cement Ltd
10. WPP Scangroup Ltd
11. Uchumi Supermarket Ltd
12. Bamburi Cement Ltd
13. Sameer Africa Ltd
14. Carbacid Investments Ltd
15. Sasini Ltd
16. Eveready East Africa Ltd
17. TPS Eastern Africa Ltd
18. Total Kenya Ltd
19. British American Tobacco Kenya Ltd
20. E.A.Portland Cement Co. Ltd
21. Standard Group Ltd
22. Unga Group Ltd
23. Crown Paints Kenya Ltd
24. Car & General (K) Ltd
25. Kakuzi Ltd
26. B.O.C Kenya Ltd