



## A SURVEY OF THE FOREIGN EXCHANGE RATE RISK MANAGEMENT PRACTICES IN THE ENERGY SECTOR OF KENYA

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### ABSTRACT

This paper investigates foreign exchange rate risk management practices among Kenyan firms in the energy sector. The study focuses on how Kenyan energy sector firms manage their foreign exchange risk and the challenges they face in managing exchange rate exposure. It also seeks to ascertain the extent to which these firms use foreign exchange rate risk management techniques. The results indicate that most of the firms in the energy sector in Kenya do have formal documented foreign exchange rate risk management systems which are also embedded in the overall company strategic plans. However, the firms exhibited a low-level use of hedging techniques. For firms which use hedging techniques, forwards and currency swaps are the most used instruments, and transaction exposure is the most managed exchange rate risk. Translation and economic exposure are not well identified and managed mainly because firms believe it is unnecessary or rather too complex. Further, firms hedge their exposure but not fully due to high cost of hedging.

The main value of this study is the analysis of foreign exchange exposure management from a Kenyan perspective. Relevant recommendations aimed at enhancing the foreign exchange rate risk management practices among Kenyan energy sector firms are made. The study is useful not only to the policy makers, entrepreneurs in the energy sector and academicians, but also to financial institutions interested in providing hedging products to these firms.

**Key Words:** Transaction Exposure, Accounting Exposure, Foreign Exchange Risk

### 1.0 BACKGROUND OF THE STUDY

Foreign Exchange risk is the effect that unanticipated exchange rate changes have on the value of the firm. It is the unexpected changes in foreign currency values and their adverse consequences for individuals and organizations which operate at the international level. This emanates from the fact that foreign exchange rate fluctuates and the extent of the fluctuations may impact negatively on the parties involved. The extent of foreign exchange risk is a function of the magnitude of potential exchange rate changes and the size and duration of the foreign currency exposure (Shapiro, 2003). Foreign exchange risk is also defined as the additional variability experience by an organization in its worldwide consolidated earnings that results from unexpected currency fluctuations. It is generally understood that this considerable earnings variability can be eliminated partially or fully-at-cost, the cost of foreign exchange risk management, is such a cost warranted or, in other words, should corporate treasures be concerned with the smooth period-to-period earnings pattern so cherished by security analysts,

because a volatile earnings pattern is commonly believed to affect the organization's to raise funds at a reasonable cost (Jacque, 1981).

Exchange rate is the relative price of one national currency expressed in terms of another. Alternatively, it is the ratio of exchange for two currencies and may be viewed as being determined by the interplay of supply and demand in foreign exchange markets. Further, exchange rate can be termed as a conversion factor, a multiplier or a ratio, depending on the direction of conversion. The exchange rate simply expresses a national currency's quotation in respect to foreign ones (Betts and Devereux, 2000). For example, if one US dollar is worth seventy Kenya shillings, then the exchange rate of dollar is seventy Kenya shillings

Foreign currency is a currency other than the functional currency of the entity. Functional currency is the currency of the primary economic environment in which the entity operates. Presentation currency is the currency in which the financial statements are presented (Allen, 2003). Exchange rate can be classified into various categories on the basis of circumstances or timing of the transaction. A spot exchange rate is the exchange rate for immediate delivery; a closing rate is the spot exchange rate at the end of the reporting period. Exchange rate may also be a buying rate, selling rate or the mean rate in any foreign currency market for a given period. Exchange difference is the difference resulting from translating a given number of units of one currency into another currency at different exchange rates. (Bodnar and Gebhardt, 1998)

It is also important to distinguish nominal exchange rates from real exchange rates. Nominal Exchange rates are established on currency financial markets. These rates are usually established in continuous quotation, and they may be fixed. Real exchange rates are nominal rates corrected by inflation measures (Bodnar and Gebhardt, 1998). The exchange rate regime is the way a country manages its currency in respect to foreign currencies and the foreign exchange market. It is closely related to monetary policy and the two are generally dependent on many of the same factors (Treasury Management Association, 1996). Exchange rate regimes are normally chosen by central banks or governments.

Since the breakdown of the Breton Woods fixed-parity system in the early 1970's the volatility of exchange rates and its associated risks have become an increasingly important component of international financial management. Standard economic analysis implies that exchange rate movements affect both the cash flows of a firm's operations and its discount rate employed to value of a firm. The wide currency fluctuations experienced during the last few decades heightened the interest in potential vulnerability of firms of foreign exchange rate risk (Muller and Verschoor, 2006).

A foreign exchange market in which exchange rates always fully reflect all available information is said to be efficient. Three degrees of market efficiency are customarily distinguished; the weakly efficient market hypothesis says that series of historical exchange rates contain no information which can be used to forecast future spot exchange rates. Secondly the semi strong version of market efficiency holds that a large and competitive group of market participants have access to all publicly available information relevant to the formation of expectations about future rates; finally if the set of available information also includes private or insiders' information, the market is said to be strongly efficient (Jacque, 1981).

Foreign exchange market is made up of buyers and sellers who negotiate and agree on the foreign exchange rate for the foreign currencies being exchanged. In most markets, and after the demise of the Breton woods institutions, the foreign exchange market has been highly liberalized with exchange rates being determined by the forces of supply and demand (Madura, 2004). The market is quite extensive and is highly accessible to individuals and companies. In Kenya, the main sources of foreign exchange are export earnings from goods and services, remittances from overseas, direct investment flows and private and government loan inflows.

All businesses trading overseas and increasingly in domestic markets will have some exposure to exchange rate movements either directly or indirectly. Whilst exposure to exchange rate movements may be an inevitable part of everyday activity, the risk arising from such exposure can be controlled (Shapiro, 2003). Exchange rate risk management is an integral part in every firm's decisions about foreign currency exposure (Allayannis, Ihrig, and Weston, 2001). Currency risk hedging strategies entail eliminating or reducing this risk, and require understanding of both the ways that the exchange rate risk could affect the operations of economic agents and techniques to deal with the consequent risk implications (Barton, Shenkir, and Walker, 2002).

Foreign exchange market is arguably the largest and most liquid of the international markets. It has witnessed frequent bouts of excessive volatility in the last decade. At times it has seemed to many businesses that they have been helpless in the fight to control the associated risks which arise when exporting or importing goods and services. Future cash flow projections, profitability, competitiveness and the ability to service debt can all be impacted by foreign exchange volatility when paying or receiving foreign currency (Shapiro, 2003).

Selecting the appropriate hedging strategy is often a daunting task due to the complexities involved in measuring accurately current risk exposure and deciding on the appropriate degree of risk exposure that ought to be covered. The need for currency risk management started to arise after the break down of the Breton Woods system and the end of the U.S. dollar peg to gold in 1973 (Papaioannou, 2001).

The issue of currency risk management for non-financial firms is independent from their core business and is usually dealt by their corporate treasuries. Most multinational firms have also risk committees to oversee the treasury's strategy in managing the exchange rate (and interest rate) risk (Lam, 2003). This shows the importance that firms put on risk management issues and techniques. Conversely, international investors usually, but not always, manage their exchange rate risk independently from the underlying assets and/or liabilities. Since their currency exposure is related to translation risks on assets and liabilities denominated in foreign currencies, they tend to consider currencies as a separate asset class requiring a currency overlay mandate (Allen, 2003).

To manage the exchange rate risk inherent in multinational firms' operations, a firm needs to determine the specific type of current risk exposure, the hedging strategy and the available instruments to deal with these currency risks. Multinational firms are participants in currency markets by virtue of their international operations. To measure the impact of exchange rate movements on a firm that is engaged in foreign-currency denominated transactions, i.e., the

implied value-at-risk (VaR) from exchange rate moves, there is need to identify the type of risks that the firm is exposed to and the amount of risk encountered (Hakala and Wystup, 2002).

International Accounting Standard No. 21 (IAS 21), *Effects of changes in foreign exchange rates*, prescribes how to account for foreign currency transactions and foreign operations, and how to translate financial statements into a presentation currency. According to this standard, an entity may carry on foreign activities in two ways. It may have transactions in foreign currencies or it may have foreign operations. In addition, an entity may present its financial statements in a foreign currency. The objective of this Standard is to prescribe how to include foreign currency transactions and foreign operations in the financial statements of an entity and how to translate financial statements into a presentation currency. The principal issues are which exchange rate(s) to use and how to report the effects of changes in exchange rates in the financial statements (IAS 21, 2001).

If the functional currency is the currency of a hyperinflationary economy, the entity's financial statements are restated in accordance with IAS 29, *Financial Reporting in Hyperinflationary Economies*. An entity cannot avoid restatement in accordance with IAS 29 by, for example, adopting as its functional currency a currency other than the functional currency determined in accordance with this Standard (IAS 29, 2001).

Financial Accounting Standards Board Statement No. 52, *Foreign Currency Translation*, applies to financial reporting of most companies operating in foreign countries. The differing operating and economic characteristics of varied types of foreign operations will be distinguished in accounting for them. Adjustments for currency exchange rate changes are excluded from net income for those fluctuations that do not impact cash flows and are included for those that do (FASB No.52, 2003).

Financial Accounting Standards Board Statement No. 133; *Accounting for Derivative Instruments and Hedging Activities*, and IAS 39; *Financial instruments; Recognition and measurement*, establishes accounting and reporting standards for derivative instruments, including certain derivative instruments embedded in other contracts, (collectively referred to as derivatives) and for hedging activities. It requires that an entity recognize all derivatives as either assets or liabilities in the statement of financial position and measure those instruments at fair value. If certain conditions are met, a derivative may be specifically designated as a hedge of the exposure to changes in the fair value of a recognized asset or liability or an unrecognized firm commitment, a hedge of the exposure to variable cash flows of a forecasted transaction, or a hedge of the foreign currency exposure of a net investment in a foreign operation, an unrecognized firm commitment, an available-for-sale security, or a foreign-currency-denominated forecasted transaction (FASB 133, 2003).

There are various determinants of the nominal exchange rate. These determinants could lead to changes of a floating exchange rate or put pressure on a fixed exchange rate. The key determinants are trade balance between countries, purchasing power parity and the relative interest rate (Carter et.al. 2003).Exports, imports and the trade balance can influence the demand of currency aimed at real transactions. An increasing trade surplus will increase the demand for country's currency and a trade deficit leads to the currency weakening (Allen, 2003).

Another form of real determination of exchange rate is offered by the "one price law" or the "purchasing power parity", according to which any freely good or service has the same price worldwide, after taking into account nominal exchange rates (Kiymaz, 2003). But in order to equalize the price of several goods, more than one exchange rate may turn out to be necessary, or an exchange rate that represents a tradable basket of goods and services. The purchasing power parity exchange rate (PPP) between a foreign currency and the domestic currency can be defined as:  $PPP = (\text{Cost of a market basket of goods and services at foreign prices}) / (\text{Cost of the same market basket of goods and services at domestic prices})$ . The exchange rate between countries, therefore, should be such that the currencies have equivalent purchasing power.

## 2.0 STATEMENT OF THE PROBLEM

Every business activity is confronted with one risk or the other and coping with risk has always been an important managerial function. More importantly, firms dealing in multiple currencies face a risk (an unanticipated gain/loss) on account of sudden/unanticipated changes in exchange rates, quantified in terms of exposures. A key assumption in the concept of foreign exchange risk, nonetheless, is that exchange rate changes are not predictable and that this is determined by how efficient the markets for foreign exchange are. Therefore, once a firm recognizes its exposure, it then has to deploy resources in managing it.

In the developed nations, the fluctuations in exchange rate cause losses at certain times and create gains at other times. Furthermore, the nature of exchange rate systems in these countries allows firms to anticipate exchange rate movements and undertake either hedging or speculative measures to minimize exchange losses. Studies originating in these countries have thus emphasized the hedging of foreign exchange risks to suit their circumstances. Recent studies have empirically investigated the value relevance of foreign exchange risk management (Lim and Tan, 2007; Seow and Tam, 2002; Allayannis and Weston, 2001). Wang *et al.* (2005) extended the scope of market risk disclosure research by examining the value relevance of the trading and non-trading derivative amount disclosed in the annual filings for the US banks. They report that disclosed notional amount of trading and non-trading derivatives is useful in explaining variations in bank values.

A study conducted by Makar and Huffman (1997) examines how U.S. MNCs used foreign exchange derivatives in the 1990 to 1994 period. In a survey, Mathur (1982) finds that most companies institute a hedging program to reduce the negative effects of foreign exchange rate changes on their cash flows and reported earnings. He also finds that a formal foreign exchange management policy is more common among larger firms. Bartov; Bodnar and Kaul (1996) find a relationship between exchange rate variability and stock return volatility, and attribute these to foreign currency transactions. They also find that MNCs that do not use hedging strategies are more vulnerable to losses due to exchange rate fluctuations. Choi and Prasad (1995) also find a link between exchange rate risk and declines in cash flows and market values. Jalilvand *et al.* (2000) and Bradley and Moles (2001) have shown a widespread use of derivative products among Canadian, US, and European firms in managing their risks, including long-run foreign exchange-rate exposures.

Nonetheless, previous studies have dwelt very much on foreign exchange risks management in general without linking these practices with the organization performance. Nonetheless, none of

those studies have focused on the energy sector which domiciles all excitement of changes. Over and above, the researcher is not aware of any such research done on the energy sector in Kenya, a sector that is very much susceptible to the risks emanating from the foreign exchange. This study will therefore fill the existing void by answering the questions: what the foreign exchange rate risk management practices and challenges in the energy sector of Kenya are.

### **3.0 OBJECTIVES OF THE STUDY**

The main objective of this study was to investigate and establish foreign exchange rate risk management practices and challenges in the energy sector of Kenya.

### **4.0 LITERATURE REVIEW**

#### **4.1 Theoretical Review**

There are a number of academic studies on foreign exchange risk management practices. Especially, they can be broadly categorized into three groups. The first group are theoretical papers addressing the issue of relevance or otherwise of currency management (Shapiro and Rutenberg 1976) Logue and Oldfield (1977); Jacque (1981); and Dufey and Srinivasulu (1983). Arguments in favour of the relevance of currency risk management are based on purchasing power parity theory, the capital asset pricing model, the Modigliani-Miller theorem and the efficient market hypothesis. On the other hand, imperfections in the capital market are used to argue for the relevance of foreign exchange risk management practices.

Most of these empirical studies also found, to a varying extent, the firms do manage their currency risk. Akrom (1974) observed that the control of foreign exchange activities was essential for a rational and consistent approach to controlling the foreign exchange exposure of the firm. Exchange rate movements affect expected future cash flows, and therefore the value, of large multinationals, small exporters (importers) and import competitors, by changing the home currency value of foreign revenues (costs) and the terms of competition. In light of this, it is surprising that previous research in the area (Jorion, 1990), Amihud (1993) and Bodnar and Gentry (1993) finds that us multinationals, exporters, and manufacturing industries are of significantly affected by exchange rate movements.

#### **4.2.2 Nature and Impact of Foreign Exchange Risks**

The foreign exchange market is arguably the largest and most liquid of the international markets, and large and rapid movements in exchange rates are common place. The effect of these movements in exchange rates on the company may be on its profits, its cash flows, or its market value. In order to minimize the possibility of financial loss, it is therefore essential that corporations with foreign exchange exposures identify measure and manage their foreign exchange risk effectively (Jacque, 1981).

Foreign exchange risk is one of the unique complications of financial management in an international environment. The values, in a firm's reference currency, of many of its cash flows depend on foreign exchange rates expected to be in effect of settlement. Therefore, expectations about future exchange rates are important determinants of the expected future values and thus the current values of such cash flows; further, variability in exchange rate forecast may be a major source of variability in current value (Hekman, 1985).

Managing foreign exchange risk is a fundamental component in the safe and sound management of all firms or institutions that have exposures in foreign currencies Rakhimova (2000). It involves prudently managing foreign currency positions in order to control, within set parameters, the impact of changes in exchange rates on the financial position of the institution (Adler and Dumas, 1984). A firm's operating exposure to currency risk depends on the effect of unexpected changes in the exchange rate on the firm's output prices and input costs. Since the correlation of prices with exchange rates is determined by the degree of segmentation of their respective markets, operating exposure depends on whether input costs and output prices are determined locally or globally. Firms facing substantial operating exposures have varying foreign exchange rates (Carter; Pantzalis and Simkins, 2003).

The first step in management of corporate foreign exchange risk is to acknowledge that such risk does exist and that managing it is in the interest of the firm and its shareholders (Giddy and Dufey, 1983). The next step, however, is much more difficult: the identification of the nature and magnitude of foreign exchange exposure. In other words, identifying what is at risk, and in what way. The focus here is on the exposure of non-financial corporations, or rather the value of their assets. Non-financial business firms, have, as a rule, only a relatively small proportion of their total assets in the form of receivables and other financial claims. Their core assets consist of inventories, equipment, special purpose buildings and other tangible assets, often closely related to technological capabilities that give them earnings power and thus value (Bodnar and Gebhardt, 1998).

The task of gauging the impact of exchange rate changes on an enterprise begins with measuring its exposure, that is, the amount, or value, at risk. This issue has been clouded by the fact that financial results for an enterprise tend to be compiled by methods based on the principles of accrual accounting. Unfortunately, this approach yields data that frequently differ from those relevant for business decision-making, namely future cash flows and their associated risk profiles (Menon and Viswanathan 2005). As a result, considerable efforts are expended, both by decision makers as well as students of foreign exchange risk, to reconcile the differences between the point-in-time effects of exchange rate changes on an enterprise in terms of accounting data, referred to as accounting or translation exposure, and the ongoing cash flow effects which are referred to as economic exposure. Both concepts have their grounding in the fundamental concept of transactions exposure (Menon and Viswanathan, 2005).

#### **4.2.3 Transaction exposure**

Transaction exposure is the exposure a firm is facing regarding all its specific commercial transactions that have already been booked. The terms of these transactions are established and settled at a given time period and their exposure can easily be measured by accounting systems (Muller and Verschoor, 2006). The implicit or explicit contractual agreements have to be taken into account as well when measuring the overall exchange rate exposure. While such commitments create contractual exposure, a firm's domestic and foreign assets and liabilities, whose values are also affected by currency fluctuations, cause translation exposure (Muller and Verschoor, 2006).

Foreign market entry through direct investment, by contrast, results in so-called translation exposure which Wihlborg (1978) defines as the uncertain domestic value of a net accounting

position denominated in a foreign currency future date; that is, a future foreign currency denominated stock. The practice periodically consolidating or aggregating parent's and affiliates' balance sheets will generally entail exchange gains or losses of non-cash flow (paper) nature as exchange rates fluctuate over the accounting horizon. While this traditional analysis of transactions exposure is correct in a narrow, formal sense, it is really relevant for financial institutions, only (Giddy and Dufey 1983). With returns from financial assets and liabilities being fixed in nominal terms, they can be shielded from losses with relative ease through cash payments in advance (with appropriate discounts), through the factoring of receivables, or via the use of forward exchange contracts, unless unexpected exchange rate changes have a systematic effect on credit risk (Giddy and Dufey 1983).

For a set of transaction exposures dominated in different currencies, Makin (1977) derives an efficient frontier of optimal portfolio of shares of exposures to be covered in a traditional mean-variance framework. Exchange rates are assumed to be normally distributed and the matrix of variance-covariance for future exchange rates available and stable. However, when analyzed carefully, it becomes apparent that the exchange risk results from a financial investment (the foreign currency receivable) or a foreign currency liability (the loan from a supplier) that is purely incidental to the underlying export or import transaction; it could have arisen in and of itself through independent foreign borrowing and lending. Thus, what are involved here are simply foreign currency assets and liabilities, whose value is contractually fixed in nominal terms (Giddy and Dufey 1983).

#### **4.2.4 Accounting exposure**

The concept of accounting exposure arises from the need to translate accounts that are denominated in foreign currencies into the home currency of the reporting entity in accordance with appropriate accounting principles. Translation risk is a multinational company's concern and its consideration may be absolutely irrelevant to many locally incorporated companies (Allayannis and Ofek, 1997).

Accounting exposure considers the sensitivity of company value to fluctuations in foreign exchange rates. This focus on economic valuation contrasts accounting-based transaction and translation exposures defined in terms of the book values of assets and liabilities denominated in foreign currencies. The accounting exposure of a firm can be estimated from time series data as the coefficient computed by regressing shareholders returns on the percentage change in foreign exchange rate (Miller and Reuer, 1998). Most commonly the problem arises when an enterprise has foreign affiliates keeping books in the respective local currency. For purposes of consolidation these accounts must somehow be translated into the reporting currency of the parent company. In doing this, a decision must be made as to the exchange rate that is to be used for the translation of the various accounts. While income statements of foreign affiliates are typically translated at a periodic average rate, balance sheets pose a more serious challenge (Jacque, 1981).

#### **4.2.5 Economic or strategic foreign exchange exposure**

Dumas (1978), Adler and Dumas (1984), and Hodder (1982) define economic exposure to exchange rate movement as the regression coefficient of the value of the firm on the exchange rate across states of nature. However, the definition does not imply that exchange rate exposure

is simultaneously determined by a firm's foreign sales) and its financial hedging. As a general rule, economic exposure management should aim at neutralizing the impact of unexpected exchange rate changes on net cash flows; this will generally be achieved by striving for a balanced currency mix of cash flows between the cost and revenue side (Jacque, 1981). An operational approach for implementing this concept of economic management was developed by Nauman-Etienne (1977), he identified managerial policies, operational characteristics, and environmental parameters to which economic exposure is sensitive; define protective steps to minimize adverse effects of unexpected exchange rate changes on future cash flows.

Economic exposure is tied to the currency of determination of revenues and costs. Economic exposure represents any impact of exchange rate fluctuations on a firm's future cash flows. It is the possibility that the parent currency denominated net present value of cash flows will adversely be affected by exchange rate movement (Walker, 1978). Unlike the transaction exposure, economic exposure is long-term in approach and does not only focus on hedging their currency payables or receivables but also determines how all the cash flow of a firm will be affected by possible exchange rate movements (Miller and Reuer, 1998). Economic currency risk has wide ranging impacts on business and its consideration is essential in assessing the long-run health of the business (Adler and Dumas, 1984). Its consideration is pertinent in appraising projects intended to be financed partly through foreign currency denominated debt. Economic currency risk is however inevitably subjective as it relies on estimations of future cash flows over uncertain time horizons.

#### **4.3 Measurement of foreign exchange risk**

After defining the types of exchange rate risk that a firm is exposed to, a crucial aspect in a firm's exchange rate risk management decisions is the measurement of these risks. Measuring currency risk may prove difficult, at least with regards to translation and economic risk (Van Deventer, Imai, and Mesler, 2004). At present, a widely used method is the value-at-risk (VaR) model. Broadly, value at risk is defined as the maximum loss for a given exposure over a given time horizon with  $z\%$  confidence.

Apportioning of exchange risk in bilateral transactions is generally thought to be achieved better by denominating the transaction in a third currency or mix of third currencies (artificial currency units) rather than by resorting to a combination of the domestic currencies of the two contracting parties using an expected utility framework of nominal return (cost), Schwab and Lusztig (1978) show that the contracting parties will always achieve a superior sharing of exchange risk by limiting themselves to a combination of their own currencies. The VaR methodology can be used to measure a variety of types of risk, helping firms in their risk management. However, the VaR does not define what happens to the exposure for the  $(100 - z)\%$  point of confidence, i.e., the worst case scenario. Since the VaR model does not define the maximum loss with 100 percent confidence, firms often set operational limits, such as nominal amounts or stop loss orders, in addition to VaR limits, to reach the highest possible coverage (Papaioannou and Gatzonas, 2002).

The VaR measure of exchange rate risk is used by firms to estimate the riskiness of a foreign exchange position resulting from a firm's activities, including the foreign exchange position of its treasury, over a certain time period under normal conditions (Holton, 2003). The VaR

calculation depends on 3 parameters: The holding period, i.e., the length of time over which the foreign exchange position is planned to be held. The typical holding period is 1 day, the confidence level at which the estimate is planned to be made. The usual confidence levels are 99 percent and 95 percent, and the unit of currency to be used for the denomination of the VaR (Papaioannou and Gatzonas, 2002).

#### **4.4 Management of foreign exchange risks**

Managing exchange rate risk exposure has gained prominence in the last decade, as a result of the unusual occurrence of a large number of currency crises. From the corporate managers' perspective, currency risk management is increasingly viewed as a prudent approach to reducing a firm's vulnerabilities from major exchange rate movements (Van Deventer et.al, 2004). This attitude has also been reinforced by recent international attention on both accounting and balance sheet risks. Foreign Exchange Risk Management is a logical and systematic method of identifying, analyzing, evaluating, treating, monitoring and communicating risks associated with any activity, function or process in a way that enables the organization to minimize losses and maximize opportunities (Allayanis, Ihrig and Weston 2001).

Foreign exchange risk also arises where the value of domestic currency denominated transactions changes in line with movements in the foreign exchange rate. In addition, legal drafting of contract terms can generate, increase or mitigate foreign exchange risk (Blenman, Lee and Walker 2006). Considered decisions on whether to accept, reduce or eliminate such risks requires the affected groups to properly identify and assess their foreign exchange exposures. The development and implementation of foreign exchange risk management programs is a specialist activity that requires appropriate knowledge and expertise in financial markets, robust systems and rigorous internal controls (Chamberlain, Howe and Popper 1997).

The firm may use an optimization model to devise an optimal set of hedging strategies to manage its currency risk. Hedging the remaining currency exposure after the optimization of the debt composition is a difficult task. A firm may use tactical hedging, in addition to optimization, to reduce the residual currency risk. Moreover, if exchange rates do not move in the anticipated direction, translation risk hedging may cause either cash flow or earnings volatility. Therefore, hedging translation risk often involves careful weighing the costs of hedging against the potential cost of not hedging (Batten et.al., 1993).

Economic risk is often hedged as a residual risk. Economic risk is difficult to quantify, as it reflects the potential impact of exchange rate moves on the present value of future cash flows. This may require to measure the potential impact of an exchange rate deviation from the benchmark rate used to forecast a firm's revenue and cost streams over a given period. In this case, the impact on each flow may be netted out over product lines and across markets, with the net economic risk becoming small for firms that invest in many foreign markets because of offsetting effects. Also, if exchange rate changes follow inflation differentials(through PPP) and a firm has a subsidiary that faces cost inflation above the general inflation rate, the firm could find its competitiveness eroding and its original value deteriorating as a result of exchange rate adjustments that are not in line with PPP (Froot and Thaler, 1990).

Under these circumstances, the firm could best hedge its economic exposure by creating payables (e.g., financing operations) in the currency that the firm's subsidiary experiences the higher cost inflation (i.e., in the currency that the firm's value is vulnerable). Sophisticated corporate treasuries, however, are developing efficient frontiers of hedging strategies as a more integrated approach to hedge currency risk than buying a plain vanilla hedge to cover certain foreign exchange exposure. In effect, an efficient frontier measures the cost of the hedge against the degree of risk hedged. Thus, an efficient frontier determines the most efficient hedging strategy as that which is the cheapest for the most risk hedged. Given a currency view and exposure, hedging optimization models usually compare 100 percent unhedged strategies with 100 percent hedged using vanilla forwards and option strategies in order to find the optimal one. Although this approach to managing risk provides the least-cost hedging structure for a given risk profile, it critically depends on the corporate treasurers' view of the exchange rate. Note that such optimization can be used for transaction, translation or economic currency risk, provided that the firm has a specific currency view (Kritzman, 1993).

Hedging performance can be measured as a distance to a given benchmark rate (Jacque, 1996). The risk embedded in the hedge is usually expressed as a VaR number that will be consistent with the performance measure. Hedging optimization models, as methods for optimizing hedging strategies for currency-denominated cash flows, help find the most efficient hedge for individual currency exposures, while most of them do not provide a hedging process for multiple currency hedging. Thus, both performance and VaR are measured as effective hedge rates, calculated for each hedging instrument used and the risk in terms of a confidence level. A single optimal hedging strategy is then selected by defining the risk that a firm is willing to take. This strategy is the lowest possible effective hedge rate for an acceptable level of uncertainty. In this way, when the firm's currency view entails apprehension of volatility, options generate a better or similar effective hedge rate at lower uncertainty than the un-hedged position. Furthermore, when local currency has a relatively high yield and low volatility, options will almost always generate a better effective hedging rate than forward hedging (Jacque, 1996).

As part of the currency risk management policy, firms use a variety of hedging benchmarks to manage their hedging strategies effectively. Such benchmarks could be the hedging level (i.e., a certain percent), the reporting period, especially for firms that use forward hedging to limit the volatility of their net equity, (e.g., quarterly or 12-month benchmarks), and budget exchange rates, depending on the prevailing accounting rules. Moreover, benchmarks enable the performance of individual hedges to be measured against that of the firm (Jacque, 1996).

Accordingly, this will necessitate four hedges per year, each of one-year tenor, with hedging being done at the end of the period, using the end-of-period exchange rate as its budget rate. Alternatively, a firm may decide to set its budget exchange rate at the daily average exchange rate over the previous fiscal year (Barton, Shenkir, and Walker, 2002). In such case, the firm would need to use one hedge through, perhaps, an average-based instrument like an option or synthetic forward. This hedging operation will usually be executed on the last day of the previous fiscal year, with starting day the first day of the new fiscal year. Furthermore, a firm may also use passive currency hedging, such as hedging the average value of a foreign currency cash flow over a specified time period, relative to a previous period, through option structures available in the market. This type of hedging strategy is fairly simple and easier to monitor.

It may also involve creation of a centralized entity in the firm's treasury to deal with the practical aspects of the execution of exchange rate hedging. This entity will be responsible for exchange rate forecasting, the hedging approach mechanisms, the accounting procedures regarding currency risk, costs of currency hedging, and the establishment of benchmarks for measuring the performance of currency hedging. These operations may be undertaken by a specialized team headed by the treasurer or, for large multinational firms, by a chief dealer (Madura, 2003).

Further, it would involve development of a set of controls to monitor a firm's exchange rate risk and ensure appropriate

#### **4.5 Case for Foreign Exchange Risk Management**

The following paragraphs discuss the rationale for foreign exchange risks management by individuals, corporations and governments.

##### **4.5.1 Minimizing financial exposure**

Given the volatility of the foreign exchange rates, there is a strong case for individuals, businesses and governments to manage foreign exchange risks and control the exposures. By so doing the affected parties would be able to minimize the costs associated with such exchange rate volatility, take advantage of opportunities or gains due to exchange rate movements and ensure cost effective operations (Madura, 2003).

##### **4.5.2 Foreign exchange exposure as unsystematic risk**

It is conventional wisdom that exchange rate movements affect both the cash flows of a firm's operations and the discount rate employed to value these cash flows. Measuring foreign exchange exposure is now a central issue in international financial management and this issue has spawned a considerable amount of research. Existing empirical evidence on foreign exchange exposure, however, seems perplexing, studies have so far documented a weak link between contemporaneous exchange fluctuations and stock returns of US multinational firms. Gendreau (1994) finds it difficult and unconvincing that the weak results imply that exchange rate changes have no effect on exporter's stock returns. Bartov and Bodnar (1994) attribute the observed insignificant relationship between exchange rate changes and stock returns to probable problems associated with the previous studies sample selection procedure, or to mispricing caused by investors' errors in estimating this linkage. Levi (1994), however, argues to the difficulty in obtaining stable measures of exchange rate exposure.

Deviations from Purchasing Power Parity (PPP) and International Fischer Effect (IFE) can persist for considerable periods of time, especially at the level of the individual firm (Madura 2004). The resulting variability of net cash flow is of significance as it can subject the firm to the costs of financial distress, or even default. Modern research in finance supports the reasoning that earnings fluctuations that threaten the firm's continued viability absorb management and creditors' time, entail out-of-pocket costs such as legal fees, and create a variety of operating and investment problems, including under-investment in Research and Development. The same argument supports the importance of corporate exchange risk management against the claim that in equity markets it is only systematic risk that matters. To the extent that foreign exchange risk represents unsystematic risk, it can, of course, be diversified away, and provided again, that

investors have the same quality of information about the firm as management, a condition not likely to prevail in practice (Garber and Spencer, 1995).

#### **4.5.3 Non-Existence of Perceived Natural Hedge**

Some firms believe that they do not have any exchange risk because they do significant level of their businesses in dollars. For instance, all the Garment companies in EPZ under the Africa Growth and Opportunity Act (AGOA) initiative export their products to the US and are paid in dollars, at the same time their raw materials are imported from Asia, which they pay for in dollars. The shilling denominated transactions are immaterial in value terms. This is a perceived natural hedge and management in these companies believes that foreign exchange risk is irrelevant. But a moment's thought will make it evident that even if you invoice foreign customers in foreign currency, when the respective currency depreciates against the local currency your prices will have to adjust or you'll be undercut by local competitors. So revenues are influenced by currency changes.

#### **4.5.4 Foreign exchange risk management at firm level vis-à-vis at Investor level**

Some opponents of foreign exchange risk management argue that investors themselves can hedge corporate exchange exposure by taking out forward contracts in accordance with their ownership in a firm. Management does not serve them by second-guessing what risks shareholders want to hedge. However, transaction costs are typically greater for individual investors than firms. Foreign exchange risk should be managed at the firm level. The assessment of exposure to exchange rate fluctuations requires detailed estimates of the susceptibility of net cash flows to unexpected exchange rate changes (De Santis and Gerard 1998). Operating managers can make such estimates with much more precision than shareholders who typically lack the detailed knowledge of competition, markets, and the relevant technologies. Furthermore, in all but the most perfect financial markets, the firm has considerable advantages over investors in obtaining relatively inexpensive debt at home and abroad, taking maximum advantage of interest subsidies and minimizing the effect of taxes and political risk (De Santis and Gerard 1998).

#### **4.5.5 Foreign exchange risk and financial distress**

The above argument for foreign risk management is buttressed by the likely effect that exchange risk has on taxes paid by the firm. It is generally agreed that leverage shields the firm from taxes, because interest is tax deductible whereas dividends are not. But the extent to which a firm can increase leverage is limited by the risk and costs of bankruptcy. A riskier firm, perhaps one that does not hedge exchange risk, cannot borrow as much. It follows that anything that reduces the probability of bankruptcy allows the firm to take on greater leverage, and so pay less taxes for a given operating cash flow (Dominguez and Tesar 2006). If foreign exchange hedging reduces taxes, shareholders benefit from hedging.

#### **4.6 Case against Foreign Exchange Risk Management**

Some finance managers refrain from active management of their foreign exchange exposure, even though they understand that exchange rate fluctuations can affect their firm's earnings and value. We explore below some of the arguments against foreign exchange risk management.

#### **4.6.1 Inadequate exposure to foreign exchanges risks fundamentals**

Some company's management consider any use of risk management tools, such as forwards, futures and options, as speculative and rather gambling on currencies. They argue that such financial manipulations lie outside the firm's field of expertise and core businesses.

#### **4.6.2 Perceived total foreign exchange risk hedge**

Some firms believe that they do not have any exchange risk as they do significant level of their businesses in foreign currency. For instance, most of the companies operating locally with their overseas parent companies or affiliates have entered into local contract priced in dollars, Euros or yen with local customers or governments, at the same time the raw materials are imported and paid for in the same hard currencies. The domestic currencies denominated transactions are immaterial in value terms. This is a perceived natural hedge and management in these companies believes foreign exchange risk is irrelevant.

#### **4.6.3 Foreign exchange risk management at firm level vis-à-vis Investor level**

Modern principles of the theory of finance suggest that management of corporate foreign exchange exposure may neither be an important nor a legitimate concern (Madura 2004). It has been argued, in the tradition of the Modigliani-Miller theories, that the firm cannot improve shareholder value by financial manipulations: specifically, investors themselves can hedge corporate exchange exposure by taking out forward contracts in accordance with their ownership in a firm. Investors face unique exchange risk as a result of their different expenditure patterns, they must themselves devise appropriate hedging strategies. Corporate management of foreign exchange risk in the traditional sense is only able to protect expected nominal returns in the reference currency (Eichengreen and Hausmann 1999). Management often conducts hedging activities that benefit management at the expense of the shareholders. The field of finance called agency theory frequently argues that management is generally more risk-averse than shareholders. If the firm's goal is to maximize shareholder wealth, then hedging activity is probably not in the best interest of the shareholders (Madura 2004).

#### **4.6.4 Existence of market equilibrium**

Another line of reasoning suggests that foreign exchange risk management does not matter because of certain equilibrium conditions in international markets for both financial and real assets. These conditions include the relationship between prices of goods in different markets, Purchasing Power Parity (PPP), and between interest rates and exchange rates, the International Fisher Effect (IFE) (Madura, 2003)

#### **4.6.5 Risk management costs are prohibitive.**

Costs associated with foreign exchange risks are usually very high. These costs are both direct and indirect. For instance, in forward contracts, if the spot rate in the future is less than today's forward rate, then one will lose money by hedging his net payables. A forward rate that serves as an unbiased forecast of the future spot rate will underestimate and overestimate the future spot rate with equal frequency. In this case, periodic hedging with the forward rate will be more costly in some periods and less costly in other periods. On average, it will not reduce one's costs and therefore hedging is not worthwhile (Madura, 2004). Risk management will also involve the hiring of consultants, strategists and financial analysts who mainly may be experts to assist in

evaluating and analyzing the firm's risk and to execute an appropriate hedging strategy. In most cases, these people are very expensive for some local companies to afford.

#### **4.6.6 Reliability of foreign exchange rate forecasting and risk measurement**

There are various modern methods and techniques of forecasting exchange rates and measuring of the foreign exchange exposures. Common among these techniques include use of standard deviation of the expected exchange rates, currency correlations, use of various models, regression analysis and other stochastic mathematical analysis. However, over time these methods, techniques and approaches have arguably not been tested and proven to deliver reliably consistent outcomes. Most Kenyan institutions managers do not have trust in these methods which they view as theoretical and unreliable. On the other hand, some of the managers are not familiar with the concept of these techniques.

#### **4.6.7 Few investment banks and financial institutions provide these facilities in emerging markets**

The derivative market is not properly developed locally. We have few qualified financial analysts, few investment banks, low growth capital market and fewer good training institutions in the area of financial management. It is because of this that the derivative markets for products like currency options, forward contracts and futures are not properly developed. Very few banks locally offer hedging products and therefore some companies use foreign banks which make it even costlier. For that reason some companies have decided to do nothing about foreign exchange risk.

#### **4.7 Accounting motives**

Management's motivation to reduce variability is sometimes driven by accounting reasons. Management may believe that it will be criticized more severely for incurring foreign exchange losses in its financial statements than for incurring similar or even higher cash costs in avoiding the foreign exchange loss. Foreign exchange losses appear in the income statement as a highly visible separate line item or as a note to the accounts, but the higher costs of protection are buried in operating or interest expenses.

##### **4.7.1 Foreign Exchange Risk Management and Control**

Each institution engaged in foreign exchange activities is responsible for developing, implementing and overseeing procedures to manage and control foreign exchange risk in accordance with its foreign exchange risk management policies. These procedures must be at a level of sophistication commensurate with the size, frequency and complexity of the institution's foreign exchange activities (Fama1981). Foreign exchange risk management procedures need to include, at a minimum: accounting and management information systems to measure and monitor foreign exchange positions, foreign exchange risk and foreign exchange gains or losses, controls governing the management of foreign currency activities; and independent inspections or audits (Griffin and Stulz 2001).

Managing foreign exchange risk requires a clear understanding of the amount at risk and the impact of changes in exchange rates on this foreign exchange exposure. To make these determinations, sufficient information must be readily available to permit appropriate action to be taken within acceptable, often very short, time periods (Griffin and Stulz 2001). It is only

through the accurate and timely recording and reporting of information on exchange transactions and currency transfers that foreign currency exposure can be measured and foreign exchange risk controlled. Accordingly, each institution engaged in foreign exchange activities needs to have an effective accounting and management information system in place that accurately and frequently records and measures its foreign exchange exposure; and the impact of potential exchange rate changes on the institution(Griffin and Stulz 2001)..

In this context, hedging activities need to take place within the framework of a clear hedging strategy, the implications of which are well understood by the institution under varying market scenarios. In particular, the objectives and limitations of using hedging products should be uniformly understood, so as to ensure that hedging strategies result in an effective hedge of an exposure rather than the unintentional assumption of additional or alternate forms of risk (He and NG, 1998).The use of hedging techniques is one means of managing and controlling foreign exchange risk. In this regard, many different financial instruments can be used for hedging purposes, the most commonly used, being derivative instruments (Griffin and Stulz, 2001). Examples include forward foreign exchange contracts, foreign currency futures contracts, foreign currency options, and foreign currency swaps.

Generally, few institutions will need to use the full range of hedging techniques or instruments. Each institution should consider which ones are appropriate for the nature and extent of its foreign exchange activities, the skills and experience of trading staff and management, and the capacity of foreign exchange rate risk reporting and control systems (Griffin and Stulz, 2001). Financial instruments used for hedging are not distinguishable in form from instruments that may be used to take risk positions. Before using hedging products, institutions must ensure that they understand the hedging techniques and that they are satisfied that the instrument meets their specific needs in a cost-effective manner. Further, the effectiveness of hedging activities should be assessed not only on the basis of the technical attributes of individual transactions but also in the context of the overall risk exposure of the institution resulting from a potential change in asset/liability mix and other risk exposures such as credit, interest rate and position risk (Griffin and Stulz 2001).

#### **4.8 Hedging strategies**

The essence of hedging is to substitute at the outset of the exposure horizons a known cost of buying protection against foreign exchange risk for an unknown transaction loss. In a sense, the ledger is trading the uncertainty of an accounting loss which may never materialize for the uncertainty of the cost of eliminating transaction risks. A cost that bears some resemblance to an insurance premium (Jacque, 1981). Thus, the rationale behind the concept of hedging is to substitute for exchange losses, footnoted in reported earnings statements, normal business costs that flow through the income statement (Jacque, 1981). Within the framework of a currency risk management strategy, the hedging instruments allowed to manage currency risk should be specified. The available hedging instruments are enormous, both in variety and complexity, and have followed the dramatic increase in the specific hedging needs of the modern firm (Hakala and Wystup, 2002; Jacque, 1996; Shapiro, 1996). These instruments include both OTC and exchange-traded products.

The relative merits of several different tools for hedging exchange risk, including forwards, futures, debt, swaps and options and their extent of usage are discussed below. First, there are different tools that serve effectively the same purpose. Most currency management instruments enable the firm to take a long or a short position to hedge an opposite short or long position. Thus one can hedge a Euro payment using a forward exchange contract, or debt in Euro, or futures or perhaps a currency swap. In equilibrium the cost of all will be the same, according to the fundamental relationships of the international money market. They differ in details like default risk or transactions costs, or if there is some fundamental market imperfection. Indeed in an efficient market one would expect the anticipated cost of hedging to be zero (Madura 2004). Second, tools differ in that they hedge different risks. In particular, symmetric hedging tools like futures cannot easily hedge contingent cash flows: options may be better suited to the latter.

#### **4.8.1 Foreign Exchange Rate Hedging**

There have been a number of studies on the impact of dynamic hedging on the price of the underlying asset. Grossman (1988) focuses on informational differences between buying an option and running the corresponding replicating strategy. The existence of options and related dynamic hedging could increase volatility, especially in the smaller and less liquid currency segment as the spot exchange rate approaches the strike price. When strike prices and/or option maturities are highly concentrated, a large volume of one way hedging could occur in a short period. Market participants reported sharp movements in spot prices were frequently observed as a result of such concentration (Frey and Stremme, 1994). Hedging refers to the process of managing risk by eliminating, or at least reducing, the underlying exposure. A hedge is affected by offsetting in part or whole the existing risk exposure associated with an underlying transaction (Hundman, 2000). 'Natural' hedges are also possible, where exposure to payments/liabilities in one currency is offset by receipts/assets denominated in the same currency. The various methods of hedging are discussed below:

#### **4.8.2 Forward contracts hedging**

Trading or "dealing" in each pair of currencies consists of two parts, the spot market, where payment is made right away, in practice this means usually the second business day, and the forward market. The rate in the forward market is a price for foreign currency set at the time the transaction is agreed to but with the actual exchange, or delivery, taking place at a specified time in the future. While the amount of the transaction, the value date, the payments procedure, and the exchange rate are all determined in advance, no exchange of money takes place until the actual settlement date. This commitment to exchange currencies at a previously agreed exchange rate is usually referred to as a forward contract. Two types of forwards contracts are often used: outright forwards (involving the physical delivery of currencies) and non-deliverable forwards (which are settled on a net cash basis) (Hundman, 2000).

Forward contracts are the most common means of hedging transactions in foreign currencies. The trouble with forward contracts, however, is that they require future performance, and sometimes one party is unable to perform on the contract. When that happens, the hedge disappears, sometimes at great cost to the hedger. This default risk also means that many companies do not have access to the forward market in sufficient quantity to fully hedge their exchange exposure (Adler and Dumas, 1984). The cost of forward contracts is normally high and prohibitive and there is also the risk of the exchange rate moving in the opposite direction.

#### **4.8.3 Currency futures hedging**

Outside of the inter-bank forward market, the best-developed market for hedging exchange rate risk is the currency futures market (Jorion 1991). In principle, currency futures are similar to foreign exchange forwards in that they are contracts for delivery of a certain amount of a foreign currency at some future date and at a known price. In practice, they differ from forward contracts in various ways. One difference between forwards and futures is standardization. Forwards are for any amount, as long as it's big enough to be worth the dealer's time, while futures are for standard amounts, each contract being far smaller than the average forward transaction. Futures are also standardized in terms of delivery date. In most countries where the currency futures market are developed, normal currency futures delivery dates are March, June, September and December, while forwards are private agreements that can specify any delivery date that the parties choose. Both of these features allow the futures contract to be tradable (Journal of International Money and Finance, 2003).

Another difference is that forwards are traded by phone and telex and are completely independent of location or time. Futures, on the other hand, are traded in organized exchanges such as the LIFFE in London, SIMEX in Singapore and the IMM in Chicago (Shapiro 2003). The most important feature of the futures contract is not its standardization or trading organization but in the time pattern of the cash flows between parties to the transaction (Williamson 2001). In a forward contract, whether it involves full delivery of the two currencies or just compensation of the net value, the transfer of funds takes place once: at maturity. With futures, cash changes hands every day during the life of the contract, or at least every day that has seen a change in the price of the contract. This daily cash compensation feature largely eliminates default risk. Thus forwards and futures serve similar purposes, and tend to have identical rates, but differ in their applicability. Most big companies use forwards; futures tend to be used whenever credit risk may be a problem.

#### **4.8.4 Money Market Hedging**

Involves debt borrowing in the currency to which the firm is exposed or investing in interest-bearing assets to offset a foreign currency payment. This is a widely used hedging tool that serves much the same purpose as forward contracts. The money market hedge suits many Kenyan companies because they have to borrow anyway, so it simply is a matter of denominating the company's debt in the currency to which it is exposed. This is logical; however, if a money market hedge is to be done for its own sake, the firm ends up borrowing from one bank and lending to another, thus losing on the spread. Though not widely used in Kenya, the method provides greater potential for prudent foreign exchange risk management. The method is simple to comprehend and use. Most Kenyan middle class are risk averse and could explore this especially when they engage this in areas like importation of second hand cars from Dubai and Japan, equipment for small business amongst others.

#### **4.8.5 Currency Options and Swaps**

Coincident with the internalization of portfolios and the interlinking of money markets across currencies has been the expanded use of methods to hedge currency risk. While basic hedging instruments such as forward exchange contracts have a long history, the use of newer instruments such as exchange-traded options and currency swaps has grown dramatically in the past decade (Garber and Spencer, 1995). In addition, option pricing methods have been used in

dynamic hedging strategies to construct tailor made synthetic derivative products, a transplantation of currency markets of the portfolio insurance methods used to hedge equity market exposure (Garber and Spencer, 1995).

Many companies, banks and governments have extensive experience in the use of forward exchange contracts. With a forward contract one can lock in an exchange rate for the future. There are a number of circumstances, however, where it may be desirable to have more flexibility than a forward provides. For example, flower exporters in Kenya may have sales priced in U.S. dollars as well as in Euros in Europe. Depending on the relative strength of the two currencies, revenues may be realized in either dollars or Euros. In such a situation the use of forward or futures would be inappropriate: there's no point in hedging something you might not have. What is called for is a foreign exchange option: the right, but not the obligation, to exchange currency at a predetermined rate.

## **4.9 Non-Hedging Strategies**

### **4.9.1 Foreign Exchange Risk Limits**

Each institution needs to establish explicit and prudent foreign exchange limits, and ensure that the level of its foreign exchange risk exposure does not exceed these limits (Nance, Smith and Smithson 1993). Where applicable, these limits need to cover, at a minimum: Foreign exchange positions should be managed within an institution's ability to quickly cover such positions if necessary. Moreover, foreign exchange risk limits needs to be reassessed on a regular basis to reflect potential changes in exchange rate volatility, the institution's overall risk philosophy and risk profile.

Authorized currencies will normally include currencies in which the institution may be called on to settle foreign exchange transactions. These are usually the currencies in which the institution or its customers conduct business. Limits on an institution's foreign exchange exposure should reflect both the specific foreign currency exposures that arise from daily foreign currency dealing or trading activities (transactional positions) and those exposures that arise from an institution's overall asset/liability infrastructure, both on- and off-balance sheet (structural or translational positions). The establishment of aggregate foreign exchange limits that reflect both foreign currency dealing and structural positions helps to ensure that the size and composition of both positions are appropriately and prudently managed and controlled and do not overextend an institution's overall foreign exchange exposure (Smith and Stulz 1985). Although the overall assessment of foreign exchange counterparties is an integral component of any foreign exchange operation, this may be conducted by an institution's credit risk management function, thus obviating the need for separate counterparty assessment within the institution's foreign exchange operations (Pringle and Connolly 1993).

### **4.9.2 Strategic invoicing**

The strategy to avoid exposure in foreign currency here for companies transacting at international level is to invoice and be invoiced in your own currency, so that nothing matters in the foreign currency movement. If a domestic currency is not widely accepted in the international market, then use a currency that is sufficiently stable. The U.S dollar is the common choice in most countries.

A popular way to hedge the risk that the domestic currency may lose value against a foreign currency is to eliminate the need for a foreign currency by negotiating all contracts in U.S. dollars. Although this can be an effective tactic of hedging risk in some cases, you should be aware that negotiating in U.S. dollars could present some problems. From your suppliers' viewpoint, cheques made out in U.S. dollar create a collection nightmare. It is time consuming in some countries to clear a U.S dollar cheques and your supplier will incur a number of additional costs including service charges, transaction fees, and the exchange rate that your supplier's bank uses to convert your U.S. dollar check into the foreign currency.

#### **4.9.3 Leading and Lagging**

Leading and Lagging is the process by which multinationals would adjust the timing of payment request or disbursement to reflect expectations about future currency movements (Madura, 2003). For instance a Kenyan firm that has payment commitments in South Africa in three months time would opt to pay earlier if it expects the shilling to depreciate against the rand in three months. This technique is called leading. However, if it expects the shilling to strengthen by the time of settlement the Kenyan firm would delay payments until the shilling appreciates. This is called lagging. This method is not common as it prejudices against a second party in the transaction. It is also not allowed in some countries.

#### **4.9.4 Currency diversification**

Multinationals with operations all over the world ensures that its cash flows are denominated in various currencies to provide a cushion to foreign exchange risks. By so doing, they minimize aggregate risks as any exposure in one currency is insignificant compared to a whole diversified portfolio of currencies that the firm transacts in. This method is only to huge multinationals with operations internationally.

#### **4.9.5 Selection of Production location**

MNCs would use various production locations to control foreign exchange risk. In this case the firms emphasize production in areas where local currencies have depreciated. In so doing, the cost of production is lowered. Therefore firms would be advised to use production units that are easy to dismantle and re-assemble. Typical example was Aggreko and Deutz Power companies who moved their generators here in Kenya during the Power crisis here in the country in 1998. They easily dismantled their equipment and moved on once the power shortages were over. Similar concept could be applied whenever there are movements in foreign currency.

#### **4.9.6 Natural Hedging**

Natural hedging refers to operational changes that mitigate or eliminate FX risk without the use of financial instruments or derivatives (Giddy and Dufey, 2005). For example, multinational businesses are concerned about depreciation of assets held in a foreign currency due solely to adverse FX movements. They can reduce this financial FX risk by matching long-term liabilities with assets. If liabilities are denominated in the same currency as assets, FX fluctuations that cause asset values to fall also cause liabilities to shrink. A match between assets and liabilities prevents loss of value, at least partially, without the costs and complications of separate financial market transactions. Of course, most businesses' assets exceed their liabilities, so this approach generally does not eliminate FX exposure.

## 5.0 RESEARCH METHODOLOGY

### 5.1 Research Design

The study used the survey research design. Norman and Fraenkel, (2001) define a descriptive survey as an attempt to collect data from members of a population in order to determine the current status of that population with respect to one or more variables. Phil (1996) says that descriptive research studies are designed to obtain information concerning the current situation and other phenomena and wherever possible to draw valid conclusion from the facts discussed. This is a survey research to explore the existing status of two or more variables at a given point in time. For this research, the researcher prefers to carry out survey on the practices of risk management and its challenges in the selected Kenyan corporations in the energy sector for the years 2000 through 2010. This design is deemed suitable for this study since the study would, through data collection from the respondents, assess attitudes, opinions and draw conclusions based on the findings. In addition, the method offered the researcher a wide coverage of the population of study and facilitated comparisons as well as being financially economical, given the wide geographical coverage of the population of study.

### 5.2 Population

Mugenda and Mugenda (2005) refer to Population as the “universe’. Borg and Gall (1999) define population as all the members of a real or hypothetical set of people, event or objects to which a researcher wishes to generalize the results of the study. The population of this research consisted of 50 corporations and institutions. These are corporations which are currently involved in the energy sector of Kenya based on information obtained from the website of the Ministry of Energy, Energy Regulatory Commission, and Petroleum Institute of East Africa.

### 5.3 Data analysis

Data collected from the field was checked for consistency, completeness and usefulness. This entailed field edits, data results validation and central editing. Obai (1998) points out that analyzing survey research includes coding, tabulating responses, translating the responses into specific categories and then entering them in the Statistical Package for Social Sciences (SPSS) computer software for windows. For quantitative, descriptive statistics percentages and frequencies were derived and used. In addition, mean and standard deviation were used alongside the frequencies for Likert items. Qualitative findings from the interviewees as well as the secondary sources were analyzed using content analysis techniques. Presentations were done by use of tables, as well as charts. Items from the open ended questions were analyzed and organized into themes and then presented in narrative form.

## 6.0 DATA ANALYSIS RESULTS

**Table 1: Distribution by foreign currency risk management inclusion in the company’s strategic plan**

<b>Fact</b>	<b>Frequency</b>	<b>Percentage</b>
Yes	10	50
No	5	25
Not sure	5	25
<b>Total</b>	<b>20</b>	<b>100</b>

According to the table 6, foreign currency risk management form part of most companies' strategic planning with response percent of 50%. However No, and not sure response had a response rate of 25% each.

**Table 2: Distribution by the extent the company measure foreign exchange rate exposure**

<b>Fact</b>	<b>Frequency</b>	<b>Percentage</b>
Yes	12	60
No	8	40
<b>Total</b>	<b>20</b>	<b>100</b>

According to the table 7, majority of the companies in the energy sector measure and quantify foreign exchange exposure. This is indicated by a 60% response rate.

**Table 3: Distribution by the kind of foreign exchange rate risk measured.**

<b>Type/frequency</b>	<b>often</b>	<b>sometime</b>	<b>Never</b>	<b>Total</b>
Translation exposure	4	2	6	12
Transaction exposure	8	4	0	12
Economic exposure	1	1	10	12

According to the table 8, transaction exposure is the most measured foreign exchange exposure type with all the 12 firms that measure foreign exchange rate risk. 8 of these firms carry out the exercise on a monthly and quarterly basis whereas 4 of the firms do it annually and sometimes not consistently. Translation and economic exposures are rarely measured.

**Table 4: Distribution by the main purpose for exchange rate exposure measurement**

<b>Reason</b>	<b>Frequency</b>	<b>Percentage</b>
Hedging	11	92
Speculation	0	0
Risk management	1	8
others	0	0
<b>Total</b>	<b>12</b>	<b>100</b>

Table 9 shows that majority of the firms in the energy sector do measure foreign exchange rate risk with the main purpose of hedging. This is shown by a response rate of 11 out of the 12 firms that measure foreign exchange rate in the selected sample.

**Table 5: Company's hedging techniques**

	<b>Often</b>	<b>Sometime</b>	<b>Never</b>	<b>Total</b>
Futures	0	0	12	12
Forwards	10	2	0	12
Options	0	0	12	12
Swaps	1	1	10	12
Natural hedge	6	6	0	12

Table 10 show that forwards and natural hedge are the most commonly hedging techniques used by most of the firms in the energy sector. Options and futures are rarely used, with one company using the cross currency swap.

**Table 6: Distribution by reasons for not using the hedging techniques**

	Frequency	Percentage
Too complex	8	60
Not allowed	2	20
Not liquid enough	0	0
Too risky	0	0
Accounting problems	2	20
No desired feature	0	0
Total	12	100

Table 11 shows that techniques like futures and options were not being commonly used as hedging tool since they are too complex to understand from management perspective. Cross currency swaps were not allowed in two companies and two companies indicated that they are not using these derivatives due to accounting complication under hedge accounting as per IFRS.

**Table 7: Average maturity of the hedging instruments**

	0-90 days	91-180 days	180-360 days	1-3 yrs	Over 3 Yrs	Not used
Forwards	5	5	2	0	0	8
Futures	0	0	0	0	0	20
Options	0	0	0	0	0	20
Swaps	0	0	0	0	2	18
Natural hedge	7	3	2	0	0	8

Table 12 shows that most firms prefer to use hedge instruments with short term maturity and therefore tend to hedge in the short-term but covered the maturity of the exposure. However, for cross currency swaps, the firms tend to hedge for a longer period though in the above case, the hedge instruments were for a shorter period than the maturity of the exposure, in which case there provisions for re-adjustment in the hedges when they expired. These are mainly for long term debt denominated in currencies other than the home or functional currency.

**Table 8: Coverage of the hedge instruments**

	Partial hedge	Full hedge	Dynamic hedge
Forwards	12	0	0
Futures	0	0	0
Options	0	0	0
Swaps	2	0	0
Natural hedge	7	5	0

Table 13 shows that the sampled firms use the instruments partially other than for the natural hedge which has minimal cost implication.

**Table 9: Percentage of exchange rate exposure hedged**

	<b>Frequency</b>	<b>Percentage</b>
0-20%	3	15
20-40%	3	15
40-60%	3	15
60-80%	5	25
80-100%	6	40
Total	20	100

Table 14, shows that firms in the energy sector hedge a significant portion of their foreign exchange exposure, at least 65% of the firms cover over 60% of the exposure.

**Table 10: Distribution by various generally acceptable foreign exchange control application**

<b>Statement</b>	<b>Yes</b>	<b>No</b>	<b>Not applicable</b>
a) The company have accounting and management information systems to measure and monitor foreign exchange positions, foreign exchange risks and foreign exchange gains and losses	12	6	2
b) There are controls governing the management of foreign currency activities	11	7	2
c) There are independent inspections or audits carried out on the foreign exchange risk management procedures	10	4	6
d) There are in place monitoring and reporting techniques that measure the net spot and forward positions in each currency or pairings in which you are authorized to have exposure	9	6	5
e)The company aggregate net spot and forward positions in all currencies	6	6	8
f) The company measures transactional and translational gains and losses relating to trading and structural foreign exchange activities and exposure	12	4	4
g) There are clear and effective segregation of duties between persons who initiate foreign exchange transactions and those responsible for operational functions such as prompt and accurate settlement, and timely exchanging and reconciliation of confirmations, or account for foreign exchange activities	10	6	4
h) There are procedures to ensure that foreign exchange transactions are fully recorded in the records and account	9	5	6

i) There are procedures to ensure that such transactions are promptly and correctly settled	11	8	1
j) There are procedures to identify and report to management any unauthorized dealing	8	6	6
k) The board review and approve foreign exchange risk manage policies	9	5	6
l) The board review periodically, but at least once per year, the foreign exchange risk management program	11	5	4
m) The board ensure that an independent inspection/audit function reviews the foreign exchange operations to ensure that the institution's foreign exchange risk management policies and procedures are appropriate and are being adhered to	7	7	6
n) The board ensure the selection and appointment of qualified and competent management to administer the foreign exchange function	9	5	6
o) The management develop and recommend foreign exchange risk management policies for approval by the board	8	7	5
p) The management is responsible for implementing exchange risk management policies	9	8	3
q) The management ensure that foreign exchange risk is managed and controlled within the foreign exchange risk management program	10	5	5
r) The management established a method which it utilizes for accurately measuring the foreign exchange risk	9	6	5
s) There are procedures established by management to measure realized and unrealized foreign exchange gains and losses	8	8	4
t) The management developed lines of communication to ensure the timely dissemination of the foreign exchange policies and procedures to all individuals involved in foreign exchange activities and the foreign exchange risk management process	9	5	6
u) The management report foreign exchange risk activities to the Board at least once per year	11	7	2

Summary	Yes	No	N/A
Total frequency(Max 420)	198	126	96
Average score (Max. 20)	9	6	5
Frequency percentage	47%	30%	23%

The study further aimed to find out the respondent's view on the structured statements which was designed on the strength of the company foreign exchange risk identification, measurement, management and control. The respondents were required to indicate by ticking on their

appropriate preference (Yes, No or Not applicable) on the application and usage of the statement processes, which are generally acceptable control and salient features of an effective and sound foreign exchange management system.

According to the table 15, a highest frequency was recorded was 12 in that the respondents in the sampled companies agreed that the companies have accounting and management information systems which measures and monitors foreign exchange positions, foreign exchange risks and foreign exchange gains and losses, and that the companies measures transactional and translational gains and losses relating to trading and structural foreign exchange activities and exposure. Also a frequency of 11 which was relatively high indicated that there are controls governing the management of foreign currency activities, there are procedures to ensure that foreign currency transactions are promptly and correctly settled and that the board review periodically on an annual basis the foreign exchange risk management program.

The lowest frequency was 7 where the respondents indicated that the board ensures that independent inspection or audit function reviews the foreign exchange risk management system and processes for compliance and effectiveness.

In summary, and based on all the 21 evaluation criteria which each had a maximum score equivalent to the sample size, 20, the overall average score was 9 out of 20 with a frequency of 196 out of the possible 420 representing 47%. This is an indication that of the sampled firms, their systems of foreign exchange risk identification, measurement, management and control are slightly below average (50%) in terms of effectiveness, strength and soundness.

On foreign exchange risk management practices, most of the respondent who gave opinions' on whether foreign currency risk management form part of the respondent's strategic plan briefly stated varied opinions revolving around the basis to monitor progress of the company, measure on the control of prices in view of competition and avoid economic downfall. Results from the annual reports and audited accounts on the foreign exchange as per the few respondent indicated a general increase in foreign exchange losses in the previous five financial year.

The most outlined challenges in foreign exchange risk management were inadequate expertise in financial management and especially in the area of foreign exchange management and control, prohibitive costs associated with foreign exchange control and lack of awareness and the under developed foreign exchange and derivatives market and lack of quality training institutions in financial management. On basis of addressing on these challenges, most respondent indicated that there was need to government and in consultation with investment banks to development an elaborate foreign exchange market alongside the secondary market for trade financial derivatives and instruments like forwards, futures, options, cross currency swaps amongst others. The respondents further indicated that local institutions should be established to train world class professionals in the area of financial management who will be absorbed in local companies, at a reasonable price, to assist in development and managing sound foreign exchange systems.

## 7.0 CONCLUSIONS AND RECOMMENDATIONS

### 7.1 Conclusion

Energy sector plays a pivotal role in Kenyan economy. This is also emphasized in the government vision 2030 development plan. The government has allocated substantial funds in the realization of vision 2030, the bulk of the funds will be channeled to the development of the energy sector under the public private partnership through project finance. Funding for these energy sector projects will inevitably expose the affected projects to massive foreign exchange risk through loans from development partners. The challenge will then be the country's preparedness to manage foreign exchange risks of this magnitude and to minimize exposure. Findings of the study indicate that the foreign exchange market is underdeveloped rendering foreign exchange risk management practices in the country inefficient and costly. By implementing reforms and learning from best practices, Kenyan government being the policy maker and its development partners should take solid steps towards resolving foreign exchange rate risks.

### 7.2 Recommendations

The energy sector plays a very critical role in the economy of this country and investments in this sector entail huge capital outlay with funding from development partners and external lending institutions in form of debt denominated in foreign currency. This then exposes these firms to foreign exchange rate risk exposure that will adversely impact the value of the energy sector projects being undertaken. Therefore there is need to develop elaborate foreign exchange policies and guidelines at a strategic level for all the players in the energy sector. The policy should form part of the company's strategic plan and reviewed at authorized at board level.

There is need for the government in consultation with investment banks to development an elaborate foreign exchange market alongside the secondary market for trading financial derivatives and instruments like forwards, futures, options, cross currency swaps amongst others. This will provide diversity, competitiveness and flexibility in the foreign exchange and derivative market

The development and implementation of foreign exchange risk management programs is a specialist area that requires appropriate knowledge and expertise in financial markets, robust systems and rigorous internal controls. The government should therefore establish local institutions to train world class professionals in the area of financial management who will be absorbed in local companies, at a reasonable price, to assist in development and managing sound foreign exchange systems. This will reduce reliance on consultant expats who are costly and will further ensure that the economy is a breast the dynamics of the foreign exchange market which is very volatile

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