

**AN EVALUATION OF THE USE OF CURRENCY OPTIONS AS AN
ALTERNATIVE HEDGING STRATEGY TO FORWARD EXCHANGE
CONTRACTS FOR THE MANAGEMENT OF FOREIGN EXCHANGE
RISK IN A MULTINATIONAL FIRM.**

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**Submitted in partial fulfillment for the requirements
for the degree of Master of Business Administration**

School of Management

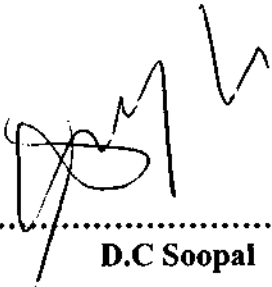
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May 2006

Declaration of Originality

The author hereby declares that the contents of this dissertation, unless specifically indicated to the contrary, are his own work and that the thesis has not been submitted simultaneously or, at any other time, for another degree.



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ACKNOWLEDGEMENTS

I wish to extend my sincere appreciation and thanks to all those who have shouldered me in preparing this dissertation especially Mr Barry Strydom, the project supervisor, who provided invaluable guidance and insight on the topic and who spent precious time to supervise my work. A very special thank you to my parents, Mr and Mrs V.C Soopal and my wife Aruna for their support and encouragement. Finally, I want to dedicate this thesis to my Grandfather and Grandmother, Pundit Ramawad and Mrs Kunttee Soopal, who always inspired me. I am much indebted to all of them.

EXECUTIVE SUMMARY

Currency exposure has become a widespread issue as more corporations of all sizes source and sell in overseas markets and compete both at home and abroad with international companies. Very few companies are unaffected by currency risk, whether directly or indirectly. Businesses that source products from foreign countries face the risk that exchange rate movement will erode gross margins if competition prevents selling prices from rising in tandem, while resource-based companies face the uncertainty associated with the fact that the world's commodities markets are denominated in US Dollars or Pounds Sterling while their costs are often denominated in their local currencies. Businesses that ignore exchange rate volatility expose themselves to unnecessary risk, which could have significant consequences if exchange rates suddenly move unfavourably.

The volatility of the South African Rand over the past few years is forcing treasurers and other managers responsible for international trade to look anew at how South African exchange rate fluctuations affect their company's results. Many companies have suffered from the effects of fluctuating exchange rates; some have reported losses running into millions of Rand. While more and more firms realize that they should manage foreign exchange risk, not all of them have come up with an appropriate management strategy. There has always been a great deal of debate over the best approach to hedging, or the best methods to forecast exchange rates; however hedging is of the utmost importance for companies.

With the recent volatility of the rand, the multinational firm covered in this thesis, showed foreign exchange losses amounting to several millions, using forward exchange contracts to cover its high foreign exchange exposures. The major disadvantage of the forward contract as experienced by the firm and shown in this thesis is that it is a legally binding agreement and thus the firm was bound to accept the agreed exchange rate and also the fact that the exchange itself had to be done. If the commercial reason for the exchange disappeared, the cost of cancelling the forward contract would be quite high. In addition, if the exchange rate at maturity was more favourable to the firm than the one agreed to in the forward contract, the firm will still have to honour the contract and will not be able to take advantage of the favourable exchange rate. Thus, with FEC there is the elimination of the opportunity for profit, should exchange rates turn out favourably.

When purchasing a currency option, however, the holder is protected from downward movements in the exchange rate whilst still having the opportunity to benefit if the currency moves favourably. Hence, the purpose of this thesis was to evaluate the use of currency options as an alternative hedging strategy to forward exchange contracts to manage the firm's foreign exchange risk.

It was found that, had the firm used currency options as compared to FEC over the last four years, the firm would have made significant saving in spite of the option premium. The firm would have enjoyed the flexibility offered by currency options, that is, to let the contract lapse when it would not be to the firm's advantage thus making a lower payment for its imports than would be paid under the forward exchange contract for the same period. The results were tested over a period of four years to prove that the difference in payments using the FEC and the currency options were statistically significant.

What was apparent from the research, however, was that though the multinational firm could choose from a vast array of financial instruments and currency derivatives to manage its foreign exchange risk, the firm chose to stick to using forward exchange contracts. The reasons varied from fear of dealing with the complexities of the many instruments available on the market to the limited resources within the foreign exchange department to understand the technicalities of the various instruments. The investigation revealed though forward cover as used by the firm was more efficient in terms of ease of use. Currency options when applied to cover the firm's foreign imports resulted in less cash outflow, making it better and more profitable than forward exchange contracts. Options contract, though more expensive, would have allowed the firms to let the option lapse and therefore benefit from spot exchange rates if these were more favourable.

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CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

As the world shifts towards a truly integrated global economy, more firms, both large and small, are becoming international businesses, engaging in international trade and investment. As these organizations increasingly engage in cross border trade and investment, their managers need to recognize that the task of managing an international business differs from that of managing a purely domestic business in many ways. Cross border transactions require that money be converted from a firm's home currency into a foreign currency and *vice versa*. Since currency exchange rates vary in response to changing economic conditions, financial managers within international businesses must develop management strategies and select amongst many financial instruments and currency derivatives to deal with unexpected exchange rate changes, which represent a risk to the financial position of the business.

"Foreign Exchange Losses of R61m eats into Shoprite's earnings". The net profit of Shoprite Holdings, one of the biggest food retailers, dropped more than 13 percent after it suffered a R61 million foreign exchange loss... as reported in the Business Report section of the Mercury Newspaper dated Tuesday the 18th of February, 2003. News of this nature has not been received as a surprise, since the Rand volatility has been in the headlines for almost 38 months when its exchange rate value to the Dollar rose from R6.1325 in January 2000 to a peak of R13.50 on the 20th December of 2001. After the currency's 37% depreciation in 2001, it bounced back strongly in 2002 to take honours as the best-performing currency against the US Dollar (Finance Week, 2003: 50). As per the Finance Week (2003: 50), some top economists took the Rand's strong performance for granted, even predicting the currency would have strengthened to US\$1/R6.50 by the end of 2003. But the Rand again surprised by being one of the worst performing currencies during the beginning of 2003. Thereafter, the Rand/Dollar exchange has been on a recovering trend towards the end of 2004, trading at the beginning of 2005 at below R6.00 to the Dollar mark.

The Shoprite's case, among many others, reflects the devastating effects of exchange rate volatility on a company's performance. Similarly, Nedcor Reviewed Financial Results for the year ended 31 Dec 2002, showed a translation¹ loss of R1bn with the strengthening of the Rand for the period from 31 Dec 2001, when the Rand was trading at R12.05 to the US Dollar to 31 Dec 2002, when it traded at R8.60 to the US Dollar. During the same period the previous year, Nedcor reported a translation gain of R1.1bn, when the Rand declined from R7.55 to the US \$ in Dec 2001 to R12.05 in Dec 2002 (Financial Mail, 2003: 42).

Today, the economic environment in which most firms operate, is highly volatile and uncertain. One of the main factors affecting this process is the increasing market globalisation and internationalisation, which is reflected in increased exchange, interest, inflation rates fluctuations as well as in high competition, demand levels etc. Exchange rate changes, however, are one of the financial risks where the increased volatility is reflected to the greatest extent (Brucaite & Yan, 2000: 1). For example, large-scale changes in exchange rates have led to dramatic changes in competitive structure of markets, that have caused companies to be nearly driven out of markets where they formerly held comfortable market shares. Well-known examples are the US firms Caterpillar and Kodak or the experiences for the German car producers Volkswagen and Porsche in the US market (Bodnar & Gebhardt, 1999: 154).

To illustrate, one big multinational company buys its raw material in the domestic market and sells its final product in both domestic and foreign markets. Assume that the situation in the market changes, and consequently the foreign currency becomes cheaper in relation to the domestic one. What are the effects on such company? If the company cannot increase its export price, its products selling in the foreign market will generate less income than before, because the domestic currency as well as the final product will become more expensive in comparison with the foreign currency and price level. Following the same logic, it is not difficult to realise, that the foreign competitors of the company will gain the competitive advantage, being able to offer a lower price for the same product in the domestic market. Therefore, the company will incur double losses: it will lose part of the domestic market and part of the foreign market.

¹ Translation Exposure as described in details in Section 2.3.2 is defined as the effect of a change in the exchange rate on the recorded accounting result of a company (Herderson, 2002: 140)

The management of foreign exchange risk has therefore become a vital aspect of financial management. South Africa has a relatively open economy, and the continuing fluctuations of the Rand/Dollar exchange rate, in an environment of flexible exchange rates, have resulted in greater emphasis on the foreign exchange management functions in firms. While more and more firms realize that they should manage foreign exchange risk, not all of them have come up with an appropriate management strategy. There has always been a great deal of debate over the best approach to hedging as well as to the choice of financial instrument or currency derivatives (Brucaite & Yan, 2000: 28). It is with this in mind that the researcher attempts to show in this thesis, through a case study of a Multinational firm, that using Currency Options instead of the Forward Exchange Contract (FEC) in a period of high volatility of the exchange rate can bring different results and possible savings in the firm's management of foreign exchange exposures. The particular firm chosen, using FEC made huge foreign exchange losses in the last four years.

1.2 Objectives

The objectives of the thesis are:

- To present one Multinational firm's foreign exchange risk management strategy and to understand its foreign exchange exposures and show how effective its current strategy is, in terms managing the firm's foreign exchange risk; and,
- To investigate the use of currency options as an alternative foreign exchange risk management strategy to FEC by making use of the firm's foreign exchange exposure figures in US Dollars over the last 4 years.

1.3 Scope and Method of Study

This research uses a quantitative based 'case study' approach and an evaluation study, which is the most suited strategy within a case study approach to compare and contrast hedging instruments for the following reasons:

- Firstly, as pointed out by Robson (1993: 5), it is a strategy which involves an empirical investigation of a particular contemporary phenomenon within its real life context, using multiple sources of evidence, and

- Secondly, using an evaluation study within a ‘case study’ approach, according to Hall & Hall (1996: 46) generates information that has direct relevance to subsequent decisions about improvements to, or the continuation of, a particular action programme.

With regards to this study, using data collected for a period of four years from January 2001 to December 2004 for the MNC, the aim is to measure and compare the results obtained from using currency options and forward exchange contracts to facilitate decision making in the management of foreign exchange risk in the multinational firm.

The evaluation study conducted in this thesis follows a simple 3 stage-process:

- Firstly, at the ‘preparation stage’ of the research, access was negotiated to the relevant and sometimes sensitive information (both financial and policy related) on the Multinational Corporation under study. Use of secondary data, such as the various performance reports prepared by the firm’s treasury on its foreign exchange positions, the firm’s policies and procedures with regards to imports and foreign exchange management, provided enough material and data to successfully understand and calculate foreign exchange exposure faced by the firm, as well as its foreign exchange risk management strategies;
- Secondly, during the ‘fieldwork stage’, data was collected and an analysis of the MNC’s current foreign exchange risk management tools and processes were conducted; and
- Finally, in the ‘analysis stage’, data collected were used to prove the main purpose of the thesis, that is, to show currency option as an alternative hedging strategy to FEC for the effective and efficient management of foreign exchange exposure/risk in the multinational firm. Using a t-test, the hypothesis: whether there is no significant difference between payments made in Rand amounts for the MNC’s exposure using forward cover and currency options, was tested.

The researcher limited this thesis to the comparison between currency options and FEC for two reasons: the first one being that these two instruments are the main ones used in the management of foreign exchange risk, and secondly, the MNC firm under study restricts its foreign exchange risk management policies to forward contracts and currency options.

1.4 Plan of the Study

The thesis is structured as follows: Chapter 2 looks at theories behind the management of foreign exchange risks. It also looks at some of the main financial instruments and currency derivatives, which can be used in the management of foreign exchange risk. Chapter 4 in turn describes the approach used by the researcher in this thesis. While Chapter 3 measures the foreign exchange exposure faced by a multinational firm and explores forward foreign exchange strategy used by the firm, Chapter 5 brings the various aspects of the theoretical background gained from Chapter 2 to analyse and evaluate currency options, as an alternative hedging strategy that the firm could employ.

In Chapter 6 and 7, the researcher provides some comments and suggestions on both the current status of the multinational firm's foreign exchange risk management system and the way forward with currency options.

CHAPTER TWO

FOREIGN EXCHANGE RISK MANAGEMENT

2.1 Introduction

The high volatility of exchange rates is a fact of life faced by any company engaged in international business. When buying or selling products in a foreign currency, there is always a risk that the settlement price will differ from the invoice price after translation into the home currency, which can pose a significant obstacle to effective cash flow management. The reaction of any firm exposed to foreign exchange risk can take one of two forms. One alternative is to do nothing, in which case, the firm is left with the foreign exchange risk and retains either the gains or the losses from the currency exposure. The other alternative is for the firm to manage the risk in some way by shifting some of the risk to others. The decision of whether to adopt an active foreign exchange risk management programme or not, can be a very complex one.

The choice depends on a number of factors, amongst others:

- how much volatility the firm is exposed to;
- how much the volatility can be reduced;
- how much it costs to implement and actively monitor a foreign exchange risk management programme;
- what expectations the firm has about foreign exchange movements; and,
- what trade-off the firm is willing to accept between the reduction in volatility and the cost of a foreign exchange risk management programme (Kim & Kim, 1999: 119).

Managing foreign exchange risk is a fundamental component in the safe and sound management of companies that have exposures in foreign currencies. It involves the use of financial instruments and currency derivatives to prudently manage foreign currency positions in order to control the impact of changes in exchange rates on the financial position of the company (Office of the Superintendent of Financial Institutions, 1998: 2).

Though the main aim of this Chapter is to give a detailed explanation of the main financial instruments/currency derivatives used in the management of foreign exchange risk, Chapter 2 starts with the extensive literature study and overview of the main theoretical classification. It is the appropriate starting point as the literature study provides a better understanding of the problem, as well as gives the readers a better grasp of what exchange rate risk management is, how it works, why it matters, how to define the exposure, etc. Towards the end of the Chapter, a literature review of recent practices in the field of foreign exchange risk management is presented.

2.2 Foreign Exchange Market

Irrespective of the choice of financial instrument/currency derivative used to manage foreign exchange risk, it is imperative at this stage, to have a good understanding of the foreign exchange market and the derivation of foreign exchange rates. When foreign trade takes place, payment for goods generally involves a foreign exchange transaction. Most of the time an importer pays for the goods it buys from an exporter in the latter's home currency. This requires the importer to accomplish a foreign exchange transaction that converts the importer's currency to the exporter's currency.

For instance, a South African importer of American products will have to pay for the goods in US Dollars. To obtain the necessary currency, the importer will sell South African Rands in return for US Dollars. The rate of conversion between the two currencies is called the Dollar-Rand (\$/R) exchange rate. The market for such transactions is called the foreign exchange market. It is the largest financial market in the world by virtually any standard (Anon 1, 2003). It is open somewhere in the world 365 days a year, 24 hours a day. Estimates by the Bank of International Settlement (BIS) places daily trading of spot and forward foreign exchange² at \$1.5 Trillion (Eun & Resnick, 2001: 74).

Currency exchange transactions are typically done in amounts of between \$3 million and \$10 million by banks, fund managers and currency exchange companies (Anon 1, 2003).

² Spot and Forward exchange transactions are explained in Section 2.2.1 below.

In South Africa, average daily turnover in the local foreign exchange market in 2001 was about R82.6 billion, or \$9.6 billion, of which \$2.3 billion were transactions in third currencies such as Dollars vs. Yen, etc. (Van Zyl, Botha & Skerritt, 2003: 312).

Foreign exchange is an ‘Over-The-Counter’ (OTC)³ market, where prices, amounts, currencies, and maturity dates are negotiable. There is no requirement for either of the parties to a foreign exchange transaction to be physically present in a specific location (Kim & Kim, 1999: 115). This is because the foreign exchange markets are found in the dealing rooms of the commercial banks around the world.

2.2.1 Foreign Exchange Rates

Two general categories of transactions can be undertaken in the foreign exchange markets, namely Spot and Forward transactions. A **spot transaction** occurs when foreign currency is purchased and paid for immediately (although a party may have two business days in which to settle the transaction) (Correia, Flynn, Uliana & Wormald, 2000: 716). The exchange rate used in the spot transaction is referred to as the spot exchange rate; it is the rate for buying and selling foreign exchange with a settlement in two days or less (Kim & Kim, 1999: 123). Spot exchange rates can be quoted in terms of either currency, for example, the spot rate for US Dollars in terms of South African Rand reported in the daily Master Currency update Report⁴ of 1st of December 2004 was 0.154\$ per Rand. The same price can be stated by computing the reciprocal, or $1/0.15 = 6.49$ R/\$. Quotes can be stated in ‘direct’ or ‘indirect’ terms. A direct quote is one made from the perspective of the home currency. From the South African perspective, a direct quote on the Rand is 6.49 R/\$. That is, the Dollar is the currency being priced, and it costs 6.49 Rand to buy one US Dollar. At the same time, an indirect quote on the Rand would be units of foreign currency per unit of home currency. From the South African viewpoint, the indirect quote on the Rand is 0.154 \$/R.

³ *OTC such as banks* refers to the meeting of buyers and sellers over-the-counter. It is a broad term encompassing a meeting at a counter in, for example, a retail outlet, over the telephone or via a communication system (Kim & Kim, 1999: 115). OTC markets may be subject to regulation or may be free of supervision by the authorities. (Falkena, Fourie & Kok, 1995: 17-18).

⁴ *Daily Master Currency Report* is available by e-mail on a subscription basis from Master Currency Online Services: http://www.mastercurrency.co.za/pass_log.asp

The reverse is the case if quotes (indirect) are presented from the American perspective. The direct quote on the US Dollar is 0.154\$/R; the indirect quote on the US Dollar is 6.49R/\$. Note in a direct quote, a *lower* exchange rate reflects an *appreciation* of the local currency against the foreign currency, while a *higher* exchange rate implies a *depreciation* of the local currency (Van Zyl, *et al.*, 2003: 317).

A **forward exchange transaction** occurs when two parties agree to exchange currency and execute the deal at some specific date in the future (Hill, 2002: 282). Exchange rates governing such future transactions are referred to as forward exchange rates. By definition, a forward exchange rate gives the price of a currency at a future date (Taylor, 1997: 54). For most major currencies, forward exchange rates are quoted for 30 days, 90 days and 180 days into the future.

Forward exchange rates can be quoted in two ways. The most natural and simple quote is to give the actual rate, sometimes called the **outright rate** (Taylor, 1997: 86). The second way of expressing a forward rate is to quote the difference between the outright forward rate and the spot rate – that is, the premium or discount. A forward rate quoted in this way is called a **swap rate** (Sercu & Uppal, 1995: 46).

The forward exchange rates may, therefore, be either at a discount or a premium to the spot rate. A foreign currency is at a forward discount (premium) against a given currency when the forward price of the foreign currency is lower (higher) than the spot rate. The percent discount (-) or premium (+) per annum in relation to the spot rate in a forward quote is computed by the following formula:

$$FP (FD) = \frac{FR - SR}{SR} \times \frac{12}{NMF}$$

Where FP = Forward Premium

FD = Forward Discount

FR = Forward Rate

SR = Spot Rate

NMF = Number of Months Forward

(Eiteman, Stonehill, & Moffett, 1995: 96)

A discount creates an advantage, i.e. it is cheaper to purchase the currency for future delivery. A premium creates a disadvantage, as it is more expensive. Discounts and premiums are always quoted from the perspective of the importer.

2.3 Foreign Exchange Exposures / Currency Risks

Any company that conducts its business in more than one currency is exposed to currency risk (or foreign exchange risk, or exchange rate risk). Currency risk refers to the risk that currency exchange rates may change adversely for a business that has exposure to foreign currency (Stephens, 2001: 8). This is very important for a corporation as it can have a major impact on its cash flows, assets and liabilities, net profit and ultimately its stock market value. Even if a business does not have its sales and operations denominated in a foreign currency, it can still face indirect foreign exchange risks, if for example the price of the materials it requires for its production is fixed abroad in a different currency. For example the world copper price is fixed on the London Metal Exchange (LME) in US Dollars.

Currency or foreign exchange risk occurs because the exchange rates of the world's major currencies float freely. Their rates are not tied to any currency or commodity, for example as they were with the Gold Standard. The exchange rate of a currency, which varies because of the forces of supply and demand for that currency, causes uncertainty because it can seldom be forecasted with any significant degree of certainty.

Exchange rate risk is viewed and measured very differently by accountants and financial economists: accounting rules are designed to measure the effect of exchange rate changes on currency income and the book values of assets and liabilities on the balance sheet, whereas economist are much more interested in the effects of exchange rate changes on future cash flows and the resultant effect on the value of the firm (Damodaran, 1997: 710).

There are three types of exposure to currency risk (Coyle, 2000 (a): 2):

- Transaction Exposure,
- Translation Exposure and
- Economic Exposure.

2.3.1 Transaction Exposure

Transaction exposure arises from the various types of transactions that require settlement in a foreign currency. It is typically defined as the extent to which the income from individual transactions is affected by fluctuations in foreign exchange rates (Hill, 2002: 631). The risk from the exposure is that cash income in the domestic currency will turn out to be lower than expected, or that cash payments in the domestic currency will turn out to be higher than expected. Transaction exposure consists of both trading items (foreign currency invoiced, trade receivables and payables) and capital items (foreign currency dividend payments and loan payments). An essential element of transaction exposure is that it may result in an actual cash loss (or gain) to the company (Hill, 2002: 631).

2.3.2 Translation Exposure

Translation risk is slightly more complex and is the result of the consolidation of parent company and foreign subsidiary financial statements (Henderson, 2002: 140). Translation exposure is defined as the effect of a change in the exchange rate on the recorded accounting results of a company. Since it has no impact on the cash flows of either the parent company or the subsidiary, it is viewed as an accounting exposure (Giddy & Dufey, 2002: 7).

Translation exposure arises from the need to translate accounts that are denominated in foreign currencies into the home currency of the reporting entity. Consider a UK firm with a subsidiary in South Africa. If the value of the South African Rand depreciates significantly against the Pound Sterling, as it did in 2001, this would substantially reduce the Pound Sterling value of the firm's equity reported in the consolidated balance sheet.

The investors and other stakeholders need values expressed in one currency in order to get a clear understanding of the company's overall financial results, therefore, the subsidiaries' results and financial position need to 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.

There are essentially four types of translation methods, which differ with respect to the presumed impact of exchange rate changes on the value of individual categories of assets and liabilities (Kim & Kim, 1999: 233). Accordingly, each method can be identified by the way in which it separates assets and liabilities into those that are "exposed" and are, therefore, translated at the current rate, i.e., the rate prevailing on the date of the balance sheet, and those whose value is deemed to remain unchanged, and which are, therefore, translated at the historical rate.

2.3.3 Economic Exposure

Economic exposure is based on the extent to which the value of the firm - as measured by the present value of its expected future cash flows - will change due to unexpected changes in exchange rate in the future (Shapiro, 1996: 277). It is concerned with the long-term real effect of a change in exchange rate on future prices, sales and costs (Hill, 2002: 631).

The reason economic exposure is concerned with unexpected rate changes is that expected rate changes are already taken into account by product pricing, interest rates, and forward foreign exchange contracts (Shapiro, 1996: 277). An example of an economic exposure is the effect of the swing in 2001/2002 in the value of the Rand on many South African firms' international competitiveness.

The rapid rise in the value of the Rand on the foreign exchange market during the last months of 2004 hurt the price competitiveness of many South African producers/exporters in world markets. South African manufacturers that relied heavily on exports, such as in the wine industry saw their export volume and world market share plunge.

Economic Exposure, also referred to as 'Competitive Exposure', is concerned with the effect of currency rate changes on competitors' cost curves (Davis & Millitelo, 1995: 22). As trade barriers fall and world markets become more integrated, competitors whose primary costs are denominated in different currencies increasingly compete in the same markets.

Having accepted the fact that foreign exchange exposure exists, whether it is transaction, translation or economic exposure, it is necessary for the management team in a firm to formulate a strategy to manage the exposure. Without strategies it becomes very difficult to make decisions of when to purchase or sell foreign exchange. The principle of risk management is that management should understand and anticipate risks, taking decisions accordingly (Anon 5, 2001: 2). Sound strategic management will include a consideration of strategic currency risks and their possible effect on net worth (Caroll, 1999: 41).

2.4 Managing Foreign Exchange/Currency Risk

The first step in successfully managing foreign exchange risk is to acknowledge that such risk actually exists and that it has to be managed in the general interest of the corporation and the corporation's shareholders (Kim & Kim, 1999: 7). Managing currency risk forms part of the greater risk management function of a business (Caroll, 1999: 41). It is a deliberate process whereby currency risk is dampened, reduced or neutralised in order to stabilise cash flow within a company.

The next step, however is slightly more complex and that is, to identify the nature and extent of the currency risk or exposure. By monitoring currency exposure, management can assess the significance of the risk and make decisions about what measures, if any, should be taken.

According to Coyle (2000(a): 9), there are a number of factors to consider:

- *Size of the exposure* (relative to the size of the company's cash flows and profits). For example, an exposure to Dollar payments of \$250,000 over a given period of time will be more significant for a South African company, which is expecting profit of just R50,000 than for a company expecting profits of R500,000.
- *Nature of the exposure*. Transaction exposure, because of its potential consequences for cash flows, normally will be regarded by management as more significant than translation exposure and economic exposure.
- *Certainty of the exposure*. Decisions by management to deal with an exposure will often depend on the degree of certainty in the estimates of foreign currency receipts and payments, and whether an estimated future exposure will actually materialize.

- *Probable direction of exchange rate movements.* There are occasions when the movement in the exchange rate is more likely to be up than down in the period of the exposure. For example, in a badly performing economy the country's currency is likely to weaken over a period of time. A foreign/multinational company with regular expenditures in that currency might therefore, decide that its exposure is small. On the other hand, a foreign/multinational company exposed to earning regular income in that currency might decide that its exposure is significant and that risk-management action is definitely required.

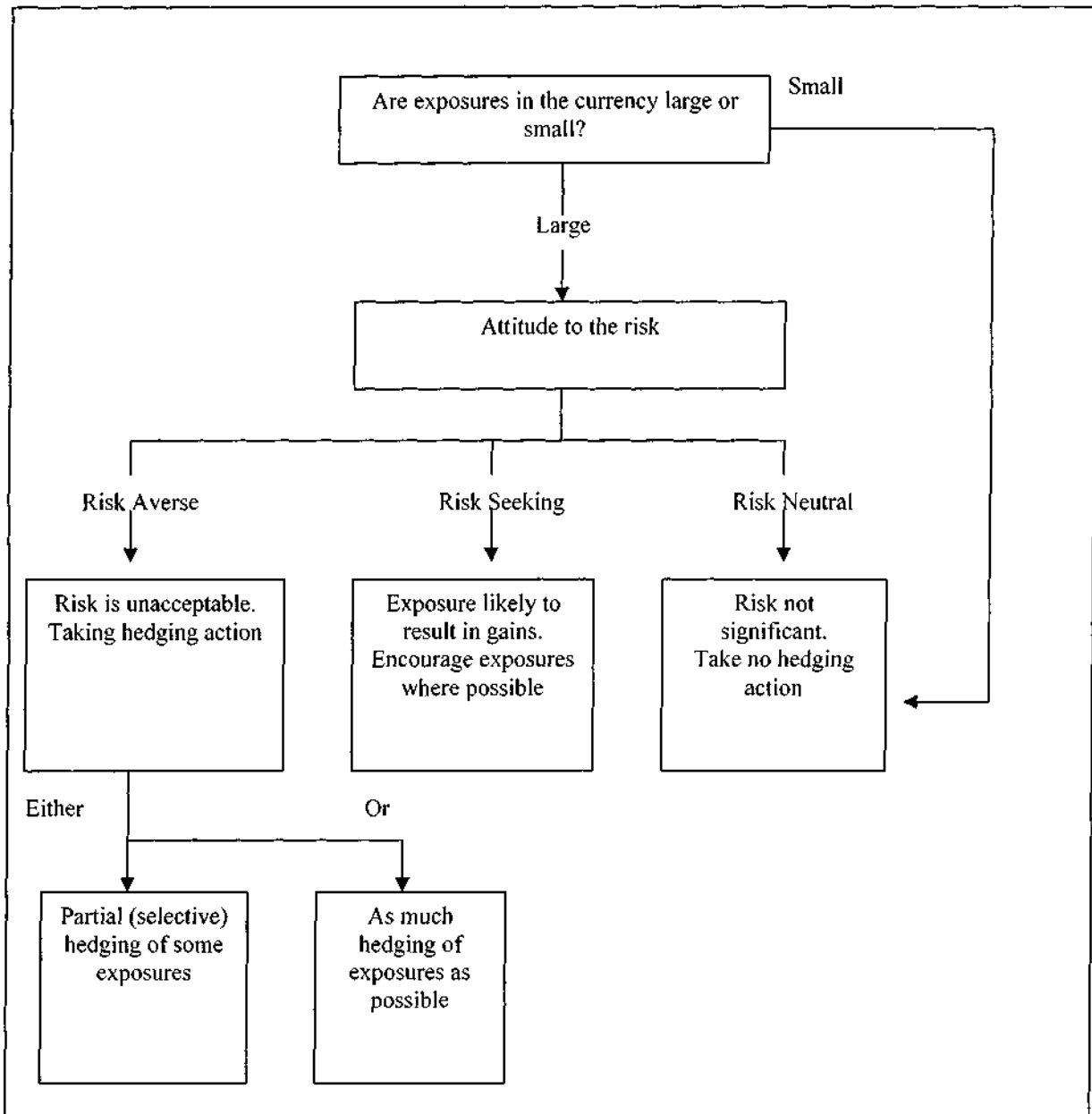
Whatever strategy a firm develops to manage its foreign exchange risks, there is a clear need for the firm to minimise the risk to the company and at the same time minimise the cost (Stephens, 2002: 193). One such strategy is 'Currency Hedging', discussed in the next Section 2.4.1. It refers to a strategy that strives to minimize the exposure to exchange rate fluctuations, thereby minimizing the uncertainty of future transactions denominated in a foreign currency and providing some stability to earnings and cash flow. Hedging can therefore, reduce a company's volatility of cash flows because the company's payments and receipts are not forced to fluctuate in accordance with currency movements (Marlowe, 1999: 5).

2.4.1 The Hedging Decision

Corporations are exposed to uncertainties regarding a variety of prices. Hedging refers to activities undertaken by the firm in order to mitigate the impact of these uncertainties on the value of the firm (Mian, 1996: 419). Today, more and more firms try to manage their foreign exchange exposure through hedging. Hedging is achieved by taking a position by either acquiring a cash flow or an asset or a contract (including a forward contract) that will rise (fall) in value and offset a drop (rise) in value of an existing position (Eiteman *et al*, 1997: 88). In simple terms, a hedge is a contract or arrangement that provides a defence against the risk or loss emanating from a change in foreign exchange rates. In hedging, safety is obtained by entering into a counter-balancing or off-setting agreement, so that whatever is lost on the foreign exchange contract is gained on the off-setting contract.

Hedging decisions vary, depending on the time frame, the volatility of currency, the market view on the specific currency, management level of sophistication and the level of risk each company is willing to take (Luca, 1995: 106).

Since one of the standard objectives of every corporation is the maximization of shareholder value or shareholder wealth (Kim & Kim, 1999: 7), the question of whether a corporate should hedge or not is best answered by asking how hedging advances the corporation towards this objective. The hedging decision is based on a company's attitude to risk, as described in the diagram below (Figure 1). While a risk neutral accepts risks as and when they arise, and does not view hedging action as necessary, a risk-seeking attitude is based on the view that exchange rates will move in the company's favour and that currency exposure will result in gains rather than losses. A risk averse attitude is normal for most companies with significant transaction exposures. Risk averse management would seek to hedge all significant exposure (Coyle, 2000(a): 16).

FIGURE 1: HEDGING ACTIONS: THE CHOICES

Source: Coyle (2000(a): 16)

Foreign exchange risk can be managed in a number of ways. Though, most of the common ones such as FEC, Currency Futures, Currency Options, Swaps and Money Market Hedges are discussed in the next section, the researcher however, limits this thesis to the comparison between only two instruments, namely currency options and FEC for two reasons. The first one being that these two instruments are the main ones used in the management of foreign exchange risk, and secondly, the MNC firm under study restricts its foreign exchange risk management policies to forward contracts and currency options.

2.4.2 Hedging with Financial Instruments / Currency Derivatives

Derivatives are usually defined as instruments whose prices are derived from the prices of underlying assets, but do not require those assets to be bought or sold (Stephens, 2001: 107). A true derivative instrument requires no movement of principal funds. It is this characteristic that makes them such useful tools both to hedge and to take risk (Taylor, 1997: 168). Currency derivatives form part of the class of financial instruments known as financial derivatives. They have been developed and adapted especially to serve the specific needs of managing currency risk.

Through the use of financial instruments and currency derivatives, multinational businesses can manage foreign exchange exposures if two basic conditions are satisfied (Higgins, 1998: 185):

1. The asset (e.g. United States Dollars) creating the risk trades in financial markets.
 2. The amount and timing of the exposure being hedged is known with reasonable certainty.
- However, this condition limits financial instruments' effectiveness against economic foreign exchange risk because of its inherent uncertainty, variability and long timeframe.

2.4.2.1 Forward Exchange Contracts

The first derivative contract to make its appearance in the currency markets was the forward foreign exchange agreement, which is merely an agreement to 'buy' a foreign currency (i.e. foreign in respect of the home currency of the buyer) for delivery at a specified date in the future. Entering into such a transaction is also called 'buying foreign exchange forward' or 'selling foreign exchange forward'. Forward foreign exchange agreements are essentially 'over-the-counter' (OTC) instruments and do not trade on public exchanges (Stephens, 2001:15).

Forward exchange contracts or agreements are the most commonly used instrument for currency risk hedging by non-bank Corporates (Coyle, 2000(a): 38), and they are termed 'forward outright' (or outright forward) transactions (Taylor, 1997: 86).

The essential points about forward foreign exchange contracts are that they are binding agreements that are entered into at the present time for delivery at an agreed date in the future, of a specified quantity of a specified currency against the simultaneous delivery of an agreed amount dominated in another currency. The point to note is that there is no choice but to exchange the currencies at the appointed date. It is a fixed obligation.

It leaves no flexibility, but it also eliminates all uncertainty. There is no cost involved. The bank or dealer profits from the buy/sell spread⁵ that it bases the forward foreign exchange rate on. The forward contract is usually contracted with the foreign exchange department of a commercial bank via telephone or possibly via an automated dealing system using a computer terminal and screen.

For example, a South African company knows that in three months' time, it must pay a US supplier \$1,000,000 for raw materials purchased. The currency spot rate of exchange is \$1=R6.5 and because the company will have to buy Dollars to make the payment, it expects its cost to be R6,500,000. The company has already sold the goods to a South African customer for R7,000,000 and therefore expects to make a profit of R500,000.

If the company is concerned about its exposure for the payment of the \$1,000,000 in three months' time, it is because the Dollar might strengthen against the Rand and erode the profit margin. For example, if the spot rate after three months \$1=R6.80, it would cost R6,800,000 to buy the Dollars and the profit on the transaction would be just R200,000. A forward contract would eliminate this risk. It is probably the simplest way in which any currency risk can be managed (Stephens, 2001: 16). If the three-month forward rate was \$1=R6.60, purchasing \$1,000,000 would cost R6,600,000 ($\$1,000,000 \times R6.60$) and the company would secure a profit of R400,000.

There is a potential 'cost' involved when using a forward exchange contract (FEC), namely that the entity will not be able to make use of favourable exchange rate fluctuations, since the exchange rate is set at the inception of the FEC (Van Zyl, 2003:325). Thus, if the Rand/Dollar exchange rate was to depreciate at a rate in excess of the forward points, then a South African exporter would have to forego an opportunity to sell his export processed at a weaker exchange rate. If the exchange rate were to depreciate at a rate less than the forward premium, an importer would have increased his expense by making use of an FEC.

⁵ *Spread* is the difference between the buying rate, called the 'bid rate' (rate at which a bank or dealer will buy a currency) and the selling rate, also referred to as the 'ask rate' (the rate at which the bank or dealer will sell a currency) (Sercu & Uppal, 1995:30).

2.4.2.1.1 Features of Forward Exchange Contracts

Some features of the forward exchange contract as described by Coyle (2000(a): 45) and summarised below, make it a very flexible mean to hedge transactions in foreign currencies.

- *Value Date Option Contracts.* If a company is uncertain about deciding the value date for settlement of a forward contract, it can arrange a contract that gives it the option to settle at any time between two specified dates.
- *Closing Out Forward Contract.* A forward contract hedges a currency risk when there is an underlying transaction creating the exposure. A company could also arrange a forward contract to hedge a transaction that either does not happen or happens earlier or later than expected. In such situations, the forward contract becomes a currency exposure instead of a hedge, and the company will make a profit or loss on currency trading, depending on the exchange rate during the exposure period. When a forward contract is arranged as a hedge for a transaction that does not materialize, the bank will close out the forward contract by making a reverse sale or purchase of currency at the spot rate.
- *Extending a Forward Contract.* A forward contract can be extended or rolled forward when the underlying transaction is delayed beyond the settlement date for the forward contract. For example, a South African company might arrange a two-month forward contract to sell \$1 million as a hedge against an anticipated receipt of that amount. Subsequently, if the Dollar income is not received for a further six weeks, the company could extend the forward contract to a new date. When a bank agrees to extend a forward contract, it is actually arranging a forward swap by which it closes out the old contract, and arranges a new contract, with the rate adjusted to reflect the interest rate differential between the two currencies for the additional period of time.
- *Uncertain Amount of Currency.* When a forward contract is arranged to cover a specific future receipt or payment of a known quantity of currency, the currency exposure will be hedged completely. In some instances, however, the amount of a receipt or payment might be uncertain, although its timing is known or predictable. For example, a company might have regular receipts or payments in a currency as part of its normal trading operations.

It knows that it will receive or pay some currency every week or every month, but does not know exactly how much each time. In these circumstances management could decide to arrange a partial hedge through forward contract, with forward cover for either the minimum expected currency income, or for an amount between the minimum and the budget figure. Any surplus income could be sold at the spot rate towards the end of each month.

- *Period of Forward Cover.* How far in the future a forward contract can be arranged depends on the willingness of banks to agree to a contract lasting beyond a certain time for a given currency. The forward market is less liquid in some currencies than in others, and is therefore less liquid for longer time periods ahead. For example, large companies and banks are able to arrange forward cover for Dollars against sterling or euros, in New York or London, for settlement dates up to five or more years ahead. In many currencies, forward cover will be difficult to arrange for a settlement date more than two years or perhaps even one year ahead. Most forward contracts are for a date up to six months ahead, and so are predominantly used to hedge short-term currency exposures.

To summarise forward contracts are used by many big companies, banks and governments, where one can fix the exchange rate for the future. 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 a high cost to the hedger. In South Africa, participation in the forward market to cover foreign exchange exposure is limited by exchange control regulation (Van Zyl, 2003: 323).

2.4.2.2 Foreign Currency Futures Contracts

Currency futures contracts are a comparatively new development in the futures market. The Chicago Mercantile Exchange (CME) first listed currency futures contracts in 1972, trading the major European currencies against the Dollar. Since then, currency futures contracts have been introduced on many futures exchanges (Van Zyl, 2003: 331).

Apart from the CME, currency futures are also traded, *inter alia*, on the London International Financial Futures Exchange (LIFFE), the Hong Kong Futures Exchange, and the South African Futures Exchange⁶ (SAFEX) in Johannesburg (Van Zyl, 2003: 331). The list is by no means exhaustive.

A currency futures contract, like any other financial futures contract, is a legally binding agreement between two parties to take or make delivery on (a) specified date(s) in the future of a given quantity of a currency at an agreed price established in a regulated market place on the date the contract is entered into. A currency futures contract is essentially the same as a forward foreign exchange where the exchange of currencies is agreed to take place on a future date, but at a rate of exchange agreed upon today (Falkena, *et.al.*, 1995: 197).

Futures can be used to hedge an exposure to currency risk when a company or financial institution expects to make or receive a foreign currency payment at some future point up to 12 months, the furthest delivery date for futures contracts. The futures contract is therefore a standardized commitment where the key terms of the agreement, as listed below are prescribed by the exchange on which the contract trades (Coyle(a), 2000: 56):

- The two currencies involved in the exchange, e.g. US \$/R;
- The quantity of the currency being exchanged also referred to as the contract size, e.g. R1 million;
- The price quote protocol, e.g. US \$ per one South African Rand;
- The delivery mechanism; and
- The date that the exchange of the two currencies will take place; referred to as the expiration date of the contract.

Like all derivatives, a currency futures contract has an underlying asset. In the case of currency futures, the underlying asset will be the quantity of the currency that forms the unit of the quote. In other words, if the futures contract quoted in US \$/R, a specified quantity of Rands will be the underlying asset. The value of the contract in South African Rand will not change, whatever happened. Only its value in terms of the US Dollar will vary as the market fluctuates.

⁶ The South African Futures Exchange (SAFEX) is licensed in terms of the Financial Markets Control Act, 1989, and controls trading in all futures and options on futures.

In currencies futures, the rates of exchange are agreed upon by means of bids and offers on an open outcry exchange⁷ as in any auction. On electronic exchanges, bids and offers are broadcasted to exchange members online in an electronic format. All trading then takes place electronically. Most exchanges in the world offer regular trading hours (RTH) and after hours trading (AHT). RTH is conducted by open outcry and AHT is done electronically (Stephens, 2001: 16).

Currencies futures trade with a quarterly cycle expiration date, but some of them have monthly expirations. The expiration dates on these contracts always fall on a regular business day of the expiration month, such as the last Friday, or the third Wednesday or the seventh last business day of the month in question. (Marlowe, 1999: 11). At the expiration date of the contract the transaction between the parties will be done through a '**clearinghouse**', which guarantees the fulfilment of contracts entered into by members at the initially agreed upon rate of exchange. It is immaterial what the spot rate of exchange is at that date, since it has no influence on the transaction (Weisweiller, 1991: 137).

As pointed out by Weisweiller (1991: 137) clearinghouses exist primarily to ensure that the funds flow for the execution of the contracts. They have evolved to assume the credit risk inherent in futures transactions by guaranteeing the performance of the buyer and seller, thus making counter party's identity irrelevant in futures trading. The clearing-house assures its financial soundness in two ways: the first way is by collecting initial '**margin**' from both transacting members, which is refunded on liquidation of the contract. Trading on margin with daily margin adjustments makes the administrative work involved in a futures contract rather cumbersome. The second is by daily settlement in cash by brokers of the re-valued contract. The revaluation process is called '**marking to market**' and the cash collected is called 'variation margin' (Weisweiller, 1991: 138). Therefore, between the date that the futures contract trade is done and the expiration date of the contract, gains and losses on futures are settled in cash. The cash settlement is achieved by debiting losses against the losing position holder's margin and crediting the gains to the gaining position holder's margin account.

⁷ Open outcry exchange is a method of trading that originated on the Chicago exchanges and entails face-to-face contact, hand signals, and loud oral agreements. Typical exchange-traded instruments include financial futures and listed options and traded currency options (Taylor, 1997: 169-171).

The losing position holder must then top-up their margin account to the minimum level required by the exchange. Through the mechanism of margin, credit risk is thus eliminated from futures trading. Also, by means of this daily process of 'marking to market', the sum of all the daily profits and losses will equal the net change in the futures price over the life of the contract.

A major difference between normal forward foreign exchange contracting and trading currency futures lies in the facility of offsetting (Van Zyl, 2003: 331). In a forward contract, the deal is done at the outset; there is no choice but to perform on the appointed day. On the other hand, the purpose of futures contracting is not to use it as a means of obtaining foreign currency; it is rarely undertaken with the intention of actual delivery (Van Zyl, 2003: 332). If a futures position is entered by purchasing one or more future contracts, then the position can be 'offset' by selling the same number of identical contracts, that is, the currency futures contract may also be closed at any time by an opposite transaction. Because of the role fulfilled by the clearing-house on the futures market as explained above, a party can get rid of their contractual obligation by substituting another party in their place. They do not require the consent of anybody except the substituting party and no formalities are required. The substituting party is found in the ordinary way by means of the auction on the floor of the exchange.

If the price of the futures contracts rose during the period they were held, there will be a profit, and if it declined, there would be a loss. The price of a currency futures contract is established irrespective of the financial status of the individual performing the transaction and it may at times be cheaper than a forward contract obtained from a bank, particularly if only small amounts are involved. However, a forward exchange contract is more flexible regarding date of delivery and transaction amount (Stephens, 2001: 17).

In summary, as per Stephens (2001: 17) futures are undoubtedly one of the most effective and straightforward risk management alternatives available on the foreign exchange markets. It is a highly liquid instrument that trades on well-established exchanges. It is easy to enter and liquidate positions and the whole process is transparent. Furthermore, it eliminates counterparty credit risk as well as legal risk. The downside however, is that because the contract trades in fixed quantities, the contract size will seldom equate to the capital amount of the currencies being hedged.

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. Companies, banks and governments have extensive experience in the use of forward exchange contracts, where 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 a computer manufacturer in South Africa may have sales priced in South African Rand as well as in Pound Sterling in the United Kingdom.

Depending on the relative strength of the two currencies, revenues may be realized in either the British pound or South African Rand. In such a situation the use of forward or futures would be inappropriate: there is 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.

Currency options as an alternative to FEC and Currency Futures, is discussed next. When purchasing a currency option, the holder is protected from downward movements in the exchange rate while still having the opportunity to benefit if the currency moves favourably. This then appears to be a good safe strategy as will be discussed in detail in the next section. Options are just like insurance, they protect against worst-case scenarios whilst still leaving room to benefit when things are favourable.

2.4.2.3 Foreign Currency Options

Currency options are one of the fastest growing segments of the foreign exchange market, accounting for as much as 7% of daily trading volume of foreign exchange in 2003 (Shapiro, 2003: 274). Founded in 1790, the Philadelphia Stock Exchange, the oldest securities market in the United States, started trading in currency options in 1983; since then, the Chicago Mercantile Exchange and the Chicago Board Options Exchange added currency options trading (Kim & Kim, 1999: 165). Since 1985, currency options have become a popular method of hedging foreign exchange risk if the direction of the future movement in the exchange rate is uncertain (McRae, 1996: 87).

A currency option is a contract, which gives the buyer (holder) the right, but not the obligation, to buy or sell a specific amount of a specified currency (underlying asset) at an agreed upon exchange rate (strike rate) on or before a specific future date in exchange for the payment of a premium (Taylor, 1995: 172).

As described by Taylor (1995: 172), the following therefore constitute the fundamental elements of all options:

- An underlying asset;
- A strike price;
- A premium for the option; and
- A period of validity

The option based hedging strategies are dependent on the underlying currencies, and for this reason they are referred to as derivative instruments (Gouws, 1994: 39). Unlike other currency derivatives, options are specifically designed to allow for a profit to the hedger upon a favourable move in the underlying exchange rate (Stephens, 2001: 132).

In options terminology, it is said to give the right to 'call' rather than buy or 'put' rather than sell. Put options, therefore, give the right but not the obligation to sell, while call options give the right but not the obligation to buy (Kim & Kim, 1999: 166).

The holder of a call option will benefit if the underlying currency's price rises, while the holder of a put option will benefit if it falls. If the buyer exercises the call option, he will acquire a long currency position and someone who has sold an option will be assigned a short currency position at the same time (Anon 3, 2001: 2). For currency options, one should specify which currency is being 'called' and which one is being 'put' to the holder, since there are currencies on both side of the exchange. For instance, an option to buy United States Dollars against South African Rand is both a United States Dollar call and a South African Rand put. Conversely, an option to sell United States Dollars against South African Rand is a United States Dollar put and South African Rand call.

Using an option strategy can be one of the alternatives available to a South African importer or exporter. In a situation where for example an importer has an obligation in three months' time to pay US \$1,000,000 for a commodity, he may buy a United States Dollar call option. The effect of buying the United States Dollar Call is to place a ceiling on the cost of the imports without limiting the potential benefit if the spot rate rises.

Similarly, an exporter who will be receiving US\$ 1,000,000 in three months' time as payment for a commodity can buy a United States Dollar put option. The effect of buying a US Dollar put option is to guarantee a minimum payment for the export, whilst not limiting potential gains should the spot rate fall. Settlement only occurs if it is advantageous for the buyer of an option to exercise the option.

If the three month forward rate for South African Rand/US Dollar is $1\$=R6.49$ (spot rate is also $R6.49$), and the exporter is unsure about the future direction of the Rand against the US Dollar, he will buy a US Dollar put option with a strike price of $1\$=R6.49$ for a total premium of US \$15,000, which equates to 1.5% of the face value of the contract. If the South African Rand appreciates beyond the strike price (above the $1\$=R6.49$, e.g. $1\$=R6.30$), he will exercise the option and buy Rand/sells US Dollar at strike price. In this case, the exporter's effective exchange rate will be equal to the strike plus the cost of the premium. If the Rand is below the strike price at expiry (e.g. $1\$=R6.55$), the exporter will simply let the option lapse, and buy US Dollars in the spot market.

The most fundamental difference between a currency option and other currency instruments, such as forward exchange contract, stems from the fact that the option 'gives the right but not the obligation' to transact, especially if it is not to the advantage of the option holder (Taylor, 1995: 172). Option holders can therefore decide whether or not to go through with the deal any time up to the expiration date. Options pay no interest and become worthless at expiration unless the price of the underlying currency changes.

Options allow unlimited profit to be taken from favourable developments, but limit the loss faced in the event of adverse developments (Kim & Kim, 1999: 167). Because of this element of choice, all exchange rate risk is transferred from the holder to the provider of the option but for this right to protection, the buyer/holder of the option pays an option premium⁸.

Options are classified in three categories depending on the relation between the exercise (strike) price and the currency market price of the underlying asset (foreign currency) (Van Zyl, 2003: 372).

- *“In-the-money”* means the option has intrinsic value. For instance, a call option, with a strike price lower than the currency spot price or a put option with a strike price higher than the currency spot price. The option premium can never be smaller than the intrinsic value.
- *“At-the-money”* is when the strike price is equal to the underlying assets value – zero intrinsic value (the strike price and the spot exchange rate are the same).
- *“Out-of-the-money”* means the option has a less beneficial strike level than the underlying asset and that the intrinsic value is zero, and therefore it is not worth exercising such an option. A call option is said to be “out-of-the-money” if the underlying spot exchange rate is currently less than the strike price of the option. A put option is said to be “out-of-the-money” if the underlying spot exchange rate is currently more than the strike price of the option.

A foreign exchange manager has to ask himself or herself whether the foreign exchange risks that he perceives to be eliminating using the currency option is worth the cost of the option premium. Different types of options, as discussed in Section 2.4.2.3.2 can be used to reduce the option premium, or the strike levels could be changed to reduce the premium.

2.4.2.3.1 OTC and ‘Exchange Traded Options’

Option transactions are conducted in two different market “situations”, namely the ‘over-the-counter’ (OTC) options and the ‘exchange traded’ options. While exchange traded options are standardised contracts, traded at any time on traded options market (McRae, 1996:87), OTC options are bought from a bank or other financial institution and are not tradable. The OTC options are more liquid than forward contracts (Sercu & Uppal, 1995: 166).

⁸ *Premium*: The “price” of the option, the money the option buyer pays and the option seller received for the rights conveyed by the option. The premium represents the amount the option holder can lose.

These currency options are created and tailored to suit a client's specifications. The declaration date is negotiable to suit the hedging strategy, so that no extra time value has to be purchased. The strike price can be set at any level and normally no margin is paid to the grantor.

The major disadvantages of OTC are its liquidity, and the fact that they are expensive, carrying a fee payable in advance to the seller. Once purchased, they cannot be sold; the only discharge is by cancellation requiring the agreement of both parties.

OTC options also carry an inherent credit risk, since each contract is an agreement between two parties, and each is at risk in that the counter-party may not fulfil the terms of the contract (Falkena, *et al.*, 1995: 245). The disadvantage of the formalized open-outcry exchange is that the declaration date may not coincide with the final date of the hedge and therefore a longer-dated and more expensive option has to be purchased.

The advantage of a formalised exchange on the other hand, is the liquidity created in the market for such securities by uniform contract specification plus the existence of a central clearing that, guarantees the fulfilment of the terms and conditions of options contracts (Falkena, *et al.*, 1995: 245).

2.4.2.3.2 Types of Options

An option contract runs to an agreed expiry date. Some options can only be exercised on their expiry date, on condition that the option is 'in-the-money'; they are called '**European**' options. Others can be exercised at any time during a given period up to the expiry date. This period is called the life of the option and these options are called '**American**' options.

The American Option is usually more valuable because it gives the holder more choice about when it may be exercised (Stephens, 2001:142-143). Options, which are hybrids of these two, are sometimes known as **Bemudan** style since they fall somewhere between the two, usually permitting exercise at any time after an initial period has elapsed (Van Zyl, 2003: 372).

2.4.2.4 Foreign Currency Swaps

The first cross-currency swap was dated August 1976 and the first single-currency swap was publicised in 1982. According to Weisweiller (1991: 206), the initial growth and development of the swaps markets was driven by arbitrage gains, rather than demand for risk management purposes. Although the opportunities for such gains have been progressively eroded, arbitrage activity has established a critical mass of liquidity by attracting new entrants into the market. Furthermore, as emphasized by Weisweiller (1991: 206) by forcing down the cost of swaps, these developments have led to their increasing employment as a routing instrument of risk management by a widening spectrum of users.

Swaps, according to Carroll (1999:120) have been at the forefront of the phenomenal growth in the use of derivatives. The use and availability of such instruments have greatly enhanced global trade, the understanding of financial risk, the flexibility in managing corporate performance and the success of international banking. Corporates have evolved from using swaps to facilitate medium term funding, to combining them into complex, holistic, financial and business risk management processes. A currency swap, as per Carroll (1999: 5), is an agreement to exchange a fixed amount of one currency for another at an agreed rate on a fixed date, together with a simultaneous agreement to reverse that transaction at an agreed rate on a fixed future date.

Swaps are transacted between international businesses and their banks, between banks, and between governments when it is desirable to move out of one currency into another for a limited period without incurring foreign exchange risk. In a currency swap, the parties exchange cash flows in one currency for cash flows in another, more or less equivalent to a deposit in one currency and a matched borrowing in another. In practice, they agree to buy specific amounts of foreign currency from each other at spot and sell the same amounts for delivery on an agreed future value date (Coyle, 2000(a): 101).

The fixed rate of exchange is established at the commencement and used as the basis for the payment flows throughout the deal, including principal at commencement, principal at the end of the swap and any interest payments on the currency that each party may have to make periodically throughout the deal (depending on the term and intervening periods) (Carroll, 1999:47).

In the currency swap, the exchange of the principal only affects the parties' balance sheets at maturity. The actual exchange is a future event; thus, currency swaps are classed as off-balance sheet instruments. Currency swaps provide a more liquid solution to exchanging large amounts of currency forward. Most currency swaps are long-term instruments, typically with a term of between 2 and 10 years (Coyle, 2000 (a): 102). Therefore, as a hedging instrument, they are appropriate only for longer-term exposures.

A currency swap starts out like any other foreign exchange transaction that is transacted now, but where the currency exchange will take place in the future. As an illustration example, assume that a South African business firm, earning Rand, requires \$50 million, for whatever reason, in 3 years time.

Obviously, it wishes to protect itself against a possible appreciation of the US dollars against the Rand. This situation could be accommodated by any currency derivative except that it is slightly large for currency futures and forward foreign exchange arrangements. The best solution is to enter into a currency swap arrangement.

The swap arrangement can be structured through a US bank. The US bank would undertake to exchange \$50 million for R325 million on a specified day in 3 years time (Rand/Dollar exchange rate reflected in the example is the rounded spot exchange rate of R6.50 to the Dollar). The South African firm and the US bank would then agree to make periodic interest payments to each other, calculated on the capital amounts. The South African firm would pay interest in US Dollars, as the fixed interest rate agreed upon at the outset, calculated on the capital amount of \$50 million. The US bank would pay fixed interest in Rand to the South African firm, based on the principal of R325 million.

The two interest rates would be agreed by the two parties at the outset and could be any rate, but the rates would not necessarily be the same in each currency. The then Dollar interest rate might well be used to fix the interest to be paid in Dollar and the Rand interest rate to fix the interest rate to be paid in Rand. In this example, the swap is structured in such a way that it does not create any interest rate risk in addition to the currency risk, that is the interest rates of the cash flows are both fixed at the outset and remain the same for the duration of the swap.

The currency risk exist in the interest payments since there is no longer any currency risk as far as the exchange of principal is concerned: the rate being set at the start. During the life of the swap, each party will have to convert their home currency into the foreign currency, at the prevailing spot rate every time interest payment is due. This creates currency risk for the South African firm: it risks an appreciation of the US Dollar against the Rand. Should the Dollar appreciate against the Rand, the firm will have to change more of its Rand revenues into US Dollar in order to pay the interest. For exactly, the same reasons, the US bank also faces currency risk. Its risk is the opposite of the currency risk faced by the South African firm: it risks an appreciation of the Rand against the Dollar.

A number of important issues arise from the above illustration. It is evident that because the full amount of the principal is actually exchanged in a swap, it involves as much credit risk as a forward foreign exchange agreement. However, in addition, a currency swap requires regular payments of interest over the period of the swap. These payments create more credit risk. For banks and financial institutions, these factors taken together result in the fact that currency swaps are less liquid than other types of swaps. This, it can be difficult to find a counter party for a particular swap.

2.4.2.5 Money Market Hedge

The money market hedge involves a contract (e.g. a loan agreement) and a source of funds to fulfil the contract (Eiteman *et.al.*, 1995: 190). A firm therefore, enters into an offsetting loan agreement in a foreign currency or local currency to cover a foreign exchange transaction. Funds required to fulfil the contract, that is, to repay the loan may be generated from business operations, in which case the money market hedge is “covered”. Alternatively, funds to repay the loan may be purchased in the foreign spot market when the loan matures. In the latter instance, the money market hedge is “uncovered” or “open” (Eiteman *et.al.*, 1995: 190).

A money market hedge therefore, uses a currency loan or deposit to lock in a present value for a future currency cash flow in the same way as a forward sale or purchase. An importer with a foreign liability would borrow the local currency and purchase the foreign currency in the spot market. The foreign currency is then invested to mature when the liability falls due.

The amount of local currency borrowed would be sufficient to buy enough foreign currency at the spot rate so that the foreign currency principal plus interest at maturity matches the foreign liability.

Consider a manufacturing company in South Africa, which exports its products to foreign companies that pay in US dollar. If the Rand appreciates against the Dollar, the company's cash flow in Rand will be diminished and its profits margin severely dented. Its present 6-month Dollar exposure amounts to \$1.5 million and the exchange rate is R6.49 to the Dollar. The company could hedge this position by borrowing, on condition that it had the facilities to do so. Following a 'money market hedge', the company would borrow \$1.5 million in the US paying the best interest rate available, then exchange the Dollar for Rand in the spot market and finally, invest the Rands in South Africa at the best available interest rate. The cost of the hedge will obviously be the difference between the interest paid on the US Dollar and the interest received on the South African investment. When the \$1.5 million becomes payable in 6 months, that money is used to pay the US Dollar loan. The company then already owns the necessary Rands and merely realises the investment it made at the start. On the face of it, the money market hedge should cost the same as a forward foreign exchange, unless the firm has some advantage in one market or the other. The cost is related to the disparity in interest rates, as is the cost of a forward contract. The money market hedge suits many companies because they have to borrow anyway, so it is simply a matter of denominating the company's debt in the currency to which it is exposed.

To summarise theories of optimal hedging demonstrate that capital market imperfections⁹ create incentives for firms to use derivative instruments. While these imperfections might be necessary for optimal derivatives use, they are not sufficient conditions (Geczy, Minton & Schrand, 1997: 1323). Geczy, *et al.* (1997: 1323) argued that given these incentives, a firm's ultimate decision to use financial instrument and currency derivative depends on a number of factors:

1. The cost of managing foreign exchange rate risk;
2. The nature and extent of its foreign exchange risk activities;
3. The skills and experience of its management, and

⁹ Capital market imperfection is contrary to the efficient market hypothesis, where about market prices do not reflect all available information (Ross *et al.*, 1996: 289).

4. The capacity of its foreign exchange rate risk reporting and control systems.

2.4.3 Currency Options versus Forward Exchange Contract

Forward exchange contracts, the so-called non-optional based hedging instrument are basically the 'standard' derivative instrument and they are seen as relatively inexpensive (Stephens, 2001: 163). OTC options follow them in popularity in spite of being the most expensive derivative. This is no doubt due to their lesser volatility and the advantage offered in that they allow for some profit when favourable changes in exchange rates occurs (Stephens, 2001: 163).

In South Africa, as elsewhere, the majority of Corporate and Institutional hedgers are still more likely to use non-optional based hedging instruments than optional based ones. This, according to Van Zyl (1999: 15) may be due to an aversion to paying a premium or because of the perceived complexity of managing and accounting for such instruments. These issues are investigated in Chapter 5 for a multinational firm operating in South Africa.

A look at the advantages and disadvantages of using either forward contracts or currency options as discussed in sections 2.4.2.1 and 2.4.2.3 reveals that each type of hedging instrument is more advantageous in different situations, and it makes sense to match the instrument to the specific situation. A forward contract has all the advantages that a perfect hedge of a risk can bestow. The major advantage is that it gets rid of all uncertainty regarding any exposure that arise when a business has to pay, or will receive foreign currency in the future. The elimination of uncertainty obviously allows a company to budget accurately and to stay within that budget. Forward foreign exchange contracts can also be given some flexibility to allow early exercise as well as extensions to the period of the contract.

The major disadvantage of the forward contract is also equal to the disadvantage of a perfect hedge (Stephens, 2001: 12). It is a legally binding agreement and thus there are two major consequences: both parties have to accept the agreed exchange rate and the fact that the exchange itself will be done. Thus, if the commercial reason for the exchange disappears, the cost of cancelling the forward contract could be quite high. In addition, if the exchange rate at maturity is better for the client than the one agreed to in the forward contract, there is no way that they could back out to take advantage thereof (Taylor, 1997:86).

The problem of the standard form of forward contracting (e.g. the elimination of the opportunity for profit should exchange rates turn out favourably) as described by Stephens (2001: 64) has been addressed by a number of banks that have constructed non-standard versions of currency forward contracts. The exact terms and conditions of the contract differ from bank to bank, but in one way or another, they all allow the client to benefit from a favourable move in the exchange rate. There will be a price to pay for the advantage. This is a matter that every company will have to consider on merit each time that a decision is made to use a forward exchange. Such a forward contract will have to be compared to the cost and advantages of currency options.

The ideal use of forward contracts is when the exposure has a straight risk-reward profile: forward contract gains or losses are exactly offset by losses or gains on the underlying transaction. If the transaction exposure is uncertain, however, because the volume or the foreign currency prices of the items being bought or sold are unknown, a forward contract will not match it (Stephens, 2001: 64). By contrast, currency option is a good hedging tool in situations in which the quantity of foreign exchange to be received or paid out is uncertain (Taylor, 1997: 178).

The increasing depth of the options markets has made it more possible to protect against downside risk while still allowing the possibility of upside gain (Davis & Militello, 1995: 4). Options have an inherently wider range of applications than do forward transactions (Falkena *et al*, 1995: 205). While only two variants are possible with a forward hedge (buying and selling), options offer four possibilities: buying or selling a put and buying or selling a call. The holder of an option has the choice of exercising the option or letting it expire worthless and his risk is limited to the total premium, paid when the contract is made. Another advantage of currency options is that it allows its buyers to know the maximum loss that they might suffer, which is the option premium (Luca, 1995: 237).

Currency options however, are expensive and the longer the term over which they are required, the more expensive they become. OTC options carry a fee payable in advance to the seller. Once purchased, they cannot be sold; the only discharge is by cancellation requiring the agreement of the other party.

The market in OTC options is not very liquid, and management may be difficult. An offsetting transaction may be possible, although one, which totally eliminates the risk, might not be easy to achieve (Stephens, 2002:192).

The general rule to follow when choosing between currency options and forward contracts for hedging purposes are summarised as follows:

1. When the quantity of a foreign currency cash outflow is known; buy the currency forward; when the quantity is unknown; buy a call option on the currency;
2. When the quantity of a foreign currency cash inflow is known, sell the currency forward; when the quantity is unknown, buy a put option on the currency; and
3. When the quantity of a foreign currency cash flow is partially known and partially uncertain, use a forward contract to hedge the known portion and an option to hedge the maximum value of the uncertain remainder (Shapiro, 2003: 369).

Coyle (2000(b): 64) explains that expectation forms the basis for all hedging decisions to be made, and the decision of which product to use therefore, entails a company taking a “view on the market”:

- If the company feels the value of the Rand/Dollar exchange is going to weaken, the traditional forward outright will be the right choice – it costs nothing and covers the downside;
- If the company feels the value of the Rand/Dollar exchange rate is going to strengthen, the correct choice is an OTC currency option. It will cost a premium but this can be more than offset by the gain in Rands;
- If the company feels the Rand/Dollar exchange rate will remain unchanged, the traditional forward would again be the right choice – it costs nothing and covers the downside, and no upside is expected; and
- If the company feels the Rand/Dollar exchange would be volatile, the option would be the right choice because with a volatile market there is always the chance that the currency will suddenly deteriorate.

These rules are summarised below:

View on the target currency	Risk Management Instrument
Weakens	Forward Contract
Strengthens	Currency Option
Goes nowhere	Forward Contract
Highly volatile	Currency Option

Bodnar and Gebhardt (1999: 155) did a comparison between American and German firms' use of, and attitudes toward derivatives. They drew the comparable sub-sample of firms from the US to match the sample of German firms on both size and industry composition. For firm commitments, forward-type (variance elimination) instruments were recommended, whereas option-type instruments were preferred for uncertain foreign currency denominated future cash flows. For exposures from anticipated transactions beyond one year, options became the preferred instrument with US companies. However, a surprising result of their analysis showed that a considerable percentage of German companies prefer options when hedging firm-commitment exposures. Bodnar and Gebhardt (1999: 155) also pointed out that forward contracts do not impact the balance sheet and are therefore less visible for higher management or for supervisory bodies, while with options the premium paid or received shows up in the profit and loss statement.

2.5 Foreign Exchange Risk Management Practices

Before understanding how the multinational firm uses FEC and the feasibility of using currency options in its management of foreign exchange risk, it seems appropriate to highlight some of the recent exchange risk management practices, which came under the spotlight in a number of published articles as summarised in Section 2.5.1 through to Section 2.5.5.

2.5.1 Use of Currency Derivatives

Bodnar & Gebhardt (1999: 155) made a series of surveys on financial risk management practices and financial/currency derivatives used by non-financial corporations in the United States.

Bodnar, *et al.* (1999) study extends his previous two surveys by asking new questions about certain aspects of derivatives used in currency risk management practices. The report compares responses taken from the various surveys and points out the changes in responses over time. The results demonstrated that the percentage of firms that used derivatives has remained constant over time; however, the intensity of usage appeared to be increasing among those firms. This indicates that these firms are generally finding derivatives beneficial for their business.

The positive impact of currency derivatives on risk, investment and value were highlighted by a number of authors in different studies:

- Geczy, *et al.*, (1997: 1325) examined currency-hedging activities for a sample of US Fortune 500 firms, and found that US firms' use of currency derivatives is positively related to the amount of research and development expenditures (R&D) and the firms' size, and negatively related to their quick ratio¹⁰;
- Allayannis & Mozumdar (2000: 7) found that the use of currency derivatives reduces the impact of cash flow on investment (i.e. hedging allows firms to smooth their investment); and
- Allayannis & Weston (2001: 247) found that the use of currency derivatives increased firm value.

2.5.2 Corporates' Foreign Exchange Hedging vs. Stock Prices

Equity investors are increasingly focussing on corporate foreign exchange hedging strategies, according to latest research by Merrill Lynch (July 2003) and are questioning corporates' traditional foreign exchange hedging techniques. According to the research, companies that have revealed losses because of inadequate or inappropriate hedging policies have seen their stock prices heavily punished.

"The market is trying to force corporations to focus on foreign exchange risk, and is using this metric to judge the efficiency of corporate management", explains Patelis (2003: 1), senior FX Analyst at Merrill Lynch.

¹⁰ *Quick ratio* also referred to as 'Acid Test' ratio, is a short-term liquidity ratio, computed as follows: ((Current Assets – Inventory) / Current Liabilities) (Ross *et al.*, 1996: 56).

2.5.3 Hedging with derivatives after Enron¹¹

Arnold Miyamoto and John Bird, of the Risk Advisory Group at Bank of America, (2002) give a snapshot of the state of derivative hedge practices and corporate risk management post-Enron. They polled dozens of companies to determine if, and how, they have changed their risk management practices, both in the US and in Europe, following the Enron crisis.

They found that no company reported a suspension of derivative hedge activity after Enron's bankruptcy filing. Company reactions fell into two categories: either they expected no change in their derivative use or they expected refinement in at least one aspect of their risk management policies and procedures, which is counter-party risk.

Companies continue to use forwards, swaps and options. The main drivers of when and how companies hedge their exposures continue to be the refinement of exposure forecasts and the market price levels in relation to initial budget rates.

2.5.4 Hedging with financial derivatives – East Asian Crisis

In a policy research working paper published by the World Bank Development Research Group in 2001, Allayannis, Brown and Klapper (2001: 3) explored the exchange rate hedging practices of firms that hedged exposure to foreign debt in eight East Asian countries between 1996 and 1998. They identified and characterised East Asian companies that used foreign currency derivatives, documenting differences in size, financial characteristics, and exposure to domestic and foreign debt. They investigated the important factors in the use of foreign currency derivatives. They found these firms appeared to be using foreign earnings as a substitute for hedging with derivatives, and engaged in “selective” hedging.

Allayannis, *et al.*, (2001: 3) also investigated the relative performance of hedgers during and after the East Asian crisis. They found no evidence that East Asian firms eliminated their foreign exchange exposure by using derivatives, and that, firms using derivatives before the crisis performed just as poorly as non-hedgers during the crisis.

¹¹ *Enron* was a dominant player in the energy derivatives market and a pioneer in off-balance sheet financing structures and was ranked the 5th largest US Corporation based on 2001 revenue by Fortune magazine. Enron filed for bankruptcy in 2001 due to an aggressive trading strategy that created complicated off-balance sheet financing structures. Their problems were unrelated to the normal business process and risk management policies of corporate America as per Arnold Miyamoto and John Bird of the Risk Advisory Group at Bank of America, (2002).

2.5.5 Treasury: a Profit or a Cost centre?

Evans (2003: 1) pointed out in spite of the successes of companies such as Novartis and Roche, treasurers are now shying away from any suggestion that they indulge in speculative trading and are running foreign exchange exposures for profit. He added that the risks of trading on their foreign exchange positions clearly outweigh the possible profits and to avoid giving the impression that they engage in speculative trading, many treasurers are very quick to point out that their treasuries are run as cost rather than profit centres. But even in cost centre treasuries, some companies are running foreign exchange exposures for profit.

The model of a treasury as a profit centre is still perfectly valid and, as Roche and Novartis have demonstrated, potentially lucrative. But treasurers need to be open about the risks they are taking on: "The imperative is transparency" (Evans, 2003: 1).

The major factors, which determine a company's foreign exchange risk management strategies and the financial instruments / currency derivatives it uses are not clear. From the different literature and surveys covered in this section, it appears that corporate management has definite views regarding foreign exchange risk management, regardless of theoretical arguments.

The literature on risk management models suggests that a number of companies around the world are attempting foreign exchange risk management in some form or other, using the different financial instruments and currency derivatives as discussed in Section 2.5.

2.6 Conclusion

In this Chapter, a detailed explanation was given of the two types of hedging instruments that are at opposite ends of the scale, the forward exchange contract and the currency option. The reason for saying that these two instruments are at opposite ends of the scale is related to the differences in the costs and risks involved. With FEC, there is no direct cost involved such as a premium. The potential to take advantage of favourable exchange rate movements are eliminated, along with the risk of negative exchange rate movements. The future exchange rate is set. With a currency option, it was found that there is more flexibility, as the option holder has the right, but not the obligation to exercise his option. The entity pays for this flexibility by way of an option premium. The risk of an adverse exchange rate movement is eliminated but the potential still exists to take advantage of favourable movements.

If the ruling spot rate is in the favour of the option holder, he will abandon his option and perform a spot transaction, which is to his advantage.

Managing risk has a cost. The financial instruments and currency derivatives discussed in this Chapter may well have a cost, there may be trading cost, but most certainly there will be an internal cost to bear in terms of time and resources spend on the activity. Any company dealing with foreign exchange exposures must then assess the impact of the risk faced in relation to the cost of managing that risk. It may well be that the impact of a particular risk faced can have on a particular business may be too insignificant to warrant the expense of managing it. Although that statement may be true for risks in general, it is hardly likely to be true for currency risk situation, especially after the volatility of the Rand in the years 2001/2002.

With the availability of several financial instruments and currency derivatives and their many variants on the foreign exchange market, the latter is a very complex market that could be extremely daunting to someone who has very little experience of the various products on offer. The only way to improve one's foreign exchange risk management is through the use of the different instruments, thereby learning about the practicalities. It is a field in which there is almost no substitute for practical experience. Getting to know the foreign exchange markets is to a company's advantage.

To summarise, managing foreign exchange exposure effectively involves: exercising centralised oversight over its foreign exchange hedging activities; recognising the difference between transaction exposure and economic exposure, and finally devising a strategy for hedging the identified foreign exchange risks, by choosing from the different financial instruments and currency derivatives available, those particular instruments and derivatives that will best suit the need of the company.

In Chapter 3, an investigation of the foreign exchange exposures and its management strategies used by a multinational firm will be undertaken, based on the theoretical background provided on forward exchange contract and currency option in this Chapter. Chapter 4, in turn provides an overview of how the whole thesis is structured and how its objective is met. Chapter 5 will analyse the firm's current foreign exchange risk management strategy and then evaluate the use of currency options as an alternative.

CHAPTER THREE

OVERVIEW OF THE MULTINATIONAL FIRM'S FOREIGN EXCHANGE RISKS / EXPOSURES AND ITS HEDGING STRATEGIES

3.1 Introduction

The multinational firm under examination is one of the world's leading suppliers of fast-moving consumer goods. The firm is considered a truly multi-local, multinational firm as it brings its wealth of knowledge and international expertise to the service of local consumers. With its head-office in Europe, the multinational firm has subsidiaries all around the world.

This chapter explores the impact of foreign currency fluctuations on the multinational firm's South African operations and provides an overview on the following issues:

- The foreign exchange risks the firm faces, and the methods the firm uses to measure its currency exposure;
- Based on the nature of the exposure and the firm's ability to forecast exchange rates, the hedging or exchange risk management strategy the firm employs; and
- Finally, which of the various hedging techniques available on the foreign exchange market the firm uses: Forward Foreign Exchange Contracts; Foreign Currency Futures Contracts; Foreign Currency Options; Foreign Currency Swaps; and Money Market Hedge.

Before attempting to provide an overview on the issues listed above, it is appropriate to provide an insight into the firm's background, its operations and, most important of all, to understand its foreign exchange exposures and its foreign exchange policies and limits, which directly dictate the strategies and hedging techniques the company uses.

3.2 Background of the Multinational Firm

The multinational firm was created when a British soap-maker merged with a Dutch margarine producer, with the objective of creating complementary businesses with strong global networks. Employing 265,000 people worldwide, the firm has two parent companies, which, despite being separate businesses, operate as a single unit with the same board of directors.

The core building block in this multinational firm is its local operating companies. These companies are organised into ten regional groups. The Africa Regional Group (ARG) covers Africa south of the Sahara, employing more than 40,000 people, many in the company's 30 manufacturing sites and plantations. It sells products into 48 African countries and is established onshore in fifteen sub-Saharan countries.

The firm's South African operation¹², which falls under the African Regional Group, is structured on the basis of 2 divisions (operating units), Foods and Home & Personal Care. Some of the product categories for the Foods division are Savoury & Dressing, Spreads & Cooking Products, Tea Based Beverages, Frozen Foods, and Ice Cream. The Home and Personal Care includes products categories such as Laundry, Household Care, Total Skin, Prestige Fragrance, Hair, Deodorants and Grooming.

The firm supplies its products to most of the big local retail outlets in South Africa, such as Pick'n Pay, Spar, Shoprite, Clicks and Metro Cash & Carry. Its exports are mainly to Angola, the Democratic Republic of Congo, Mozambique and Mauritius. The firm sources its main raw materials from the following countries: Oil, Chemicals, Tea, Herbs & Spices from Singapore, Europe (France & Ireland), Ireland and India respectively, and capital equipment from Germany and the United States. The firm's products are distributed in South Africa through Tibette & Britten, the Super Group and some other local haulage companies.

3.3 The Firm's Main Foreign Exchange Transactions and Resulting Exposures

The firm defines its *trading exposures* as exposures arising from, and in support of, the trading activities of its operating units, i.e. exposures arising from buying and selling goods and services, and its *financial exposures* as arising from two sources: Cash flows between the Parents and Subsidiaries, including dividend and service fees, and Capital movements arising from cross currency deposits and funding.

¹² From this point onwards, the South African operations (both the Foods & the Home & Personal Care operating units) on which the thesis is based, will be referred to as the "firm".

Since exposures on financial flows are managed by the country that receives the foreign currencies and not by the firm, for purpose of this thesis, the researcher concentrates on the firm's trading exposures as defined above.

3.3.1 Trading Exposures

3.3.1.1 Exports

The firm's main exports are denominated in US Dollars as detailed in Table 1 below. The exports of Foods to Mauritius constitute the highest US Dollar income for the firm. Exports to countries such as Mozambique and Zimbabwe are mainly inter-company transfers of goods. The firm's exports contribute a very small proportion to its total NPS as indicated in Table 2, and a small percentage compared to its total foreign currency transacted each month (an average of 5% to 6% every month as shown in Table 3 (2004 monthly figures)).

TABLE 1: THE FIRM'S MAIN EXPORTS

Products	Country	Currency Charged on Customer's Invoice	Average Rand Value per Month - 2004 Millions
1	2	3	4
Home & Personal Care	Angola, Democratic Republic of Congo, Mauritius	US Dollars	R5m
Powders	Madagascar, Mauritius	US Dollars	R0.15m
Foods	Mauritius, Mozambique,	US Dollars	R0.06m
Foods (oil – Bulk)	Zimbabwe	US Dollars	R0.04m

TABLE 2: EXPORTS AS A PERCENTAGE OF NPS (2004 ANNUAL FIGURE)

Division	Year	Net Proceed from Sales	Exports	Exports as a Percentage of NPS
1	2	3	4	5
Food Division	2004	3 Billions	3 Millions	0.10%
Home & Personal Care	2004	4.7 Billions	60 Millions	1.30%

TABLE 3: EXPORTS AS A PERCENTAGE OF TOTAL FOREIGN CURRENCY TRANSACTED EACH MONTH (2004 FIGURES)

Month	Exports (Million - Rands)	Total Currency Dealings (Million Rands)	Exports as a Percentage of Total Foreign Currency Transacted each Month
1	2	3	4
Jan	R4.7m	R98.9m	5%
Feb	R11.6m	R91.5m	13%
Mar	R1m	R64.4m	2%
Apr	R4.8m	R103.9m	5%
May	R11.9m	R100.7m	12%
Jun	R1.6m	R42.5m	4%
Jul	R11.5m	R116.3m	10%
Aug	R4.8m	R64.0m	8%
Sep	R1.7m	R67.9m	3%
Oct	R5.4m	R66.1m	8%
Nov	R7.8m	R81.6m	10%

3.3.1.2 Imports

Payment for imports constitutes one of the largest deals in foreign exchange for the firm. The firm's major imports for 2004 are listed in Table 4 below and the currencies at which the imports are quoted on the overseas suppliers' invoice are also reflected in the column 3 of the table. Imports dealing are mainly conducted in three major currencies, the US Dollar, the Pound Sterling and the Euro.

TABLE 4: THE FIRM'S MAIN IMPORTS

Materials / Products	Country	Currency on Supplier's Invoice	Average Rand Value per Month - 2004 (Millions)
1	2	3	4
Fats & Oil	Singapore	US Dollars	R49m
Chemicals & Others	Europe (France / Ireland)	Euros and Pounds Sterling	R13m
Tea leaves	Ireland and Mozambique	Pound Sterling and US Dollars	R4.3m
Herbs & Spices	India	US Dollars	R4.3m
Capital Equipment	Germany and USA	Euros and US Dollars	R2.8m

Table 5 below shows the amount of foreign exchange required for imports, capital and loan and interest per month for the 2004 financial year, respectively, and columns 5 to 7 from the table provides the percentage of each to the total amount of foreign exchange requirement. It is evident from Table 5 that, on average, 96% of the total requirement for foreign exchange was for imports.

TABLE 5: IMPORTS, CAPITAL, AND LOAN & INTEREST AS A PERCENTAGE OF TOTAL FOREIGN CURRENCY'S REQUIREMENT FOR EACH MONTH (2004 FIGURES)

Month	Imports (Millions - Rands)	Capital (Millions - Rands)	Loans & Interest (Millions - Rands)	As a Percentage of Total Foreign Currency Required in each Month		
				Imports	Capital	Loans & Interest
1	2	3	4	5	6	7
Jan	97.8	1	0.06	99%	1.01%	0.06%
Feb	91.1	0.4	0	100%	0.44%	0.00%
Mar	64.4	0	0	100%	0.00%	0.00%
Apr	94.1	9.7	0.15	91%	9.33%	0.14%
May	99.8	0.96	0.03	99%	0.95%	0.03%
Jun	41.7	0.82	0.04	98%	1.93%	0.08%
Jul	112.1	4.1	0.05	96%	3.53%	0.04%
Aug	60.1	4.7	0	93%	7.25%	0.00%
Sep	66.3	1.5	0.04	98%	2.21%	0.05%
Oct	75.5	4.2	0	95%	5.27%	0.00%
Nov	78.4	3.1	0	96%	3.80%	0.00%
Dec	51.5	3.1	0	94%	5.68%	0.00%
Total/Average (Percentage)	932.8	33.6	0.36	96%	3.47%	0.04%

A detailed breakdown of the split by currency (Rand value) and percentage split per currency (Euro, Pound Sterling and US Dollars), for the financial year 2004, is provided in Table 6 below. In terms of foreign currency dealings, US Dollar accounted for 85% of the total foreign currency dealings in 2004, while the Euro and the Pound Sterling accounted for a mere 9% and 6%, respectively.

TABLE 6: FOREIGN EXCHANGE TRANSACTIONS SPLIT BY CURRENCY – RANDS AMOUNT AND PERCENTAGES (2004 FIGURES)

Month	Currency			Total (Millions Rands)	Split per Currency (%)		
	Euro (Millions Rands)	Pound Sterling (Millions Rands)	US Dollars (Millions Rands)		Euro	Pound	US Dollars
1	2	3	4	5	6	7	8
Jan	9.2	9.3	75.7	94.2	10%	10%	80%
Feb	1.8	4	74.1	79.9	2%	5%	93%
Mar	9.5	3.4	50.5	63.4	15%	5%	80%
Apr	11	3.8	84.3	99.1	11%	4%	85%
May	0.89	3.8	84.1	88.8	1%	4%	95%
Jun	8.7	3.5	28.7	40.9	21%	9%	70%
Jul	2.1	2.3	100.3	104.7	2%	2%	96%
Aug	11.3	4.1	43.8	59.2	19%	7%	74%
Sep	9.2	2.4	54.4	66	14%	4%	82%
Oct	5.4	9.2	46	60.6	9%	15%	76%
Nov	6.2	2.6	65	73.8	8%	4%	88%
Dec	9.3	4.5	45	58.8	16%	8%	77%
Total	84.6	53	751.9	889.5	9%	6%	85%

From Table 5 above, it is evident that the foreign exchange transactions, which are predominately imports, are mainly conducted in US Dollars, which (as illustrated in Table 6) constitute the major currency. The average monthly spending on 'Fats & Oil' imports as illustrated in Table 4 in Section 3.3.1.2 is more than two thirds of the firm's average monthly spending on imports (i.e. R49 million out of a total of R78 million worth of imports). 'Fats & Oil' is an extremely important raw material for both the Food and Home & Personal Care Divisions. It contributes 67% of the raw materials in the Food Division and 48% in the Home & Personal Care Division, and it is mainly imported from Singapore and quoted in US Dollars.

This leads to the conclusion that a more in-depth analysis of the foreign exchange exposure, arising from the firm's 'Fats & Oil's imports in US Dollars, will paint a clearer picture of the firm's foreign exchange risk/exposure. While this is covered in Section 3.5, the foreign exchange risk management policies and limits, which provide a framework for the firm to manage its foreign exchange risks, are described in the next section.

3.4 Foreign Exchange Risk Management Policies and Limits

All significant areas of the firm's Treasury, including foreign exchange risk management, are governed by policies and guidelines approved by the firm's Financial Director and are subject to a stringent system of authorities and regular monitoring. All Treasury dealings must always comply with the firm's Code of Business Principles and with the Treasury Code of Conduct.

The firm's main foreign exchange management policies, which are broken down in a number of short and easy to understand policies and procedures, are explained briefly below. They are mandatory for the firm to follow, and deviations are only allowed after prior written approval by the Financial Director or, where appropriate, by the Treasurer.

3.4.1 Foreign Exchange Exposure Limits

For each of the firm's operating units, there is an exposure limit set and approved by the Finance Director beyond which all exposures must be covered. The maximum authorized exposure limit for the firm's South African operations, inclusive of its Food division, is set at £5 million (Euro 7.5 million). Normal policy is to cover up to 100% of all commitments on a rolling three-month basis. The percentage cover and cover period are constantly monitored, and are formally reviewed on a weekly basis. When decisions are to be taken to amend this ratio up or down and/or to change the cover period in the light of perceived trends, the firm will consider advice from its local bankers.

For most operating units, where cover is available, the firm's preference is to have a low limit such that all exposures are fully covered. Where an operating unit of the firm has a high level of dedicated treasury resource, a higher limit may be allowed. The existence of cover provides a time buffer during which the operating unit can assess how to deal with a worsening of exchange rates.

3.4.2 Treatment of foreign exchange exposure on Capital Expenditures

All the firm's Capital Expenditure (CAPEX) and Loans & Interest are covered forward, and all cover is taken to month-end date except loans & interest, which is taken to the actual payment date. All capital items are fully covered, irrespective of the amount excluding spares.

3.4.3 Restriction on Currency Purchases

Trading in currencies in which there are no underlying businesses is considered speculation and is not allowed by the firm. Covers are to be taken for existing exposures only. Where hard currency and cover is not consistently available, the firm's foreign exchange department, on behalf of the operating units, may by exception purchase additional amounts to meet forecasted requirements.

3.5 The Firm's Foreign Exchange Risk Management Strategies and Hedging Instrument Used

3.5.1 Foreign Exchange Risk Management Strategy

The firm's Treasury department uses hedging to limit its exposure to risk incurred in the normal course of business in relation to currencies and interest rates. The firm is allowed to use forward contracts, cross currency deposits/ borrowings and options as hedging instruments. The most common and preferred method of hedging is by forward exchange contracts. Where forward contracts are not available (which is seldom), approval is sought to obtain cover by using cross currency deposits or borrowings. The use of hedging instruments other than forward contracts requires Group Treasury approval.

3.5.1.1 Hedging Economic Exposure

Economic exposure, as discussed in Chapter 2, Section 2.3.3, is concerned with exchange losses arising out of long-term trends in the exchange rates between currencies. It represents the time that will be needed to recover margins in the event of devaluation, or in other words, the cover that needs to be taken for the results to be neutral in the event of devaluation. Effective implementation requires a thorough understanding of the competitive environment and strong cash-flow forecasting procedures. Reducing economic exposure requires the firm to make strategic choices that go beyond the realm of financial management. The key to reducing economic exposure is for the firm to distribute its productive assets to various locations, in order for its long-term financial well-being not to be severely affected by adverse changes in exchange rates.

Only the top-level board members of the firm are in a position to permit the hedging of long-term foreign exchange exposure. If the firm buys from a country with a strengthening exchange rate or sells into a country with a declining exchange rate, this situation can only be altered by diversifying purchases towards countries with a more benevolent trend in the exchange rate and diversifying sales in a similar manner. These are top-level decisions. The duty of the firm's Foreign exchange department in this case is to identify these trends in exchange rates and inform the board accordingly. It is up to the board to ensure that the prediction is reasonable and then to find suitable alternative markets.

3.5.1.2 Hedging Transaction Exposure

The transaction method covers only the accounting exposure (those exposures are already recognised in an operating unit's accounts for which firm commitments exist and will be recognised in the accounts within the next 12 months). Integrated systems enable commitments represented by firm purchase orders to be taken directly. Care is, however, taken that all commitments are captured – not just all purchase orders. Only commitments up to 12 months are included. Among the various instrument available on the market, the firm uses forward exchange contracts as described in Section 3.5.2.

Although all operating units are encouraged to understand their economic exposure, the majority of them uses the transaction method for ongoing management of their exposures. For both transaction and economic exposures, the maximum exposure period covered is 12 months. If the calculated period for any of the firm's foreign exchange transaction is in excess of 12 months, as a matter of policy, it is to be limited to a 12-month period. Any exposure beyond this period is referred to as structural exposure and does not fall under the firm's foreign exchange policy and the firm's strategy in this case is to keep such exposure un-hedged.

3.5.2 Foreign Exchange Contracts (FEC)

The firm uses FEC contracts to cover its exposure. A summary of the firm's foreign exchange cover from the different banks it deals with, as at the 30th of June 2004 using FEC, is shown in Table 7 below, while the detailed calculation of the foreign exchange cover is illustrated in Table 8.

TABLE 7: THE FIRM'S FOREIGN EXCHANGE COVER WITH THE DIFFERENT BANKS AS AT 30TH JUNE 2004

Banks	Foreign Exchange Cover (Rand Value)
1	2
CITIBANK	151,439,900.00
FNB / FIRST RAND	151,941,103.00
NEDBANK	49,462,800.00
STANDARD BANK	210,477,891.00
INVESTEC	67,275,975.00
	630,597,669.00

The firm's Forex department focuses on a period of six months from July 2004 to December 2004, as it believes that forecasts of exchange rates beyond six months can be unreliable. From Table 8, the 'CPX=USD' in the 'Cover Type' column refers to the portion of imports relating to capital expenditure in US Dollars. Column 3 of Table 8 gives the different maturity dates of the forward cover with the different banks. The 'Forward mark-to-market' in Rand value is obtained by multiplying the Dollar amount of forward cover taken (column 5) by the US Dollar forward exchange rate (column 8). The forward rate of the US Dollar to the Rand, which is obtained by adding the forward points (column 7) to the spot exchange rate (column 6), is the exchange rate which the Forex Department charges the operating companies upon their request for forward cover.

TABLE 8: CALCULATION OF TOTAL FOREIGN EXCHANGE COVER WITH THE DIFFERENT BANKS – AS AT 30/06/2004

COVER TYPE	BANK	MATURITY	CURRENCY	AMOUNT IN US DOLLARS	ZAR/US\$ SPOT	ZAR / US\$ POINTS	ZAR/US\$ FWD	FORWARD MARK-TO-MARKET (RANDS)
1	2	3	4	5	6	7	8	9
USD	FNB	07/29/2004	USD	3,740,000.00	6.5826	0.1208	6.7034	25,070,716.00
USD	SCMB	07/29/2004	USD	3,400,000.00	6.5826	0.1208	6.7034	22,791,560.00
USD	SCMB	07/29/2004	USD	1,700,000.00	6.5826	0.1208	6.7034	11,395,780.00
USD	SCMB	07/29/2004	USD	1,300,000.00	6.5826	0.1208	6.7034	8,714,420.00
USD	CITI	08/30/2004	USD	3,270,000.00	6.8139	0.1226	6.9365	22,682,355.00
USD	CITI	08/30/2004	USD	7,580,000.00	6.8139	0.1226	6.9365	52,578,670.00
USD	CITI	08/30/2004	USD	8,150,000.00	6.8139	0.1226	6.9365	56,532,475.00
USD	CITI	09/27/2004	USD	3,000,000.00	6.4365	0.1123	6.5488	19,646,400.00
CPX=USD	SCMB	09/27/2004	USD	9,070,000.00	6.4365	0.1123	6.5488	59,397,616.00
USD	FNB	09/27/2004	USD	9,345,000.00	6.4365	0.1123	6.5488	61,198,536.00
USD	SCMB	10/23/2004	USD	3,350,000.00	6.1487	0.1024	6.2511	20,941,185.00
USD	INV	10/23/2004	USD	3,500,000.00	6.1487	0.1024	6.2511	21,878,850.00
USD	FNB	10/23/2004	USD	6,160,000.00	6.1487	0.1024	6.2511	38,506,776.00
USD	INV	10/23/2004	USD	5,000,000.00	6.1487	0.1024	6.2511	31,255,500.00
USD	NED	11/24/2004	USD	7,520,000.00	6.4770	0.1005	6.5775	49,462,800.00
CPX=USD	SCMB	11/24/2004	USD	3,610,000.00	6.4770	0.1005	6.5775	23,744,775.00
USD	FNB	11/24/2004	USD	4,130,000.00	6.4770	0.1005	6.5775	27,165,075.00
USD	INV	11/24/2004	USD	2,150,000.00	6.4770	0.1005	6.5775	14,141,625.00
USD	SCMB	11/24/2004	USD	2,530,000.00	6.4770	0.1005	6.5775	16,641,075.00
USD	SCMB	12/24/2004	USD	1,280,000.00	6.5546	0.0910	6.6456	8,506,368.00
USD	SCMB	12/24/2004	USD	1,770,000.00	6.5546	0.0910	6.6456	11,762,712.00
USD	SCMB	12/24/2004	USD	3,500,000.00	6.5546	0.0910	6.6456	23,259,600.00
CPX=USD	SCMB	12/24/2004	USD	500,000.00	6.5546	0.0910	6.6456	3,322,800.00
				95,555,000.00				630,597,669.00

A summary of the firm's orders, forecasted for the 6 months (July to December 2004) is shown in Table 9. While column 2 and 4 show the firm's orders in Dollar terms and Rand value, respectively, column 5 gives the actual total cover amount (actual purchases) from the different banks as shown in Table 7. The total cover amount in Rand value is obtained by multiplying the US Dollar amount with the actual FEC rate from the actual forward contract entered with the banks. For reasons of pricing and transaction costs, the firm does not usually purchase foreign currency in amounts below \$1m for its Home & Personal Care and \$500,000 for its Food division. The amount in US Dollars and percentage by which the firm has over-or-under covered its exposure is very negligible, as shown in Column 8 and 9. This implies that the firm always tries to cover its exposure to the maximum.

The charge-out rate in Column 3 and respective Rand values for the six months, obtained by multiplying the total orders amount in US Dollars by the charge out rate, is discussed in section 5.2 of Chapter 5.

TABLE 9: THE FIRM TOTAL ORDERS AND TOTAL COVER AS AT 30/06/2004 ON FIRM ORDERS

BOOK MONTH	TOTAL ORDERS (Million US \$ / Rands)			TOTAL COVER (Million US \$ / Rands) (actual purchases)			Over/ Under Cover (Millions Rand)	Percentage of Over / Under Cover with respect to Total Orders
	US\$	Charge Out Rate	Rand Value	US\$	Actual FEC Rate	Rand Value		
1	2	3	4	5	6	7	8	9
07/04	10.1437	6.65	67.46	-10.1400	6.70	-67.97	0.004	-0.04%
08/04	19.0313	6.90	131.32	-19.0000	6.94	-131.79	0.031	-0.16%
09/04	21.4175	6.50	139.21	-21.4150	6.55	-140.24	0.003	-0.01%
10/04	18.0073	6.20	111.64	-18.0100	6.25	-112.58	-0.003	0.02%
11/04	17.4132	6.50	113.19	-17.4100	6.58	-114.51	0.003	-0.02%
12/04	9.5800	6.60	63.23	-9.5800	6.65	-63.66	-	-
TOTAL	95.59		626.04	-95.56		-630.77	0.0380	

3.6 Conclusion

This Chapter provides an overview of the Multinational firm's foreign exchange risk/exposures and its hedging strategy. As became evident in Section 3.3, imports of Fats & Oils in US Dollars constituted the firm's major foreign exchange exposure. An overview of the firm's foreign exchange management process reveals that, with the support of well-defined foreign exchange management policies, the firm uses the 'transaction method' to measure its currency exposures and hedges the same exposure with Foreign Exchange Forward Contracts.

In 2004, as per the Table 10 below, the firm, using solely FEC contracts, incurred foreign exchange losses of R48.94 million. In hindsight, the firm, covering its monthly foreign exchange exposures at the FEC rate, ended up paying a higher rate than the actual spot rate in those particular months. The foreign exchange loss incurred in 2004, as shown in Table 10 below, could easily repeat itself in 2005. For example if the Rand/Dollar exchange rate had to strengthen to below the R6.00 to the Dollar level, the firm would incur significant foreign exchange losses, having to purchase Dollars at a higher rate than that on the market.

TABLE 10: SUMMARY OF THE USE OF FEC COVER VS SPOT (2004 FIGURES)

PAYMENT PERIOD	US DOLLARS UTILISED PER MONTH MILLION	AVERAGE FEC RATE	FEC RAND AMOUNT	AVERAGE SPOT RATE	SPOT RAND AMOUNT	FEC VS SPOT COST / SAVING*
1	2	3	4	5	6	7
January	16.04	7.1195	114.20	6.9502	111.48	-2.72
February	6.70	6.8657	45.98	6.7903	45.47	-0.50
March	16.20	6.6826	108.26	6.6322	107.44	-0.82
April	17.50	7.0803	123.91	6.5826	115.20	-8.71
May	14.00	6.9175	96.85	6.8139	95.39	-1.45
June	16.99	6.7566	114.77	6.4365	109.34	-5.44
July	10.14	6.7034	67.97	6.1487	62.34	-5.62
August	19.03	6.9365	132.00	6.477	123.26	-8.74
September	21.42	6.5488	140.28	6.5546	140.40	0.12
October	18.00	6.2511	112.52	6.4043	115.28	2.76
November	17.41	6.5775	114.51	6.0511	105.35	-9.16
December	9.58	6.6456	63.66	5.7421	55.01	-8.66
	183.00		1,234.90		1,185.96	-48.94

* Excludes Spot deals and any cost/profit on FEC extension

Using forward exchange contracts, the firm is committed to the fixed FEC rate, and cannot take advantage of any favourable move in the spot exchange rate, hence the need for a financial instrument, which can both protect the firm when the spot exchange rate moves against the firm, while at the same time allowing the firm to benefit from a favourable move in the spot exchange rate. Such an instrument, as described in Section 2.4.2.3 of Chapter 2, is the currency option. Chapter 5 attempts to evaluate the use of currency options using the same foreign exchange exposures as described in this Chapter.

CHAPTER FOUR

RESEARCH METHODOLOGY

4.1 Introduction

This thesis adopted a form of business research, which is defined by Zikmund (1997: 3) as the systematic and objective process of gathering, recording, and analysing data to aid in making business decision. A review of the literature regarding the categories of research studies into foreign exchange risk management practices showed that there are a number of different approaches one can follow. Batten, Mellor & Wan (1993: 16) identified three broad categories of such research studies. The first category of research concerned the relevance of foreign exchange exposure management. The second group of research studies identified by Batten, *et al.* (1993: 16) investigates the effectiveness of various hedging instruments such as forward contracts, options and futures. The third group of papers are categorised by Batten, *et al.* (1993: 16) as empirical field studies, designed to investigate which risk management practices are used in practice, and to identify factors that influenced the choice of such practices. This proposed thesis fell under the second category, in that it aimed to examine the effectiveness of using currency options versus forward contracts in a multinational firm.

As discussed in Chapter 1, this thesis is limited to the comparison of currency options and forward exchange contracts for two reasons: the first one being that these two instruments are the main ones used in the management of foreign exchange risk, and secondly, the MNC firm under study restricts its foreign exchange risk management policies to forward contracts and currency options.

4.2 Approach

A quantitative based ‘case study’ approach was considered more appropriate in this thesis, since as pointed out by Robson (1993: 5), it is a strategy, which involves an empirical investigation of a particular contemporary phenomenon within its real life context, using multiple sources of evidence.

The advantage of a case study is that it allows for an entire organization or entity to be investigated in depth and with meticulous attention to detail (Zikmund, 1997: 108) and in addition being, a quantitative based research, it allows observations to be converted into discrete units that could then be compared to other units by using statistical analysis (Robson, 1993: 146), precisely the objectives of this thesis.

The most suited strategy within a case study approach to compare and contrast the hedging instruments, is by means of an evaluation study in which the information has direct relevance to subsequent decisions about improvements to, or the continuation of, a particular action programme. According to Hall & Hall, (1996: 46), an evaluation study involves a specification of the goals or intended purposes of the programme and the collection of data relevant to such goals in a measurable form. It requires some kind of judgement as to whether, and to what degree, the goals of a programme are being achieved.

Pawson & Tilley, (1997: 217) point to the fact that evaluation research allows one to develop transferable and cumulative lessons from research, and also add that evaluators need to orient their thinking to context-mechanism-outcome (CMO) pattern configurations. They state that a CMO configuration is a proposition stating, what it is about a program, which works for whom and, in what circumstances. In this research, the CMO configuration is as follows: the context is the management of foreign exchange risk in a multinational firm; the mechanism is through the use of currency options, and finally the outcome is the expected results from comparing currency options as an alternative to forward exchange contract.

Evaluation study is a form of 'applied research' (Pawson & Tilley, 1997: 214), which is defined by Zikmund (1997: 8) as research undertaken to answer questions about a specific problem or to make decisions about a particular course of action or policy decision. The purpose of an evaluation study, as per Robson (1993: 170), is to assess the effects and effectiveness of something, typically some innovation or intervention: policy, practice and/or service. With regards to this study, using data collected from the same period for the MNC, the objective was to measure and compare the results obtained from using currency options and forward exchange contracts to facilitate decision making in the management of foreign exchange risk in a multinational firm.

The evaluation study conducted in this thesis followed a simple 3 stage-process as described by Hall & Hall, (1996: 18). The first stage, which formed part of the 'Preparation stage of the research', was to gain access to the relevant and sometimes sensitive information (both financial and policy related) on the Multinational Corporation under study, the other two stages were fieldwork and analysis. While, fieldwork involved data collection and understanding of the MNC's current foreign exchange risk management tools and processes, the final 'analysis' stage was simply to use the data collected and proved the main purpose of the thesis, that is, to show currency options as an alternative hedging strategy to forward foreign exchange contracts for the effective and efficient management of foreign exchange exposure/risk in the multinational firm.

4.3 From Problem Statement to Research Hypothesis¹³

4.3.1 Problem Statement

The management of currency risk by corporations has come a long way in the last three decades. Before the break-up of the Bretton Woods system, currency was not a major consideration for corporate executives, nor did it have to be (Hill, 2002: 292). Exchange rates were allowed to fluctuate, but only within reasonable tight bands, while the US Dollar itself was pegged to the most solid commodity, gold. The responsibility for managing currency risk, or rather maintaining currency stability, was largely that of governments. This responsibility is now shared by the private sector (Hill, 2002: 292).

While more and more firms realise that they should manage their foreign exchange exposure, not all of them come up with the appropriate management strategy. The complexity of foreign exchange rate changes appears in the following way: it influences not only a firm's existing financial position, but also sales and prices which in turn will affect the firm's future value. Therefore, the choice of an appropriate foreign exchange exposure management strategy is a crucial decision for the financial viability of a company.

While the MNC under study uses solely forward exchange cover as the instrument for its foreign exchange exposure management strategy, this is not the only instrument available.

¹³ Hypothesis, is an unproven proposition or supposition in statistical theory that tentatively explains certain facts or phenomena (Zikmund, 1997: 559).

Various forms of cover can be taken, apart from a forward exchange contract, one of these being a currency option, which, at a cost, would eliminate the downside risk, while leaving some upside potential.

The research objective as described by Zikmund (1997: 89) is the purpose in measurable terms; the definition of what the research should be. In addition, as postulated by Bouma (1997: 35), in order to succeed, research must be guided by a clear statement of the problem or issue to be addressed by the research.

The objectives of the thesis are:

- To present one Multinational firm's foreign exchange risk management strategy and to understand its foreign exchange exposures and show how effective its current strategy is, in terms managing the firm's foreign exchange risk; and
- To investigate the use of currency options as an alternative foreign exchange risk management strategy to FEC by making use of the firm's foreign exchange exposure figures in US Dollars over the last 4 years.

Thus, the main objective of this research can be stated as follows: *'To evaluate the use of currency options as an alternative hedging strategy to forward exchange contracts for the management of foreign exchange risk in the multinational firm'*.

4.3.2 The Research Hypothesis

The research hypothesis were derived from the research objectives listed above. The hypothesis¹⁴: 'whether there is a significant difference between payments made in Rand amounts for the MNC's exposure using forward cover and currency options' was tested. The null hypothesis is stated in symbolic terms as $(\mu_A - \mu_B \leq 0)$, whereby μ_A is the population mean payments using FEC; and μ_B is the population mean payment using currency option.

$$H_0 : \mu_A - \mu_B \leq 0 \text{ or } \mu_A \leq \mu_B$$

¹⁴ Hypothesis testing is a systematic procedure for determining whether the result of a research study, which examines a sample, provide support for a particular theory or practical innovation, which applies to a population (Aron & Aron, 1997: 91).

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ysis states that the population mean (μ_A) is greater than the population mean payments using currency options is less than the mean payments

$$H_1 : \mu_A - \mu_B > 0 \text{ or } \mu_A > \mu_B$$

hypothesis, the means of the monthly exposures payments in Rand amounts years using forward cover and then using currency options were compared if they are 'statistically significantly' different from each other. The term 'statistically significant' as defined by Fink (1995:3) is used to show that the difference between two groups or sets of observations are statistically meaningful and not due to chance. The main statistical technique used to test the hypothesis is the sample Student t-test and more precisely as per Aron (1997: 164), a t-test for dependent means.

4.4 Research Methodology

4.4.1 Data Collection

Access to the MNC's foreign exchange processes, policies and numerical data was negotiated bearing all the concerns raised by Hall & Hall, (1996: 17), in mind, as listed follows:

- First, the MNC had to be satisfied that the researcher is a student who could be trusted to act responsibly and presents himself to the MNC in a professional way;
- Second, the MNC needed to know that what is being proposed will not result in exploitation of the organisation for selfish academic ends but the research study will make a contribution to the organisation's evaluation of the different foreign exchange risk management tools; and
- Thirdly, the MNC needed to be presented with a clear rationale for the project, based on showing what the study has to offer in terms of results and convincing hypotheses and proof.

Once the above were complied with, in the 'field work' stage of Hall's (1996: 18) three-stage process for an evaluation study, the four primary means for collecting both quantitative data and other general MNC's foreign exchange related information were considered, that is through observations, questionnaires, structured interview and the use of secondary data (Scheyvens & Storey, 2003: 38).

While observation, questionnaires and structured interviews are indisputably appropriate for collecting quantitative data, due to the specific nature of this study, that is looking at a single MNC's as a case study, the use of secondary data as postulated by Scheyvens & Storey, (2003: 39) was used.

Use of secondary data, such as the various performance reports prepared by the firm's treasury on its foreign exchange positions, the firm's policies and procedures with regards to imports and foreign exchange management provided enough materials and data to successfully understand and calculate foreign exchange exposure faced by the firm as well as its foreign exchange risk management strategies. As Hall & Hall (1996: 216) described, an especially fruitful source of available data comes from documents not intended for public consumption, but produced by organisation as a record of their activities. These include any of the written records, files, registers, accounts, inventories, job descriptions, organisational charts, constitutions, policy documents, minutes or other documents which proliferate in the organisation.

4.4.1.1 Background to the Data

All data presented in the analysis section of the thesis, such as the foreign exchange exposures figures in US Dollars are approximated and rounded figures of the actual monthly exposures. All exchange rates used are monthly averages of the Rand/Dollar exchange rates used from the firm Reuters screen¹⁵ or obtained from the banks it deals with. The same applies for the forward points applicable at the time.

¹⁵ Reuters is a information service provider, which the banks used to transmit various market related economic information online to companies upon a payment of a subscription fee.

Research is always constrained by lack of time or resources. While casting the net as widely as possible and gather as much data as one can (in the case of this study, looking at the MNC's exposure over a ten to twenty years period) increases the confidence one has with his or her results, however, in nearly all cases, this is simply not possible Scheyvens & Storey, (2003: 42). One therefore needs to select a small group, which is representative of the wider population, hence the focus of the researcher on the last four years. From January 2001 to December 2004, the Rand/Dollar exchange rate peaked to its highest ever exchange rate of R13.50 to the Dollar on the 20th of December 2001 and dropped to below the R6.00 to the Dollar mark in late 2004. When presenting data in tables to make comparisons between different groups of different variables, as is the case in this study - comparison between means of the Rand value of the firm Dollar exposure using forward exchange contract or currency options, Dixon, (1987) as cited in Hall & Hall, (1996: 116) suggests a group of at least thirty in size is acceptable. Choosing four years with 48 months thus fulfils the rule postulated by Dixon, above.

4.4.2 Method of Data Analysis

The aim of data analysis as explained by Williams (2003: 125) is to discover the relationship between cases and variables, and between variables. In this study, the data analysis conducted in Chapter 5 of the foreign exchange exposure of the MNC over the last 4 years, was with the intention to prove that the financial situation of the MNC using currency options might be different than using solely forward exchange contract, and that the potential savings from using currency options far outweigh the cost of the option premium. To do that, the Rand value of the monthly saving/loss using forward exchange contracts and currency options, including the option premiums, were compared and analysed over a 48 months period from January 2001 to December 2004.

The main statistical technique used in this research to investigate the hypothesis, (whether there is no significant difference between payments made in Rand amounts for the MNC's exposure using forward cover and currency options) is the sample Student t-test and more precisely, as per Aron & Aron, (1997: 164), a t-test for dependent means.

As per Williams (2003: 141), a t-test can be used to find out if the mean of a sample is similar to the population and with two samples to see if the mean of the samples is different. The t-test is used in this case, to test the hypothesis: stating that the mean of the Rand payment value for the MNC monthly exposures is significantly different from two samples; one using the forward exchange contract and the other using currency options. Using the t-test however, as indicated by Mckenzie, Powell and Usher (1997:126) requires one to make certain assumptions about the distributions of the populations from which the data arose. In particular, the model assumed by the t-test is that the two distributions are normally distributed¹⁶ with equal variances. If the data appears to satisfy these assumptions, then one would proceed with the t-test. If not, then one has to consider questions of robustness, and decide whether it is wise to proceed or if some alternative test should be adopted. However, as postulated by Defusco, McLeavey, Pinto and Runkle (2001:327), the t-test is fairly robust to unequal variances if the sample sizes are roughly equal and are not too small.

4.5 Limitation of the Research

Some of the limitations the researcher encounter while conducting this particular research are listed below:

1. The analysis is conducted using only the Rand/Dollar exchange rate; Dollar being the currency the firm trades the most in. The procedure is however applicable to other currencies;
2. To overview each and every one of the multinational firm's foreign transactions, exposed to foreign exchange risk was found to be too many to be analysed in this type of academic paper. In this thesis, the foreign exchange value of the major import transactions in Dollars is added to form a lump sum of foreign exchange amounts, which are then covered in their respective period of time;
3. It is also important to understand when a risk arises, and to know what period the risk extends to. To be able to achieve this, one has to distinguish between two categories of foreign exchange risk, i.e. the short term or trade-related risk and the long term or capital nature risk. This thesis mainly concentrates on trade-related transaction risk;

¹⁶ The normal distribution is a smooth, bell-shaped curve that is continuous and symmetric around the mean (Fink, 1995: 42). As per Williams (2003: 131), a normal distribution is one where the mean, median and mode, all fall at the same point. He mentioned that although 'real' normal distributions are rarely found, some distributions (for example age) come quite close and often researchers will talk of a normal distribution when it is merely nearly normal.

4. The exchange rate changes affect the firm's business, not only in financial aspects such as pricing, sales volume and cost, but also in terms of competitions. It is however not possible to discuss all possible effects in the thesis. Therefore, only the financial aspects of exchange rate change effect are concentrated on; and
5. Finally, the researcher is fully aware that future exchange rates are uncertain, and it is impossible to make a prediction with any level of certainty.

The evaluation of the cash flows in Chapter 5 is done on the basis that the exposures were only covered on the day when they arose, or on the day when the cash flow occurred. In reality, as per Coyle (2000 (b): 65), an exposure could be hedged at any time from when it arises, until the commitment is settled.

CHAPTER FIVE

ANALYSIS AND EVALUATION OF THE USE OF CURRENCY OPTIONS AS AN ALTERNATIVE FOREIGN EXCHANGE RISK MANAGEMENT HEDGING STRATEGY BY THE FIRM

5.1 Introduction

No single corporate exposure management system will be right for all companies. The appropriate system must be firm specific, i.e. it must take into account the size of the company and its constituent units (McRae, 1996: 77-78). In addition, the exposure objectives and strategies of the company and its operating and organisational characteristics, as well as personnel strengths should *inter-alia* be considered (McRae, 1996: 77-78). It is with this in mind, Chapter 5 analyses the hedging strategy used by the Multinational firm, as described in Chapter 3, assessing its effectiveness and most important, evaluating the currency option as an alternative hedging strategy. This Chapter investigates whether using currency options, the firm's foreign exchange gain/loss situation would have been different and whether it could improve the firm's foreign exchange gain/loss on its foreign currency transactions in the future.

5.2 An Analysis of the Firm Current Hedging Strategy

As mentioned in Section 3.5, the firm's Treasury department uses forward exchange contracts to hedge its monthly foreign exchange exposures. Using only forward exchange contracts, the firm incurred foreign exchange losses of around R49 million in 2004, as shown in Table 10 in Section 3.6, as well as an internal foreign exchange negative variance of R4.7 million for the period July to December 2004, as illustrated in Table 11 below.

TABLE 11: CHARGE OUT RATE VS ACTUAL FEC RATE

BOOK MONTH	TOTAL ORDERS (Million US \$ / Rands)			TOTAL COVER (Million US \$ / Rands) (actual purchases)			Variance in Foreign Exchange Payment
	US\$	Charge Out Rate	Rand Value	US\$	Actual FEC Rate	Rand Value	
1	2	3	4	5	6	7	8
07/04	10.1437	6.65	67.46	-10.1400	6.70	-67.97	-0.517
08/04	19.0313	6.90	131.32	-19.0000	6.94	-131.79	-0.478
09/04	21.4175	6.50	139.21	-21.4150	6.55	-140.24	-1.029
10/04	18.0073	6.20	111.64	-18.0100	6.25	-112.58	-0.937
11/04	17.4132	6.50	113.19	-17.4100	6.58	-114.51	-1.328
12/04	9.5800	6.60	63.23	-9.5800	6.65	-63.66	-0.437
TOTAL	95.59		626.04	-95.56		-630.77	-4.7257

The cause of the internal foreign exchange negative variance is that, the charge out forward rates to the different operating units by the firm's foreign exchange department are different from the actual forward cover rate it actually pays for the foreign exchange from the banks. As shown in Table 11 above, for the amount of 'Dollar cover' purchased by the firm for the six months July to December 2004, the firm incurred a foreign exchange variance of R4.7 million, paying R630.77 million for the six months' imports, while charging out only R626.04 million to its operating companies. The charge out rate is different from the FEC rate, as the former is calculated by the foreign exchange Department using forward points at the time an order is placed, whilst the actual FEC rate paid for the foreign exchange purchases is the rate paid when the cover is physically purchased from the bank. Therefore, there exists a timing difference, which creates a foreign exchange variance; the actual Rand amount difference between the Dollars charged out to the operating units and the amount paid for at the FEC rate.

The cumulative foreign exchange rate loss over the last four years, from January 2001 to December 2004, amounted to approximately R119 million, as revealed in Table 12 below. With the benefit of hindsight, this clearly demonstrates that the firm would have been far better off without hedging its foreign exchange risk, by simply buying foreign exchange on the spot market, as and when its foreign exchange payments were due, and this would have saved the firm around R120 million over the four year period. However, although the firm may have incurred an overall loss over the four year period, from the column 9 of Table 12 below, one can clearly see that the firm also saved on foreign exchange payments by using FEC, i.e. January 2001 to February 2002.

These savings or losses in the foreign exchange payments are determined by the spot rate and the FEC rate. The foreign exchange losses occurred as a result of the Rand strengthening over the years.

TABLE 12: USE OF FEC VS SPOT RATE OVER A PERIOD OF FOUR YEARS

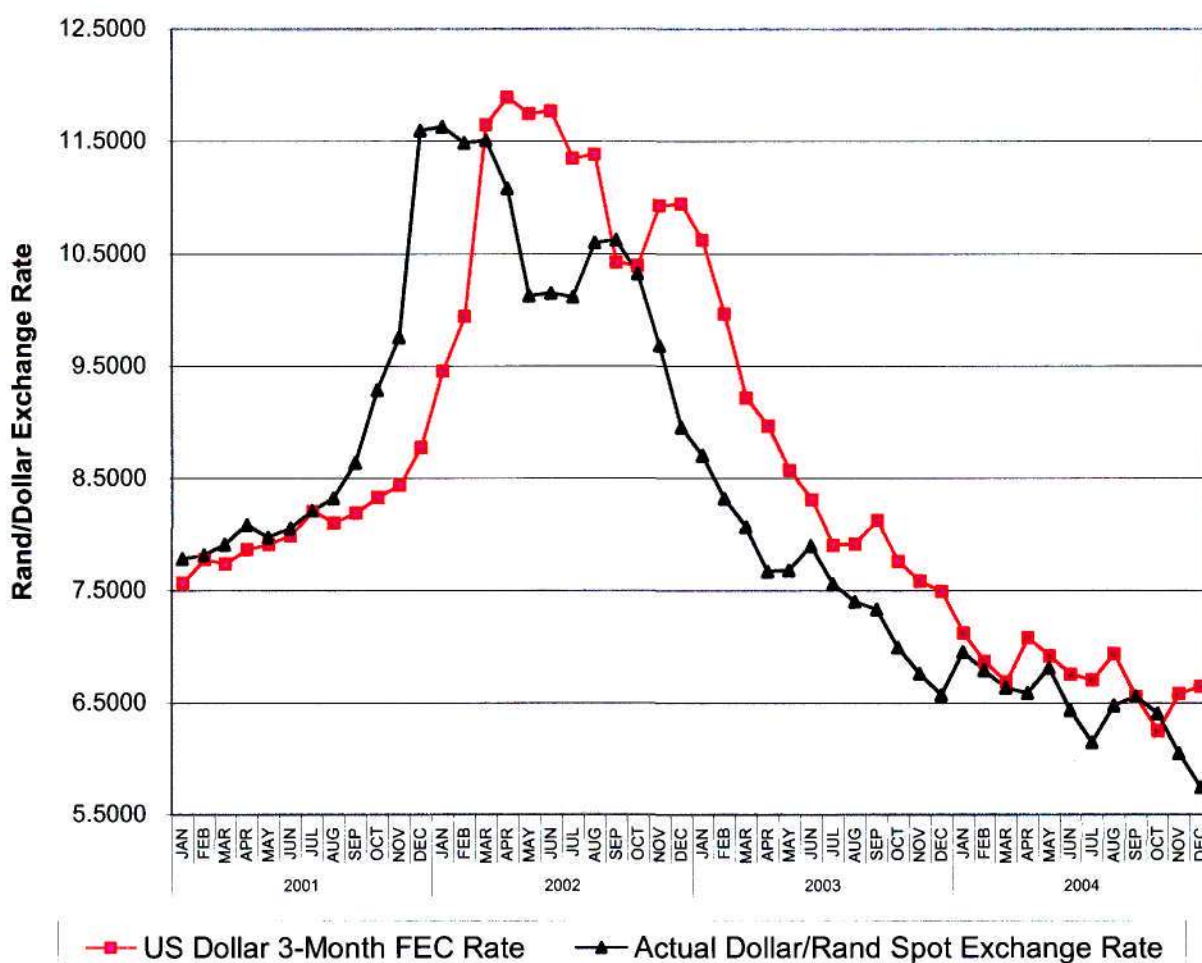
		Monthly Exposure in US Dollar (Million)	Actual Spot Rate	Total Exposure in Rands at the Spot Rate	US Dollar 3-Month FEC Rate	Total Exposure in Rands using FEC Rate (Million)	Gain / Losses (FEC vs Spot Rate)	
1	2	3	4	5	6	7	8	9
2001	JAN	7.42	7.7818	57.71	7.5672	56.12	1.59	Profit
	FEB	4.60	7.8146	35.98	7.7766	35.80	0.17	Profit
	MAR	4.77	7.9061	37.74	7.7328	36.91	0.83	Profit
	APR	5.58	8.0812	45.06	7.8646	43.85	1.21	Profit
	MAY	7.13	7.9706	56.84	7.9116	56.42	0.42	Profit
	JUN	7.50	8.0562	60.44	7.9847	59.90	0.54	Profit
	JUL	7.33	8.2085	60.19	8.2057	60.17	0.02	Profit
	AUG	5.76	8.3201	47.94	8.1031	46.69	1.25	Profit
	SEP	5.01	8.6388	43.24	8.1875	40.98	2.26	Profit
	OCT	7.69	9.2859	71.40	8.3239	64.01	7.40	Profit
	NOV	4.23	9.7553	41.27	8.4377	35.69	5.57	Profit
	DEC	2.89	11.5953	33.52	8.7733	25.36	8.16	Profit
2002	JAN	6.22	11.6291	72.28	9.4514	58.74	13.54	Profit
	FEB	4.40	11.4829	50.55	9.9403	43.76	6.79	Profit
	MAR	6.09	11.5060	70.10	11.6440	70.94	-0.84	Loss
	APR	4.43	11.0773	49.10	11.8926	52.71	-3.61	Loss
	MAY	0.56	10.1284	5.63	11.7475	6.53	-0.90	Loss
	JUN	3.45	10.1499	35.04	11.7700	40.64	-5.59	Loss
	JUL	5.82	10.1151	58.91	11.3448	66.07	-7.16	Loss
	AUG	4.25	10.5958	45.02	11.3804	48.36	-3.33	Loss
	SEP	3.32	10.6172	35.28	10.4234	34.64	0.64	Profit
	OCT	2.51	10.3208	25.95	10.3921	26.13	-0.18	Loss
	NOV	4.90	9.6782	47.38	10.9195	53.45	-6.08	Loss
	DEC	1.72	8.9544	15.38	10.9388	18.79	-3.41	Loss
2003	JAN	8.34	8.7035	72.55	10.6193	88.52	-15.97	Loss
	FEB	5.91	8.3216	49.20	9.9622	58.90	-9.70	Loss
	MAR	7.53	8.0663	60.73	9.2159	69.39	-8.66	Loss
	APR	7.82	7.6690	59.96	8.9639	70.08	-10.12	Loss
	MAY	10.35	7.6826	79.54	8.5686	88.71	-9.17	Loss
	JUN	4.64	7.8977	36.63	8.3113	38.55	-1.92	Loss
	JUL	13.09	7.5593	98.93	7.9035	103.43	-4.50	Loss
	AUG	3.43	7.4036	25.37	7.9133	27.11	-1.75	Loss
	SEP	8.23	7.3350	60.38	8.1209	66.85	-6.47	Loss
	OCT	7.18	6.9940	50.21	7.7595	55.71	-5.50	Loss
	NOV	11.10	6.7572	75.03	7.586	84.23	-9.20	Loss
	DEC	7.35	6.5677	48.27	7.4936	55.07	-6.80	Loss

TABLE 12 – Cont'd

		Monthly Exposure in US Dollar (Million)	Actual Spot Rate	Total Exposure in Rands at the Spot Rate	US Dollar 3-Month FEC Rate	Total Exposure in Rands using FEC Rate (Million)	Gain / Losses (FEC vs Spot Rate)		
2004	JAN	16.04	6.9502	111.48	7.1195	114.20	-2.72	Loss	
	FEB	6.70	6.7903	45.47	6.8657	45.98	-0.50	Loss	
	MAR	16.20	6.6322	107.44	6.6826	108.26	-0.82	Loss	
	APR	17.50	6.5826	115.20	7.0803	123.91	-8.71	Loss	
	MAY	14.00	6.8139	95.39	6.9175	96.85	-1.45	Loss	
	JUN	16.99	6.4365	109.34	6.7566	114.77	-5.44	Loss	
	JUL	10.14	6.1487	62.34	6.7034	67.97	-5.62	Loss	
	AUG	19.03	6.4770	123.26	6.9365	132.00	-8.74	Loss	
	SEP	21.42	6.5546	140.40	6.5488	140.28	0.12	Profit	
	OCT	18.00	6.4043	115.28	6.2511	112.52	2.76	Profit	
	NOV	17.41	6.0511	105.35	6.5775	114.51	-9.16	Loss	
	DEC	9.58	5.7421	55.01	6.6456	63.66	-8.66	Loss	
Total Foreign exchange Loss							-119.43		

If the firm could predict that the spot rate will be higher than the FEC rate, it would be beneficial for the firm to enter into a FEC contract and, if on the other hand, the firm expected the spot rate to be lower than the FEC rate, a position where the firm does not cover its exposure will be to the firm's advantage. Graphically, as shown in Figure 2 below, the sections where the 3-month FEC rate (represented by the red line) are below the spot rate (represented by the black line) indicate where about the firm would have benefited by entering into a FEC contract, while sections where the red line is above the black line, buying for Dollars on the spot market instead of entering into a FEC contract, would have been beneficial to the firm.

FIGURE 2: RAND/DOLLAR EXCHANGE RATE – TRENDS OVER THE PERIOD JANURARY 2001 TO APRIL 2004



In hindsight, it is easy to see when the firm should have and when it should not have entered into a FEC contract. However, at the point where the foreign exchange exposure arises, the firm immediately decide whether or not it will cover its foreign exchange exposures. With the volatility of the Dollar/Rand exchange rate in recent years and the several major swings as depicted in Figure 2, it would have been extremely difficult for the firm - even with external advice from its bankers - to predict accurately the trend of the Dollar/Rand foreign exchange rate. In such a situation of high volatility of the exchange rate, as discussed in Chapter 2, by purchasing a currency option to cover its foreign exchange exposures, the holder is protected from downward movements in the exchange rate while still having the opportunity to benefit if the currency moves favourably. One can therefore see the potential benefits of a hedging strategy using options.

In addition, as per Luca (1995:237) currency options allow the buyer, the firm's foreign exchange Department in this instance, to know the maximum loss that it might suffer, which is the option premium. As fully investigated in the next section, with currency option, upon payment of the option premium, the firm would have had the flexibility to let the option expire and would have paid for its imports at the market spot rate, for all the periods where the 3-Month call option rate (equivalent to the FEC rate including the option premium) would have been higher than the market spot rate.

5.3 Evaluation of Currency Options as an Alternative Hedging Strategy for the Management of the Firm's Foreign Exchange Risk

5.3.1 Currency Option as an Alternative Hedging Strategy

Currency options as discussed in Chapter 2, are more effective if the exchange rate is expected to move in completely different directions from what was originally anticipated. A look at the trend of the Dollar/Rand spot exchange rate over the last few years in Figure 2 in Section 5.2 above, shows that the Rand/Dollar exchange rate has had at least eight major changes in direction over the period January 2001 to December 2004.

As established in Chapter 3, the thesis will focus mainly on the firm's imports, which constitute 96% of its currency dealings and on the Rand/Dollar exchange rate, since Dollar transactions account for 85% of the currency dealings. Using the same data from Table 9 for the period July to December 2004 in Section 3.5 of Chapter 3, the researcher attempts to show that the potential saving using currency options instead of forward exchange cover far out-weigh the cost of the option premium. The latter is done by comparing the Rand value of the monthly saving/loss using a forward exchange contract and currency options including the option premiums over a period of six months from July 2004 to December 2004.

The firm purchasing a call option on Dollars for each of the six months (June to December 2004) acquires the right – but not the obligation – to buy the agreed amount of US Dollars at the end of each month at the contractual strike price. To obtain this right at the 3-Month call option, the firm has to pay option premiums ranging from 3.25% to 4.11% on the Dollar amount of its monthly exposure.

The quotes for the option premium were obtained from Standard Bank and calculated by taking a monthly average of the daily option premium rates as shown in Appendix A. The total premiums as calculated in Table 13 below in both Rand and Dollar terms, are payable at the January 2004 spot exchange rate of R6.9502 to the Dollar, normally two working days after the date that the option is purchased. The currency option premium in Dollar terms is obtained by multiplying the option premium percentage for the respective month by the Dollar value of the exposure for that month, and then multiplied by the January spot exchange rate for the Rand value. The strike price chosen for the currency option is the same as the FEC rate, so as to make a comparison between the two instruments possible, however, the payment of the exposure using the currency options includes the option premium.

TABLE 13: 3-MONTH OPTION PREMIUM CALCULATION

BOOK MONTH	COVER TAKEN FOR THE MONTHLY EXPOSURE (Million US \$)	OPTION PREMIUM (%)	OPTION PREMIUM IN DOLLAR VALUE (Millions)	SPOT EXCHANGE RATE AS AT JAN-04	OPTION PREMIUM IN RAND VALUE (Millions)
1	2	3	4	5	6
07/04	10.1400	4.11%	0.4168	6.9502	2.8965
08/04	19.0000	4.04%	0.7676	6.9502	5.3350
09/04	21.4150	3.56%	0.7624	6.9502	5.2987
10/04	18.0100	3.25%	0.5853	6.9502	4.0681
11/04	17.4100	3.33%	0.5798	6.9502	4.0294
12/04	9.5800	3.35%	0.3209	6.9502	2.2305
TOTAL	95.56				

The option premium calculated in the column 6 of Table 13, for instance R2.9 million for July will have to be paid by the firm, if it chooses to cover its foreign exchange exposure with currency options (whether it exercises the option or not).

Analysing the payments on a monthly basis, the total actual cover purchase required for instance, for the month July is 10.14 million US Dollars. From Table 14 below, since the strike price in July is higher than the spot exchange rate, thus the call option is 'out-the-money', the firm will let the option lapse and buys the 10.14 million US Dollars in the spot market at the spot exchange rate of R6.149 to the Dollar. The total payment in July is therefore, R65.24 million ($(\$10,14m \times R6.149) + R2.8965$ (Option premium)).

TABLE 14: 3-MONTH CALL OPTION VS 3-MONTH FEC

Book Month	Monthly Exposure (Million US \$)	Total Payment in Rand using FEC Rate (Millions)		Total Payment in Rand using a 3-Month Call Option (Millions)			Actual Spot Rate	Decision with Currency Option	Total Payment in Rands at the Spot Rate	Total Payment in Rands at the Spot Rate + the Option Premium	Actual Payment	Saving / Loss (FEC vs Currency Options)
		FEC Rate	Rand Value	Option Strike Rate = FEC Rate	Option Premium in Rand Value (Millions)	Rand Value						
1	2	3	4	5	6	7	8	9	10	11	12	13
07/04	10.1400	6.7034	67.97	6.7034	2.8965	70.87	6.149	Do not Exercise Option - Buy at the Spot Exchange Rate and Pay Option Premium	62.348	65.244	65.244	2.728
08/04	19.0000	6.9365	131.79	6.9365	5.3350	137.13	6.477	Do not Exercise Option - Buy at the Spot Exchange Rate and Pay Option Premium	123.063	128.398	128.398	3.3955
09/04	21.4150	6.5488	140.24	6.5488	5.2987	145.54	6.555	Exercise Option	140.367	145.665	145.541	-5.2987
10/04	18.0100	6.2511	112.58	6.2511	4.0681	116.65	6.404	Exercise Option	115.341	119.410	116.650	-4.0681
11/04	17.4100	6.5775	114.51	6.5775	4.0294	118.54	6.051	Do not Exercise Option - Buy at the Spot Exchange Rate and Pay Option Premium	105.350	109.379	109.379	5.1352
12/04	9.5800	6.6456	63.66	6.6456	2.2305	65.90	5.742	Do not Exercise Option - Buy at the Spot Exchange Rate and Pay Option Premium	55.008	57.239	57.239	6.4260
TOTAL	95.56		630.77			654.63			601.48	625.34	622.45	8.32

As is evident from Table 14, the firm using currency options, upon payment of the option premium, is under no obligation to pay any fixed exchange rate, as is the case with a forward contract. Comparing the total payment in July of R67.94 million with the forward exchange contract to the one with the currency options of R65.24 million (inclusive of the option premium), it is evident that the firm could have saved R2.728 million. The same scenario is repeated in August, November and December, where the option strike rate is higher than the spot rate, so the firm does not exercise the option and buy its foreign exchange on the spot market paying the option premium. In September and October, however, since the option strike rate is lower than the spot rate, the firm then exercises the currency options as there are 'in-the-money', now paying the lower strike rate of R6.5488 in September and R6.2511 in October rather than the spot rate of R6.555 and R6.404. Therefore, with the option premium, the firm pays R145.541 million ($\$21.4150\text{m} \times \text{R}6.5488 + \text{R}5.2987\text{m}$) and R116.650 million ($\$18.01 \times \text{R}6.2511 + \text{R}4.0681\text{m}$) in September and October respectively.

When compared to the FEC, for September and October, the firm makes a loss of R5.287 million in September and R4.0681 million in October, (being the difference between the payment of R145.541 million for October and R116.650 million for September compared to the FEC payment of R140.24 million for September and R112.58 million for October), equivalent to the option premium paid in these two months. This proves Luca's (1995: 237) statement discussed in Section 2.4.3.2 of Chapter 2, 'the advantage of currency option is that it allows its buyers to know the maximum loss that they might suffer, which is the option premium.'

Over the six-month period, the firm using currency option could have made a cumulative saving of R8.32 million with a total payment of R622.45 million as compared to R630.77 million using FEC. This clearly confirms that the potential saving using currency option instead of forward exchange cover does outweigh the cost of the option premium. The Rand value of the monthly saving using currency options instead of forward cover is positive despite high options premium (4.11% in June), being charged for using the currency options over the six-month-period.

During the period of six months selected above, the spot exchange rates were only greater than the option strike rate twice, thereby causing the currency option to be exercised and resulting in excess foreign exchange payments as compared to the payments under FEC.

This therefore indicates that, during a prolonged period where a currency option is ‘out-of-the’ money, the firm may lose out in terms having to pay the option premium instead of using straight forward cover, which would have been more beneficial. However, with a volatile foreign exchange rate, as South Africa experienced over the last few years, one needs to take a view over a longer period to really understand whether the foreign exchange payments made for the firm’s imports using currency options is lower than those made using forward exchange contracts, that is getting a favourable exchange rate using currency options as an alternative to FEC. This leads to the testing of the research’s hypothesis, which states that ‘There is no significant difference between payments made in Rand amounts for the MNC’s exposure using forward cover and currency options’.

5.3.2 Testing the Research Hypothesis

To validate the hypothesis, the means of the monthly exposures payments in Rand amounts over a period of four years, using forward cover first and then using currency options were compared and tested to identify if they are ‘statistically significantly’ different from each other.

The *null hypothesis* equivalently in symbols:

$$H_0 : \mu_A - \mu_B \leq 0 \text{ or } \mu_A \leq \mu_B$$

The *alternative hypothesis* states that the population mean (μ_A) is greater than the population mean (μ_B) that is the mean payments using currency options is less than the mean payments using FEC or, in symbols:

$$H_1 : \mu_A - \mu_B > 0 \text{ or } \mu_A > \mu_B$$

The average monthly payments in Rand amounts for the firm’s imports using both the FEC and currency options are calculated in Appendix B. With the use of FEC as a hedging technique, the average monthly payment is simply the total payments of R3,124.14 million (monthly exposure in US Dollar multiplied by the FEC rate over the 48 month period), divided by 48. As far as the average payment using currency option is concerned, the option premium is calculated in Rand value, first.

The latter is then added to the monthly exposure in Rand terms (monthly exposure in US Dollar multiplied by the FEC rate – assuming the currency option strike rate is equal to the FEC rate). However, the final monthly payments using currency options depend on the option strike rate and the market spot rate.

If the strike rate is greater than the market spot exchange rate at the time of payment, the firm will let the currency option lapse and will buy the Dollars on the spot market to pay for the imports, bearing in mind that the option premium would need to be added to the payments to arrive at the final payment for the month.

On the other hand, if the option strike rate is lower than the spot exchange, the firm will exercise the option, paying for the imports at the strike rate and once again adding the option premium to arrive at the final monthly payment. The average monthly payment using currency option is therefore obtained by taking the average of the total monthly payments over the 48 months whether they are made at the spot exchange rate (when the option is not exercised) or the option strike rate (when the option is exercised).

The option premium as shown in Column 8 of Appendix B is calculated using the same principle as in Table 13, that is, the monthly average of the daily option premium (Appendix A) is multiplied by the monthly exposure amount in Dollar value and then multiplied by the January spot exchange rate for each relevant year to arrive at the option premium in Rand terms.

From the Table in Appendix B, the total savings from using currency options is R53,75 million (R3, 124.14 million using FEC less R3,070.39 million using currency options). The mean of the foreign exchange payments for the firm's imports using FEC is calculated as R65.09 million, while with the use of currency options the mean is R63.97 million. This implies that on average, the firm could save R1.12 million per month if it chose to cover its Dollar exposure using currency options. However, this difference between the two means could be higher or lower depending for instance on the period selected. One therefore needs to ascertain that the difference is real and significant and not merely due to chance factors only, and that the properties that differentiates currency option and FEC are relevant.

To test the hypothesis is basically testing the fact that there is no significant difference between payments made in Rand amounts for the MNC's exposure using forward cover and currency options. The method applied in this case is to compare the means of the two groups: more precisely as per Bless & Kathuria (1993: 145), to analyse their difference under the assumption that the two groups belong to the same population.

In order to achieve this, one needs to refer implicitly to a sampling distribution¹⁷ of the difference between the two means with a mean $(\mu_A - \mu_B) \leq 0$, whereby μ_A is the population mean payments using FEC and μ_B is the population mean payment using currency option. The difference between the means of the two groups is checked to see if it lies in the confidence interval or in the rejection area of the sampling distribution. In so doing, the null hypothesis which states that there is no significant difference between the two means, is tested, that is, the assumption $(\mu_A - \mu_B) \leq 0$ is correct.

As per Williams (2003: 141), a t-test can be used to find out if the mean of a sample is similar to the population and with two samples to see if the mean of the samples is different. Hence, the purpose of the t-test in this case is to test the null hypothesis, if the means of the two samples are the same. As indicated by McKenzie, *et al.*, (1997:126), however, using the t-test requires one to make certain assumptions about the distributions of the populations from which the data arose. In particular, the model assumed by the t-test is that the two distributions are normally distributed with equal variances. A look at the statistics of the two distributions, one with the monthly payments of the firm's imports using FEC and the other using currency options, (Table 15 below), shows that the variance are slightly different from each other, i.e. 1003.42 as compared to 1008.78. However, as postulated by Defusco, *et al.*, (2001:327), the t-test is fairly robust to unequal variances if the sample sizes are roughly equal and are not too small. In this case, the sample sizes or number of observations are equal and since the number of observations are not too small and are both greater than thirty (>30) (Kathuria, 1993: 145), the researcher can proceed with the t-test.

¹⁷ Sampling distributions are tightly related to probability. These elements are, for instance, the means of a set of a few samples, which have been randomly selected from a population. The choice of the samples might affect directly the sampling distribution. As a consequence, any conclusion drawn on the basis of these data is influenced by the choice of samples (Kathuria, *et.al*, 1993: 86).

TABLE 15: T-TEST: PAIRED TWO SAMPLE FOR MEANS

t-Test: Paired Two Sample for means		
	Variable 1	Variable 2
Mean	65.09	63.97
Variance	1,003.42	1008.78
Observations	48	48
Pearson Correlation	0.99	
Hypothesized Mean Difference	-	
Df	47	
t Stat	2.06	
P(T<=t) one-tail	0.02	
t Critical one-tail	1.68	
P(T<=t) two-tail	0.05	
t Critical two-tail	2.01	

From Table 15, the t-critical¹⁸ one tail value is 1.68, and the decision rules are as follows:

if $t_{stat} \geq 1.68$, then H_0 is rejected.

if $t_{stat} < 1.68$, then H_0 is not rejected.

Since the calculated t_{stat} of 2.06 from Table 18 is greater than the critical t at 1.68 for a 5% level of significance¹⁹ ($\alpha = 0.05$) one directional (one-tail), the null hypothesis is rejected, which implies that the differences in mean payments using FEC and currency options are not the same and that the difference is clearly statistically significant. Referring to the alternative hypothesis, this leads to the conclusion that the payments for imports using FEC are greater than the payments made for the same imports using currency options.

5.4 Conclusion

It is important to bear in mind that the evaluation of the FEC vs. currency option was done with the benefit of hindsight. Since future exchange rates are uncertain, it is impossible to make a prediction with any level of certainty. In this Chapter, an attempt was made to explain whether using currency options as an alternative to FEC could provide better results in terms of savings in foreign currency for imports payments. Currency options provided a convenient means of hedging or positioning "volatility risk", especially considering the recent volatility of the Rand. What was crucial was to determine whether the price/premium was worth paying for.

¹⁸ The critical value is the absolute value that a test statistic must exceed, for the null hypothesis to be rejected (Fink, 1995: 47).

¹⁹ Level of significance, denoted by the Greek letter α , is called the alpha value; it gives the probability of rejecting the null hypothesis when it is actually true (Fink, 1995: 46).

In other words, was the true volatility greater than that reflected in the option's price? This was answered in Table 14, where it was shown that using currency options, the cash out-flows were less compared to a FEC position, realising a saving of R8.22 million over a six months period. It also became apparent that using currency options in a period of unstable exchange rate, the payments for the firm's imports over a four year-period, were statistically different and lower than the payments made using an FEC contract. This provides compelling evidence that currency options can and should be used by the firm as an alternative to FEC in a period of exchange rate volatility.

CHAPTER SIX

CONCLUSION

6.1 Introduction

In order to fulfil the first purpose of this thesis as listed in Chapter 1, that is: ‘to provide a full theoretical overview of the mechanics of the two main foreign exchange risk management instruments, the FEC and Currency Options’, an overview of existing classifications and terminologies of foreign exchange exposures and risks as well as an overview of existing theories on forward exchange cover and currency options were conducted in Chapter 2.

To summarise, managing foreign exchange exposure effectively for the firm involves:

- Exercising centralised oversight over its foreign exchange hedging activities (Office of the Superintendent of Financial Institutions, 1998: 2);
- Recognising the difference between transaction exposure and economic exposure (Damodaran, 1997: 710); and
- Finally, devising a strategy for hedging the identified foreign exchange risks, by choosing those particular instruments and derivatives which will best suit the need of the company from the different financial instruments and currency derivatives available (McRae, 1996: 77-78).

In Chapter 3, imports of a FMCG multinational company with large open currency positions were looked at, in order to fulfil the second objective of the thesis, which aimed at presenting the MNC’s foreign exchange risk management strategies, starting from when its foreign exchange exposure arose and ending with the choice of hedging instrument.

6.2 Findings

As postulated by Stephens (2001: 8) and discussed in Chapter 2, any company that conducts its business in more than one currency is exposed to currency risk, and managing this risk is very important for the company as it can have a major impact on its cash flows, assets and liabilities, net profit and ultimately its stock market value.

Hedging as defined in Chapter 2 referred to activities undertaken by the firm in order to mitigate the impact of foreign exchange risk on the value of the firm (Mian, 1996: 419). Hedging therefore reduces a company's volatility of cash flows, because the firm's payments and receipts are not forced to fluctuate in accordance with currency movements (Marlowe, 1999: 5). What became evident in Chapter 3 was the fact that the firm's Treasury department used hedging to limit its foreign exchange exposure. The thesis focused mainly on the firm's imports, which constituted 96% of its currency dealings and on the Rand/Dollar exchange rate, since Dollar transactions accounted for 85% of its currency dealings.

In Chapter 2, economic exposure was referred to as the risks associated with the long-term real effect of a change in exchange rate on future prices, sales and costs (Hill, 2002: 631), while transaction exposure was referred to the risk that a cash income in the domestic currency would turn out to be lower than expected, or that cash payments in the domestic currency would turn out to be higher than expected following a foreign exchange transaction (Hill, 2002: 631). As noted in Chapter 3, although all the firm's operating units are encouraged to understand their economic exposure, the majority of them use the transaction method for the ongoing management of their exposures.

A closer look in Chapter 2 at the advantages and disadvantages of using either forward contracts or currency options to manage foreign exchange risk revealed that each type of hedging instrument was more advantageous in different situations, and it made sense to match the instrument to the specific situation. A forward contract had all the advantages that a perfect hedge of a risk can bestow (Stephens, 2001: 163). The major advantage as discussed in Chapter 2 was that it gets rid of all uncertainty regarding any exposure that might arise when a business has to pay, or receive foreign currency in the future.

What was also found and was discussed in Chapter 2, is that the most fundamental difference between a currency option and other currency instruments, such as forward exchange contract, stems from the fact that the option 'gives the right but not the obligation' to transact, especially if it is not to the advantage of the option holder (Taylor, 1995: 172). Option holders could therefore decide whether or not to proceed with the deal at any time up to the expiration date. Options pays no interest and becomes worthless at expiration, unless the price of the underlying currency changes.

What transpired from Chapter 2 through to Chapter 4 of this thesis is that hedging against risk is a multi-dimensional problem. The selection of incorrect hedging instruments can be just as costly an open position. The firm, using FEC, made a cumulative loss of R119 million over the last four years, as illustrated in Table 12 of Chapter 5. While conventional hedging protects against the downside, only currency options allow the upside to be exploited (Davis & Militello, 1995: 4).

Using data for the period July to December 2004 in Chapter 3, the researcher attempts to show that the potential saving using currency options instead of forward exchange cover far out-weighs the cost of the option premium. The latter was done by comparing the Rand value of the monthly saving/loss using forward exchange contract and currency options including the option premiums over that period, which ranged from 3.25% to 4.11% on the Dollar amount of the monthly exposure.

Over the six-month period, as shown in Chapter 5, the firm using currency option could have made a cumulative saving of R8.32 million with a total payment of R622.45 million, as compared to R630.77 million using FEC. This clearly confirms that the potential saving using currency option instead of forward exchange cover out-weighed the cost of the option premium. The average Rand value of the monthly saving using currency options instead of forward cover was positive, despite high options premium.

Furthermore, as pointed out in Chapter 2, currency options allowed its buyer, the firm's foreign exchange department in this instance, to know the maximum loss that it might suffer, which is the option premium (Luca, 1995:237). This was proven in Chapter 5, where it was shown that, for September and October 2004, the firm made foreign exchange losses, (being the difference between the payments made in these two months using currency options as compared to the FEC payments), equivalent to the option premium paid in these two months.

However, with a volatile foreign exchange rate, as South Africa experienced over the last few years, the researcher felt the need to take a view over a longer period to really understand whether the foreign exchange payments made for the firm's imports using currency options was lower than those made using forward exchange contracts

During a four year period, it was proven in Chapter 5 that using currency options allowed the firm to save up to an average of R1.12 million per month as compared to FEC, which was derived from the difference between the average monthly payment of R65.09 million using FEC compared to a monthly payment of R63.97 million using currency options (as shown in Appendix B). With FEC, the firm made a total payment of R3,124.14 million for its imports over the four year period, while for the same period, using currency options, total payments for the imports amounted to R3,070.39 million (Appendix B), thus allowing for a R53.75 million saving.

In addition to the potential saving the firm could have had using currency option over the four year period, the hypothesis 'whether there is a significant difference between payments made in Rand amounts for the MNC's exposure using forward cover and currency options' was tested. The null hypothesis tested was stated in symbolic terms as $(\mu_A - \mu_B \leq 0)$, whereby μ_A is the population mean payment using FEC; and μ_B is the population mean payment using currency option. The resulting alternative hypothesis therefore implies that the population mean (μ_A) should be greater than the population mean (μ_B), that is the mean payments using currency options is less than the mean payments using FEC.

To validate the null hypothesis, the means of the monthly exposure payments in Rand amounts over the period of four years using forward cover and then using currency options were compared and tested to identify if they are 'statistically significantly' different from each other, that is to show that the difference between two distributions or sets of observations are statistically meaningful and not due to chance (Fink, 1995:3). A sample Student t-test was the main statistical technique used to test the hypothesis and more precisely as per Aron (1997: 164), a t-test for dependent means. The purpose of the t-test in this case was therefore to test the null hypothesis, if the means of the two samples are the same (Williams, 2003: 141). Though as indicated by McKenzie, *et al.*, (1997:126), the t-test could only be used if the two distributions are normally distributed with equal variances, which was not the case in this study. Defusco, *et al.*, (2001:327) postulated that a t-test is fairly robust to unequal variances, if the sample sizes are roughly equal and are not too small. In this case, the sample sizes or number of observations are equal and since the number of observations are not too small and are both greater than thirty (>30) (Kathuria, 1993: 145), the researcher proceeded with the t-test.

As indicated in theory, the critical value resulting from the t-test using the parameters under study, is the absolute value that a test statistic must exceed, for the null hypothesis to be rejected (Fink, 1995: 47). Since the calculated t_{stat} was greater than the critical value for a 5% level of significance ($\alpha = 0.05$) one directional (one-tail), the null hypothesis was rejected, which implied that the differences in mean payments using FEC and currency options were not the same and that the difference was clearly statistically significant. Thus, referring to the alternative hypothesis, this led to the conclusion that the payments for imports using FEC are greater than the payments made for the same imports using currency options.

What was crucial in this thesis, though, was to determine whether the price/premium of the currency option was worth paying for, considering the total foreign exchange exposures the firm is faced with. In other words, was the true volatility greater than that reflected in the option's price? With an average monthly exposure figure of 6 million US Dollars in 2001, which increases to 15 million Dollars in 2004, these foreign exchange exposures are substantial enough to warrant even option premiums as high as 6.11% to be paid to cover the latter.

Currency options, as discussed in Chapter 2, are more effective if the exchange rate is volatile (Coyle, 2000 (b)) and if the exchange rate is expected to move in a completely different direction to that anticipated by its current trends (McRae, 1996: 87). A look at the trend of the Dollar/Rand spot exchange rate over the last few years in Figure 2 in Chapter 5 confirms the volatility of the Dollar/Rand exchange rate, and shows that the Rand/Dollar exchange rate has had at least eight major changes in direction over the period January 2001 to December 2004. Both Coyle's (2000(b)) and McRae (1996: 87) rules with regard to currency options were proven in Chapter 5.

From 2001 itself, the high volatility of the Rand/Dollar exchange rate was apparent, the firm should have shifted from its traditional FEC to currency options. This would have prevented the R119.3 million foreign exchange loss, which the firm incurred over the last four years.

6.3 Conclusion

The firm using FEC made a cumulative loss of R119 million over the last four years, which exhibited a period of high volatility in the Rand/Dollar exchange rate.

However, it was proven in this thesis that the use of currency options would have enabled the firm to save up to R53.75 million over the same period. Currency options were proven to be more cost effective.

In addition, the hypothesis that ‘there is no difference between the mean payments using FEC and currency options’ was tested and subsequently rejected, which led to the conclusion that the firm’s payments for imports using FEC is statistically greater than the payments made for the same imports using currency options.

On this basis, as mentioned before, the researcher recommended that, in periods of high volatility, the firm should use currency options as an alternative to FEC, especially with an average monthly, which would most certainly increase with the firm’s growth over the years.

On a last note, whether the MNC keeps hedging its foreign exchange rate risk using FEC or shifts to currency option, foreign exchange risk is dangerous; it is expensive and should not be ignored. The “do nothing” alternative is an option only if it is a conscious decision, and not out of ignorance. A working knowledge of currency options for the firm can only be beneficial, even if the firm has not tried it as yet, hence the main purpose of the thesis.

As in all other business activities, it is always important to find the most cost-effective way of achieving the desired result. While the cost of hedging, whether with FEC or currency option, is extremely important in determining its relevance to the value added by the activity, the avoidance of hedging foreign exchange risk should not be an option.

CHAPTER SEVEN

RECOMMENDATION

7.1 Introduction

An overview of the firm's foreign exchange management process revealed that, with the support of well-defined foreign exchange management policies, the firm uses the 'transaction method' to measure its currency exposures and hedges the same exposure with Foreign Exchange Forward Contracts. With FEC, there is no direct cost involved such as a premium. The potential to take advantage of favourable exchange rate movements are eliminated, along with the risk of negative exchange rate movements. The future exchange rate is set.

With a currency option, however, as shown in Chapter 5, there is more flexibility, as the option holder has the right, but not the obligation to exercise his option. The firm pays for this flexibility by way of an option premium. The risk of an adverse exchange rate movement is eliminated but there is still the potential for the firm to take advantage of favourable movements (Kim & Kim, 1996: 166). It was proven in this thesis that using currency options would have allowed the firm to save up to R53.75 million over the last four years.

7.2 Recommendations

Effective risk management is a key ingredient to any organisations future success (Cotter, 2002: 2). With high US Dollar exposure, as described in Chapter 3, it is highly recommended that, during periods of high volatility in the currency market, the firm uses currency options to manage its foreign exchange risks. Currency options as discussed in Chapter 2, are more effective if the exchange rate is volatile (Coyle, 2000 (b)). However, for the effective use of currency options, the firm is required to review and strengthen the existing conditions conducive to its use, as well as create other specific conditions necessary.

7.2.1 Measurement and Review

There needs to be continuous monitoring regarding whether the firm's foreign exchange exposures are headed in the same direction as was initially intended. As such, the foreign exchange exposure management activities need to be reported and reviewed (Anon 4, 1998: 7). To use currency options the firm is required to have a proper foreign exchange risk management structure and resources. Cutting corners to reduce expenses is often a poor strategy as advocated by Hamilton (2002: 3). Hamilton also emphasized the fact that sufficient resources must be devoted to accounting and reporting systems, and must be tailored to the particular risk profile of the organisation. This in turn requires that a comprehensive analysis of risk is undertaken and then regularly reviewed.

In terms of foreign exchange risk management structure, the researcher in Chapter 3, found that the firm does possess the appropriate conditions and environment conducive to the use of currency options, such as the right foreign exchange policies and control over its foreign exchange activities. However, as discussed below, these must be monitored closely and reviewed regularly without room for complacency.

- Foreign Exchange Policy.

The first thing that one notices with the Multinational firm under study is that, it has a well-defined foreign exchange policy. A good foreign exchange policy is critical to the sound risk management of any corporate treasury (Caroll, 1999: 41). Without a policy, decisions are made ad-hoc and generally without any consistency and accountability. It is important for the firm's treasury personnel to know what benchmarks they are aiming for. Equally important is for senior management or the board to be confident that the risks of the business are being managed consistently and in accordance with overall corporate strategy (Anon 5, 2002: 1).

In terms of foreign exchange exposure limits, the firm has a detailed and comprehensive policy on the exposure limit for the firm's South African operations, which is set and approved by the Finance Director, as discussed in section 3.4 of Chapter 3. The maximum authorised exposure limit for the firm is set at £5 million (Euro 7.5 million). The percentage cover and cover period are constantly monitored, and are formally reviewed on a weekly basis. However, with regard to policy on trading limits, the firm's foreign exchange policy does not seem to make particular reference to it.

As pointed out by Hamilton (2002: 3), amongst other things, all companies, and not just financial institutions, need to ensure that they have an appropriate policy on trading limits, which clearly indicate the maximum amounts, the foreign exchange department can trade on the foreign exchange market to cover its exposure. Also advocated by Giddy, et. al, (2002: 10) however talented and honorable a firm's foreign exchange dealers, it has become evident that some limits must be imposed on the trading activities of the corporate treasury, for losses can get out of hand even in the best of companies.

While the researcher recommends that the firm develop and enforce a clear and comprehensive policy on trading limits, it is also emphasised that similar to its policy on foreign exchange exposure limits, the policy on trading limits also needs to be constantly monitored, and formally reviewed on a regular basis. However, instead of hamstringing treasury with a complex set of rules, trading limits can take the form of prohibiting positions that could incur a loss (or gain) beyond a certain amount, based on sensitivity analysis (Giddy, et. al, 2002: 10). Giddy also added that in line with all the above mentioned, any attempt to cover up losses should reap severe penalties.

Hamilton (2002: 3) explained in an article on 'Control Failures', how inadequate policing on foreign exchange trading was one of the factors, which led to the Allfirst (a fully owned American subsidiary of the Allied Irish Bank), incurring losses of some \$691 million. John Rusnak, a currency trader in Allfirst Baltimore office, was conducting trades of unauthorised limits in Japanese Yen, which went badly wrong.

Another equally important policy, the firm's foreign exchange policies does not cover is the 'Stop-Loss policy'. It is highly recommended that exposure Management should not be undertaken without having a stop-Loss policy in place (Anon 4 1998: 6). Stop Loss is nothing but a commitment to reverse a decision when the view is proven to be wrong

Stop-Losses should be activated when:

- Critical levels in the rate being monitored are reached, which clearly state that the view held has been proven wrong;
- The factors/ assumptions behind a view either change or are proven wrong;

- The Exposure Manager should be accorded flexibility to set appropriate Stop-Losses for each trade, and
- The Exposure Manager should, however, make sure he has set a stop-loss for positions he enters into, on an a priori basis (Anon 4, 1998: 6).

Finally, all corporate policies, especially good ones that have been developed with much thought and effort, run the risk of being applied mechanically despite changing circumstances. External changes such as new international economic conditions, currencies, derivatives, accounting standards and tax regulations as well as internal changes due to increased operating growth, industry competition, major acquisitions and divestitures, etc. are all reasons why it is believed and strongly recommended that companies should establish a formal review process to assess every two or three years whether its current foreign exchange policies and procedures are still adequate and appropriate (Wallace, 1999: 13).

- Controls over foreign exchange activities

A good set of controls are critical for the efficient monitoring of any financial activities (Van Zyl, 1999: 7). The firm needs to ensure that it has the necessary set of controls, such as a segregation of duties between the back and front office; proper authorisation of documents and processes; proper reporting and filing, etc. to monitor its foreign exchange activities efficiently. According to Wallace (1999: 8), many of the worst derivative debacles of the last decade can be traced to a simple failure to properly segregate duties, in which the foreign exchange traders were doing such back office activities, such as confirmations, accounting or settlements. As advocated by Hamilton (2002: 3), there is no room for complacency; proper segregation of duties is essential, including a clear separation of the front and back office functions. This absolutely basic principle of internal control is ignored at one's peril. He further added that mandatory rotation of personnel and compulsory vacations are an essential part of that process. This will provide safeguards to protect the firm from potential losses by ensuring that unauthorised exposure as well as unauthorised trading do not occur and that foreign exchange activities are conducted according to the policies and procedures of the company.

Control over the foreign exchange functions and activities by the firm's internal audit team will also ensure that the firm is not exposing itself to risk resulting from an improper or uncontrolled foreign exchange strategy. However, sufficient and adequately trained personnel are essential if a company hopes to have an effective internal audit and control system (Hamilton, 2002: 3).

Therefore, as supported by Holliwell (1998: 5), setting limits, monitoring exposures, having clear reporting lines, separating the trading "front office" from the administrative and controlling "back office" and ensuring that everything is subject to the "two pairs of eyes" are critical elements for the effective management of foreign exchange risk, and in this case using currency options.

7.2.2 Training

With the availability of several financial instruments and currency derivatives and their many variants on the foreign exchange market as discussed in Chapter 2, the latter is a very complex market that could be extremely daunting to someone who has very little experience of the various products on offer. It is of the researcher's opinion that the only way to improve one's foreign exchange risk management is through the use of the different instruments, thereby learning about the practicalities. It is a field in which there is almost no substitute for practical experience. Getting to know the foreign exchange markets is to a company's advantage.

What became apparent in Chapter 3 was that though the Multinational firm could choose from a vast array of financial instruments and currency derivatives, including currency options, to manage its foreign exchange risk, it chose to limit itself to forward exchange contracts. The reasons for this strategy vary from fear of dealing with the complexities of currency options and the limited resources within the foreign exchange department to understanding the technicalities of such instruments. As mentioned above, according to Van Zyl (1999:15), there is a perceived complexity associated with derivatives in general, including currency options. It is therefore recommended that the firm undertake some serious training of its staff so as to have qualified and experienced employees with regards to the functioning and mechanics of currency options. According to Wallace (1999: 6), one of the twelve core principles in managing foreign exchange risk is for any corporation to ensure that it has a sufficient number of qualified, experienced personnel to properly execute its foreign exchange dealings.

Regarding training, Wallace (1999:8) pointed out that a large number of major corporations around the world send their corporate traders to an outside foreign exchange trading course, which a few of the major banks occasionally run. With the worldwide competition and the firm's high volume and value of foreign exchange transactions, the firm can request such training from its bankers and also request all their support in the effective use of currency option.

7.2.3 Relationship with the Banking sector

Any company, which is involved in substantial volumes of foreign exchange transactions needs to agree to its strategy on how much of the risk is to be reduced and what cost is to be incurred in doing so (Maugham, 2000: 1). To deal with the high cost of acquiring a currency option to cover its exposure, the firm must ensure that it obtains competitive rates for its foreign exchange transactions, as well as for the premium on the currency options. As shown in Chapter 5, since using currency options may be a better alternative for the firm, then, obtaining the best rate and premium on the option may provide even better results. In today's environment, where driving down costs has assumed paramount importance, the firm's foreign exchange department does know the banks are competing fiercely for its business, therefore the department should bargain to get the best deal in terms of rates and option premium. This is confirmed by Wallace (1999:11), who pointed to the fact that a larger number of big Multinationals have a rotating bank group, periodically dropping the least competitive bank. When doing competitive bidding on spots, forwards and foreign swaps (not currency swaps), companies on average ask 2 to 3 banks to bid and for European options, the average increases slightly to 2 to 7.

In addition, to get the best deal in terms of rates and option premium for the effective use of currency options, the firm needs valuable information, of both an internal and external nature from its local banks to assist with its decisions.

The firm needs to demand the following from its banks:

- i. Provide better market advice on hedging mechanisms / currency option;
- ii. Faster execution time, especially for longer-term foreign exchange dealing;
- iii. Quicker response for quotes;
- iv. Provide a contact window rather than service desk;

- v. Provide better online/modem facilities to reduce paperwork and improve work efficiency;
- vi. Create hedge ideas that can easily be implemented;
- vii. Correlate foreign exchange skills, real time information and strategic advice with the commercial needs of the organization; and.
- viii. Know more about their customers' needs and businesses

7.2.4 Oversight by the Board of Directors and Senior Management

The risk culture of a business is critical and as per Holliwell (1998: 1) it must be established at the most senior level. Holliwell (1998: 5) further added that the responsibility for risk management rests at the top and if the senior executives do not understand what is going on, they must find out. He agreed that it would be nonsense to suggest that they should know every detail of all that is happening in a business but their job is to ensure adequate systems and controls are put in place. This was further supported by Schwartz & Smith (1997: 314), who indicated that a board of directors should define the company's fundamental risk management policies including risk management of derivatives activities to ensure that these policies are consistent with the company's broader business strategies, management expertise, capital strength, and overall appetite for risk. Schwartz *et. al.*, (1997: 315) also indicated that the role of senior management, in general, is to ensure that effective derivatives risk management policies and procedures are implemented and maintained.

Therefore, it is the firm's company's board of directors and management's responsibility to look after the interest of the shareholders to the best of their ability. Therefore, hedging is very important, and using the right hedging instrument is equally important. Avoidance of hedging foreign exchange risk is not a soft option. There is a precedent of shareholders successfully suing a board of directors and management for not hedging the foreign exchange risk faced by the company using the right instruments and currency derivatives:

“In June 1992, the directors lost their final appeal (Brane vs Roth) with the courts citing failure to hedge as the manager's cardinal sin. The directors, moreover, had a duty to understand hedging techniques and should have watched over the managers more carefully” (Edwards, 1993: 53).

7.3 Areas for further Investigation

Though, in Chapter 5, the saving from the use of currency option could be attributed to currency volatility that prevailed in the last four years with the Dollar/Rand exchange rate peaking to R13.50 to the Dollar and then trading below the R6.00 mark in the later part of 2004, there exists the possibility that in period of stable exchange rate, the currency option may stay 'out-of-the' money for long periods, thereby the firm losing out in terms of having to pay the option premium instead of using straight forward cover. This can lead to further avenues of research in the field; where firstly, one can conduct the same investigation over longer periods of time, which contains both periods of volatility and stability in the foreign exchange market and secondly, investigate the level of volatility in the exchange rate, which will trigger the switch from FEC to currency options and vice versa.

The problem of the standard form of forward contracting (e.g. the elimination of the opportunity for profit should exchange rates turn out favourably) as described by Stephens (2001: 64) has been addressed by a number of banks that have constructed non-standard versions of currency forward contracts. The exact terms and conditions of the contract differ from bank to bank, but in one way or another, they all allow the client to benefit from a favourable move in the exchange rate. There will be a price to pay for the advantage. An avenue of research hence will be to understand and analyse the non-standardised versions of currency forward contracts as opposed to a straight forward contract and compared them to the cost and advantages of currency options.

7.4 Conclusion

The researcher, therefore recommends that during periods of high volatility, the firm should use currency options as an alternative to FEC, especially with an average monthly exposure figure of 15 million Dollars in 2004, which would most certainly increase with the firm's growth over the years. The researcher also recommends that for the effective use of currency options, the firm must review and strengthen the existing conditions conducive to its use as well as create other specific conditions necessary.

LIST OF REFERENCES

Allayannis, G. & Brown, G. W. & Klapper, L. F. 2001. *Exchange Rate Risk Management: Evidence from East Asia*. Policy Research Working Paper: The World Bank Development Research Group, Finance.

Allayannis, G. & Mozumdar, A. 2000. *Cash Flow, Investment and Hedging*. Darden Graduate School of Business Working Paper: University of Virginia.

Allayannis, G. & Weston, J. 2001. The Use of Foreign Currency Derivatives and Firm Market Value. *Review of Financial Studies*. Vol. 14. No.1. 243-276.

Anon 1. 2003. How big is the FX market?

<http://www.cambridgefx.com/currency-exchange/currency_exchange.htm#9> 12 Sep 2003.

Anon 2. 2003. Nedcor Reviewed Financial Results for the year ended 31 December 2000. *Financial Mail*. 21 February 2003. 42-43

Anon 3. 2001. Currency Option Overview: Options in General – Definition and Use.

<<http://www.ozforex.com.au/fxoptions.htm>> 12 Sep 2003.

Anon 4. 1998. Risk: Foreign exchange risk management guidelines.

<<http://www.kshitij.com/risk/fxmg8.shtml>> 12 Sep 2003

Anon 5. 2002. For Corporates.

<<http://www.ozforex.com.au/reference/forcorporates.html>> 12 Sep2003

Aron, A. & Aron, E. N. 1997. *Statistics for the Behavioural and Social Sciences: A Brief Course*. Prentice Hall, Inc.: New Jersey.

Batten, J. M. & Mellor, R. & Wan, V. 1993. Foreign Exchange Risk Management Practices and Products used by Australian Firms. *Journal of International Business Studies*. Q3. 1993. 12-17.

Bharath, K. 2003. Crazy about the Rand. *Finance Week*. 5 February 2003: 49-50

Bless, C. & Kathuria, R. 1993. *Fundamentals of Social Statistics: An African Perspective*. Juta & Co. Ltd: Kenwyn.

Bodnar, G. M. & Gebhardt, G. 1999. Derivative Usage in Risk Management by US and German Non-Financial Firms: A Comparative Survey. *Journal of International Financial Management and Accounting*. Vol.3. No. 3. 153-187.

Bouma, G. D. 1997. *The Research Process*. Oxford University Press: Australian.

Brucaite, V. & Yan, S. 2000. *Financial Risk Management – Case Studies with SKF and Elof Hanson*. Unpublished Industrial and Financial Economics Master Thesis.

Carroll, T. 1999. *Understand Swaps in a day*. TTL, Harrogate: England.

Correia, C. & Flynn, D. & Uliana, E. & Wormald, M. 2000. *Financial Management*. Juta & Co Ltd: Lansdowne.

Cotter, J. 2002. Allied Irish Trading Disaster: Lessons to learn.
<<http://www.fenews.com/fen25/cotter.html>> 12 Sep 2003

Coyle, B. 2000(a). *Hedging Currency Exposures*. Financial World Publishing. The Chartered Institute of Bankers: United Kingdom.

Coyle, B. 2000(b). *Introduction to Currency Risk*. Financial World Publishing. The Chartered Institute of Bankers: United Kingdom.

Damodaran, A. 1997. *Corporate Finance Theory and Practice*. John Wiley & Sons INC: Canada.

Davis, H. A. & Militello (Jr), F. C. 1995. *Foreign Exchange Risk Management: A Survey of Corporate Practices*. Financial Executive Research Foundation Inc.: New Jersey.

- DeFusco, R. A, & McLeavey, D. W. & Pinto, J. E. & Runkle, D.E.2001. *Quantitative Method for Investment Analysis*. United Book Press: Baltimore, America.
- Edwards, W. 1993. *Hedging Yardsticks – Delphi Risk Management*. Treasury Management International.
- Eiteman, D. K. & Stonehill, A. I. & Moffett, M. H. 1995. *Multinational Business Finance*, New York: Addison-Wesley Publishing Company: New York.
- Eiteman, D. K. & Stonehill, A. I. & Moffett, M. H. 1997. *Multinational Business Finance*, New York: Addison-Wesley Publishing Company: New York
- Eun, C. S. & Resnick, B. G. 2001. *International Financial Management*. 2nd Edition. McGraw-Hill. New York: America.
- Evans, E. 2003. No gambling in the treasury.
<<http://www.cfo.com>> 12 Sep 2003
- Falkena, H. B. Fourie, L. J. & Kok, W. J. 1995. *The South African Financial System*. Southern Book Publishers: Halfway House, Cape-Town.
- Fink, A. 1995. *How to Analyse Survey Data*. Sage Publications Inc.: London.
- Geczy, C. & Minton, B. A. & SchRand, C. 1997. Why Firms Use Currency Derivatives. *The Journal of Finance*. Vol.52, No.4. 1323-1354.
- Giddy, I. H. & Dufey, G. 2002. *The Management of Foreign Exchange Risk*: New York University and University of Michigan.
<[http:// pages.stern.nyu.edu /~igiddy/fxrisk.html](http://pages.stern.nyu.edu/~igiddy/fxrisk.html)> 12 Sep 2003
- Gouws, J. N. 1994. *Managing Foreign Exchange Exposure Risk in an Operating Environment*. Unpublished Master Thesis.

Hall, D. & Hall, I. 1996. *Practical Social Research: Project Work in the Community*. Macmillan Press Ltd: Houndmills, Basingstoke, Hampshire & London

Hamilton, S. 2002. Control Failures: How we ignore lessons from the past.
<<http://www01.imd.ch/news/research/perspective/index.cfm?art=2323>> 12 Sep 2003

Henderson, C. 2002. *Currency Strategy: The Practitioner's Guide to Currency Investing, Hedging and Forecasting*. John Wiley & Sons Ltd: West Sussex, England.

Higgins, R. C. 1998. *Analysis for Financial Management*. 5th Edition. Irwin McGraw Hill: New York.

Hill, C. W. L. 2002. *International Business: Competing in the Global Market Place*. McGraw-Hill/Irwin: New York.

Holliwell, J. 1998. Risk: Enough rope to hang the business.
<<http://www.kshitij.com/risk/honestq.shtml>> 12 Sep 2003

Kim, S. H & Kim, S. H. 1999. *Global Corporate Finance: Text and Cases*. 4th Edition. Blackwell Publishers Inc. Massachusetts: USA.

Lindert, P. H. 1991. *International Economics*. Richard D. Irwin, Homewood: Boston.

Luca, C. 1995. *Trading in the Global Currency Markets*. Prentice Hall: New Jersey.

Marlowe, J. 1999. Hedging Currency Risk with Options and Futures.
<<http://www.business.com>> 12 Sep 2003

Master Currency Online Services
<http://www.mastercurrency.co.za/pass_log.asp>

Maugham, S. 2000. Foreign exchange hedging.
<<http://www.accaglobal.com/publications/studentsaccountant/36968>> 12 Sep 2001

McKenzie, G. & Powell, J. & Usher, R. 1997. *Understanding Social Research: Perspective on Methodology and Practice*. Falmer Press: London

McRae, T. W. 1996. *International Business Finance: A concise Introduction*. John Wiley & Sons Ltd: Chichester: England.

Mian, S. L. 1996. Evidence on Corporate Hedging Policy. *Journal of Financial and Quantitative Analysis*. Vol.3, No.3. 419-439.

Miyamoto, A. & Bird, J. 2002. Hedging with derivatives after Enron: A snapshot of the state of derivative hedge practices and corporate risk management post-Enron. Advisory Group at Bank of America.

<<http://www.corporatefinancemag.com>> 12 Sep 2003

Office of the Superintendent of Financial Institutions. 1998. *Guideline: Standards of Sound Business and Financial Practices - Foreign Exchange Risk Management*: Canada.

Pawson, R. & Tilley, N. 1997. *Realistic Evaluation*. Sage Publications Ltd: London.

Patelis, A. 2003. *Research: Corporates' FX hedging under the spotlight - Merrill Lynch*.

<<http://www.cfo.com>>

Robson, C. 1993. *Real World Research: A Resource for Social Scientist and Practitioner-Researchers*. Blackwell Publishers Inc.: Massachusetts.

Ross, S. A. & Westerfield, R. W. & Jordan, B. D. & Firer, C. 1996. *Fundamentals of Corporate Finance*. First South African Edition. Time Mirror International Publishers Limited: Italy, Turin.

Scheyvens, R. & Storey, D. 2003. *Development Fieldwork: A practical guide*. Sage Publication: London.

Schwartz, R.J. & Smith (Jr), C. W. 1997. *Derivatives Handbook: Risk Management and Control*. John Wiley & Sons, Inc.: United States.

Sercu, P. & Uppal, R. 1995. International Financial Markets and the Firm. South-Western College Publishing: Cincinnati, Ohio.

Shapiro, A. C. 1996. Multinational Financial Management. Prentice Hall: Upper Saddle River.

Shapiro, A.C. 2003. Multinational Financial Management. 7th Edition. John Wiley & Sons, Inc.: Hoboken.

Stephens, J. J. 2001. Managing Currency Risk using Financial Derivatives. John Wiley & Sons, Ltd: England.

Taylor, F. 1997. Mastering Foreign Exchange & Currency Options – A Practitioner's guide to the mechanics of the markets. Pitman Publishing: Great Britain.

Van Zyl, C. Botha, Z. & Skerritt, P. 2003. Understanding South African Financial Markets. Van Schaik Publishers: Pretoria.

Wallace, J.B. 1999. The Group of 31 Report: Core principles for managing multination FX risk – Greenwich Treasury Advisors LLC.

www.gtallc.com/download/GTA_G31_report.pdf 12 Sep 2003

Weisweiller, R. 1991. Managing a Foreign Exchange Department - A Manual of Effective Practice. Quorum Books – United States / Canada.

Williams, M. 2003. Making Sense of Social Research. Sage Publications Ltd: London.

Zikmund, W. G. 1997. Business Research Methods. Fifth Edition. The Dryden Press: Orlando.

**APPENDIX A: CALCULATION OF MONTHLY 3-MONTH CALL OPTION
PREMIUM**

JANUARY - 2001	Daily 3- Month Call Option Premium
2001/01/02	2.49%
2001/01/03	2.49%
2001/01/04	2.51%
2001/01/05	2.55%
2001/01/08	2.67%
2001/01/09	2.97%
2001/01/10	2.93%
2001/01/11	2.82%
2001/01/12	2.77%
2001/01/15	2.69%
2001/01/16	2.71%
2001/01/17	2.71%
2001/01/18	2.71%
2001/01/19	2.90%
2001/01/22	2.90%
2001/01/23	2.77%
2001/01/24	2.81%
2001/01/25	2.81%
2001/01/26	2.72%
2001/01/29	2.72%
2001/01/30	2.61%
2001/01/31	2.61%
Average	2.72%

DECEMBER - 2004	Daily 3- Month Call Option Premium
2004/12/01	3.28%
2004/12/02	3.26%
2004/12/03	3.26%
2004/12/06	3.28%
2004/12/07	3.36%
2004/12/08	3.42%
2004/12/09	3.42%
2004/12/10	3.44%
2004/12/13	3.40%
2004/12/14	3.40%
2004/12/15	3.30%
2004/12/17	3.36%
2004/12/20	3.49%
2004/12/21	3.36%
2004/12/22	3.36%
2004/12/23	3.36%
2004/12/24	3.36%
2004/12/28	3.31%
2004/12/29	3.31%
2004/12/30	3.31%
2004/12/31	3.31%
Average	3.35%

**APPENDIX B: FOREIGN EXCHANGE PAYMENTS USING 3-MONTH CALL OPTION VS 3-month
FEC - Jan-01 to DEC-04**

		Monthly Exposure in US Dollar (Millions)	Total Payments in Rands using FEC Rate (Millions)		Total Payment in Rands using a 3-Month Call Option (Millions)				Actual Spot Rate	Decision with Currency Option	Total Payment in Rands at the Spot Rate	Total Payment in Rands at the Spot Rate + the Option Premium	Actual Payment
			US Dollar 3-Month FEC Rate	Rand Value	Option Strike Rate = FEC Rate	Option Premium %	Option Premium in Rand Value (Millions)	Rand Value					
JAN 01- Spot Rate R7.7818													
2001	JAN	7.42	7.5672	56.12	7.57	2.72%	1.57	57.69	7.78	Exercise Option	57.710	59.28	57.69
	FEB	4.60	7.7766	35.80	7.78	2.78%	1.00	36.80	7.81	Exercise Option	35.978	36.97	36.80
	MAR	4.77	7.7328	36.91	7.73	2.74%	1.02	37.93	7.91	Exercise Option	37.736	38.75	37.93
	APR	5.58	7.8646	43.85	7.86	2.73%	1.18	45.03	8.08	Exercise Option	45.057	46.24	45.03
	MAY	7.13	7.9116	56.42	7.91	2.34%	1.30	57.72	7.97	Exercise Option	56.845	58.14	57.72
	JUN	7.50	7.9847	59.90	7.98	2.03%	1.19	61.09	8.06	Exercise Option	60.440	61.63	61.09
	JUL	7.33	8.2057	60.17	8.21	2.20%	1.26	61.42	8.21	Exercise Option	60.188	61.44	61.42
	AUG	5.76	8.1031	46.69	8.10	2.08%	0.93	47.63	8.32	Exercise Option	47.944	48.88	47.63
	SEP	5.01	8.1875	40.98	8.19	2.23%	0.87	41.85	8.64	Exercise Option	43.244	44.11	41.85
	OCT	7.69	8.3239	64.01	8.32	2.67%	1.60	65.60	9.29	Exercise Option	71.403	73.00	65.60
	NOV	4.23	8.4377	35.69	8.44	2.78%	0.92	36.61	9.76	Exercise Option	41.268	42.18	36.61
	DEC	2.89	8.7733	25.36	8.77	6.11%	1.37	26.73	11.60	Exercise Option	33.518	34.89	26.73

			Total Payments in Rands using FEC Rate (Millions)		Total Payment in Rands using a 3-Month Call Option (Millions)								
Monthly Exposure in US Dollar (Millions)			US Dollar 3-Month FEC Rate	Rand Value	Option Strike Rate = FEC Rate	Option Premium %	Option Premium in Rand Value (Millions)	Rand Value	Actual Spot Rate	Decision with Currency Option	Total Payment in Rands at the Spot Rate	Total Payment in Rands at the Spot Rate + the Option Premium	Actual Payment
JAN 02- Spot Rate R11.6291													
2002	JAN	6.22	9.4514	58.74	9.45	5.03%	3.64	62.38	11.63	Exercise Option	72.279	75.91	62.38
	FEB	4.40	9.9403	43.76	9.94	3.82%	1.96	45.72	11.48	Exercise Option	50.553	52.51	45.72
	MAR	6.09	11.6440	70.94	11.64	4.94%	3.50	74.44	11.51	Do not Exercise	70.097	73.60	73.60
	APR	4.43	11.8926	52.71	11.89	3.41%	1.76	54.47	11.08	Do not Exercise	49.098	50.86	50.86
	MAY	0.56	11.7475	6.53	11.75	3.25%	0.21	6.74	10.13	Do not Exercise	5.631	5.84	5.84
	JUN	3.45	11.7700	40.64	11.77	3.47%	1.39	42.03	10.15	Do not Exercise	35.043	36.44	36.44
	JUL	5.82	11.3448	66.07	11.34	3.66%	2.48	68.55	10.12	Do not Exercise	58.909	61.39	61.39
	AUG	4.25	11.3804	48.36	11.38	3.88%	1.92	50.27	10.60	Do not Exercise	45.023	46.94	46.94
	SEP	3.32	10.4234	34.64	10.42	3.64%	1.41	36.04	10.62	Exercise Option	35.281	36.69	36.04
	OCT	2.51	10.3921	26.13	10.39	3.27%	0.96	27.08	10.32	Do not Exercise	25.949	26.90	26.90
	NOV	4.90	10.9195	53.45	10.92	3.38%	1.92	55.38	9.68	Do not Exercise	47.377	49.30	49.30
	DEC	1.72	10.9388	18.79	10.94	3.74%	0.75	19.54	8.95	Do not Exercise	15.384	16.13	16.13

		Monthly Exposure in US Dollar (Millions)	Total Payments in Rands using FEC Rate (Millions)		Total Payment in Rands using a 3-Month Call Option (Millions)				Actual Spot Rate	Decision with Currency Option	Total Payment in Rands at the Spot Rate	Total Payment in Rands at the Spot Rate + the Option Premium	Actual Payment
			US Dollar 3-Month FEC Rate		Option Strike Rate = FEC Rate	Option Premium %	Option Premium in Rand Value (Millions)	Rand Value					
JAN 03- Spot Rate R8.7035													
2003	JAN	8.34	10.6193	88.52	10.62	3.92%	2.84	91.37	8.70	Do not Exercise	72.554	75.40	75.40
	FEB	5.91	9.9622	58.90	9.96	3.73%	1.92	60.81	8.32	Do not Exercise	49.197	51.12	51.12
	MAR	7.53	9.2159	69.39	9.22	3.70%	2.42	71.81	8.07	Do not Exercise	60.731	63.16	63.16
	APR	7.82	8.9639	70.08	8.96	3.38%	2.30	72.38	7.67	Do not Exercise	59.960	62.26	62.26
	MAY	10.35	8.5686	88.71	8.57	4.46%	4.02	92.73	7.68	Do not Exercise	79.542	83.56	83.56
	JUN	4.64	8.3113	38.55	8.31	4.17%	1.68	40.23	7.90	Do not Exercise	36.632	38.32	38.32
	JUL	13.09	7.9035	103.43	7.90	4.04%	4.60	108.03	7.56	Do not Exercise	98.928	103.53	103.53
	AUG	3.43	7.9133	27.11	7.91	3.85%	1.15	28.26	7.40	Do not Exercise	25.367	26.51	26.51
	SEP	8.23	8.1209	66.85	8.12	3.55%	2.54	69.39	7.34	Do not Exercise	60.380	62.92	62.92
	OCT	7.18	7.7595	55.71	7.76	3.68%	2.30	58.01	6.99	Do not Exercise	50.214	52.51	52.51
	NOV	11.10	7.586	84.23	7.59	3.52%	3.40	87.64	6.76	Do not Exercise	75.031	78.43	78.43
	DEC	7.35	7.4936	55.07	7.49	4.15%	2.65	57.72	6.57	Do not Exercise	48.265	50.92	50.92

			Total Payments in Rands using FEC Rate (Millions)		Total Payment in Rands using a 3-Month Call Option (Millions)								
Monthly Exposure in US Dollar (Millions)			US Dollar 3-Month FEC Rate	Rand Value	Option Strike Rate = FEC Rate	Option Premium %	Option Premium in Rand Value (Millions)	Rand Value	Actual Spot Rate	Decision with Currency Option	Total Payment in Rands at the Spot Rate	Total Payment in Rands at the Spot Rate + the Option Premium	Actual Payment
JAN 04- Spot Rate R6.9502													
2004	JAN	16.04	7.1195	114.20	7.12	4.94%	5.51	119.70	6.95	Do not Exercise	111,481	116.99	116.99
	FEB	6.70	6.8657	45.98	6.87	4.55%	2.12	48.10	6.79	Do not Exercise	45,475	47.59	47.59
	MAR	16.20	6.6826	108.26	6.68	4.28%	4.82	113.08	6.63	Do not Exercise	107,442	112.26	112.26
	APR	17.50	7.0803	123.91	7.08	4.30%	5.23	129.14	6.58	Do not Exercise	115,196	120.43	120.43
	MAY	14.00	6.9175	96.85	6.92	4.64%	4.51	101.36	6.81	Do not Exercise	95,395	99.91	99.91
	JUN	16.99	6.7566	114.77	6.76	4.21%	4.97	119.74	6.44	Do not Exercise	109,337	114.31	114.31
	JUL	10.14	6.7034	67.97	6.70	4.11%	2.90	70.86	6.15	Do not Exercise	62,342	65.24	65.24
	AUG	19.03	6.9365	132.00	6.94	4.04%	5.34	137.34	6.48	Do not Exercise	123,257	128.60	128.60
	SEP	21.42	6.5488	140.28	6.55	3.56%	5.30	145.58	6.55	Exercise Option	140,400	145.70	145.58
	OCT	18.00	6.2511	112.52	6.25	3.25%	4.07	116.59	6.40	Exercise Option	115,277	119.34	116.59
	NOV	17.41	6.5775	114.51	6.58	3.33%	4.03	118.54	6.05	Do not Exercise	105,350	109.38	109.38
	DEC	9.58	6.6456	63.66	6.65	3.35%	2.23	65.90	5.74	Do not Exercise	55,009	57.24	57.24
Total Payments			3,124.14										
Mean Payments			65.09										
									3,070.39				
									63.97				