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MASTERS in MANAGEMENT: FINANCE AND INVESTMENT

Corporate Risk Management: A Case Study Of SAA

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DECLARATION

I, Ndivhuwo Ramaremisa, declare that the research work reported in this dissertation is my own, except where otherwise indicated and acknowledged. It is submitted for the degree of Master of Management in Finance and Investment at the University of the Witwatersrand, Johannesburg. This thesis has not, either in whole or in part, been submitted for a degree or diploma to any other universities.

Date:..... Signature…….....

Abstract

Corporate Risk management has become very important for firms who are exposed to markets risks. A firm that manages the market risks it is exposed to efficiently can ensure it remains solvent in times of extreme market volatility. This paper looks at the hedging activities of South African Airways over a 10 year period where the airline experienced significant losses due to volatility in the Rand Exchange Rate and Crude Oil prices.

Keywords: South African Airways, Corporate Risk Management, Hedging, Derivatives, Hedging Policy, Currency Risk, Commodity Risk.

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1 Introduction

1.1 Problem Statement

In 2003 and 2008 South African Airways (SAA) reported losses of R6bn and R1bn respectively (SAA, 2000-2011), the losses were attributed to hedging activities related to the rand exchange rate as well as the price of oil.

The media's reports on the hedging losses caused uproar, with the public questioning how such losses would be allowed to occur on the national carrier, the public were also questioning why an airline is busy engaging on betting on the oil price as well as the rand exchange rate.

SAA is the South African national airline and flag bearer with over 700 destinations which includes 34 cities across the world (SAA, 2000-2011). The airline has a significant international operation and as such has revenues that are in foreign currency. The airline also has a cost base that is in foreign currency, these costs include the fuel price as well as the aircraft leasing fees. The foreign currency revenues and costs give rise to foreign exchange risks while the fuel costs give rise commodity price risk. These financial risks need to be managed if the airline is to be a sustainable business.

In 2003, SAA adopted and implemented the accounting standard AC133 (SAA, 2000-2011). AC133 allows companies to recognise financial assets and liabilities in the balance sheet. Financial assets and liabilities are economic claims that arise from contractual arrangements between two economic agents. Financial derivatives are thus classified as financial assets or liabilities on the balance sheet. A company can thus realise an accounting profit or loss as a result of the movement in the fair value of the financial derivative from marking to market.

Following SAA's adoption and implementation of AC133 in April 2003, the airline was required to fair value and mark to market the hedges that were already in place. The marking to market of these financial derivatives resulted in an unrealised accounting loss (SAA, 2000-2011). The accounting loss became a realised loss in 2004 when the airline decided to close off the foreign exchange hedge book (SAA, 2000-2011). Figure 1 below shows SAA's headline earnings from 2000 to 2011.

The graph shows a time series of headline earning from 2001 until 2011. There have been two periods where the airline reported headline losses, 2003/2004 where the losses were as a result of the foreign currency hedges as well as 2007/2008 where the losses were mainly due to fuel price hedges.

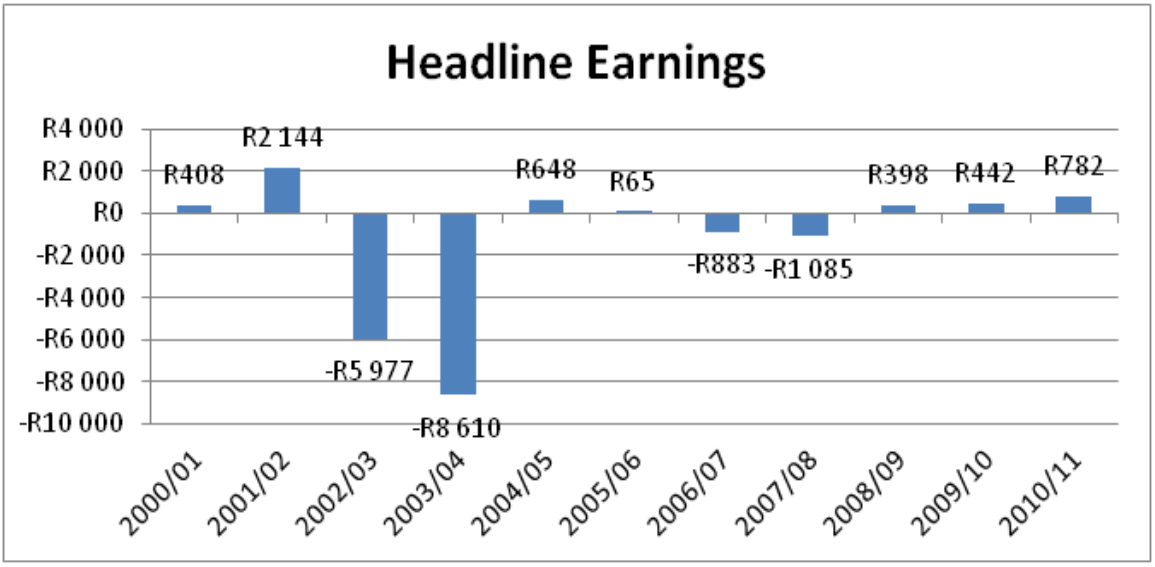

Figure 1: Headline Earning in millions ZAR, 2001-2011: Source: SAA Annual Financial Reports

SAA operates in an industry that is exposed to a magnitude of factors that can adversely affect earnings. The major factors include the jet fuel price; a commodity where the price is correlated to the volatile price of crude oil, as well as a volatile rand. These two factors make forecasting and budgeting very difficult exercise as they introduce a lot of uncertainty.

Given that SAA is an international airline operator, management has to consider the different destinations the airline offers to customers in their forecasting and budgeting process. Jet fuel which is primarily derived from crude oil has different prices depending on the location the crude oil is obtained for the jet fuel. There are many different types of crude oil with the major ones being West Texas Intermediate (WTI) crude, used in the US, Brent crude, used in Europe and, Dubai crude, used in the Middle East (Cobbs & Wolf, 2004).

The price moves over time of the different types of crude oils differ significantly, making it more difficult to forecast what the future cost of fuel will be given the multiple destinations SAA operates. This makes forecasting and budgeting of the volume of jet fuel required at the different locations very difficult. A robust hedging policy and hedging process is therefore required if the airline does not want volatility in their earnings as a result of these factors.

The Miller and Modigliani theory of corporate finance has been extended to corporate risk management, in this form it states that if shareholders can costlessly replicate a firm's financial risk management policy there is no need for the firms to do it themselves (Modigliani & Miller, 1958) and (Modigliani & Miller, 1961). Given that the real world has imperfect capital markets, firms which are exposed to market volatilities on commodities, interest rates and foreign exchange should in fact consider engaging in hedging activities if they want to reduce the expected costs of financial distress as well as to maximise the value of the managers wealth portfolio, (Judge, 2003)

1.2 Purpose of study

The main objective of this study is to describe the reasons that led to the hedging loss incurred by SAA. The paper aims to document the hedging process as well as the hedging tools employed by SAA. The study will also document hedging activities at some of the other South African State Owned Corporates (SOC). The study also aims to determine what led to such heavy losses and derive lessons that can be used by other African corporates that are currently hedging or seek to engage in hedging activities.

1.3 Question of study

i. Why did SAA engage in Hedging Activities?
ii. What was their strategy?
iii. What were the tools that were used for the hedging activities?
iv. The factors that led to the losses?

1.4 Significance of study

The study aims to contribute to the discussion of the use of derivatives by corporates in their risk management. The study focuses on SAA to determine the hedging strategy employed and discusses how the losses occurred.

1.5 Methodology

The paper will look at the performance of SAA for the period 2000 to 2010 with an emphasis on periods 2003/2004 and 2007/2008 when the airline reported losses attributed to hedging. The paper will look at the he hedging policy at the time as well as the products used to carry out the hedging activities.

Information regarding the activities that were followed during these periods will be attained from discussions with SAA personnel (primarily SAA Group Treasurer Phetolo Ramosebudi) and SAA hedge bank counterparties namely ABSA Capital and Nedbank Capital.

2 Literary Review

2.1 General Review of Corporate Risk Management Literature

Derivatives are in essence insurance contracts, individuals and firms alike use them to mitigate the risk they are exposed to. (Mayers & Smith, 1982) argue that corporations buy insurance contracts for several distinct reasons; they show that corporate insurance contracts can:

i. Allocate risk to the firm's claimholders who have a comparative advantage in risk bearing.
ii. Lower expected transaction costs of bankruptcy
iii. Provide real service efficiencies in claims administration
iv. Monitor the compliance of contractual provision
v. Bond the firm's real investment decisions
vi. Lower the firms expected tax liability
vii. Reduce regulatory costs

Following on from (Mayers & Smith, 1982) there have been many theories as to why hedging adds shareholder value, (Adams, 1999) summarised the results of the vast literature on corporate risk management documenting the common themes and reasons why hedging adds shareholder value;

i. Progressive tax scales, companies with more volatile income will pay higher taxes on average than companies with the same income but lower volatility.
ii. Increased borrowing capacity, reducing the volatility of corporate value increases the willingness of lenders to provide debt.
iii. Costs of financial distress, hedging reduces the chances of a corporation with debt falling into financial distress and thus avoid the underinvestment problem.
iv. Managerial reasons for hedging
v. Asymmetric information, if a firm shows volatile earnings then shareholders cannot tell whether the variability is due to financial risks that could be hedge or caused by managerial incompetence.
vi. Organisational economics

(Ross, 1997) also showed that a firm that hedges its risk increases its optimal amount of debt and so realizes more tax benefits from leverages. He notes three impacts of risk-reduction on shareholder value:

i. The increase in tax benefits,
ii. The reduction of bankruptcy costs

iii. and the reduction in the potential cost of the underinvestment problem

In his paper on the study of hedging and the use derivative use, (Judge, 2003) defines hedging as firms managing their risks via operational and financial strategies in addition to firms that use derivatives for hedging. He summarized the theories which explain why hedging adds shareholder value, he listed the following five theories;

i. Hedging reduces the expected corporate tax liability for a firm with a convex corporate tax schedule;
ii. Hedging lowers the probability of the firm encountering financial distress which in turn lowers the expected costs of financial distress;
iii. Hedging reduces the risk imposed on the firm's managers, employees, suppliers, and customers;
iv. Hedging can control the conflict of interest between bondholders and shareholders, thus reducing the agency costs of debt;
v. Hedging facilitates the financing of investment projects using internal funds and so decreases the reliance on costly external financing.

There have been numerous papers on the evidence of hedging and derivatives usage by non financial firms, one of the earlier papers (Bodnar, et al., 1996), used a sample of 530 firms, of the 530 firms that responded to the survey, 183 or 35% responded that they used derivatives. They found that hedging firm-commitment transaction exposures was clearly more common than hedging balance sheet items. 80% of the firms used derivatives to hedge firm commitments, the majority of them doing so frequently, while only 44% of firms used derivatives to hedge the balance sheet. A third of firms used derivatives to arbitrage across markets in order to reduce funding costs, but only 5% did so frequently. 43% of firms report using derivatives to speculate on the direction of financial prices; but only 9% of the firms did so frequently.

(Bodnar, et al., 1996) also found that credit risk and liquidity risk were issues of concern for over 50% of the respondents, with 52% showing concern about credit risk and the rest showing concern about liquidity risk of derivatives. Firms surveyed showed less concern about the cost of the derivatives with only 13% expressing a concern and 32% expressing a concern about the transaction costs they pay in acquiring their derivatives.

As an extension, (Bodna & Gebhardt, 1999) did a comparison between German and US non financial firms and found that German firms were more likely to use derivatives than US firms, of the firms surveyed 78% of German firms used derivatives compared to only 57% of US firms. Aside from this higher overall usage, the pattern of usage across industry and size groupings was comparable across

both countries. Foreign currency derivative usage was most common for both countries, followed closely by interest rate derivatives. Commodity derivatives were a distant third. The usage rates across all three classes of derivatives were higher for German firms than US firms.

The differences between the two countries were found to be driven by the greater importance of financial accounting statements in Germany than the US. German firms also indicated significantly less concern about derivative related issues than US firms, which appears to arise from a more basic and simple strategy for using derivatives.

In another study, (Judge, 2003), on UK Non-Financial Firms, 67% of annual report firms and 78% of survey respondents disclosed the use of derivatives. This was in line with the studies of papers (Bodnar, et al., 1996) and (Bodna & Gebhardt, 1999) in their studies on US and German non-financial firm's use of derivatives.

In a more comprehensive study, (Bartram, et al., 2004), 7292 non-financial firms from 48 countries were studied and 59.8% of the firms used derivatives in general, while 43.6% used currency derivatives, 32.5% interest rate derivatives, and only 10.0% commodity price derivatives. They also found that countries with economies that have more developed markets tended to be more stable and therefore firms based in these countries had less of a need for risk management. They found that measures of economic, financial, and political risk are directly related to derivatives usage.

The use of FX derivatives is mostly prevalent in the so called Multinational Corporations, MNC's, these firms are exposed to three distinct foreign currency exposures i.e.

i. Economic exposure
ii. Transaction exposure
iii. Translation exposure

(Eun, et al., 2012) define these exposures as follows;

Economic exposure is the extent to which the value of the firm would be affected by unanticipated changes in exchange rates.

Transaction exposure is the sensitivity of realised domestic currency values of the firms contractual cash flows denominated in foreign currencies to unexpected exchange rate changes

Translation exposure is the potential that the firm's consolidated financial statements can be affected by changes in exchange rates.

(Wihlborg, 1980) argues that the economically correct home currency, from which to evaluate exchange risk, does not depend on the country in which shareholders or the parent corporation are located. Instead it is the currency denomination of future transactions for which the receipts on an asset are going to be used that determines exchange risk.

The (Bartram, et al., 2004) study examined derivative usage by industry and type of exposure. The study revealed that the use of commodity price derivatives was concentrated in industries such as chemicals, utilities, steel, mining and oil. The study also found that the use of interest rate derivatives varied across industries with utility firms having usage rates of 63% which was the highest and mining having the lowest usage rates of 21.3%. Currency derivative usage was more evenly split with usage rates ranging between 35% and 60%.

(Géczy, et al., 1997) found that firms with greater growth opportunities and tighter financial constraints are more likely to use currency derivatives. The result suggested that firms use derivatives to reduce cash flow variation that might otherwise preclude firms from investing in valuable growth opportunities. They also found that firms with extensive foreign exchange-rate exposure and economies of scale in hedging activities are also more likely to use currency derivatives. (Géczy, et al., 1997) also found the source of foreign exchange-rate exposure is an important factor in the choice among types of currency derivatives.

(Guay & Kothari, 2003) states that the average time-to-maturity of the currency and interest rate swaps is about 5 years compared to about 1-2 years for commodity derivatives. They state that the finding is not surprising because swap contracts are typically designed to hedge periodic cash flows over long horizons (e.g., bond interest payments), whereas long dated forwards and options contracts are extremely illiquid or non-existent.

2.2 Review of Airline Corporate Risk Management Literature

Even though (Bartram, et al., 2004) found the use of commodity price derivatives to be very minimal in their study, there have been numerous studies of the widespread use of commodity derivatives in the airline industry where firms hedged their exposure to jet fuel prices.

(Lin & Chang, 2009) studied 69 airline companies from 32 countries and found that jet fuel hedging was positively related to market value. They also found that the tendency to avoid financial distress was one of the most important determinants for jet fuel hedging activities;

they found this to be particularly true during periods of volatile fuel prices. They also found an increase in derivative use even during periods of stable fuel prices, this they found was due to firms alleviating the underinvestment problem.

(Lin & Chang, 2009) is consistent with many other studies including (Carter, et al., 2002) which examined the fuel hedging behaviour of the US Airline industry where they found that the principal benefit of hedging jet fuel came from the reduction of underinvestment costs. They state that this is very peculiar to the airline industry where new aircraft purchases must be planned in advance with purchase orders submitted to aircraft manufacturers and these have to be disclosed in the firm's financial as contractual obligations.

(Cobbs & Wolf, 2004) state an important observation regarding jet fuel, they found that even though hedging is prevalent there was no perfect hedge available in either the over the counter (OTC) or exchange traded derivatives markets. They state that the reason for the lack of a perfect hedge is due to the illiquid nature of the jet fuel market and the lack of sufficient quantities to hedge all of airline jet fuel consumption. This was consistent with (Morrell & Swan, 2006) where they that most airlines hedged jet fuel using the more liquid gas oil and crude oil.

(Carter, et al., 2002) provides an additional reason as to why other fuels are used in hedging other than jet fuel. They state that when crude oil is refined, the main by-products are gasoline, heating oil, diesel fuel, and jet kerosene. They go on by stating that products from the same part of the barrel shared similar characteristics, hence, the prices are highly correlated. Heating oil, which shares similar characteristics to jet fuel, is frequently used in hedging by airlines. Crude oil is also used in hedging by airlines due to the high price correlation with jet fuel.

The use of substitutes to hedge out fuel risk introduces the airline to another risk what needs to be managed i.e. basis risk. (Haushalter, 2000) defines this risk as a risk a firm encounters when the settlement price of the hedging instrument is different from the price of the underlying asset being hedged.

(Haushalter, 2000) states that this risk can be measured by taking the correlation between the change in the price of the asset being hedged and the change in the change in the price of the asset underlying the financial instruments available for hedging.

(Morrell & Swan, 2006) found that less than 80% of jet fuel needs were hedged more than three months ahead. The study found that the cause of the short dated nature of the hedges was that the jet fuel was proxy hedged using crude oil as it is liquid and allows for greater flexibility. They also found that spread between crude oil and jet fuel tended to widen in times of market instability making the proxy hedge ineffective during those times.

They found that it was the case that the crude oil and jet fuel widened significantly when the original cause of the volatility was war. The greater the military use of diesel, jet fuel and gasoline led to a switch of production thereof leading to greater demand for jet fuel from the military compared to crude oil. This proved that crude oil is not always an ideal hedge against jet fuel price increases.

(Morrell & Swan, 2006) continue by stating that, there are no significant exchange-traded futures contract traded for jet fuel. They also note that Aviation fuel was always priced in US dollars, and this included oil derivative contracts resulting in Airlines getting additional exposure to exchange rate movements particularly where they do not have adequate natural hedge cover. Few airlines outside the US have sufficient revenues in US dollars to provide such cover.

(Morrell & Swan, 2006) also state that it is sometimes the case that exchange rates move in such a way as to mitigate increases in fuel prices.. They noticed that the weaker dollar sometimes offset some of the dollar fuel price increases as the oil price and the dollar were indirectly correlated. They also found that many large airlines have been hedging foreign exchange risks for many years. They also found that Airlines never have long dated contracts with fuel suppliers making them highly exposed to volatile input prices.

2.3 Review of Hedging Tools

(Hull, 2012) gives extensive definitions of the types of hedging instruments available for non financial firms to hedge out their financial risks. The following are brief definitions from (Hull,

2012) of the type of hedging products most commonly used in the three different asset classes, FX, Interest rates and commodities.

2.3.1 Forward Contract

A Forward contract is a non-standardized contract between two parties. The parties agree to buy or to sell an asset at a specified future time at a price agreed upon today. The party agreeing to buy the underlying asset in the future assumes a long position i.e they are long the underlying asset, and the party agreeing to sell the asset in the future assumes a short position, i.e. they are short the underlying asset. The price agreed upon by the parties is called the contract's delivery price, which is equal to the forward price at the time the contract is initiated.

2.3.2 Futures Contract

A Futures contract is a standardized contract between two parties. The parties agree to buy or sell a specified asset of a standardized quantity and quality for a price agreed upon today with delivery and payment occurring at a specified future date. These futures contracts are negotiated at a futures exchange, which acts as an intermediary between the two parties.

The party agreeing to buy the underlying asset in the future, i.e. "the buyer" of the contract, is again said to be "long" the contract, and the party agreeing to sell the asset in the future, i.e. "the seller" of the contract is again said to be "short" the contract. On a day to day basis, the party that has a negative mark to market on the contract makes a payment to the exchange and the party with the positive mark to market receives a payment from the exchange.

These payments are done to reflect the profit and losses incurred by the two of the two parties thereby reducing the credit risk exposure should one party default. In most contracts the reverse of the initial trade is done at maturity so that no physical delivery need take place.

2.3.3 Swap Contract

A swap contract is a derivative whereby two counterparties exchange cash flows periodically. The two parties agree to exchange a stream of defined cash flows against another define stream. The two streams are usually referred to as the swap contract's legs.

The swap contract defines the specific dates when the cash flows are to be paid together with the calculations on the way interest is accrued. Usually at the time when the contract is initiated at least one of these series of cash flows is determined by a random or uncertain variable such as an floating interest rate, currency rate, commodity price or stock price.

2.3.4 Options Contract

An options contract gives the buyer (the owner of the contract) the right, but not the obligation, to buy or sell an underlying asset or instrument for a specified price, being the strike, on or before a specified date, being the maturity date. The seller of the contract incurs an obligation to fulfil the transaction, i.e they would be obliged to sell or buy the underlying should the owner elect to "exercise" the option prior or at expiration. The buyer of the contract pays a premium to the seller for this right.

There are two types of option contracts, a call option gives the owner the right to buy an underlying at a specific price, the owner would exercise their right if the underlying's price is higher than the strike. A put option gives the owner right to sell an underlying at a specific price, the owner would exercise their right if the underlying's price is lower than the strike.

(Bodnar, et al., 1996) found that the dominance of swaps as a vehicle for interest rate risk management stood out, where as forwards dominated the currency risk category, the use of swaps and OTC options was also significant for managing currency risk. They found that no one contract type dominated for firms engaged in hedging equity and commodity exposures.

(Bartram, et al., 2004) found that forward exchange contracts were the most commonly used instruments with a usage rate of 35.3%, interest rate swaps were second with usage rates of 11.0%. Surprisingly the study found that only 1.1% of the firms surveyed used currency futures contracts.

(Purnanandam, 2004) found that the use of swaps was the most widely used instrument in managing interest rate exposures while forwards and futures contracts were the most widely used instruments for managing foreign currency risks. He found that 85% of the interest rate hedgers use swaps, whereby 22% of them use options. Among the foreign currency hedgers, about 70% of firms use forwards and futures contracts.

(Haushalter, 2000) found that 50.8% of the companies in the study used swap and 37% used futures and forwards with only 10.5% using options. The ranking of the types of products used in the instruments is consistent with other studies of derivatives use.

(Morrell & Swan, 2006) state that in recent times there has been an increasing use of structured products global airlines. A very common structured product used is the so called collar. The product is a combination of a call and a put option. The popularity of the product stems from the fact that it can be structured in such a way as to have a zero premium. The premium on the bought call options is subsidised by the premium on the sold put option. This is popular with airlines since it allows them to have an input on the level of one of the strike levels, either the put or the call strike.

3 Formulating the Risk Management Policy and Strategy

There is an important rule of thumb which is advocated in the corporate risk management industry, if there is an underlying exposure that you are hedging and you are not leveraging then it's probably a legitimate hedge.

The management of the firm need to first identify all of the risks to which the firm is exposed before they can begin to make any decisions about hedging the risk. The risks generally fall into three categories, namely business risk, operational risk and financial risk. For most non-financial organizations, business risk is the risk associated with manufacturing and marketing activities, whereas operational risk is associated with systems and regulations. For both these risks, management is unable to hedge them. Management is however able to hedge components of the so called financial risks.

Figure 2 below shows a granular split of the risks faced by a firm. It also shows what risks the firm is expected to take on and the risks it needs to adequately manage and mitigate,

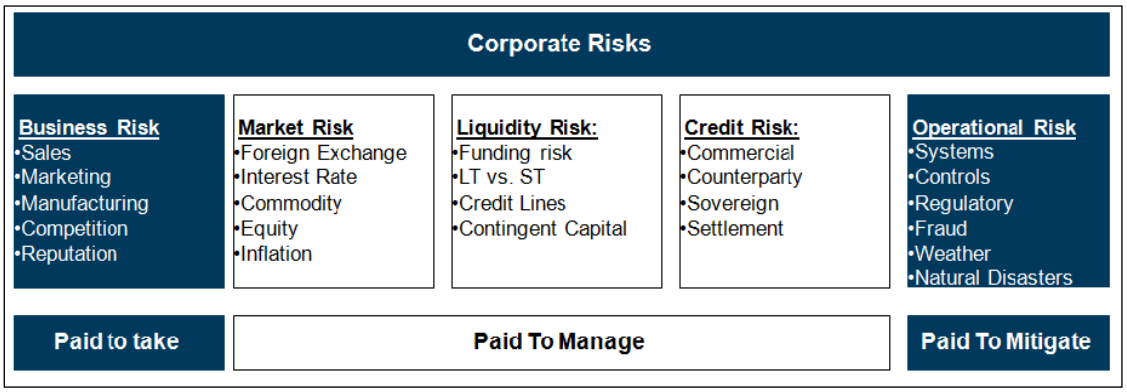

Figure 2: Risk Faced by non financial firms **Source: Absa Capital**

(Giddy, 2000) identified and outlined seven steps designed to determine whether firms should hedge or not. The following are the steps he advocated should be followed.

i. Identify the risks
ii. Distinguish between hedging and speculating
iii. Evaluate the costs of hedging in light of not hedging
iv. Use the right measuring stick to evaluate hedge performance
v. Don't base the hedge program on the market view
vi. Understand the hedging tools
vii. Establish a system of control

Figure 3 shows that the decision also depends on timing as well as whether competitors are already hedging their exposures.

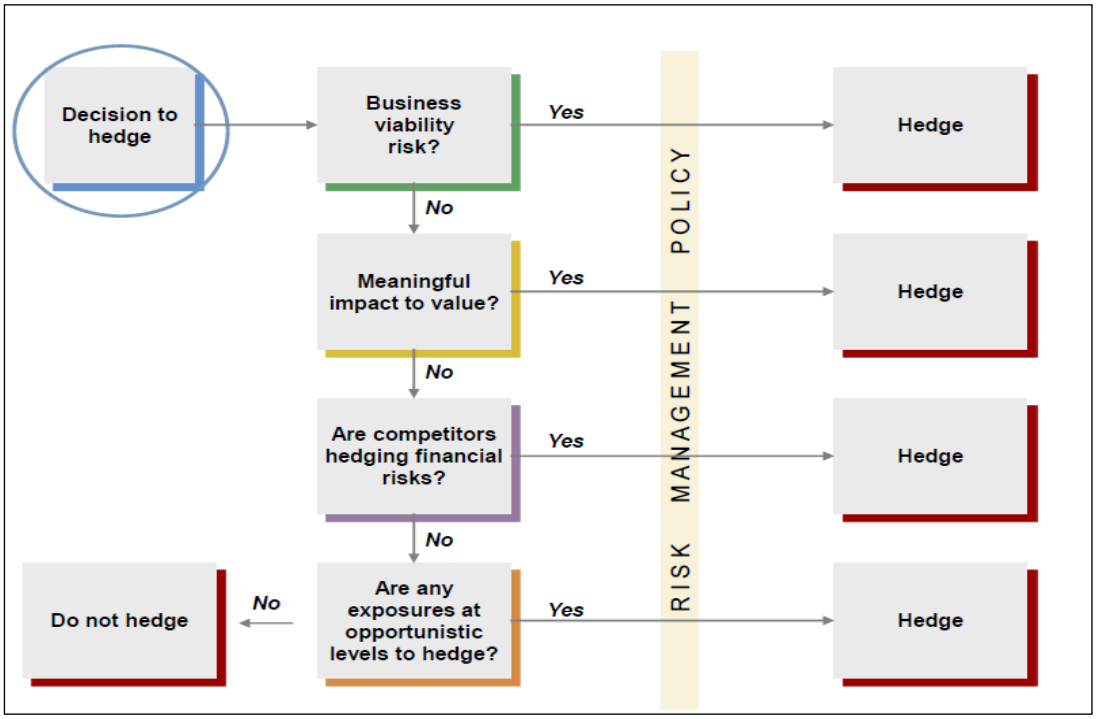

Figure 3: Decision to hedge or not to Hedge **Source: Absa Capital**

Corporate risk managers who wish to use hedging techniques to improve their company's risk profile need to educate their board of directors about the risks the company is naturally exposed to when it does not hedge.

As mentioned previously risk management is a step-by-step approach where the firm must firstly Identify its exposure and then define its risk management or hedging policy. This requires a formulation of the hedging strategy.

In formulating the hedging strategy, it is important to inform the hedging bank of the hedging policy this enables the firm to avoid “noise” and unrealistic proposals. Ideally the overall hedging strategy should be revisited regularly in order to;

i. To remain competitive
ii. To take advantage of market situations
iii. To implement new policy decisions

When dealing with the bank the firm needs to ensure to deal on the most appropriate strategies vs. a price perception and needs to also allow for post-deal management as this will maximise value for the firm.

The risk management policy should not be a financial and not a product driven process, it should be based on risk assessment and mitigation analysis. The following should be considered when implementing the strategy;

i. **Analytical:** The strategy must be based on a full analysis and understanding of the different exposures and their relationships.
ii. **Consistent:** The strategy must define a risk management policy which should be followed and not allow once off hedging activities.
iii. **Recurrent:** The strategy must recognize and address the dynamic nature of the financial exposures.
iv. **Rational:** Strategy must ensure that hedging decisions are not made randomly and have a clearly defined budget.

The strategy must ensure that discussions of the potential financial products with their advantages and disadvantages should be the last act of the risk management policy. Other factors to consider in the hedging policy are;

i. Leverage: How leveraged is the company and what are the future financing needs
ii. What are the future capex plans of the company?
iii. Industry: What is the industry norm when it comes to hedging and what is the competitive landscape
iv. Diversification of product lines
v. Financial sophistication and understanding especially senior management.
vi. Local tax and accounting treatment
vii. Factors that determine when to execute a hedge
viii. Tenor of the hedge
ix. Current market funding

As an example, a firm who has identified that it is exposed to FX risk on a particular transaction. In formulation the firm's hedging strategy; the risk manager is faced with a number of options it can pursue in execution an effective hedge. Figure 4 below shows a FX hedging tool kit which the firm can utilise in managing the FX exposure.

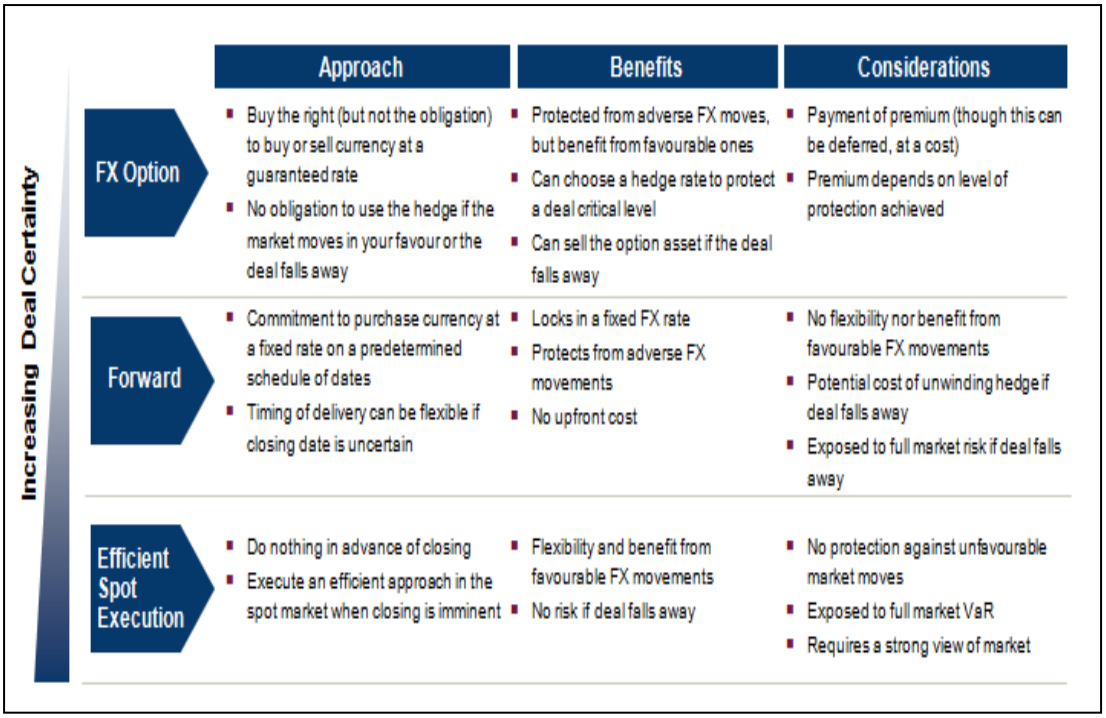

Figure 4: The FX Hedging Toolkit **Source: Absa Capital**

A clearly defined hedging policy therefore helps to ensure that top management and the company's board of directors are aware of the hedging activities used by the corporation's risk managers and that all risks are properly accounted for and managed.

4 Review of SAA hedging activity

The following sections look at the hedging activity within SAA as reported in its Financial Statements over the observation period. The functions of the Committee responsible for undertaking the hedging activity is SAA are also detailed.

4.1 Financial, Risk and Investment Management Committee of SAA

According to the financial statement of SAA, the function of overseeing the activities of risk management is the Financial, Risk and Investment Management Committee (FRIC). The major duties fulfilled by this committee are as follows:

i. Present the overall financial risk exposure to the directors.
ii. Review and recommend any changes to the Financial Risk Management Policy to the Board.
iii. Review and approve treasury counterparties and counterparty limits for banking, investment and hedging purposes.
iv. Review financial risk management activities.
v. Report on the implementation and control of financial risk management activities to the Board.
vi. Review investment decisions and make recommendations to the Board.

SAA's business operations make the airline to have exposure to various financial risks. Being a major player in the global airline industry, it is significantly exposed to the US dollar, like most of its non US counterpart. This exposure arises because foreign currency inflows are naturally insufficient to cover all foreign currency outflows.

SAA's revenues are predominantly in Rand and its costs are predominantly in US dollars. These dollar costs arise from leasing the aircrafts where the contracts are US dollar denominated, as well as the jet fuel requirements which as previously stated are only quoted in US dollars. To address these risks, SAA has put in place a hedging program which utilises derivative financial instruments to protect it against adverse movements in the ZAR/USD exchange rates and to provide some certainty of costs.

SAA has implemented accounting statement AC 133, which deals with the fairvalue of financial instruments. This accounting statement has been adopted to reflect SAA's increasing exposure to financial instruments.

SAA uses risk management instruments such as currency option contracts, cross-currency swaps, forward exchange contracts, interest rate swaps and options, as well as jet fuel commodity swaps

and options. As per the AC 133 statement, the profit and losses which arise as a result of the derivative financial instruments are recognised directly in the balance sheet until the underlying exposure occurs. Any asset or liability resulting from the conclusion of a hedged transaction is recognised at the initial measurement of the hedged item, incorporating the profit or loss on the hedge from inception of the hedge to the time of the recognition of the transaction. The profit or loss from the hedge is shown in the income statement If at initial recognition of the hedged transaction there is a profit or loss.

Derivatives embedded in other financial instruments or non-derivative host contracts are treated as separate derivatives when their risks and characteristics are not closely related to those of host contracts and the host contracts are not carried at fair value with unrealised gains or losses reported in the income statement.

4.2 SAA Hedging activity Part I

The hedging activity as reported in the Annual Financial Statements of SAA.

From the annual financial statement of 2001/02 to 2009/10, the rand experienced its most volatile period yet, with the rand reaching highs of R12.40/$, while hitting lows of R5.6/$. Over the period, the rand averaged R7.73/$. Figure 5 below shows a graph of the rand over the period.

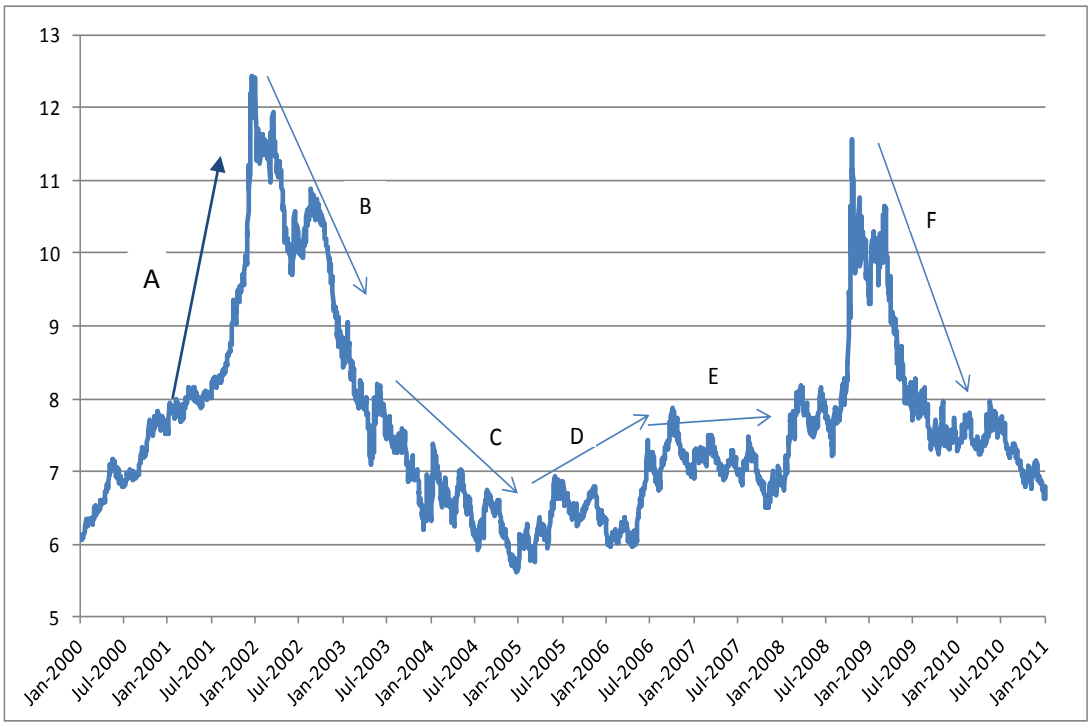

Figure 5: Historical USDZAR **Source: Bloomberg**

This period also represents a period where the oil price hit $140/barrel. Figure 6 below shows the dollar price of oil during the period.

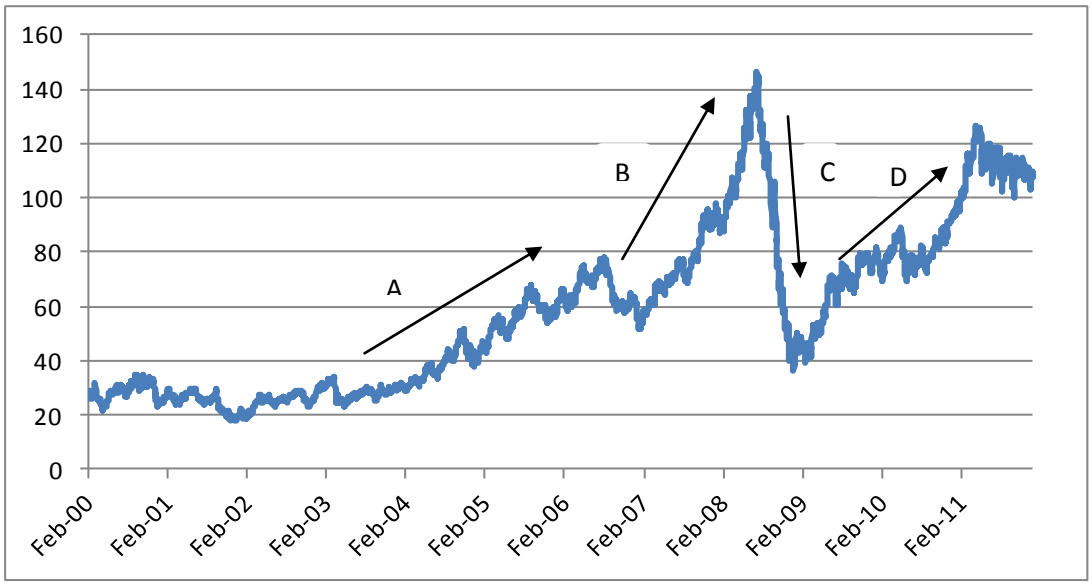

Figure 6: Historical Brent Crude Oil **Source: Bloomberg**

4.2.1 2001/02 Financial Year

In the 2001/02 financial year SAA made a profit of R1 953 million before tax (2001: profit of R263 million). The increase from the prior year was as a result of the significant devaluation of the Rand against major currencies during the latter part of the year under review. During the course of the year the Rand moved from R5.89/$ to R9/$ and as a result of the hedges in place i.e FEC and options contracts entered into, SAA benefit from the mark to market of the hedges. See point A on Figure 5.

4.2.2 2002/03 Financial Year

In the 2002/03 financial year, SAA only hedged 57% of the required minimum of 70% of its foreign currency exposure. This was due to the significant strengthening of the Rand during the first quarter of 2003, the positive mark-to-market as at 31 March 2002 reversed into a negative mark-to-market of R4 506 million at 31 March 2003.

This resulted in an unrealised net derivative fair value loss of R5 383 million (including the reversal of the previous year's positive mark-to-market) in the Income Statement. The mark-to-market position was dependent on the Rand/US$ exchange rate which moved from 10/$ to 8/$, See point B on Figure 5. This negative mark to market implies that SAA was contractually obliged to buy dollars at a higher rate than the current spot rate.

4.2.3 2003/04 Financial Year

In the 2003/04 financial year, the mark-to-market of the hedges resulted in the recognition of a charge in the income statement of R4 485 million (2003: R5 284 million). This was due to the average rand exchange rate against the US dollar strengthening by 26% to a level of R7,15 compared to an average rate of R9,53 for the year to March 2003, see point C on Figure 5. During the year, SAA, together with its major shareholder and in consultation with Government, made a decision to settle the hedge portfolio. This process commenced in April 2004, and was completed during June 2004.

SAA then embarked on a process, in line with an approved risk management strategy, to manage the risk of volatile oil prices. This was after fuel costs contribution increased to approximately 20% to SAA's cost base. The strategy to manage the risk was to hedge up to 60% of the airline's annual rolling consumption of jet fuel. Jet fuel prices were hedged by means of vanilla derivative financial instruments, i.e. swaps and options.

4.2.4 2004/5 Financial Year

In the 2004/05 financial year, SAA's fair market value of all derivative financial instruments in respect of the jet fuel portfolio at year-end was positive by R199 million (Brent $53,4). The average oil price increased 42% during the year ended 31 March 2005, see point A on Figure 6. The rand also strengthened 14% from R7.32/$ to an average of R6.32/$ during the year.

4.2.5 2005/6 Financial Year

In the 2005/06 financial year, the price of Brent crude averaged US$58 compared to SAA's budget price of US$45 per barrel. SAA managed the risk of the price of jet fuel which resulted from the volatility in the Brent crude energy market through prudent risk management thereby realising an average price of US$50. This hedging activity led to SAA realising net cash inflows from jet fuel hedging to the amount of R292-million. By the balance sheet date, SAA had 42% of its jet fuel needs hedged over the next financial year inline with the hedge policy requirement of a minimum of 40% and a maximum of 60% of the jetfuel uplift on a 12-month rolling basis. The weighted average price of the hedged jet fuel was approximately US$62.

The USD/ZAR exchange rate was fairly stable over the financial year, having started the year trading at around R6,24/$ and closing the financial year trading around R6,17. During the Financial year SAA's hedge policy was to hedge between 50% and 75% of its net

foreign exposure, and as at balance sheet date SAA was within this mandate, having hedged 75% of its currency exposure at a USD/ZAR rate of R6,23/$ for the next financial year.

4.2.6 2006/7 Financial Year

In the 2006/07 financial year, more than a quarter of the airline's costs also rose steeply in line with the oil price, which exceeded $70 per barrel at times during the financial year. See point B on Figure 6. No hedging activities were reported in the financial statements.

4.2.7 2007/8 Financial Year

In the 2007/08 financial year fuel costs constituted in excess of 30% of the airline's operating costs, excluding aircraft leases. As such, the sustained surge in oil prices posed significant challenges for SAA. During the financial year the dollar price per barrel of Brent crude oil rose from US$68 at 1 April 2007 to US$104 as at 31 March 2008, see point B on Figure 6. Steps were taken to reduce the adverse impact on SAA's financial results through hedging activities (both fuel hedges and FECs) and increases in fuel levy recoveries. These steps, however, had a lagging effect due to the continuous increase in fuel prices.

4.2.8 2008/9 Financial Year

In the 2008/09 financial year, SAA's was heavily impacted by the sharp rise of Brent crude as a result of the financial crisis. The conservative nature of SAA's hedging which was to hedge 40% to 60% for jet fuel exposures and 50% to 75% for currency exposure minimised the SAA's potential losses. Given the sharp rise and then sharp fall in Brent crude prices, see point C of figure 6, SAA still recorded hedging losses of R1, 046-billion as some of the hedges were done at the peak .

4.2.9 2009/10 Financial Year

In the 2009/10 financial year there was an improvement in hedging losses and SAA's hedging programme, the approved hedging target range was 40% – 60% of the 12 month rolling future purchase for fuel, and 50% – 75% for currency. During the reporting period, fair value movements and translation losses from hedging decreased from R1,6‑billion to R601‑million this was a 62% decline from the prior year. This was mainly due to the hedges being in the money due to the oil price increasing significantly, point D on figure 6, during the financial year

4.3 SAA hedging Activity Part II

From the brief discussions with the corporate treasurer of SAA as well as corporate sales personnel from SAA hedge banks. It was understood that the reasons for large hedging losses were from a number of reasons the two reasons which contributed significantly were the need to adhere to the hedging ratio as stipulated in the hedging policy as well as the hedging products used.

4.3.1 The Hedge Ratio

As stated above the Financial, Risk and Investment Management Committee (FRIC) is mandated by the board to be responsible for setting the required hedge ratio for both the FX and commodity exposures.

According to SAA's Group Treasurer, the need to ensure that the hedging policy was not breached was one of the factors that led to the hedging losses experienced in both 2004 and 2008.

SAA put in place hedges at inadequate times in order to be compliant with the policy. They hedged at times when there was extreme volatility in the rand FX market and there were a high number of speculators in the markets as well as times when the market was going in their favour when hedging their exposure would not be required and transacting in the spot market would have been more effective.

Figure 7 below shows the historical daily volatility distribution of the rand since 1989 as well as from 1999 and 2009 to present to see how daily volatility has evolved over the periods. As can be seen, the mean and mode from the graph moved from a 2 cent daily move in the period since 1989 to 10 cents and 14 cents daily move for the period from 1999 and 2009 respectively. This shows how volatile the rand has become over the years.

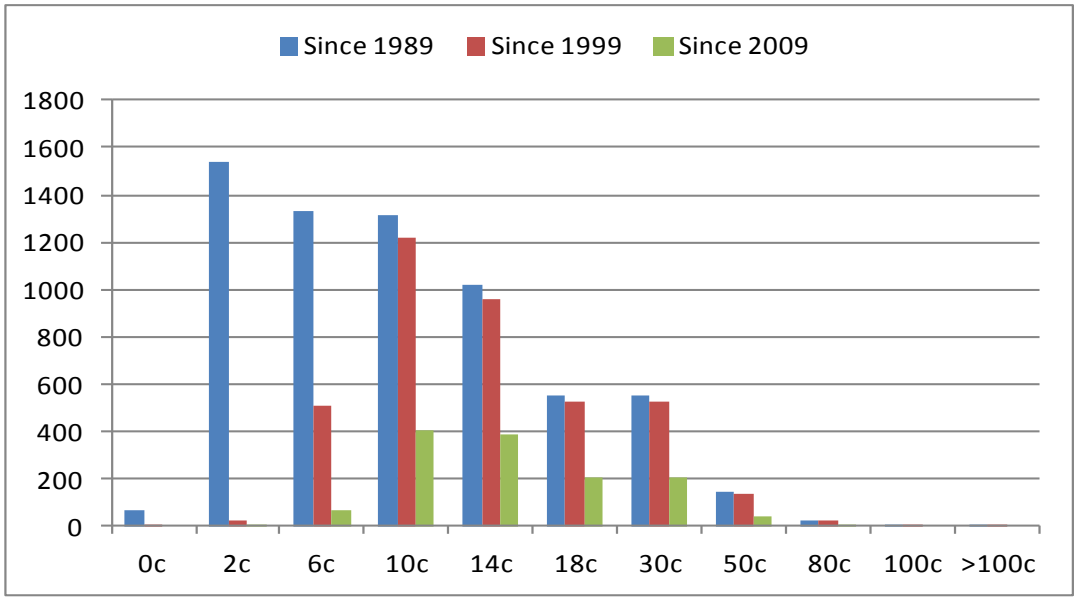

Figure 7: Daily Volatility Distribution **Source: Bloomberg**

Figure 8 below shows to the month to month distribution of the move in the rand over the period 2000 to 2010. Again this shows that on a month to month basis, the rand can move adversely in a very high frequency

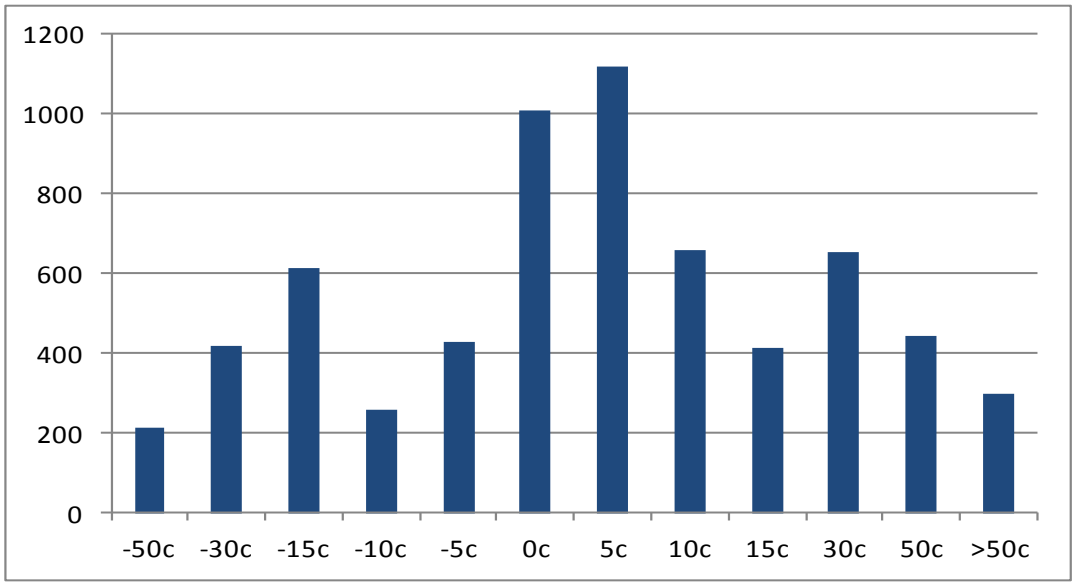

Figure 8: Month to Month Volatility Distribution **Source: Bloomberg**

The times series in Figure 5 and 6 show how volatile the rand as well as the oil price was during 2004 and 2008. The volatility experienced shows that during 2004 the market was not pricing the level of the rand on the underlying economic fundamentals but rather on sentiment and suggests evidence of speculators in the market. The same can be said about the oil price in 2008.

During 2004, the rand weakened significantly but also strengthened showing that executing hedges as the market corrected would not have been optimum. In 2008 the oil price also moved significantly high but also moved significantly lower. This shows that during times of high volatility it have been more optimum to not execute any hedges during this period but that would have meant the hedge policy would have been breached.

The board through the FRIC has since revised the hedge policy whereby the maximum hedge ratio is stipulated and the minimum hedge ratio is not stipulated meaning that SAA can have periods where exposures are not hedged. By revising the policy in this way, the SAA treasury team that is responsible for executing the hedges is not forced to execute hedges when they can see evidence of speculators in the market as well as extreme volatility.

The team uses metrics such as volumes traded and shapes of the forward curve and volatility skew to check for evidence of market speculators in the market. The hedge execution process has also been revised, the process followed is such that a rolling hedge process is followed whereby the near dated exposures are hedged at higher hedge rates with the far dated exposures either remaining un-hedged or hedged at very low hedge ratios.

4.3.2 The Hedge products

The hedging products used were another factor that led to the significant losses. From the discussion with SAA's hedge bank sales personnel, the products that SAA used which led to the losses were geared forwards and Geared Collars. Both products are structured using vanilla calls and puts.

As discussed in section 2.3.4 a Vanilla Put Option gives the holder the right to sell an underlying asset at a certain rate/price at a predetermined date, while a Vanilla Call Option gives the holder right to buy an underlying asset at a certain rate/price at a predetermined date, these vanilla options require the holder to pay a premium at inception. The geared products which SAA used are structured such that no premium is payable, the client buys and sells either a put option or a call option using the sold option to fund the bought option.

4.3.2.1 Geared Forward

A Geared Forward can protect a client from an unfavourable movement in a Currency Exchange Rate. However, a Geared Forward allows the client to obtain a better Currency Exchange Rate ("Enhanced Forward Rate") than if you had instead entered into a comparable Forward Exchange Contract (i.e. a Forward Exchange Contract for the same Principal Amount and having the same Trade Date and Payment Date).

In return for the Enhanced Forward Rate, until Expiry the client has uncertainty in relation to the maximum amount of currency they may be obliged to exchange on the payment date.

For example a 1x3 Geared Forward allows the client to have protection in unfavourable currency moves for one times the exposure but should the currency move in the clients favour the client will be obliged to exchange three times the exposure at the protection rate. Figure 9 below shows a schematic view of the mechanics of the workings of a geared forward.

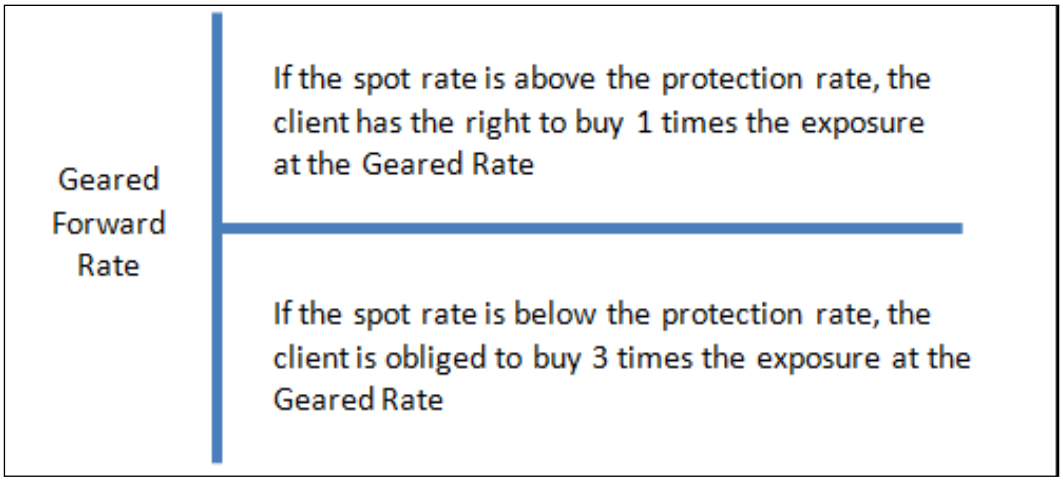

Figure 9: Schematic view of a Geared Forward **Source: Absa Capital**

4.3.2.2 Geared Collar

A Geared Collar works much like how a geared forward works. it can protect a client from an unfavourable movement in a currency exchange rate. However, it allows the client to obtain a better collar range ("Enhanced Collar Range") than if the client had instead entered into a comparable vanilla collar contract. In return for the Enhanced collar range, the client has uncertainty in relation to the maximum amount of currency they may be obliged to exchange on the payment date. Figure 10 below shows a schematic view of the mechanics of the workings of a geared collar.

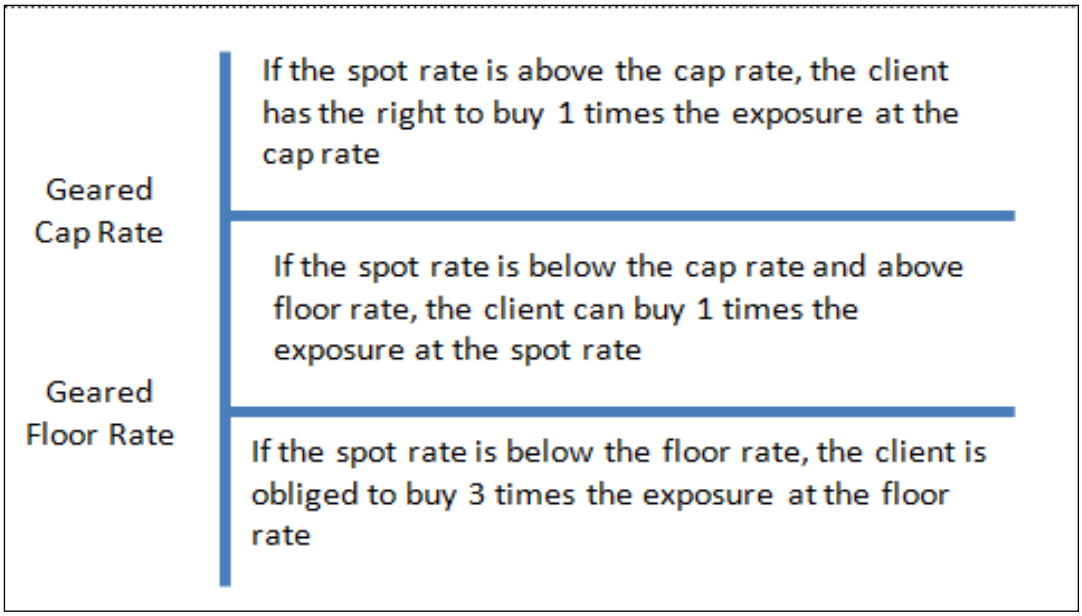

Figure 10: Schematic view of a Geared Collar **Source: Absa Capital**

5 Review of Hedging Practices in other SA State Owned Corporation

SAA is a 100% state owned corporation and per the act is required to report to report its activities to the ministry of Public enterprises. Given its status as a State Owned Corporation, (SOC) the government has come to its rescue in the form of bailouts using taxes. This is the reason there was a large up roar in society when SAA reported the hedging losses. To see whether using derivatives to hedge exposures is prevalent in other by SOC's, the hedging activities as reported in the annual financial statements of the larger SOC is documented below.

5.1 Transnet SOC Ltd

As per the 2013 annual financial statement, (Transnet, 2013), Transnet has a centralised treasury function which performs a supporting role to the operating Divisions and is tasked with the following three main objectives:

i. Ensuring that Transnet is cost-effectively and timeously funded
ii. Manage both financial and operational risks, and
iii. Lower the overall cost of doing business and add value to the overall business of Transnet.

The Financial Risk Management policies are contained in a Board approved Financial Risk Management framework (FRMF) which is approved by the Board on an annual basis and is aligned with the Group Enterprise Wide Risk Management Framework (ERM). Transnet must also operate within the limits as contained in the Transnet Delegation of Authority (DOA) as approved by the board.

Transnet is exposed to Liquidity, Credit (comprising of Counterparty risk) and Market risk (comprising of Currency, Commodity and interest rate risk) though its day to day to day business operations. Below outlines how Transnet exposure to the risk categories arises.

i. **Liquidity Risk:** These exposures arises mainly from Transnet's seven year Market Demand Strategy and operational expenditure programme, the redemption of loans and daily operational cash requirements.
ii. **Credit Risk (Counterparty risk):** These exposures arise mainly as a result of the investment of operational cash on hand and surplus cash on hand positive fair values of derivative hedging instruments.
iii. **Market Risk:** Transnet is exposure to currency, commodity and interest rate risk, these are outlined below

i. **Currency Risk:** These risks arises as a result of Transnet's Market Demand Strategy and expenditure programmes where goods are imported from foreign currencies, as well as from the raising of funding in a foreign currency exposing Transnet to currency fluctuations. The currency exposures are hedged as soon as supplier and funding agreements are signed. No pooling of hedging across different exposure types is allowed and hedging is done per project exposure.

   Foreign currency exposures are hedged until maturity using vanilla hedging instruments such as currency swaps and FEC's after careful consideration. Hedge accounting is applied to minimise volatility in the statement of comprehensive income.

ii. **Commodity risk**: These risks arise as a result of changes in prices of Brent crude oil, iron ore and steel. Only the fuel risk exposures are monitored and hedged. The FRMF requires the use of vanilla type hedging instruments that are very liquid with a maximum tenor of 12 months. It also states that the underlying used to hedge the exposure should have a very high correlation with the product consumed.

iii. **Interest rate risk:** These risks arise as a result of Transnet's borrowings, investment in interest bearing instruments and derivative financial instruments. Transnet measures interest rate risk by calculating the impact of fair value movements on derivatives and floating rate loans and running cash flow at risk scenarios and extreme sensitivities to determine the impact against the annually approved external finance cost budget in respect of current liabilities and new funding requirements per financial year. Its the group's policy that all foreign currency interest rate exposures are hedged to rand as soon as agreements are concluded.

Per the above, Transnet Soc Limited makes use of derivatives to help manage market risks exposures such as commodity and currency.

5.2 Eskom Holdings SOC Limited

As per the 2013 annual financial statement, (Eskom, 2013), the board of directors of Eskom has delegated the enterprise wide risk management to Eskom's audit and risk management committee which operates through various subcommittees. One of the committee's main objectives is to ensure that the group is not unnecessarily exposed to financial risks. Most of the

financial risks arising from financial instruments are managed in the centralised treasury function of the group. The group has exposure to the following financial risks as a result,

i. **Credit Risk:** This arises from cash and cash equivalents, investment in securities, derivatives held for risk management, financial trading assets and deposits made with counterparties.

ii. **Market Risk:** This arises from the fair value or future cash flows of financial instruments will fluctuating because of changes in foreign exchange rates, commodity prices, interest rates and equity prices.

iii. **Liquidity Risk**: This is the risk that the group will not have sufficient financial resources to meet its obligations when they fall due. This arises from mismatches in the timing of cash flows from revenue and capital and operational outflows.

iv. **Funding risk:** This risk arises when the necessary liquidity to fund illiquid asset positions, such as building new electricity capacity, cannot be obtained at the expected terms.

Of these financial risks, only market risk is managed by the use of financial derivatives. The Eskom treasury department is responsible for managing market risk within the risk management framework approved by executive committee and the board. Eskom is exposed to currency risk, commodity risk and interest rate risk.

i. **Currency Risk:** This risk arises primarily from purchasing imported goods and services directly from overseas. Hedging instruments consist of forward exchange contracts; the contracts mostly have a maturity of less than one year from the reporting date. They are rolled over at maturity when necessary. The group also makes use of cross-currency swaps, particularly in the management long term FX exposures. The group's policy is to hedge FX exposures once the exposure is firm and ascertainable.

ii. **Commodity Risk:** Eskom is exposed to commodity risk in instances where commodities are either used directly (eg liquid fuels or coal) or indirectly as a component of plant, equipment or inventory (eg, copper, aluminium or steel). The exposures are hedged economically by means of options or futures options.

iii. **Interest Rate Risk:** These risks arise mainly from borrowings, debt securities and longer dated forward exchange contracts. The group's borrowings and debt securities which are issued at variable rates expose the group to cash flow interest rate risk. Borrowings and debt securities issued at fixed rates expose the group to fair value interest rate risk. Eskom uses Forward rate agreements and interest rate swaps to hedge interest rate risk.

From the above, it is clear that Eskom makes use of a range of derivatives to help manage market risks exposures such as commodity, currency and interest rate.

5.3 Telkom SOC Ltd

As per the 2013 annual financial statement, (Telkom, 2013), Telkom is exposed to market risk, credit risk and liquidity risk. Telkom's senior management oversees the management of these risks, supported by a financial Risk Committee that advises on financial risks and the appropriate financial risk governance framework. All derivative activities for risk management purposes are carried out by specialist teams that have the appropriate skills, experience and supervision. Telkom is exposed to the following risks in general.

i. **Credit Risk:** Telkom is exposed to credit risk from its operating activities and from financing activities, including deposits with banks and financial institutions.
ii. **Liquidity Risk:** Telkom is exposed to liquidity risk as a result of uncertain cash flows as well as capital commitments.
iii. **Market Risk:** Exposure to Market risk arises from loans and borrowings, deposits, available-for-sale investments, and derivative financial instruments which the Telkom undertakes. The components of market risk Telkom is exposed to is as follows:
    i. **Interest rate risk:** This arises from the repricing of the Group's forward cover and floating rate debt. The guideline is to target a fixed/floating debt ratio of 65% fixed. In an economic environment of low interest rates, a higher ratio may be established. Telkom primarily makes use of interest rate swaps to hedge interest rate exposure which arises from its borrowings.
    ii. **Currency risk:** This arises as a result of monetary assets and liabilities in currencies other than Telkom's functional currency, the Rand. Telkom manages its foreign currency rate risk by economically hedging all identifiable exposures using forward exchange contracts and cross-currency swaps

Per the above, Telkom SOC Limited makes use of a range of derivatives to help manage market risks exposures such as interest rate and currency.

The observations from these SOC's show that hedging is not just done at SAA. All these SOCs utilise derivatives in their hedging activity as they seek to manage market risks they are exposed to.

6 Conclusion

During these very turbulent and extremely volatile times in both local and global markets, firms who do not hedge their exposures to market risk might as well be speculating on their future as hedging is not only something they should consider but something that should be high on management priorities.

This unprecedented volatility has been well documented and has led many firms to losses not related to their underlying businesses. This leads to firms losing market share to their competitors as financial resources are eroded instead of being used in investments towards innovation and marketing.

The literature on corporate risk management is vast and continues to expand as researchers try to answer the question of why, when and how corporates should hedge their exposures. (Judge, 2003) is one of the papers that goes in great detail to answer these questions. (Bartram, et al., 2004) and (Bodnar, et al., 1996) aimed to document the number of firms that are currently hedging exposures to the different types of market risks showing the high prevalence of hedging by corporates in both developed and developing countries across the world.

The corporate treasurer is not only faced with the when and how the firm should hedge, they are also faced with a number of risk management products to choose from. These include forwards, futures, swaps and options as well as structure constructed using combinations of these products in order to put place an effective hedge for the firm.

Hedging in the airline is much more prevalent than in many other industries, many airlines hedge their fuel cost which is a large component of their cost base and it is highly correlated to the volatile oil price, making the operation of an airline very difficult. Non US airlines are also exposed to currency risk as a result of the fuel price being quoted in US dollars. This is the case for SAA who have most of their revenue in rand and need to convert it through the volatile foreign exchange market in order to make their dollar fuel purchases.

SAA risk management activities are governed by the Financial, Risk and Investment Committee, the committee is mandated to review and recommend any changes to the risk management policy. It was due to the inflexibility of the policy that led to the hedging losses as the policy required exposures to be hedged at a certain hedge ratio at all times. This lead to hedges being executed at inappropriate times and at times using the effective hedging products. Evidence shows that other state owned corporations such and Eskom and Transnet entities actively hedge their exposure to market risks.

7 Recommendations and Limitations

7.1 Recommendations for Further Research

This study focussed on SAA and its hedging activities during a certain period. For further research the study can be expanded to include all SOC's. A questionnaire format could be used to gather the information. The questionnaire could be sent to all the SOC's treasuries and banks, both local and international banks. This would help in making the study more robust in understanding of the extent of the hedging activity among the SOC's. This would also help in understanding what the other SOC's are doing differently to SAA, what SAA can learn from these other SOC in terms of Hedging policy and the products they use in their hedging activities.

7.2 Limitations of the Study

The study relied heavily on a few individuals regarding the hedge activities at SAA, i.e. SAA's Group Treasurer and a few sales persons from Absa Capital and Nedbank Capital. The study would have benefited from more access of people who were actively involved in the hedging activities past and present at both SAA and the Hedge Bank counterparties.

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