

UNIVERSITY OF KWAZULU-NATAL

**AN INVESTIGATION INTO THE USE OF DERIVATIVE INSTRUMENTS BY
FINANCIAL INSTITUTIONS IN NAMIBIA**

**By
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Declaration

I declare that this research is my own work and have acknowledged all sources. The research has not been previously submitted for any degree or examination in any other institution. It is submitted for the Masters in Business Administration at the University of KwaZulu-Natal.

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Dedications

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Abstract

Over the past two decades, derivatives have demonstrated their important role in the financial market. At the same time, they have been criticized for some severe financial losses (Eales, 2004). These instruments enhance the ability to differentiate risk and allocate it to those investors most able and willing to take it. It appears that along with the benefits of powerful new tool for managing risks and the ability to create preferred return patterns, the use of various derivatives instruments has become what often appears to be a substantial risk (McHenry, 1995). This research aims to investigate whether financial institutions in Namibia use derivatives instruments and to ascertain the risk management practices that institutions have put in place in order to avert huge derivative losses. This survey covered all the portfolio managers that register with the Namibia Financial Institution Supervisory Body. The sample was chosen for the reason that portfolio managers are usually at the center of derivative trading dealing on behalf of their clients as market makers or trading on their own account.

Overall, this research reveals that 64.7% of financial institution in Namibia use derivatives instruments. Although institutions use derivatives for different reasons, hedging was rated high among derivative users with 58.3% followed by asset allocation with 45.5%. Accessing to market is rated third. It is also found that future contract and swaps are the most traded derivatives instrument, followed by forward contracts. This research discovers that significant proportions (61.5%) of derivatives users find that derivatives are helpful and they will increase usage in the next financial year.

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CHAPTER 1

PROBLEM STATEMENT AND RESEARCH DESIGN

1.1 Introduction

The past two decades gave rise to many new financial instruments and investment products. One such category which saw tremendous growth was derivatives market. These instruments consist of futures, forwards, options, and swaps of all kinds (Supanvanij, 2005). Many agree that these securities and contracts have not only given companies the ability to offset non-business risks but have also led to more efficient, liquid capital markets. However, skeptics feel that the advent of derivatives has led to ill-gotten gains, pure trading profits for financial institutions, and specifically, that stock index futures led to the October 13, 1987, stock market crash (Nguyen & Faff, 2003).

What everyone can agree on is that the involvement of the public in dealing with and trading in derivatives has multiplied exponentially since their inception. Corporations, the banking industry and investors have all seen the benefit that many of these derivative products offer. And many traders derive a livelihood by using derivatives to hedge risks; speculate in currency and option markets, and to exploit arbitrage opportunities.

This chapter consists of the problem statement and the motivation of the research project. In addition, the objective of the research and scope of the research will be discussed in detail. Finally, an overview of the research is given covering the content of each chapter.

1.2 Problem Statement

The evolution of financial derivatives provides one of the most devastating financial headlines in modern economic history (Eales, 2004). He also notes that, in less than three decades, financial derivatives have sprung from conception to global prominence, spanning the world's financial markets and institutions and integrating the global financial system. Bartman *et al.* (2004) find that, recent decades have witnessed the shift in the nature of risk in the global financial market, in which volatility of many asset

classes has increased. They further add that, in an environment in which investors are continuously exposed to a broad range of risk, derivatives have become valuable tools used in risk management practice of institutions. While derivatives existed for many years, there are still strong deviating opinions on whether institutions should trade them or this new global financial trading activity poses risks to individual firms, markets and the overall global society (Bartman *et al.*, 2004).

1.3 Motivation of the Research

Harowitz and Mackay (1995) indicate that, in recent years vast amount of attention has been received from press regarding the derivative markets. They acknowledge that, despite the potential of derivatives to manage the risk faced by institutions, the past spate of widely publicized derivative disasters has triggered debate about the benefits, risk and proper regulation of these financial instruments. Arnold (2005) gives examples of some derivative losers. For instance, Sumitomo Corporation lost US\$3,500 million in 1996 because of Copper Futures; Metallgesellschaft lost US\$1,800 million from oil Futures in 1993; Kashima Oil lost US\$1,500 million from Forex Derivatives in 1994; Orange County lost US\$1,700 million from Interest Rate Derivatives in 1994; Barings Bank lost US\$1,400 million from Stock index and Bond futures and Options in 1995; and Daiwa Bank lost US\$1,100 million from Bonds in 1996.

Bodnar *et al.* (2003) question whether there is something inherently wrong with derivatives themselves or managers' carelessness and misusing of derivative tools contribute to their ineffectiveness in risk mitigation. They conclude that, since the derivatives are complex, skilled personnel would be required to implement and monitor them in order for institutions to benefit from them. This could instigate whether the organizations that are operating in developing countries like Namibia, where there is shortage of skilled labour are trading derivatives and able to manage them appropriately. Stulz (2004) concludes that, although attention has been paid to this topic, a lot still need to be done in order to establish a better understanding of derivatives. This study will support his conclusion by investigating the extent to which financial institutions in Namibia use derivative instruments and the risk management practices in place to prevent

huge derivative losses that happened in other countries. The result of the study can contribute towards unearthing the subject matter.

1.4 Value of the project

Studies by Guay and Kothari (2003) and Bodnar *et al.* (2003) indicate that derivatives would continue their rise in significance. This fact necessitates the need to know how and why firms are using derivatives. Their work was supported by Bartman *et al.* (2004) who note that, the increase in use of derivatives is an indication that they could no longer be dismissed as peripheral to the working of the financial and economic systems. Thus understanding of how derivatives operate could be an advantage to financial institutions that are striving to conquer the industry. Research of this nature may also enhance the ability to deal with derivatives risk. The study therefore aims to add to the literature in several different ways. Firstly, it may provide empirical evidence whether financial institutions in Namibia use derivative instruments. Secondly, it may determine which types of derivative instruments are commonly used; thirdly, it may establish the motivating reasons for trading derivatives by financial institutions; finally, it may determine whether Namibians have necessary educational qualification and experience to deal with derivatives. Moreover, findings of the study may be useful for future references as a source of secondary data.

1.5 Purpose of the Research

The purpose of this research is to investigate derivatives and the role they play in the financial market and to ascertain the risk management practices that financial institutions in Namibia have put in place in order to avert huge derivative losses. As part of the global economy, albeit small but developing, it is strategic to know the level of Namibia's awareness of developments within this field and inculcation developments in the global business arena.

1.6 Objectives of the Study

The main objectives of the study are:

- To examine the use of derivatives at country level and determine which types are commonly used.

- To ascertain the most common underlying assets classes.
- To determine whether Namibians have necessary education and experience in derivative trading.
- To assess the risk management practices that institutions has put in place in order to avert derivative losses.

1.7 Scope of the research

In this study, all eighteen financial institutions that register with Namibia Financial Institutions Supervisory Authority (NAMFISA) will be included. The sample has been selected for the reasons that banks and asset management firms are usually at the center of derivative trading, dealing on behalf of the clients as market makers or trading on their own account.

1.8 Layout of the research project

Chapter 1 is the introduction to the research project. The research problem is discussed and it highlights the motivation on the study which includes some of the debacles that derivative use has caused. In this chapter the problem statement, research objectives, key critical questions and value of the research is presented.

Chapter 2 reviews the literature and gives background on derivative uses. It define derivatives, discuss types of derivative instruments, how derivatives are traded and the risk involved with trading in derivatives. In addition it reviews the types of risk derivatives exposes participating institutions to, various techniques commonly used to measure these risk and the methods firms use to hedge against losses arising from trading derivatives.

Chapter 3 provides the scientific basis for the research, which has been conducted. Chapter Three also explains the reasons for using the various sampling techniques and will explain the benefits and the disadvantages of these techniques. Also the instruments used in the research project are discussed in detail. In addition, the researcher outlines the relevance of the questions asked in the questionnaire and the types of questions used in the questionnaire.

Chapter 4 discusses the research outcome and relate this outcome to prior theory and research in the field of derivatives. Using SPSS, the researcher will compare, correlate, covariance, t-Test, ANOVA and contrast the data collected from the questionnaire via graphs and tables.

Chapter 5 gives answers to the research questions. The research questions are aimed at establishing the following: whether financial institution in Namibia trade derivative instruments, what type of derivative instruments are commonly used and the motives there to, risk management practices that institutions put in place and also to establish where the people involved in derivatives trading have sufficient knowledge and experience. Finally, recommendations are made to help institutions effectively manage derivative activities; respond to its growth and complexity, and to continue to benefit from its use.

CHAPTER 2

BACKGROUND TO PREVIOUS RESEARCHES

2.1 Introduction

According to Bodnar *et al.* (2002) the use of derivative instruments for risk management purposes has been a worldwide phenomenon for several decades. The growing use of these instruments is part of an increased awareness of risk management among corporate managers. As a result of this phenomenon, the market for derivative instruments increased drastically over the last 15 to 20 years. Despite the growth of these markets, relatively little is known about how firms actually use derivatives for risk management purposes (Bodnar *et al.*, 2002).

In modern financial markets, financial derivative instruments such as futures, forwards, options, and swaps are widely used by corporations to alleviate exposure from fluctuations in interest rates, currencies and commodity prices (Nguyen & Faff, 2002). Due to their indispensable nature, no professional investor would dream of investing without making use of derivatives. Some investors still perceive derivatives as one stumbling block, for many who have attempted their use; they have proved costly, sometimes futile and at other time play a vital role in managing the risk of underlying securities (Carter & Simkims, 2004).

A number of studies have examined the use of derivatives in several countries, the most recent studies include: United States (Bodnar *et al.*, (1998), German (Bodnar *et al.*, (2002), Sweden (Alkeback & Hangelin, 1999), New Zealand (Berkman *et al.*, 1997), Netherlands (Grant & Marshall, 1997) and Canada (Downie *et al.*, 1996). One purpose of this study is to add to the country on this list by investigating derivative use among the Namibian financial institutions. The key words used in the search for literature are: derivatives, risk management, hedging and financial institutions. The search engines used are: OPAC, Nexus, SABINET, Science Direct and Goggle.

The purpose of this chapter is to frame the subject area under study, identify the relevant concepts, methods and techniques for derivative trading. The chapter starts by defining derivatives, types of derivatives, risk involved with derivatives trading as well as the uses

and benefits obtained from trading them. It then reviews the types of risks derivatives exposes participants to, the various techniques commonly used to measure these risks and the methods firms use to hedge against losses arising from trading derivatives. The chapter concludes with the research questions that the researcher is attempting to answer in this study.

2.2 Derivatives defined

According to Basso *et al.* (2005) derivatives have emerged as an important mechanism to trade off risk and return as they allow future cash flows to compensate the realization of risk events. Hetamsaria and Kaul (2005) point out that the word derivative originates from mathematics and refers to a variable, which has been derived from another variable. They further explain that, derivatives are so called because they have no value of their own; they derive their value from the value of some other asset, which is known as the underlying. Becketti (1993) defines derivatives as financial contracts whose values are derived from the values of other underlying assets, such as foreign exchange, bonds, equities, or commodities. He further states that, because derivatives values are related to these underlying assets and because they have certain other characteristics, derivatives are useful for hedging, speculating, arbitraging price differences, and adjusting portfolios at low cost.

Pike and Neale (2003) explain that, although sometimes viewed as instruments of the devil, derivatives are really nothing more than an efficient means of transferring risk from those exposed to it, but would rather not be (hedgers) to those who are not, but would like to be (speculators). They further add that derivatives offer treasurers a sophisticated toolbox to manage risk. Benke *et al.* (1996) argue that derivatives allow a business to counterbalance existing risks, thereby limiting potential losses and stabilizing cash flows. Moreover, derivatives offer speed, precision, flexibility, and low transaction costs. Improperly used, derivatives can cause substantial harm. Either way, derivatives are complicated and becoming more so. They further state that derivatives are the wave of the future, and accounting managers need to understand them to enable their companies to compete successfully. Becketti (1993) classifies derivatives according to three features: the type of contract, the type of asset underlying the security, and whether the derivative is traded on an exchange or in the over-the-counter (OTC) market. What

distinguishes derivatives, however, is their greater gearing and complexity compared with traditional cash market instruments (Derek, 1995).

As per Pricewaterhouse Coopers survey (1997) derivatives today are increasingly being used and used successfully by growing numbers of corporations, financial institutions, building societies, insurance companies, commodity groups, fund managers and other organizations. Whether the purpose of trading is to hedge against future adverse price movements in respect of underlying assets and/or portfolios, manage interest rate or exchange rate risks, or take positions with a view to improving profits, derivatives are and will continue to play an important and internationally recognized role in the world's trading and financial systems.

2.3 Basic derivative building blocks

Eales (2004) identifies the major derivative instruments, which in some respects may be regarded as building blocks. They can be categorized as follows:

- Forward Contracts
- Future Contracts
- Swaps
- Option contracts

Eales (2004) further enunciated that each instrument has its own characteristic, which offers advantages in using them but also bring disadvantages. The disadvantages may not always be apparent to the end users and these days it is crucial that end users are made aware of the risks associated with the derivative contract they enter into and made aware of the instrument's appropriateness for the purpose it is to perform.

2.3.1 Forward Contract

Forward contract is negotiated privately between two parties to buy and sell a specific quantity of a commodity, foreign currency or financial instrument (Culp & Mackay, 2001). Pike and Nile (2003) add that entering into a forward contract enables future transactions and their prices to be agreed today, but not to be paid until delivery at a specified future date. Because a forward contract is not formally regulated by an

organized exchange, each party to the contract is subject to the default of the other party. Cost of a forward is included in the deal (Laure, 1995).

2.3.2 Future Contracts

Being exchange-based derivatives, future contract are very tightly defined and regulated to ensure that all parties to a transaction are aware of the instrument's operational characteristics (Eales, 2004).

Pike and Nile (2003) define future contracts as a commitment to buy or sell an asset at an agreed date and at a price determined at the time of taking out the contract. He further adds that, unlike the forward contracts, future contracts are standardized in terms of period, size and quality. Laure (1995) remarks that, because futures contract is traded on a regulated exchange, it has less credit risk than a forward contract. A brokerage commission is the cost to a future contract (Culp & Mackay, 2001).

2.3.3 Option Contracts

Becketti (1993) defines options as contracts that convey from one party to another the right, but not the obligation, to buy or sell a specified asset at a predetermined price on a specified future date (American Option) or before the fixed expiration date (European options). The buyer of an option has the right to walk away from the option contract or exercises it (Correia *et al.*, 2003). He further classifies options into two types – the put and the call.

Pike and Nile (2003) describe the call options as the right to buy an asset at a specified price and specified date. If at expiry the price of an asset is higher than the exercise price, the owner of the call option benefits at the expense of the seller. They further explain that in the case of the call, the buyer of an option will limit his possible loss to the cost of the premium, however the profit is unlimited. Pike and Nile (2003) define a put option as the right to sell an asset at a specified price and at a specified date. In this case the buyer of an option will walk away and not exercise the options if the price of the asset is greater than the exercise price.

Options come both in exchange-based and over-the-counter variety (Eales, 2004). Mintor *et al.* (2005) explain another type of financial derivative that is also generally included in

the options category, the cap or floor agreement. A cap agreement gives the buyer the right to receive the positive difference between the agreed upon cap rate and the current reference rate. There is a notional amount stated in the agreement. If the reference rate does not move above the cap rate, no funds are exchanged and the seller of the cap would have income to the extent of the fee received. They define a floor as an agreement that gives the buyer the right to receive the negative difference between the agreed upon floor rate and the current reference rate, based on a notional amount. If the reference rate does not move below the floor rate, no funds are exchanged and the seller of the floor would have income to the extent of the fee received.

2.3.4 Swaps

Swaps are agreements between two counter parties to exchange a series of cash flows in the future according to a pre-arranged formula (Laure, 1995). In an interest rate swap, for example, one party agrees to pay the other party a sequence of fixed cash flows in exchange for a sequence of variable cash flows or they swap cash flow in a one currency for one in another currency (Beckett, 1993). Swaps are now available on interest rate, currency, equity, credit, property and many other commodities (Eales, 2004).

2.4 Trading derivatives

Some derivatives are traded on organized exchanges, while others are traded only in over counter market (OTC) (McHenry, 1995). Beckett (1993) defines exchange-traded derivatives as standardized contracts; that has standardized features and is not tailored to the needs of individual buyers and sellers while OTC derivatives are customized to meet the specific needs of the counter parties. He further points out that, swaps are the leading examples of OTC derivatives.

Scott (1995) mentions another important difference between exchange-traded and OTC derivatives namely, the credit risk. In the OTC market, a derivatives investor is exposed to the risk that his counter party may default on the contract. In the market for exchange-traded derivatives, though, credit risk is controlled by the exchanges, which act as a clearing house for all trades and set margin requirements. When a futures contract is traded on an exchange, he gives an example; the exchange simultaneously sells the

contract to the buyer and buys the same contract from the seller. The buyer and seller trade with the exchange rather than with each other. As a consequence, the buyer and seller need not worry about each other's creditworthiness. Dadalt *et al.* (2002) add that, the exchange protects itself by requiring traders to maintain margins large enough to cover most one-day movements in prices. He further explains that, in exceptionally volatile markets, exchanges might even require traders to post additional margin during the trading day. Because of these mechanisms, losses on exchanges due to defaults have been almost nonexistent.

The guidelines to derivative users by Pricewaterhouse Coopers (1997) suggest that, exchanges be enforced to operate with a high level of integrity, efficiency and transparency in order to deliver confidence in their markets and provide for the fair treatment of all market users. The guidelines further disclose that the purpose of the exchange is generally to ensure that they:

- (a) maintain high standards of integrity and fair dealing;
- (b) facilitate a “proper market” in their instruments;
- (c) ensures that its prices are transparent and the price formation process is reliable;
- (d) has a mechanism to monitor compliance with its rules;
- (e) has effective arrangements for the investigation of complaints;
- (f) has financial resources sufficient to sustain proper performance;
- (g) has a high degree of security and operational reliability and appropriate contingency arrangements.

In his article, Kittel (1999) gives some differences between OTC and Exchange-Traded Derivatives.

Over the counter	Exchange Traded
Private transaction	Public price quote
Credit risk	Limited credit risk due to clearing house
Wide range of structured and contract size	Standard contracts and size
Many currencies	Major currencies
Any maturity	Standard expiration dates
Not formally regulated	Regulated by exchanges laws
Ability to value varies by market	Daily settlement and intra-day prices electronically posted

Table 2.1: OTC versus Exchange Traded Derivatives (kittle, 1999)

2.5 The characteristics of derivatives

According to Benson *et al.* (2004), derivatives have grown in popularity because they offer a combination of characteristics not found in other assets. They also consider the close relationship between their values and the values of their underlying assets as most important characteristic of derivatives. Becketti (1993) indicates that there are three other characteristics that distinguish derivatives from underlying assets and make them useful for a variety of purposes. He describes those characteristics as follows:

2.5.1 Short positions

It is easier to take a short position in derivatives than in other assets. He further states that, an investor is said to have a short position in an asset if he is obligated to deliver the asset in the future. For example, an investor can short a stock by temporarily borrowing and then selling the stock. This investor will profit if the stock price falls before he must return it to the lender. An investor is said to have a long position in an asset if he either currently owns or is entitled to future delivery of the asset.

Becketti (1993) illustrates short position by the following example: to short stocks or bonds, an investor must find someone who owns the needed quantity of the asset and is willing to lend it to the short seller. Shorting a futures contract or an option is more straightforward. Every futures or options trade results in one party who is long (who buys the derivative) and one party who is short (who sells the derivative). Since the underlying

asset is not exchanged when a derivative security is bought and sold, there is no need to find asset holders willing to lend their securities.

2.5.2 Liquidity and transactions costs

Exchange traded derivatives are more liquid and have lower transactions costs than other assets (Beckett, 1993). Correia *et al.* (2003) adds that derivatives are more liquid because they have standardized terms, low credit risk, and interest in the underlying assets is broad. Furthermore, he states, their transactions costs are low. Kittle (1999) presents evidence that the transaction cost for buying a diversified portfolio of common stock is dramatically lower using the futures market than using the cash market. For Treasury securities, costs are lower in the futures market as well, although the difference between cash and futures transaction costs is not as striking as in the stock market.

In addition, Kittle (1999) adds that, the margin requirements for exchange-traded derivatives are relatively low, reflecting the relatively low level of credit risk associated with these derivatives. In contrast, Beckett (1993) mentions that, customized terms and the lack of a clearing house make OTC derivatives relatively illiquid. As a consequence, counter parties to OTC derivatives may be unable to withdraw from their contracts if their portfolio needs change. In this circumstance, the counter party wishing to withdraw must undertake an offsetting trade while keeping the original contract in place (Beckett, 1993).

2.5.3 Financial engineering

Derivatives can be constructed or combined to closely match specific portfolio requirements (Beckett, 1993). He gives an example: suppose a firm with a floating-rate loan needs to limit its exposure to sharp increases in the interest rate. The firm can purchase a derivative called an interest rate cap. This derivative pays the firm the difference between the floating rate of interest and a predetermined maximum called the cap rate whenever the floating rate exceeds the cap. Similarly, the lender can protect against a sharp decline in interest rates by purchasing an interest rate floor. This derivative pays the lender the difference between a predetermined floor rate and the floating rate whenever the floating rate falls below the floor. Another floating-rate

borrower might want protection against any large change in the interest rate, either up or down. This borrower can construct an interest rate collar by purchasing a cap and selling a floor. In this case, the borrower's effective interest rate will lie between the floor and cap rates.

2.6 Uses and Benefits of Derivatives Instruments

Puwalski (2003) identifies three basic uses of derivatives: hedging, speculating and arbitrage.

2.6.1 Hedging

When used for hedging, a derivative position is employed to offset or reduce the risk associated with an existing balance sheet position or future planned transaction (Puwalski, 2003). Arnold (2005) defines hedging as transactions that protect a business or assets against changes in some underlying.

Supanvanij (2005) explains the benefits of using derivatives to hedge as follows:

Investment opportunity. Froot *et al.* (1993) find that risk management can reduce under investment problem. By alleviating unnecessary fluctuations in cash flows, hedging helps ensure that a firm will not increase the use of expensive external financing or bypass positive NPV projects (Geczy *et al.*, 1997; Gay & Nam, 1998).

Financial distress costs. Risk management decreases the expected cost of financial distress by reducing the volatility of a firm's cash flows or earnings (Smith & Stulz, 1985; Geczy *et al.*, 1997; Berkman & Bradbury, 1997). It also increases a firm's value by reducing its probability of default and increasing its leverage (Froot *et al.*, 1993; Haushalter, 2000). Financial distress is measured by the ratio of long-term debt to total assets.

Taxes. Hedging can reduce earnings fluctuation, which leads to the increase in present value of tax shields (i.e. tax loss carry forwards) and lower tax payments. It helps ensure that a firm's income falls within the optimal range of tax rates (Froot *et al.*, 1993).

Currency exposure. Firms with sales in foreign currencies should have great incentives to use derivatives to reduce fluctuations in exchange rates. They can benefit for both

dollar appreciation and depreciation (Allayannis & Weston, 2001). Currency exposure or degree of international involvement is measured by total foreign sales to total sales.

Liquidity. Liquidity is measured by the dividend yield and the quick ratio. Highly liquid firms may have low incentives to hedge due to their flexibility to meet the cash flow needs (Berkman & Bradbury, 1997; Howton & Perfect, 1998).

Profitability. Firms with higher level of cash are predicted to have lower incentive to hedge due to their lower needs for external financing (Froot *et al.*, 1993). Profitability is calculated by the ratio of net income to total assets.

Vega-to-Delta. This ratio measures the risk-taking incentives of management and is expected to be negatively related to hedging. The nature of options (in-the-money or out-of-the-money) can affect a firm's hedging decision (Carpenter, 2000). Knopf *et al.* (2002) find that hedging increases with delta (sensitivity to price change) and decreases with vega (sensitivity to stock volatility). Rogers (2002) also show a negative relationship between the ratio of vega to delta and derivatives use.

2.6.2 Speculating

Speculators enter derivative transactions in order to profit from expectations that are different from the market's expectations about how derivatives prices will move (Puwaliski, 2003). Arnold (2005) notes that speculators accept high risk in anticipation of high reward, he further states that, speculators are also attracted to derivatives market because they are often more liquid than underlying markets. In addition the speculator is able to sell before buying (to 'short' the market) in order to profit from a fall. Levich and Ripston (1999) argue that speculators are needed by financial markets to help create trading liquidity. Upper (2005) concluded that speculators provide a kind of insurance for hedgers - they accept risk in return for a premium.

2.6.3 Arbitrages

Derivatives can be used to arbitrage price discrepancies in financial markets (Beckett, 1993). Arnold (2005) explains that arbitrage is to exploit price differences on the same instrument or similar assets; he further states that, the arbitrageur buys at the lower price and immediately resells at the higher price in another market.

Beckett (1993) identifies the two important types of arbitrage:

First, investors can use derivatives to take advantage of differences in the cost of capital. He gives an example, suppose a multinational firm needs to borrow dollars but could receive a preferential loan rate from a lender in Germany. This firm might borrow German Marks (DM) at the more favorable interest rate and convert the DM to dollars in the currency market. Then, to hedge the exchange rate risk of the future loan payments, the firm might enter into a dollar/DM currency swap (pay dollars/receive DM). In effect, the multinational firm borrows dollars at the lower German interest rate.

In the second type of arbitrage, market makers can use derivatives to take advantage of temporary discrepancies in asset prices. Because the value of a derivative security depends on the value of one or more underlying assets, investors can sometimes make riskless profits if the price of the derivative gets out of line with the prices of the underlying assets. Market makers are usually the only ones in a position to make arbitrage profits because market makers face lower transactions costs than other market participants. The readiness of market makers to pursue arbitrage opportunities guarantees that such price discrepancies are few and small (Beckett, 1993).

2.6.4 Prior studies on uses and benefits of derivatives

Several studies have been taken on derivatives studies. The following section highlights these studies as well as their findings. Allayannis and Weston (2001) indicate that derivatives usage can increase shareholder value as much as 4.87% on average, when measured by Tobin's Q, for 720 non-financial firms in the U.S. However, Guay and Kothari (2003) show that derivatives are a small piece of risk management for large U.S. firms, and that firm value changes only slightly compared to firm value for large moves in the underlying prices and rates.

Grant and Smith (1999) find that banks that use derivatives are more profitable than banks that do not. The results of the study also contradict the result of Jason and Taylor (1994) that indicates derivatives trading are risky and may expose firms to large losses. Purnanadam (2003) investigated banks use of derivatives for risk management. He concludes that larger banks are more likely to use derivatives for risk management and

that banks that use derivatives for that purpose do so to reduce the probability of financial distress.

The Bartman *et al.* (2004) study also provides evidence on why firms use derivatives. They find that firms with higher leverage and lower balance sheet liquidity are more likely to use derivatives to hedge, which is consistent with a body of evidence that firms with higher costs of financial distress are more likely to hedge. Froot *et al.* (1993) and Smith and Stulz (1985) provide theoretical explanations of the relation between derivative use and firm value. These explanations suggest firms use derivatives to lower non-diversifiable costs that associated with market frictions, such as taxes, financial distress costs, and external financing costs.

Guay (1999) shows that when firms start using derivatives, their stock return volatility falls by 5 percent, their interest rate exposure falls by 22 percent, and their foreign exchange exposure falls by 11 percent. He further adds that if firms hedge systematically, they would use derivatives much more.

2.7 Derivatives debate

Laure (1995) states that the debate surrounding derivative rages, with supporters strongly convinced they are useful tools and opponents equally insistent that they are inherently dangerous. He adds that, depending on how they are used derivatives can be either. Pai and Curcio (2005) compare their power to drugs, considering that even antibiotics can threaten life if used incorrectly. In that same manner, financial catastrophe can be the extreme consequence of misusing or misunderstanding derivatives. They reinforce that, if a pension fund manager uses them skillfully, derivatives could be like vitamins, insurance against loss. Laure (1995) concludes that, it pays to know how and when to use these powerful financial instruments.

The famed investor Warren Buffett warned in the 2002 Berkshire Hathaway annual report, rather harshly, that derivatives posed a grave threat to the global financial system and that derivatives are financial weapons of mass destruction, carrying dangers that, while now latent, are potentially lethal (Buffet, 2003). Public concern over the use of derivatives has been greatly enhanced by the widely publicized cases of significant losses involving derivative which included: the Enron bankruptcy, the Baring Bank failure, the

collapse of the Thai Baht and the debacle of the hedge fund, Long Term Capital Management, which included among its managing partners, two Nobel prize winning financial economists who had received awards for their contribution in the field of pricing derivatives (Pai & Curcio, 2005).

On the other hand, Greenspan (2004) has suggested that access to derivatives can enhance macroeconomic development; He also remarks that, by far the most significant event in finance during the past decade has been the extraordinary development and expansion of financial derivatives. He further adds that, these instruments enhance the ability to differentiate risk and allocate it to those investors most able and willing to take it - a process that has undoubtedly improved national productivity growth and standard of living.

The Modigliani and Miller (1958) paradigm predicts that the use of derivatives cannot add value if markets are perfect. However, modern finance theories indicate that there are certain circumstances under which a hedging program using derivatives can be value enhancing. According to Nance *et al.* (1993) and Geczy *et al.* (1997), in the presence of progressive tax codes, financial distress, under investment costs and agency costs, hedging is generally a value enhancing exercise. Despite the recent derivative disasters that have focused public scrutiny upon corporations' use of derivatives, available empirical evidence shows that the use of derivatives can bring significant risk management benefits to a company provided that they are used in a rational manner.

Nguyen and Faff (2002) propose that various parties who are unable to fully diversify the risk relating to the claims they have on the firm may influence the use of derivatives. Of these parties, managers are most likely to have an impact. This is so for some reasons: (1) they have a large and non-diversifiable stake in the firm; and (2) they are the ones who make the decision regarding financial derivative use.

2.8 Risk Associated with Derivative Activities

Derek (1995) argues that, the nature of derivative financial risks is not fundamentally different from that of the risks in the normal cash markets. What distinguishes derivatives, however, is their greater gearing and complexity compared with traditional cash market instruments. Fletcher *et al.* (2002) define risk as the potential that events,

expected or unanticipated, may have an adverse impact on the bank's capital and earnings. Kuprianov (1995) identifies four basic kinds of risk associated with the use of derivatives.

2.8.1 Market Risk

Culp and Mackay (2001) define market risk as the risk that the value of a contract, financial instrument, asset, or portfolio will change resulting from volatility in financial markets. They argue that, interest rate risk is a common form of market risk. Basso *et al.* (2005) add that Market risk describes banks' exposure to price fluctuations, reductions in market liquidity, uncertainty over settlement, and vulnerability to cross-market disturbances. Becketti (1993) identifies the common types of market risk as follows:

Price risk. Becketti (1993) points out that price risk is the simplest risk type to understand because the value of a derivative position will almost certainly change over time. He further added that price risk is familiar to banks, which are exposed to price risk in all of their investment activities. It is misleading to consider the price risk of derivatives alone, since derivatives are typically used to hedge a bank's other assets and liabilities. Even when hedges are imperfect, derivatives typically reduce a bank's overall price risk (Becketti, 1993).

Liquidity risk. Institutions face liquidity risk from time to time; circumstances may temporarily reduce the liquidity of particular derivatives. According to Bank (1995) the liquidity risk of derivatives takes two forms: market liquidity and cash flow. Market liquidity will have an impact on the potential changes in market value of an instrument. If there is insufficient market activity, an institution may not be able to unwind its position quickly enough to avoid serious loss. The impact of derivatives on the net cash-flow profile of an institution is germane to the assessment of an institution's ability to fund itself as obligations become due.

Becketti (1993) notes that, liquidity risk is a problem for all derivative investors, but it is probably more of a concern to intermediaries because they must continually adjust their derivative positions to remain hedged. The financial market disruptions of the past years give some idea of the likely effects of liquidity risk. While many market participants

suffered losses during these disruptions, very few participants were severely impaired and systemic collapses were avoided.

Settlement risk. Derivative investors also face settlement risk (Kuprianov, 1995). One kind of settlement risk is common to all financial markets and thus is familiar to banks. This risk arises when one party pays out funds or delivers assets before receiving assets or payment from its counter party. Technical problems with the payment system or the sudden, unanticipated failure of the counter party exposes the paying party to the risk of loss. This kind of settlement risk is more pronounced in cross-country transactions because markets in the countries involved may not be open at the same time.

Another kind of settlement risk is unique to derivative markets and thus presents a new challenge to bank managements. Many derivative contracts are settled on terms that depend on the prices of particular assets at settlement time. For example, Becketti (1993) notes, the settlement value of some contracts is determined by the average value of LIBOR, the London Interbank Offer Rate, on the settlement date. Similarly, the settlement value of a treasury bond futures contract depends on the price of the bond that is cheapest to deliver on the expiration date, as specified in the futures contract. These asset prices may move anomalously on settlement day, and thus may affect the settlement values of derivative contracts.

Cross-market disturbances. Derivative investors are also vulnerable to cross-market disturbances. Because the values of derivatives are based on the value of one or more underlying assets, disturbances in the markets for the underlying assets can disrupt the derivatives market (Kuprianov, 1995). Banks are exposed to cross-market disturbances in their other investment activities. The links between financial markets have grown tighter over time. Thus, a disruption in, say, the Japanese stock market is likely to have an impact on the market for U.S. treasury bonds. Nonetheless, by their nature, banks' derivative activities probably involve more exposure to the risk of cross-market disturbances than do banks' other investment activities (Becketti, 1993).

2.8.2 Credit Risk

Credit risk is one of the most significant risks associated with derivatives (Derek, 1995). Cocheo (1993) defines credit risk as the risk to earnings or capital of an obligor's failure to meet the terms of any contract or otherwise to perform as agreed. He adds that, credit risk arises from all activities in which success depends on counterpart, issuer, or borrower performance. It arises any time institution funds are extended, committed, invested, or otherwise exposed through actual or implied contractual agreements, whether reflected on or off the balance sheet. Derek (1995) also recognizes the objective of the credit risk management function as to control credit exposure to counter parties and effectively to manage collateral, including margin, arrangements. He adds that credit risk depends in part on a trade's counter party's credit worthiness, market volatility, and the probability of counter party default. Counter parties' credit ratings are constantly being updated, and equity positions on derivatives change. Therefore counter party credit risks must be monitored throughout the life of the trade and factored into risk management assessments.

Culp and Mackay (2001) agreed with (Derek 1995) by adding that counter party credit risk can be effectively managed through accurate measurement of exposures, ongoing monitoring, timely counter party credit evaluation, and sound operating procedures. In addition, there are a growing number of mechanisms that can reduce credit exposure, such as netting arrangements, credit enhancements, and early termination agreements. Becketti (1993) identifies two types of credit risk in derivatives dealings and defines them as follows.

Counter party risk. The risk of counter party default is an important risk for OTC derivatives, the market segment in which banks are most heavily involved. OTC derivatives are bilateral contracts. If one party defaults, the counter party is exposed to financial loss. Thus, participants in the OTC derivatives market must carefully evaluate and monitor the creditworthiness of their counter parties (Becketti, 1993).

Potential exposure. While assessing the creditworthiness of counter parties is not new to financial institutions, evaluating the potential exposure of derivatives positions is a new challenge. Becketti (1993) reinforces that most derivative contracts have no net value when they are initiated, but their value and hence the institution's potential loss may

fluctuate significantly over the life of the contract. He also acknowledges that no money changes hands when a futures contract is exchanged or a swap is entered into, because the contract simply binds the parties to exchange in the future assets whose present values are equal. As time passes, though, the value of a derivative changes in response to changes in financial market conditions.

2.8.3 Operating Risk

Users of derivatives face operational risk, or the risk that losses will be incurred as a result of inadequate computer systems and internal controls, inadequate disaster or contingency planning, human error, or management failure (Culp & Mackay, 2001). Bodnar (2002) explains operating risk as the risk associated with monitoring and controlling risk-taking by employees, ensuring accurate valuation of derivatives holdings, guaranteeing legal enforceability of contracts, and anticipating changes in regulation.

Puwalski (2003) notes that a failure at any point in the risk management chain constitutes operational risk and can result in significant losses. Benke *et al.* (1996) clarify that; key to managing the operational risk of derivatives is developing the procedures and implementing the necessary controls to ensure the effective management of the market, credit, and legal risks of derivative use. Becketti (1993) identify the following risk types involved with operational risk.

Inadequate internal controls. Financial Institutions are exposed to operating risk in all their activities. Becketti (1993) also highlights that failures can be traced, at least in part, to inadequate internal controls. In these instances, either management failed to adequately supervise employees who exposed the banks to losses, or misguided management policies inadvertently guided the banks toward failure.

Kuprianov (1995) emphasizes that participating in derivatives markets requires highly sophisticated and reliable internal controls. Losses can occur in many ways and because derivatives can be complex, the potential for human error is high. He also adds that, the complexity of derivatives makes it difficult for management to monitor the employees responsible for derivatives trading and thus to guard against error or fraud and since some derivatives positions can be highly volatile; the cost of mistakes can mount rapidly. As a

result, management may need to monitor derivative positions more frequently than it monitors other aspects of the portfolio.

Valuation risk. Becketti (1993) acknowledges that one aspect of a bank's internal controls is the maintenance of accurate valuations of derivative holdings. He adds that because of their complexity, the values of some of these assets can be calculated only with the aid of mathematical models. While the development and refinement of these models have been one of the most active areas of academic research in recent decades, all such models are based on assumptions about underlying market conditions. In periods of unusual turmoil or volatility, these assumptions may not hold, and the models may give misleading valuations. The problem of accurate valuation is widely recognized as an important risk in derivative markets, and investors and regulators devote significant resources to improving valuations.

Legal risk. Legal risk is an important type of operating risk in derivatives markets, largely because derivatives are relatively new and involve some features whose legal standing is yet to be tested (Becketti, 1993). Culp and Mackay (2001) define legal risk as the risk of loss because a contract cannot be enforced. They also note that, as with other types of risk, legal risk has long been present in traditional lending and trading activities, because of the relative newness of derivatives transactions, however, their treatment under existing laws and regulations has been (and, to some extent, still is) ambiguous. They concluded that, this legal uncertainty could lead to unexpected losses. Legal risk is a prime public policy concern, since it can interfere with the orderly functioning of markets (Benke *et al.*, 1996).

Regulatory risk. Becketti (1993) defines the regulatory risk, as the possibility that regulatory treatment of institutions's activities might change. Regulatory risk is an important risk for all of a bank's operations and may be higher for derivatives, though avoidable.

2.9 Measuring Derivatives Risk

Studies by Kole (2003), El-Mairy (2003) and Linsmeier and Pearson (1996) suggest that Value at Risk (VaR) and Stress testing are the common methods of measuring derivatives risk. Stulz (2004) supports their finding by indicating that, stress tests and VaR are the

two most popular approaches to measuring the risk of a derivative portfolio. Whereas, with stress tests, firms compute the value of their derivative portfolio using scenario of interest, VaR is a quantile of the distribution pertaining to the change in the value of the portfolio over a day. He mentions that with these tools, firms that use derivatives regularly could assess their risks reasonably well. He also acknowledged that, these derivative risk measure tools do not always work well and that the valuation of derivative does depend on the nature of the derivative, whether it is a commonplace or exotic, and the degree of liquidity of the markets in which derivative are trade.

2.9.1 Value at Risk

Linsmeier and Pearson (1996) define Value at Risk as a single, summary, and statistical measure of possible portfolio losses. Specifically, they added, VaR is a measure of losses due to normal market movements. Losses greater than the VaR are suffered only with a specified small probability. They concluded that, VaR aggregates all of the risks in a portfolio into a single number suitable for use in the boardroom, reporting to regulators, or disclosure in an annual report. According to Puwalski (2003) VaR is widely used by banks, securities firms, commodity merchants, energy merchants, and other trading organizations. Such firms could track their portfolios' market risk by using historical volatility as a risk metric. They might do so by calculating the historical volatility of their portfolio's market value over a certain number of trading days. Value at risk gives institutions the ability to detect when a trader mis hedges a portfolio before a loss is incurred. It quantifies market risk while it is being taken (Puwalski, 2003). Linsmeier and Pearson (1996) give a comparison of Value at Risk Methodologies:

Comparison of Value at Risk Methodologies			
	Historical Simulation	Variance/Covariance	Monte Carlo Simulation
Able to capture the risks of portfolios which include options?	Yes, regardless of the options content of the portfolio	No, except when computed using a short holding period for portfolios with limited or moderate options content	Yes, regardless of the options content of the portfolio
Easy to implement?	Yes, for portfolios for which data on the past values of the	Yes, for portfolios restricted to instruments and currencies covered by	Yes, for portfolios restricted to instruments and

	market factors are available.	available "off-the-shelf" software. Otherwise reasonably easy to moderately difficult to implement, depending upon the complexity of the instruments and availability of data.	currencies covered by available "off-the-shelf" software. Otherwise moderately to extremely difficult to implement.
Computations performed quickly?	Yes.	Yes.	No, except for relatively small portfolios.
Easy to explain to senior management?	Yes.	No.	No.
Produces misleading value at risk estimates when recent past is atypical?	Yes.	Yes, except that alternative correlations/standard deviations may be used.	Yes, except that alternative estimates of parameters may be used.
Easy to perform "what-if" analyses to examine effect of alternative assumptions?	No.	Easily able to examine alternative assumptions about correlations/standard deviations. Unable to examine alternative assumptions about the distribution of the market factors, i.e. distributions other than the Normal.	Yes.

Table 2.2: Comparison of Value at Risk Methodologies (Linsmeier & Pearson, 1996)

2.9.2 Stress Testing

Stress testing is a simple form of scenario analysis (Linsmeier and Pearson, 1996). Kole *et al.* (2003) conclude that stress tests form an important and relevant element of current risk management. Stress tests are meant to evaluate the influence of large, unexpected movement in financial markets on portfolio value, they also added that stress tests become even more important, if those movements are accompanied by structural break or temporal breakdown.

Linsmeier and Pearson (1996) conclude that, stress testing can be a nice supplement for VaR analyses, and many firms use it for that purpose. For assessing the risk of a breakdown in historical correlations, stress testing can be valuable. Other than that, as a tool for addressing vaguely defined limitations of a VaR measure, stress testing is largely a placebo.

The Bank of International Settlements (2000) identifies the following ways in which stress tests can be used to influence risk managers' decision-making:

- Managing funding risk
- Quantify tail risk
- Provide a check on modeling assumption
- Set limits for traders
- Determine capital charges on trading desk's positions

2.9.3 Greeks

The two important greek derivative measures are delta and gamma. The delta is perhaps the most basic risk management concept. Delta indicates how much the theoretical price of an instrument or portfolio changes when the price of the underlying asset, currency, or commodity changes by a small amount. Therefore it is very closely related to sensitivity analysis. While originally developed for options, the concept can be applied to other derivatives and to cash positions as well (El-Mairy, 2003).

Gamma supplements delta by measuring how delta changes as the price of the underlying asset, currency, or commodity changes (Linsmeier & Pearson, 1996). They define Gamma as the partial derivative of delta with respect to the price of the underlying asset, currency, or commodity, or equivalently as the second partial derivative of the option price with respect to the price of the underlying asset, currency, or commodity.

2.10 Derivative market and its growth

There has been a huge growth in derivative markets and derivative uses by companies and financial institutions (Grant & Marshall, 1997; Bodnar *et al.*, 1998; and Whidbee & Wohar, 1999). According to Stulz (2004), derivatives have been trading for centuries. He also argues that, some of the earliest derivative markets are the market for options on tulip bulbs in seventeenth century in Holland and the futures market for rice in Japan in the same century. Laure (1995) suggests that there are many tens of billions of dollars transacted in derivatives daily, worldwide, and a couple trillion of outstanding positions, which is hard evidence that they are important. Stulz (2004) recognizes that the development of the Black-Scholes (1973) formula in the early 1970s changed the trading

of derivatives forever. Almost immediately, he continued, the approach used by Black and Scholes to price options together with critical contribution from Merton (1973) was found useful to price, evaluate the risk of, and hedge most derivatives. Benson and Oliver (2004) point out that, until the 1970s, trading of derivatives took the form mostly of options, forward and future contract. They also revealed that the Chicago Mercantile Exchange started trading future contract on currency in 1972, a year later the Chicago Board Options Exchange where stock options are traded was founded.

Overall derivatives usage has been increasing dramatically in the last few years (Saito & Schiozer, 2005). Bank of International Settlements – BIS (2004) data show, for example, that the amounts outstanding of over-the-counter derivatives has risen from US\$99.8 trillions in June, 2001 to US\$270,1 trillion in June, 2005, a 63% increase over 4 years. In organized exchanges, the option contracts grow from US\$23,0 trillions in December 2003 to US\$37,2 trillions in December 2005 indicating a growth of 38%. Future market increased from US\$13,8 trillions in December 2003 to US\$ 21,8 trillions in the same period in 2005 representing the growth of 37%.

Figure 2.1 shows the amount outstanding of over the counter derivatives as indicated by the Bank of International Settlements (2005) survey.

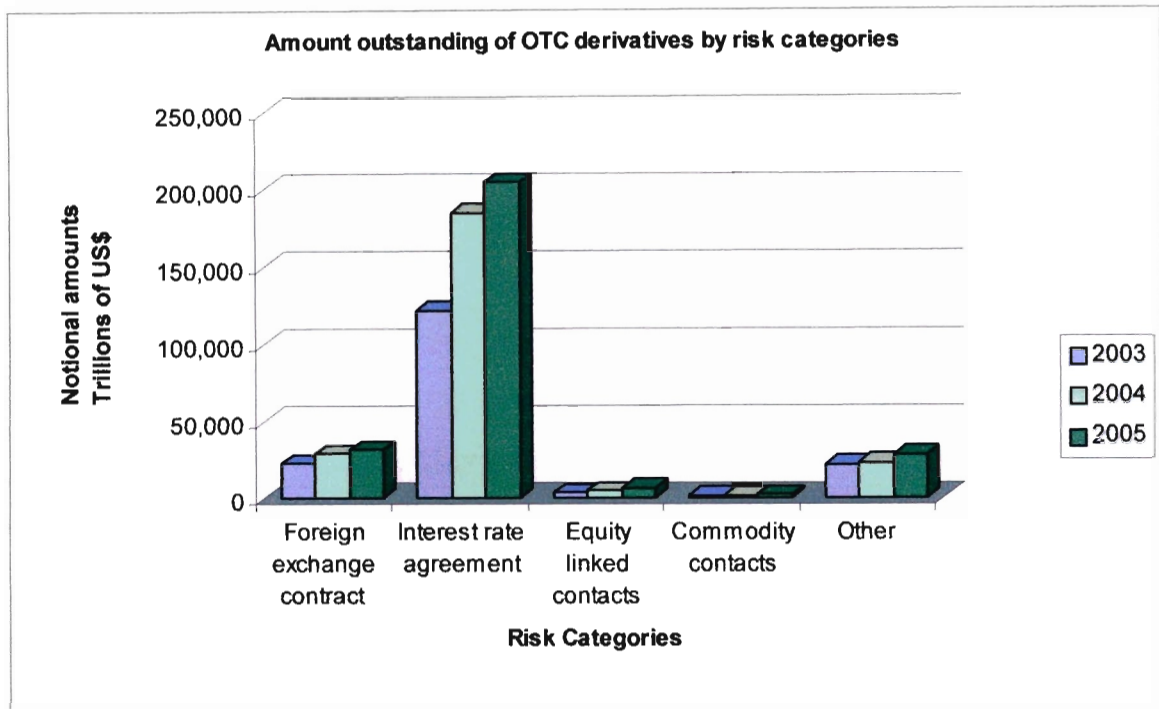


Figure 2.1: Amount outstanding of OTC derivatives by risk categories (Bank of International Settlements, 2005)

Figure 2.2 shows the derivatives traded on organized exchanges by instruments as indicated by the Bank of International Settlements (2005) survey.

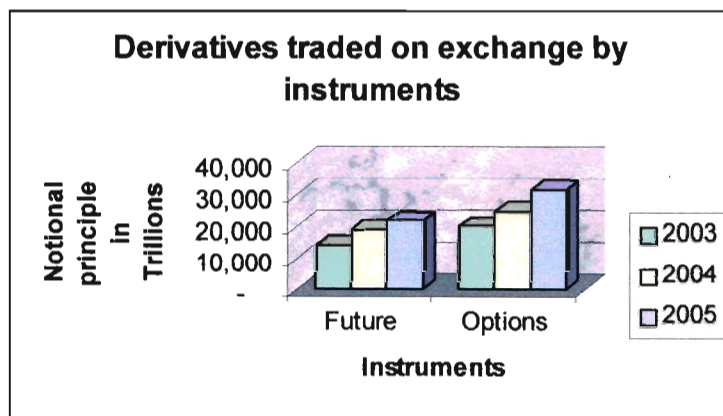


Figure 2.2: Derivatives traded on Exchanges by instruments (Bank of International Settlements, 2005)

2.11 Research Questions

The aim of this research is to determine the extent to which and context within which financial institutions in Namibia use derivative instruments and the methods the institutions use to safeguard against derivative losses. These aims can be achieved by answering the following questions:

- Do financial institutions in Namibia use derivatives?
- What are the motives of financial institutions to trade derivatives?
- What types of derivatives used and for which financial risk?
- What type of risk management practices do institutions put in place to avert derivative losses?
- Do derivative traders have sufficient education and experience to handle derivatives?

2.12 Conclusion

Derivatives are financial contracts whose values are derived from the values of other underlying assets, such as foreign exchange, bonds, equities, or commodities. Trading derivatives allow business to counterbalance existing risks, thereby limiting potential losses and stabilizing cash flows. Moreover, derivatives offer speed, precision, flexibility, and low transaction costs. Improperly used, derivatives can cause substantial harm. Derivative instruments can be categorized into futures, forwards, options, and swaps. Some derivatives are traded on organized exchanges, while others are traded only in over counter market (OTC).

Exchange-traded derivatives as standardized contracts; that has standardized features and is not tailored to the needs of individual buyers and sellers while OTC derivatives are customized to meet the specific needs of the counter parties. Stulz (2004) indicates that, stress tests and VaR are the two most popular approaches to measuring the risk of a derivative portfolio. Whereas, with stress tests, firms compute the value of their derivative portfolio using scenario of interest, VaR is a quantile of the distribution pertaining to the change in the value of the portfolio over a day.

It is evident from the literature reviewed that, there is no inherent, hidden danger in derivative instruments. They are instruments that carry risk, as all financial variables do.

The danger lies in overconfident market prediction and peoples' reckless disregard of basic business principles. Since a derivative instrument merely derives its value from underlying assets, they can never be more dangerous or volatile than the underlying variable itself.

Therefore, on condition that one understands the working of these instruments and appreciates the actual risk involved, financial derivatives can be quite safe. They are indispensable in the modern financial markets when they are used to neutralize and manage risk, rather than to take it on. The user of derivatives, as with all other instruments of investment, must be informed, focused and disciplined. The next chapter will focus on the methodology that will be used in this research.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Introduction

The purpose of this chapter is to give insight on the methodology to be used in this study. To be successful, research studies need to establish a methodological approach and develop a research design in order to answer the research questions that were listed at the end of chapter two. Those questions will be used to determine whether financial institutions in Namibia use derivative instruments, which derivative instruments are commonly used, the motive of using such instruments and whether Namibians have sufficient knowledge and experience to deal with derivatives.

Business research textbooks, articles and Internet websites were used to gather the information on research methodology. This chapter outlines the overall research methodology; it explains the reasons for using the various sampling techniques and will explain the benefits and the disadvantages of these techniques. It stipulates research design used in this study, the type of approach adopted, the sample taken, how data will be collected and analyzed. The chapter also gives insight on the questionnaire to be used, how it was constructed and the relevance of the questions asked in the questionnaire.

3.2 Sampling and Sampling Techniques

3.2.1 Sampling procedures

According to Stead and Struwig (2001) sampling is about carefully selecting a sub-set of a specific population that can be shown to share the properties or variable of the population. They add that findings from the sample can then be employed to make inferences and to varying degree of confidence, about the larger population. Gilbert *et al.* (2002) acknowledge that sampling techniques can be divided into two broad categories of probabilities and non-probability sample. Probabilities are distinguished by the fact that each population element has a known chance of being included in the sample. In contrast, non-probability sample there is no way of estimating the probability that any

population element will be included in the sample, and thus there is no way of ensuring that the sample is representative of the population (Gilbert & Churchill, 1999).

McDaniel and Gates (2000) acknowledge that probability samples have several advantages over non probability samples, including a reasonable certainty that the information will be obtained from a representative cross section of the population, a sampling error that can be computed, and survey results that can be projected to the total population. However, they note that probability samples are more expensive than non probability samples and usually take much more time to design and execute. Aaker *et al.* (2003) note that the advantages of non probability samples are: They cost less than probability samples, can be gathered more quickly than non probability samples while the disadvantages are: sampling error cannot be computed, researcher does not know the degree to which the sample is representative of the population from which it was drawn and lastly, the result of non probability samples cannot be generalized to the total population.

Probability sampling methods include simple random samples, systematic sample, stratified sample, and cluster sample. Non-probability sampling consists of convenience sample, judgment sample, quota samples; snowball samples (McDaniel & Gates, 2000).

3.2.2 Sampling Technique

The population in this study will be financial institutions that registered with NAMFISA. These financial institutions consist of four commercial banks and fourteen asset management companies. According to Aaker *et al.* (2003) if all the respondents in a population are asked to provide information, such survey is called a census. They add that a census is appropriate if the population size itself is quite small, in this case eighteen institutions. A census is also conducted if information is needed from every individual or object in the population. The respondents in this study will consist of portfolio managers in participant institutions. Financial institutions will be further divided into small, medium and large institutions for data analysis purposes. Portfolio managers are selected to participate in this study for the reason that they are usually at the center of derivative trading, dealing on behalf of the respective financial institutions.

3.3 Research Design

Gilbert *et al.* (2002) define a research design as a framework or plan for a study, used as a guide in collecting and analyze the data. They further add that a research design ensures that the study will be relevant to the problem and will be economical in procedures. Gilbert and Churchill (1999) note that research design can be classified in terms of the fundamental objective of the research into three basic types: exploratory research, descriptive research or casual research.

3.3.1 Exploratory Research

Struwig and Stead (2001) define the exploratory approach as the research into an area that has not been studied and in which a researcher wants to develop initial ideas and a more focused research questions. Welman and Kruger (1999) add that, the purpose of exploratory research is to determine whether or not a phenomenon exists, and to gain familiarization with such phenomenon, not to compare it with other phenomena.

The major emphasis on exploratory research is on the discovery of ideas and insight. The exploratory study is particulaly helpful in breaking broad, vague problem statement into smaller, more precise sub problem statements (Gilbert & Churchhill, 1999). Aaker *et al.* (2003) add that the research methodology in exploratory research is highly flexible, unstructured, and qualitative, for the researcher begins without preconception as to what will be found. Gilbert (1999) found that exploratory research is more useful in literature search, experience survey and focus groups.

3.3.2 Descriptive Research

Gilbert and Churchhill (1999) define descriptive research as a research design in which the major emphasis is on determining the frequency with which something occurs or the extent to which two variables co-vary. McDaniel and Gates (2000) note that descriptive studies are conducted to answer the who, what, when, where and how questions. They identify two types of descriptive research: longitudinal and cross sectional studies. Saunders *et al.* (2003) define cross-sectional studies as the study of a particular phenomenon at a particular time while longitudinal refers to the study of a particular phenomenon over a long period of time.

3.3.3 Casual Research

According to McDaniel and Gates (2000), casual studies are designed to collect raw data and create data structure and information that will allow the decision maker or researcher to model cause and effect relationship between two or more variables. Casual research is more appropriate when researcher objectives include the need to understand the reason why certain phenomena happen as they do.

3.4 Data Requirements

According to Hair *et al.* (2000) the availability of data structure and information needed to resolve decision and information research problems are many and can be classified as being either secondary or primary data. Determination of membership is based on three fundamental dimensions: (1) the extent that the data already exist, (2) the degree to which the data has been interpreted by someone, (3) the extent to which the researcher or decision maker understands the reasons why the data was collected and assembled.

3.4.1 Primary and Secondary Data

Secondary data are statistics that already exist, been gathered for a previous purpose, not for the immediate study at hand. Primary data, in contrast are originated by the researcher for the purpose of the investigation at hand (Gilbert *et al.*, 2004). Sources of primary data include, amongst others, interviews, questionnaires, research data, letters and speeches (Struwig & Steady, 2003). Secondary data sources include books, journals, websites of organisations and newspaper articles (Saunders *et al.*, 2003).

Aaker *et al.* (2003) note that the most significant benefits secondary data offer a researcher are savings in cost and time. Secondary data involves just spending a few days online or in the library extracting the data and reporting them. This involves very little time, effort, and money compared to primary data. Even if data are bought from another source, it will turn out to be cheaper than collecting primary data, because all those using the data share the cost of data collection. Despite the many potential benefits, Aaker *et al.* (2003) also document a number of limitations. By definition, secondary data are data that were collected in the past for the purpose other than the current research. Hence, problem of fit are likely to occur between the data required for current research and the available

data. The available data may have a different unit of measurement from what is required in the current research. The researcher has no knowledge of how the data were collected, nor do they have any control over it. Therefore, they do not know anything about accuracy or its bounds of error. Finally, secondary data may be outdated, and hence cannot be used in current research. Another problem frequently faced by researcher using secondary data according to Acker *et al.* (2003) is one of publication currency – The time from data collection to data publication is often too long, hence, the data are outdated even when they are first available.

3.4.2 Qualitative and Quantitative data

Hair *et al.* (2000) acknowledge that there are two types of research data, namely, quantitative and qualitative. According to McDaniel and Gates (2000) qualitative research refers to research findings not subject to quantification. It is often used to examine attitudes, feelings and motivations. They note that qualitative research continues to grow in popularity for the following reasons: first, it is usually less expensive to conduct than quantitative studies. Second, it is an excellent means to understand in depth the motivation and feelings of the respondents. Third, it can improve the efficiency of quantitative research.

Qualitative research has its disadvantages. One problem is that it sometimes does not distinguish small differences in attitudes or opinion as well as in large-scale quantitative studies. Also, the respondents in qualitative studies are not necessarily representative of the population that is of interest to the researcher. Thirdly, a number of individuals lack formal training yet progress to be expert in the field. Techniques that are used in qualitative research are focus group, depth interview and projective technique.

Hair *et al.* (2000) mention quantitative research is commonly associated with survey or experiments and is still considered the mainstay of the research industry for collecting marketing data. They note that quantitative research places emphasis on using formalized standard questions and predetermined response opinions in questionnaires or survey administered to large numbers of respondents.

Hair *et al.* (2000) note the main goal of quantitative research is to provide specific facts decision markers can use to (1) make accurate predictions about relationships and

behaviours, (2) gain meaningful insight about those relationships, and (3) verify or validate the existing relationships. In quantitative research practices, researchers are well trained in construct development, scale measurement, questionnaire design, sampling and statistical data analysis skills. In addition, the researcher must have a solid ability to translate numerical data structures into meaningful narrative information. However, data reliability and validity issues are serious concerns with quantitative research procedures. McDaniel and Gates (2000) note that the significant difference between qualitative and quantitative research is sample size. Struwig (2003) notes that sampling procedures for qualitative research differ from quantitative research in that random selection and generalizability are not of primary consideration in quantitative research. They further note that qualitative research focuses primarily on the depth or richness of the data and therefore qualitative researchers generally select samples purposefully rather than randomly. Table 3.1 compares qualitative and quantitative research on several levels.

Comparison Dimension	Qualitative Research	Quantitative Research
Types of questions	Probing	Limited probing
Sample Size	Small	Large
Information per respondent	Much	Varies
Administration	Requires interviewer with special skills	Fewer special skills requires
Hardware	Tape recorders, projection devices, video, pictures, discussion guides	Questionnaires, computers, printouts
Ability to replicate	Low	High
Type of research	Exploratory	Descriptive or casual

Table 3.1: Distinctions between quantitative and qualitative data (McDaniel & Gates, 2000)

3.5 Data collection methods

According to McDaniel and Gates (2000) there are three fundamental approaches to gather raw data. One is to ask questions about variable and market phenomena using interviewers or questionnaires. The second one is to observe variables using observers or high-tech devices. The last one is to change one or more variables while observing the effect of the change on another variable. They add that survey is often descriptive in

nature, but can be casual. Experiments are almost always casual and observation research is typically descriptive.

3.5.1 Observation

According to McDaniel and Gates (2000) observation is the fastest growing method of data collection. They define observation as the systematic process of recording people's behavioral pattern without questioning or communicating with them. To be successful, the needed information must be observable and the behaviours of interest must be repetitive, frequent, or predictable in some manners.

The primary advantages of observation are: observer sees what people actually do rather than having relied on what they say they did. This approach can avoid much of the bias factors caused by the interviewer and question structure associated with survey approach. The disadvantages of observation according to McDaniel and Gates (2000) are that usually only behaviour and physical characteristic can be examined. The researcher does not learn about motives, attitudes, intention or feelings. A second problem: the present observed behaviour might not be projectable to the future. Lastly, observation research can be time consuming and costly if the observed behavior occurs infrequently and if observable consumers are selected in a biased pattern, distorted data may be obtained.

3.5.2 Experimental Research

According to McDaniel and Gates (2000) research based on experiment is fundamentally different from research based on survey or observation. In survey or observation, the researcher asks people questions or observes what they do. In case of experiments, the researcher becomes an active participant in the process.

Experiments are an extremely powerful form of research because it is the only type of research that can truly explore the existence and nature of casual relationship between variables. Given these advantages over other research designs for primary data collection, experimental researches are not used more often because they can be costly in both time and money (McDaniel & Gates, 2000).

3.5.3 Survey Method

Hair *et al.* (2000) define the survey research methods as the research procedures for collecting large amount of raw data using question and answer formats. One major advantage of survey is the ability to accommodate large sample sizes at relative low cost. Using a large sample increase the geographical flexibility of the research. Also, when implemented correctly, the data structures created from the survey method can increase the researcher's ability to make generalized inferences about the defined target population as a whole. Another major advantage of survey is their ease of administration. Most surveys are fairly easy to implement because there is no need for sophisticated devices to record actions and reactions as with observations or experiments.

Another factor in favor of surveys is that they collect quantitative data ripe for advanced statistical analysis. Patterns and trends within the data can be determined by using mathematical analysis to identify large and small differences with the data structures.

Survey methods are not without problems. Implementation is fairly easy, but developing the appropriate survey can be very difficult. To ensure precision, the researcher must contend with a variety of issues associated with construct development, scale measurement and questionnaire designs. In appropriate treatment of these issues will create inaccuracies in construct development and measurement, opening floodgates to systematic errors. A second potential disadvantage of survey designs relates to their limited use of probing questions. In general, survey designs limit the use of extensive probing by the interviewer and rarely use unstructured or open-ended questions. Consequently, the data might easily lack the details or depth that the researcher desires for addressing the initial research problems. A third disadvantage of surveys is the lack of control researchers have over their timelines. Depending on the administrative techniques, surveys can take significantly longer to complete than other methods. In direct mail for example, the researcher must carefully develop the questionnaire packet, disseminate the packet and wait for them to be returned by postal services. The last advantage of survey design is that it can be very difficult to know whether the selected respondents are being truthful.

According to Hair *et al.* (2000), survey methods are generally divided into three generic types. One is the person-administered survey, in which there is significant face-to-face

interaction between interviewer and the respondents. Second is the telephonic administered survey. In this survey the telephone is used to conduct the question and answer exchange. Computers are now used in many ways in telephonic interview especially in management functions, data recordings, and telephone number selection. Third is the self-administered survey. In this survey, there is little, if any, actual face-to-face contact between the researcher and the prospective respondent. The respondents read the questions and record their answers.

Hair *et al.* (2000) give three major factors that affect the choice of the survey method: situational characteristics, task characteristics and the respondent characteristics. With situational factors, consideration must be given to such elements as available resources, completion time frame, and data quantity requirements. Also, the researcher must consider the overall task requirements and ask questions like, how difficult is the task? What stimuli will be needed to evoke responses? To what extent do the questions deal with sensitive topics? Finally, the researcher must be concerned about the diversity of the prospective respondents, the likely incidence rate, and the degree of survey participation. Maximizing the quantity and quality of data collected while minimizing the cost and time of the survey generally requires the researcher to make trade-offs.

3.5.3.1 Questionnaire

The questionnaire is the common thread for almost all data collection methods (McDaniel & Gates, 2000). A questionnaire is a data collection technique in which a respondent is asked to respond to the same set of questions in a predetermined order (Saunders *et al.*, 2003). According to McDaniel and Gates (2000) there are number of considerations that must be kept in mind in designing a good questionnaire. (1) does it provide the necessary information to achieve the goals of the study? (2) fitting the questionnaire to respondents (3) the editing, coding, and data processing. Questionnaires can be either of the self-administered type, or interviewer administered type (Saunders *et al.*,2003). Self-administered questionnaires can be administered online, through the post or delivered to and collected from respondents, while interviewer administered questionnaires can take the form of either telephonic questionnaires or structured interviews (Saunders *et al.*, 2003). Developing well-crafted questionnaires is more difficult than it might seem.

Researchers should carefully consider the type, content, wording, and order of the questions that they include.

a) Advantages of questionnaires

According to Gilbert and Churchill (1999) questionnaires are less expensive than interviews; they do not require a large staff of skilled interviewers; They can be administered in large numbers all at one place and time; Anonymity and privacy encourage more candidates and honest responses; Lack of interviewer bias; Speed of administration and analysis; Suitable for computer based research methods and less pressure on respondents.

b) Disadvantages of questionnaire

Gilbert and Churchill (1999) state that the major disadvantage the questionnaires offer is little flexibility to the respondent with respect to response format and the possibility of low response rates, which can lower the researcher's confidence in the result. The bias associated with self-selection makes them scientifically worthless unless response rates are high.

3.6 Choice of data collection method

As already stipulated in chapter one, the aim of this study is to investigate the uses of derivative instruments by financial institutions in Namibia. The questionnaire has been chosen as the data-gathering tool. The reasons for choosing a questionnaire are that it allows for easy data collection and analysis and they are less expensive than interviews. This will allow the interviewer to compile the results quickly and form conclusions from the results in an efficient manner. Furthermore a questionnaire would be able to provide the relevant information needed. The sample size will be 18 Financial Institutions that have registered with NAMFISA. The questions asked would be closed- ended with a few open-ended questions that will inquire on the demographics of the respondents.

3.7 Questionnaire construction

Hair *et al.* (2000) note that many researchers believe that designing questionnaires is more an art than a science, where art relates to the researcher's creative use of words in

asking the right questions and developing the related scale points. While there is some level of creativity involved in designing a questionnaire, the process itself should be scientific one that integrates established rules of logic, objectivity, discriminatory powers and systematic procedures. Theoretically, questionnaires consist of several components, words, questions, format and hypothesis, that are integrated into a recognizable, hierarchical layer system.

Struwig and Steady (2003) acknowledge that, it is important to keep in mind that the response to a questionnaire is voluntary, and therefore a questionnaire should be designed to maintain the interest of the respondents. They give the following guidelines to questionnaire design.

- Contain precise and clear instruction on how to answer the questions
- Be divided into logical sections by subject
- Start with questions that are easy to answer
- Proceed from general to specific questions
- Ask personal or sensitive questions last
- Avoid the subject-related or technical jargon
- Employ the respondent's vocabulary
- Minimize the number of questions to avoid respondent fatigue

3.7.1 Types of questions

According to Struwig and Stead (2003) there are five types of questions to use in the questionnaires.

a) Open ended questions

These are questions that respondents are free to answer in their own words and to express any idea they think apply. No choices or alternatives are offered. These questions are appropriate for opening questions since they introduce the subject and elicit general reactions. They are also useful when further clarification is required. Among the disadvantages of open ended questionnaires are those they allow for a considerable degree of bias on the part of the interviewer and those they may demand a difficult and time consuming tabulation of responses.

b) Multiple-choice questions

According to Stead and Struwig and (2003), multiple choice questions offer specific alternatives from which the respondent must choose one or more. They also acknowledge that these types of questions are preferred to open ended questions because it simplifies the recording, tabulation and editing process considerably.

c) Dichotomous questions

Dichotomous questions allow for responses that indicate an unmistakable division, for example yes or no. Respondents are offered a choice between two options only. The advantages of this type of question according to Steady and Stuwing (2003) are similar to those of multiple-choice questions. One point of criticism is that no provision is made for the 'don't know' or 'maybe' class of response. Another difficulty is that one cannot factor a statistical technique to analyze dichotomous questions and thus produce sub-scale from a measure.

d) Scaled response questions

A fourth question format that is often used to gather data on attitude and perception is scaled- response questions. Two examples are the Likert-type scale and semantic differential scale. A Likert-type scale is usually linked to a number of measure attitudes or perceptions and 5 point or 7 point scales are often used. A semantic differential scale is similar to a Likert-type scale, but only two bipolar adjectives on a scale (Stead & Stuwing, 2003)

e) Ranking question

According to Hair *et al.* (2000), the rank order questions incorporate a scale point format that allows respondents to compare their own response by indicating their first preference, second preference, third preference and so forth. This format allows for easy comparison of each possible raw response. These scales are easy to use in personal interview and all types of self-administered surveys. Although it can be difficult, it is possible to use them in telephone interview as well.

3.7.2 Sequence of questions

Aaker *et al.* (2003) noted that the sequence of the questions would be determined initially by the need to gain and maintain the respondent's cooperation and make the questionnaires as easy as possible for the interviewer to administer. They give basic guidelines for sequencing a questionnaire to make it interesting and logical to both interview and respondents:

- Questions should flow logically from one to the next.
- The researcher must ensure that the answer to a question is not influenced by previous questions.
- Questions should flow from the more general to the more specific.
- Questions should flow from the least sensitive to the most sensitive.
- Questions should flow from factual and behavioural questions to attitudinal and opinion questions.
- Questions should flow from unaided to aided questions
- According to the three stages theory (also called the sandwich theory); initial questions should be screening and rapport questions. Then in the second stage you ask all the product specific questions. In the last stage you ask demographic questions.

3.7.3 Length of questionnaire

According to McDaniel and Gates (2000) the length of the questionnaire is an important determinant of the success of the survey. The questionnaire was designed in such a way that it can be completed in approximately twenty minutes. Employee's time was taken into consideration during the design of the questionnaire. It was felt that a short precise questionnaire would have greater results than a longer one. Sufficient information was extracted to describe the desired area of interest. Special care was taken to ensure that questions or options were not double barreled. The vocabulary used was simple and ambiguity was guarded against. To eliminate confusion when answering the questions, most questions had options to choose from and the respondents were assured that their

responses would be treated with confidentiality. All respondents thanked were for their time.

3.8 Layout of questionnaire

A questionnaire designed with the assistance of the research promoter was delivered and collected at all eighteen participant institutions. A 31 question questionnaire was aimed to determine whether the financial institutions use derivative instruments in their trading activities, which instruments are commonly used and the risk management practices that institutions has put in place.

The questionnaire was divided into two sections A and B. Section A consists of questions one to thirteen asked about the demographics of the respondents while Section B that comprise of questions 14 to 31 concentrate on derivative uses and the risk management practices that institutions have put in place.

Questions 1 – 13

These questions were open ended and based on the demographic of the research respondents. They asked amongst others, name, position, qualification and experience of the respondents in order to answer research question 5 that was designed to find out whether Namibians have the necessary educational background and experience to deal with derivatives. In addition these questions were used to determine whether or not the sampled institutions have independent department that deals with derivatives, how many people work in the department, who head up the department and their qualifications. Also these questions determined how institutions deal with derivative transactions if they do not have an established derivatives department.

Questions 14-19

These questions were used to determine whether or not institutions used derivative instruments and the reason for their policy. These questions were designed to answer the research questions 1 and 2 that asked about if institutions are using derivatives and the motive of using them. In addition there were also questions asking on which assets classes are used as underlying assets and also determine which kind of assets are used for

which underlying market. Those questions were designed to answer the research question three.

Questions 20-25

For respondents that use derivatives, these questions was posed to determine the risk management practices that institutions have put in place to avert huge derivatives loses. The question varies from reporting of derivative transactions, limits put on derivative activities, techniques in place to measure derivatives risk and policy covering derivative trading. These questions were designed to answer the research question four.

Questions 26 – 31

The final few questions were used to determine the level of respondent's satisfaction with their derivative activities and also to indicate the level of satisfaction with derivative achieving it intended purpose. Finally, question 31 was used to predict how the institutions used derivatives with change over the next financial year. Institutions were given five options, decrease a lot, decrease some, remain the same, increase a lot and increase some.

3.9 Data Handling

Data in the form of coded responses from the questionnaires will be analysed using the Statistical Package for Social Scientists (SPSS). SPSS package was chosen because of its ability to provide a broad range of capability for the entire analytical process. SPSS will be used to compare, correlate, covariance, t-Test and contrast the data collected from the questionnaires. The results will be discussed in Chapter Four.

3.10 Ethical Consideration

The ethics committee of the University of KwaZulu-Natal approved the questionnaire before it was delivered at the respective Financial Institutions. The Research Coordinator at the Graduate School of Business wrote the letters of facilitation to the Chief Operating Officers / Managing Directors of the sampled institutions asking for the permission to survey the Portfolio Managers. The letter of facilitation was delivered together with the

questionnaires at the institutions. Respondents were asked to sign as an indication of giving their consent to voluntarily participate in the research.

3.11 Conclusion

The overall research design drew on both qualitative and quantitative approaches using an explorative study to find out and establish whether Financial Institutions in Namibia trade derivatives. With acknowledgement of the benefits of sampling technique, this research included all eighteen portfolio managers that registered NAMFISA. The research only used primary data from the institutions under survey. Primary data was preferred because it is collected for the purpose of this research, unlike the secondary data that was collected for other purposes. A thirty-one-questions questionnaire was designed with the help of both Professor Lubbe and Professor Klopper of the University of KwaZulu-Natal to answer the research questions and research objectives.

The questionnaire was divided into two sections; Section A consisted of the demographics of the respondents while Section B focused on their derivative uses and risk management practices. The ethic committee approved the questionnaire before it was delivered at the financial institutions. Respondents were asked to sign as an indication of giving their consent to voluntarily participate in the research. Quantitative data in the form of coded responses from the questionnaires was analysed using SPSS. SPSS was also used to compare, correlate, covariance, t-Test and contrast the data collected from the questionnaires. The next chapter will reveal the results of data analysis as well as the interpretation of those data.

CHAPTER 4

DATA ANALYSIS AND INTERPRETATION

4.1 Introduction

This chapter presents the results that emerged from the questionnaires. The data from the questionnaires has been analyzed and put into a computer database using SPSS and excel. 18 questionnaires were handed out to the relevant population as according to the guidelines listed in chapter 3. Out of the 18 questionnaires handed out, 17 institutions agreed to voluntarily participate in this study. This represents a response rate of 94%.

The results aim is to carry out the study objectives and answer the research questions stipulated in chapter 2. The chapter is dividend into three sections as per the structure of the questionnaire. The first section focuses the demographic of research participants; the second section focuses on derivative uses; the third section is based on the risk management practices while the last section is dealing with derivative controlling and reporting procedures. Techniques used for data analysis includes, descriptive statistics, T-test, ANOVA correlation and chi-square test.

4.2 Demographics of respondents

This section focuses on the demographics of the respondents.

4.2.1 Respondent position in the organization

Table 4.1 below reveals position dispersion of respondents in this project, these are 5.9 % administrator, 11.8 % analyst, 5.9 % dealer, 11.8 % director, 11.8 % head, 47.1 % portfolio manager, 5.9 % treasurers participated in this project.

	Freque ncy	Percent	Valid Percent	Cumulative Percent
Administrator	1	5.9	5.9	5.9
Analyst	2	11.8	11.8	17.6
Dealer	1	5.9	5.9	23.5
Director	2	11.8	11.8	35.3
Head of trading	2	11.8	11.8	47.1
Portfolio manager	8	47.1	47.1	94.1
Treasurer	1	5.9	5.9	100.0
Total	17	100.0	100.0	

Table 4.1: Respondents' position

4.2.2 Respondent Department

Institutions that trade derivatives were asked to indicate if they have an independent department within their institution that deals with derivatives. Table 4.2 displays the results to the question. Among the derivatives trader institutions, 29.4% have an independent derivative department and none of the institutions has a department or even a trader in Namibia. All the derivative departments and traders reside in South Africa. Out of the 70.6% that do not have derivative department, derivative activities are dealt with at treasury, dealing or research department.

	Frequency	Percent	Valid Percent	Cumulative Percent
Derivative	5	29.4	29.4	29.4
Research	7	41.1	41.1	70.5
Dealing	1	5.9	5.9	76.4
Treasury	4	23.5	23.5	100
Total	17	100	100	

Table 4.2: Respondents' Department

4.2.3 Respondent Education Level

One of the objectives of this survey is to determine whether people who are dealing with derivatives in Namibia, do have the necessary qualifications and experience. Table 4.3 indicates that, 76.5 % have postgraduate qualification, 17.6% hold undergraduate degree and 5.9% have diplomas.

	Frequency	Percent	Valid Percent	Cumulative Percent
Degree	3	17.6	17.6	17.6
Diploma	1	5.9	5.9	23.5
Post graduation	13	76.5	76.5	100.0
Total	17	100.0	100.0	

Table 4.3: Respondents educational level

4.2.4 Respondents' position in the organization versus education level

The Table 4.4 below reveals comparative descriptive results of respondents' position in an organization versus education level. Table results clearly exhibit difference in contribution of perceptions of each education level.

		Respondent Education Level			Total
		Degree	Diploma	Post graduation	
Respondent Position in the organization					
	Analyst	5.90%		20.80%	26.70%
	Dealer		5.90%		5.90%
	Portfolio Manager			56.30%	56.30%
	Treasurer			11.10%	11.10%
	Total	5.90%	5.90%	88.20%	100.00%

Table 4.4: Respondent Position in the organization versus respondent education level

The above table indicates that 56.30% portfolio managers that participate in this study have postgraduate qualification while 5.90% of analysts have degree and 20.80% have postgraduate education. Treasurers that participated have postgraduate education.

4.2.5 Who heads up the derivatives department versus respondent education level

			Respondent Education Level			Total
			Degree	Diploma	Post graduation	
Who heads up the derivatives department	Portfolio manager		17.6%	5.9%	64.7%	88.2%
	Chief dealer				5.9%	5.9%
	Treasury manager				5.9%	5.9%
Total			17.6%	5.9%	76.5%	100.0%

Table 4.5: Who heads the derivative trading?

Table above indicates that 88.2% of derivatives department are headed up by the

portfolio manager while treasury manager and chief dealers head up nearly 6% of respondents. This indicates that people that head up derivative departments in Namibia are educated senior people.

4.2.6 Assets under management

	Frequency	Percent	Valid Percent	Cumulative Percent
Less than 3 billion	8	47.1	47.1	47.1
3 to 5 billion	1	5.9	5.9	52.9
5 to 10 billion	5	29.4	29.4	82.4
10 billion & Over	3	17.6	17.6	100.0
Total	17	100.0	100.0	

Table 4.6: Assets under management

The above table reveals that, 47.1% of participant institutions have assets under management of less than three billion, 35.5% have assets between 3 to 10 billion and 17.6% have assets of 10 billion and over.

4.2.7 Experiences of derivative traders

Question 9 asked the respondents to indicate their years of experiences with derivative trading: 50% of respondents indicated 7 years or more, 33% indicated 4 – 6 years while 17% indicated 0-3 years. Results are displayed in Figure 4.1.

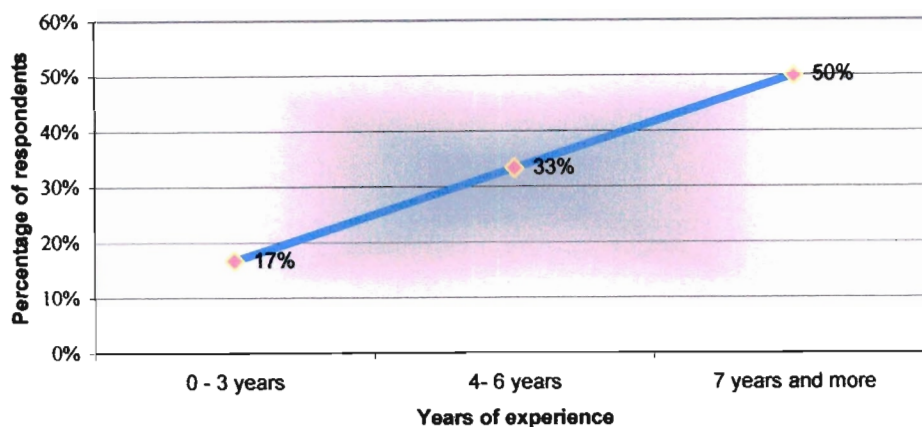


Figure 4.1: Experiences of derivative traders

4.3 Derivative uses

Question 14 was designed to identify whether institutions use derivatives in the management of their assets, and then to indicate the value of derivatives as a percentage of overall assets under management. As shown in table 4.7, 64.7% of institutions in the full sample use derivatives while 35.3% do not use derivatives. This proportion of derivative use is consistent with Nguyen and Faff (2003) who report evidence of derivative use in 74.2% of their sample while Benson and Oliver (2004) find 76% of top 500 Australian firms to use derivatives.

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	11	64.7	64.7	64.7
No	6	35.3	35.3	100.0
Total	17	100.0	100.0	

Table 4.7: Derivatives uses

The above table results divulge perceptions of participated respondents in this project, they have expressed 64.7 % Yes, 35.3 % no towards derivative uses.

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4.3.1 Derivatives use versus respondent education level

	Respondent Education Level			Total
	Degree	Diploma	Post graduation	
Does your institution use derivatives	5.9%		58.8%	64.7%
Yes	11.8%	5.9%	17.6%	35.3%
No	17.6%	5.9%	76.5%	100.0%
Total				

Table 4.8: Derivative uses versus education level

4.3.2 Percentage of derivatives users by institution sizes

As shown by figure 4.2 below, the use of derivatives is more common among large institutions (100%) as compared to medium or small institutions (83% and 47%) respectively. This confirms the conclusion of El-Masry (2003) that large institutions are better able to bear the fixed cost of derivative use compared to small institutions. This positive relationship is consistent with the results of Bodnar *et al.* (1995, 1996, 1998) for US companies, Berkman *et al.* (1997) for New Zealand companies, Alkeback and Hagelin (1999) for Swedish companies and Ceuster *et al.* (2000) for Canadian companies, who also find evidence that derivative use is more associated with large institutions than small institutions. For the purpose of this survey, institutions were defined as follows, small are institutions with less than three billion assets under management while medium and large are institutions with 4 to 6 and more than 7 billions respectively.

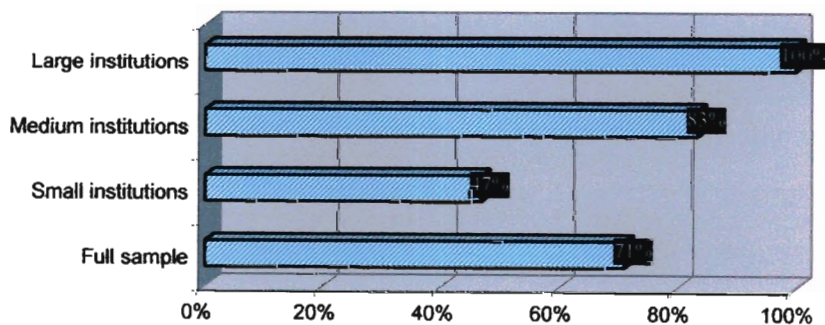


Figure 4.2: Percentage of derivative users by institutions sizes

4.3.3 Reasons for not using derivatives

Respondents that do not use derivatives were asked to indicate the reasons for their policy. Table 4.9 summarizes the responses from the sample as per respondents' educational level.

		Q7 : Respondent Education Level			Total
		Degree	Diploma	Post graduation	
Q15.1 : Lack of knowledge or experience with derivatives	Very Important	6.70%	6.70%	13.30%	26.70%
	Not applicable	6.70%	66.70%	73.30%	
	Total	13.30%	6.70%	80.00%	100.00%
Q15.2 : Inability to adequately monitor or control derivatives use by portfolio managers	Very Important	7.10%	7.10%	7.10%	21.40%
	Not applicable	7.10%		71.40%	78.60%
	Total	14.30%	7.10%	78.60%	100.00%
Q15.3 : Increased investment risks when derivatives are used	Important	5.90%	5.90%		11.80%
	Very Important	5.90%		17.60%	23.50%
	Not applicable	5.90%		58.80%	64.70%
Total	17.60%	5.90%	76.50%	100.00%	
Q15.4 : Investment objectives can	Important		6.30%		6.30%
	Very Important	6.30%		18.80%	25.00%

be met without using derivatives	Not applicable	6.30%		62.50%	68.80%
Total		12.50%	6.30%	81.30%	100.00%

Q15.5 : Concern about how derivatives are perceived by clients, regulators or other parties	Less Important	7.10%			7.10%
	Very Important		7.10%	7.10%	14.30%
	Not applicable	7.10%		71.40%	78.60%
Total		14.30%	7.10%	78.60%	100.00%

Table 4.9: Reasons for not using derivatives

Respondents were given five reasons of not using derivative of which they had to rank, very important, important and less important. Lack of knowledge or experience was ranked very important by 26%. 25% indicate that their investment objectives can be met without using derivatives while increased investment risk with derivatives was in the third position stated very important by 23.5% of the respondents. This finding is consistent with Stulz (2004) who concludes that, portfolios that include derivatives are riskier than those that do not. Large institutions were mainly concerned about the two reasons cited above as well as how derivatives are perceived by public and regulators. For the smaller institutions, the primary reasons for not using derivatives are the already cited, and the lack of knowledge and the inability to control or monitor their use respectively.

4.3.4 Use of derivatives by asset class

Question 16 attempts to identify which of the asset class do institutions use derivatives. Respondents were asked to select from the list of assets classes that include equities, bonds, commodities, cash and properties. Figure 4.3 summarizes the responses. Domestic bonds and equity are the most common assets classes that institutions in Namibia are using, followed by cash and a tie between forex and foreign equity. Commodities are the least asset classes that portfolio managers invest into while none of the institutions use

properties as underlying assets. Figure 4.4 shows the same data but arranged by institution sizes.

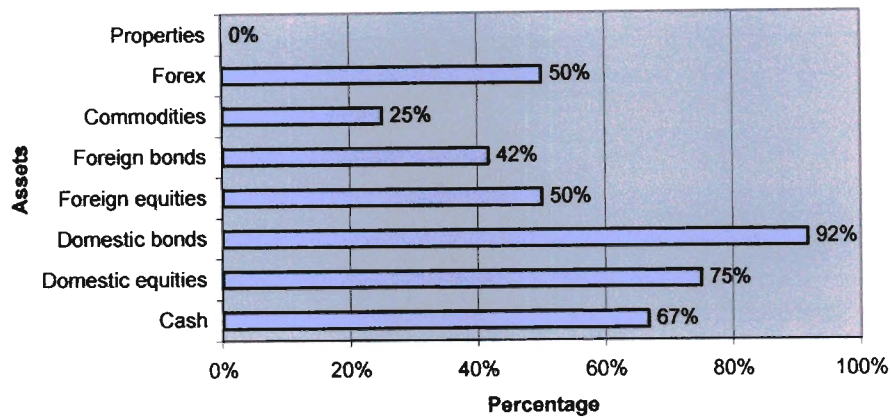


Figure 4.3: Use of derivatives by asset class

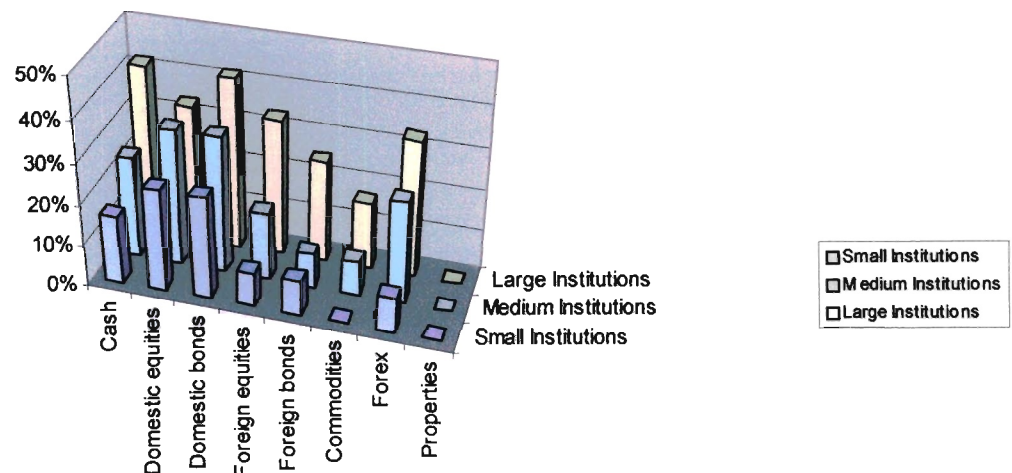


Figure 4.4: Use of derivatives by asset class arranged according to institution sizes

4.3.4.1 Using correlation to find out whether there is a relationship between asset classes

The correlation analysis tool is particularly useful when there are more than two measurement variables for each of the subjects. The correlation coefficient, like the covariance, is a measure of the extent to which two measurement variables “vary together” and unlike the covariance, the correlation coefficient is scaled so that its value

is independent of the units in which the two measurement variables are expressed (Sloan, 2000). The value of any correlation coefficient must be between -1 and +1 inclusive. The following are the results that were obtained using correlation.

		Q16.5 : Foreign bonds	Q16.6 : Commodities	Q16.7 : Foreign exchange
Q16.1 : Cash	Pearson Correlation	-.538	-.282	.670*
	Sig. (2-tailed)	.135	.462	.048
	N	9	9	9
Q16.2 : Domestic equities	Pearson Correlation	.122	-.282	-.708*
	Sig. (2-tailed)	.754	.462	.033
	N	9	9	9
Q16.3 : Domestic bonds	Pearson Correlation	-.050	-.582	-.562
	Sig. (2-tailed)	.890	.078	.091
	N	10	10	10
Q16.4 : Foreign equities	Pearson Correlation	.773**	.395	-.254
	Sig. (2-tailed)	.009	.259	.479
	N	10	10	10

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

** Correlation is significant at the 0.01 level (2-tailed).

Table 4.10: Correlation – Asset classes

The above correlation results reveal the following results

- The Q 16.1 has correlation with Q 16.5, r value is -0.538, it indicates negatively strongly correlated.
- The Q 16.1 has correlation with Q 16.6, r value is -0.282, it indicates negatively moderately correlated.
- The Q 16.1 has correlation with Q 16.7, r value is 0.670, it indicates positively strongly correlated.
- The Q 16.2 has correlation with Q 16.5, r value is 0.122, it indicates positively moderately correlated.
- The Q 16.2 has correlation with Q 16.6, r value is -0.282, it indicates negatively moderately correlated.
- The Q 16.2 has correlation with Q 16.7, r value is -0.708, it indicates negatively correlated.
- The Q 16.3 has correlation with Q 16.5, r value is -0.050, it indicates negatively moderately correlated.
- The Q 16.3 has correlation with Q 16.6, r value is -0.582, it indicates negatively strongly correlated.
- The Q 16.3 has correlation with Q 16.7, r value is -0.562, it indicates negatively strongly correlated.

- The Q 16.4 has correlation with Q 16.5, r value is 0.773, it indicates positively strongly correlated.
- The Q 16.4 has correlation with Q 16.6, r value is 0.395, it indicates positively averagely correlated.
- The Q 16.4 has correlation with Q 16.7, r value is -0.254, it indicates negatively moderately correlated.

4.3.4.2 Using the T – test to analyze asset classes

According to Sloan (2000), t-test is the most commonly used. The usual assumption is that the populations have the same variance. He stipulates that the interpretation rule for the t-test is as follows:

If p value is less than or equal $p \leq 0.05$, statistically there is a significant difference between the groups. If p value is greater than $p > 0.05$, statistically there is no significant difference between the groups.

T - Test

		t	df	Sig. (2-tailed)
Q16.1 : Cash	Equal variances assumed	-1.667	7	.140
	Equal variances not assumed	.	.	.
Q16.2 : Domestic equities	Equal variances assumed	1.342	8	.217
	Equal variances not assumed	.	.	.
Q16.3 : Domestic bonds	Equal variances assumed	.302	9	.770
	Equal variances not assumed	.	.	.
Q16.4 : Foreign equities	Equal variances assumed	.967	9	.359
	Equal variances not assumed	.	.	.
Q16.5 : Foreign bonds	Equal variances assumed	.894	8	.397
	Equal variances not assumed	.	.	.
Q16.6 : Commodities	Equal variances assumed	.632	8	.545
	Equal variances not assumed	.	.	.
Q16.7 : Foreign exchange	Equal variances assumed	-1.391	8	.202
	Equal variances not assumed	.	.	.

Table 4.11: T-test – asset classes

In above T-test results, the p significant values are above 0.05 for q16.1 to q16.7, observed t-values and critical t-values for q16.1 to q16.7 as follows

Q number	observed t- value	critical t-value	Hypothesis
16.1	-1.667	- 2.365	H ₀ Not rejected
16.2	1.342	2.306	H ₀ Not rejected
16.3	0.302	2.262	H ₀ Not rejected
16.4	0.967	2.262	H ₀ Not rejected

16.5	0.894	2.306	H ₀ Not rejected
16.6	0.632	2.306	H ₀ Not rejected
16.7	-1.391	-2.306	H ₀ Not rejected

the above t-values, significant values reveal the null hypothesis is accepted, which indicates statistically there is no difference between q14 group respondents (Yes and No) perceptions towards the above study statements.

4.3.4.3 Using central tendency statistics on different asset classes

Central Tendency Statistics

		Q16.1	Q16.2	Q16.3	Q16.4	Q16.5	Q16.6	Q16.7	Q16.8
N	Valid	9	10	11	11	10	10	10	9
	Missing	8	7	6	6	7	7	7	8
Mean		2.00	2.00	2.00	2.00	1.00	1.00	2.00	1.00
Median		2.00	2.00	2.00	2.00	1.00	1.00	2.00	1.00
Mode		2	2	2	1	1	1	1	1
Std. Deviation		.782	.738	.603	.786	.699	.483	.876	.333
Variance		.611	.544	.364	.618	.489	.233	.767	.111
Range		2	2	2	2	2	1	2	1
Minimum		1	1	1	1	1	1	1	1
Maximum		3	3	3	3	3	2	3	2

Table 4.12: Central tendency statistics – Asset classes

The above table results reveal central tendency stats results for Q16.1 to Q16.8

The measurement scale code interpreted as
 1 = Never
 2 = Often
 3 = Very Often

Mean

The mean results are as follows:

The q16.1, q16.2, q16.3, q16.4, q16.7 study variables have mean value of 2.00; this reveals the respondents participated in this project have articulated average. The q16.5, q16.6 q16.8 study variable have mean value is 1.00; this reveals that the respondents

participated in this project have articulated average perception is never towards the above-mentioned variables.

Standard Deviation

The q16.1 to q16.8 variables have standard deviation from 0.333 to 0.876, it reveals these variables have variation in respondents' perception.

4.3.5 Approaches to manage risk with derivatives

Derivatives differ by the type of underlying exposure. Institutions were asked to indicate the kinds of derivatives they use to manage their exposure in six broad categories: equity, interest rate, currency, commodities, bonds and properties. The results are summarized in Figure 4.5. It is found that the most common kind of derivatives is future and swaps at 75%. This is followed by forward contracts with 58%. Research participants appear to be indecisive between over the counter options and exchange traded options as both are used by 48% of the respondents.

The figure also shows that future contract dominates the equity class while swaps dominate the interest rate class at 75% each. This is followed by bonds swaps and forward contract equity with 58%. This result is consistent with Howton and Perfect (1998) who also find that swaps are the most often used interest-rate contracts. Commodities are the least asset classes that trade derivatives, while no institution uses derivative in the property asset class.

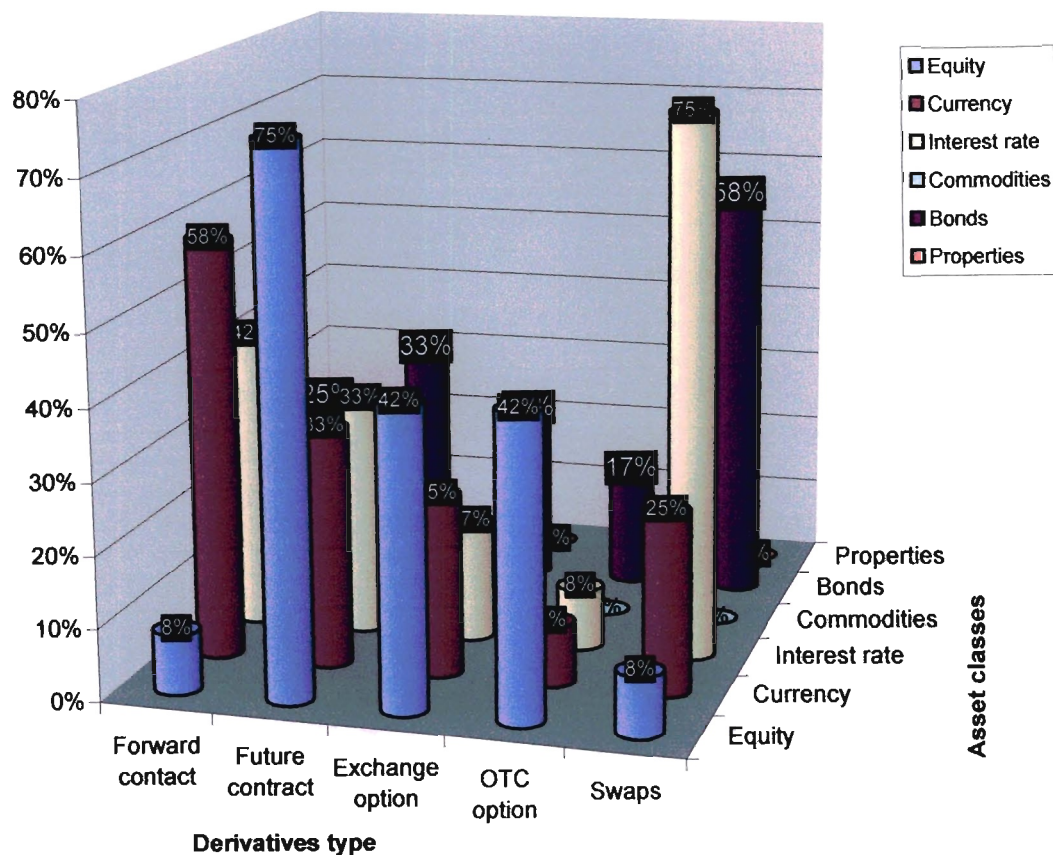


Figure 4.5: Approaches to manage risk with derivatives

4.3.6 Reasons for trading derivatives

It is interesting in knowing, if the institutions are trading derivatives, the most important reasons for using them. Eight options were given, and institutions were asked to indicate how often they use derivatives for various commonly cited rationales. Among the options include, hedging, achieve incremental returns, asset allocations, market timing, increase leverage, minimizing taxes and access to markets.

The results disclose that financial institutions in Namibia very often use derivatives for hedging purposes at 58% of the responding firms, followed by asset allocation with 45%. Using derivatives to achieve incremental return or obtaining leverage were each listed as

reasons by 20% of respondents. Accessing to market is the least very often reason for using derivatives. This finding is consistent with Stulz (1996) and Tufano (1996) findings that firms primarily use derivatives for hedging purposes. This survey reveals that in Namibia, derivatives are not very often used to minimize taxes or timing the market which contradicts the findings of Graham and Rogers (2002) who find evidence that very often institutions use derivatives to reduce the present value of tax liabilities.

4.3.6.1 Using T-test to analyze the reasons for trading derivatives

T-test

		t	df	Sig. (2-tailed)
Q19.1 : Hedging	Equal variances assumed	-0.833	10	.424
	Equal variances not assumed	.	.	.
Q19.2 : Achieving incremental return	Equal variances assumed	.287	8	.251
	Equal variances not assumed	.	.	.
Q19.3 : Assets allocation	Equal variances assumed	-1.011	9	.338
	Equal variances not assumed	.	.	.
Q19.4 : Short term market timing	Equal variances assumed	.447	8	.667
	Equal variances not assumed	.	.	.
Q19.5 : Minimizing taxes	Equal variances assumed	.447	8	.667
	Equal variances not assumed	.	.	.
Q19.6 : To Access markets in which direct investment is limited	Equal variances assumed	.624	7	.553
	Equal variances not assumed	.	.	.
Q19.7 : To obtain greater leverage in investments	Equal variances assumed	.478	8	.645
	Equal variances not assumed	.	.	.

Table 4.13: T-test – Reasons for using derivatives

The T-test results above show that, the p significance values are above 0.05 for q19.1 to q19.7, observed t-values and critical t-values for q19.1 to q19.7 as follows

Q number	observed t- value	critical t-value	Hypothesis
19.1	-0.833	- 2.228	H ₀ Not rejected
19.2	0.287	2.306	H ₀ Not rejected
19.3	-1.011	-2.262	H ₀ Not rejected
19.4	0.447	2.306	H ₀ Not rejected
19.5	0.447	2.306	H ₀ Not rejected
19.6	0.624	2.365	H ₀ Not rejected
19.7	0.478	2.306	H ₀ Not rejected

The above t-values, significance values reveal the null hypothesis is accepted, which indicates statistically there is no difference between using derivatives group respondents perceptions towards the above study statements

4.3.6.2 Using Anova to analyze the reasons for using derivatives

ANOVA : Education Level

		Sum of Squares	df	Mean Square	F	Sig.
Q19.1 : Hedging	Between Groups	.417	2	.208	.750	.500
	Within Groups	2.500	9	.278		
	Total	2.917	11			
Q19.2 : Achieving incremental return	Between Groups	1.125	2	.563	1.370	.315
	Within Groups	2.875	7	.411		
	Total	4.000	9			
Q19.3 : Assets allocation	Between Groups	2.020	2	1.010	1.173	.357
	Within Groups	6.889	8	.861		
	Total	8.909	10			
Q19.4 : Short term market timing	Between Groups	.225	2	.113	.203	.821
	Within Groups	3.875	7	.554		
	Total	4.100	9			
Q19.5 : Minimizing taxes	Between Groups	.600	2	.300	.600	.575
	Within Groups	3.500	7	.500		
	Total	4.100	9			
Q19.6 : To Access markets in which direct investment is limited	Between Groups	.508	2	.254	.410	.681
	Within Groups	3.714	6	.619		
	Total	4.222	8			
Q19.7 : To obtain greater leverage in investments	Between Groups	.400	2	.200	.233	.798
	Within Groups	6.000	7	.857		
	Total	6.400	9			

Table 4.14: Anova – Reasons for using derivatives

The Anova test results reveal there is no statistically significant difference in perceptions of different education groups of respondents towards the reasons for using derivatives because all reasons of using derivatives the p significance values are above 0.05.

4.3.7 Concerns about derivative usage

A derivative user faces many issue that are, to some extent, unique to the product. Therefore, institutions were asked to indicate their degree of concern about a series of aspects regarding the use of derivatives. These aspects include: the credit risk, monitoring uses, complex pricing, regulatory issues, liquidity and reaction by stakeholders. Figure 4.6 displays the responses. Concern about liquidity was rated high with 68% followed by counter party risk and reaction by other parties with 58%. The ability to quantify the

underlying exposure and monitoring uses were the last in the list of concerns with 17% each.

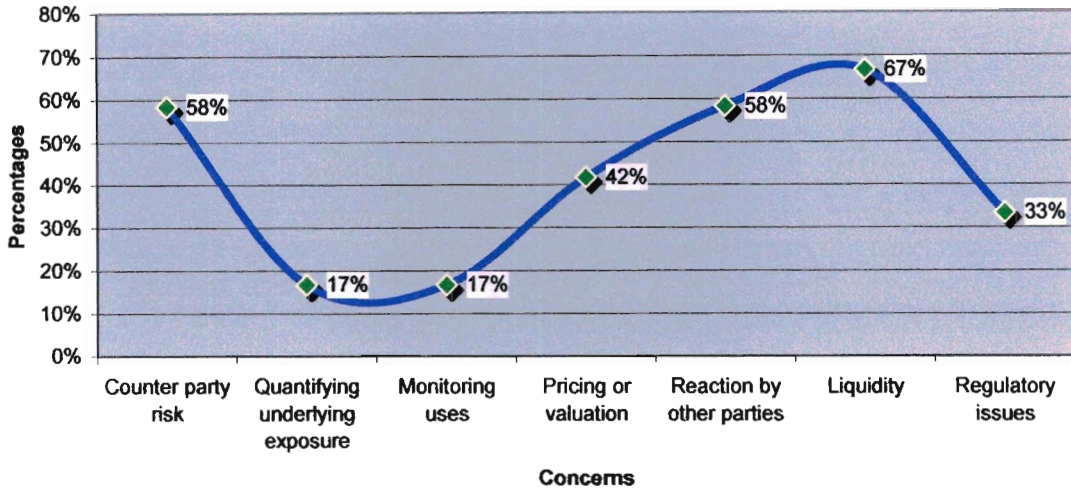


Figure 4.6: Concerns about derivative usage

4.3.8 Satisfaction with derivative uses

Respondents were asked to indicate, on how satisfied they were that derivatives were achieving their intended purpose. Table 4.15 presents these results. 60% of the sample indicated a high degree of satisfaction, while, 30% indicated satisfaction while 10% were neutral. None of the institutions indicated that they were unsatisfied with their derivative uses.

	Frequency	Percent	Valid Percent	Cumulative Percent
Neutral	1	5.9	10.0	10.0
Satisfied	3	17.6	30.0	40.0
Very satisfied	6	35.3	60.0	100.0
Total	10	58.8	100.0	
Missing System	7	41.2		
Total	17	100.0		

Table 4.15: Satisfaction with derivative uses

4.3.9 Future derivative uses

Given the response to the preceding question, Institutions that use derivatives were asked to determine how their usage would change in the following year as compared to the current year. Table 4.16 displays the response to the questions. It is not surprising to find that 61.5% of institutions expect their use of this product to increase as compared to 30.8% who indicate that their usage will remain constant. The remaining 7.7%, which comprises of small institutions expect their derivative uses to decrease over the next financial year. Overall, this result suggests that a significant proportion of derivative users find that derivatives use are helpful that they are choosing to increase their usage

	Frequency	Percent	Valid Percent	Cumulative Percent
Decrease some	1	5.9	7.7	7.7
No change	4	23.5	30.8	38.5
Increase some	8	47.1	61.5	100.0
Total	13	76.5	100.0	
Missing System	4	23.5		
Total	17	100.0		

Table 4.16: Future derivative uses

4.3.10 Using Anova and T-test to analyze derivative satisfaction and future derivative uses

ANOVA : Education level

		Sum of Squares	df	Mean Square	F	Sig.
Q26 : How satisfied are you with the overall reporting on derivatives activities in your institution	Between Groups	.400	2	.200	.350	.716
	Within Groups	4.000	7	.571		
	Total	4.400	9			
Q27 : How satisfied are you that your use of derivatives is achieving its intended purpose	Between Groups	.625	2	.313	.565	.593
	Within Groups	3.875	7	.554		
	Total	4.500	9			
Q31 : How do you expect your derivatives usage to change over the next year	Between Groups	.231	2	.115	.231	.798
	Within Groups	5.000	10	.500		
	Total	5.231	12			

Table 4.17: Anova - derivative satisfaction and future derivative uses

The Anova test results reveal there is no statistically significant difference in perceptions of different education groups of respondents towards the above statements because all the analysis has a p significance values above 0.05.

T-test

		t	df	Sig. (2-tailed)
Q26 : How satisfied are you with the overall reporting on derivatives activities in your institution	Equal variances assumed	.580	8	.578
	Equal variances not assumed	.	.	.
Q27 : How satisfied are you that your use of derivatives is achieving its intended purpose	Equal variances assumed	-.725	8	.489
	Equal variances not assumed	.	.	.
Q31 : How do you expect your derivatives usage to change over the next year	Equal variances assumed	.086	11	.933
	Equal variances not assumed	.084	1.369	.944

Table 4.18: T-test - derivative satisfaction and future derivative uses

In the above T-test results, the p significance values are above 0.05 for derivative satisfaction and the future derivative uses; it reveals statistically there is no significant difference between the above questions.

4.4 Control and reporting procedures

This section concentrates on some aspects regarding control and reporting policy.

4.4.1 Derivatives Reporting

Institutions were asked how frequently derivative activities reported in their organizations. Table 4.19 presents the results. The table shows that 63.6% of the institutions that use derivatives report derivative activity on the monthly basis followed by 27.3% who report on the quarterly basis while the remaining 9.1% do not follow a set-reporting schedule.

	Frequency	Percent	Valid Percent	Cumulative Percent
Monthly	7	41.2	63.6	63.6
Quarterly	3	17.6	27.3	90.9
As needed / No set schedule	1	5.9	9.1	100.0
Total	11	64.7	100.0	
Missing System	6	35.3		
Total	17	100.0		

Table 4.19: Derivative reporting

4.4.2 Published internal guidelines on the use of derivatives

Institutions were asked whether they publish internal guidelines on the use of derivatives. Of the institutions using derivatives, 66.7% report they are publishing internal guidelines about the use of derivatives compared to 33.3% of the institutions that have not done so. Table 4.20 displays this result. It is argued here that organizations that have a documented risk management plan have considered in more detail financial risk management issues relative to organizations that do not have a documented risk management plan.

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	8	47.1	66.7	66.7
No	4	23.5	33.3	100.0
Total	12	70.6	100.0	
Missing System	5	29.4		
Total	17	100.0		

Table 4.20: Published internal guidelines on the use of derivatives

4.4.3 Sources of obtaining derivative risk measures

Institutions were also asked to indicate the source for obtaining their measure for derivative risks. The results are summarized in Figure 4.7. All institutions that use derivatives indicated that, they perform calculations internally within the institutions, and 25% indicate that they are provided with the calculation by consulting firms and 8.3% get derivative risk measures from security brokers / dealers whom they transact with.

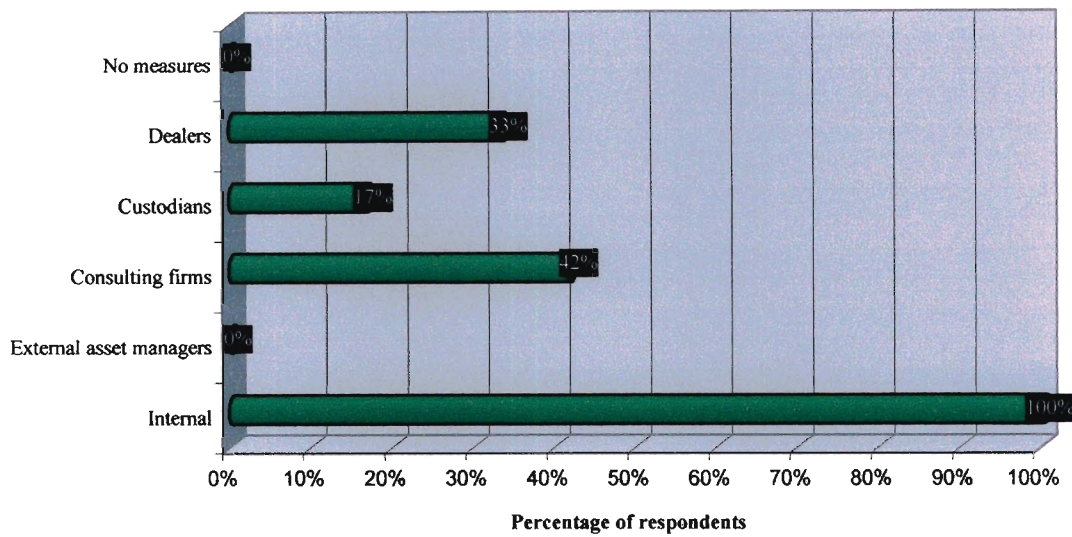


Figure 4.7: Sources of obtaining derivative risk measures

4.4.4 Techniques used to measure derivative risks

Table 4.21 displays the techniques that sampled institution use to evaluate the riskiness of the derivatives transactions or portfolio. This survey confirms the perception that Value at risk is widespread among investors, as it used by 83.3% of derivatives users in this survey while stress testing is used by 8.3%. No firm uses option sensitivity measures. However, the findings support El-Mairy (2003) who finds that Value at risk is the most common techniques that institutions are using to measure derivative risk.

	Frequency	Percent	Valid Percent	Cumulative Percent
Value at risk	10	58.8	83.3	83.3
Stress testing	1	5.9	8.3	91.7
Others	1	5.9	8.3	100.0
Greeks	-			
Total	12	70.6	100.0	
Missing System	5	29.4		
Total	17	100.0		

Table 4.21: Techniques used to measure derivative risks

4.4.5 Limits on derivative activities

Controlling derivative activity is a challenge in any organization. Survey participants that use derivatives were asked to indicate the type of limits they employ. In table 4.22, it is evident that Value at Risk based limits is the most common one, cited by 67% followed by restriction on the type of derivatives with 58%. 8% of respondents indicate that they place limits on notional value also 8% indicate that they do not place any limit on they derivative uses.

Limits on derivatives activities	Percentage of respondents
Value at Risk based	67
Type of derivatives	58
Strategies employed	42
Restriction on maturity	42
Notional value as a % of assets	42
Other market limits e.g delta, durations	33
Notional value	8
No limits	8

Table 4.22: Limits on derivatives activities

4.4.5.1 Using Chi-Square test to analyze limits on derivative activities

According to Sloan (2000) the interpretation rule of Chi-Square is as follows: If p value is less than or equal $p \leq 0.05$, there is statistically significant relationship. If p value is greater than $p > 0.05$, there is no statistically significant relationship. The Chi-Square test was used to analyze the limit s on derivative activities, the results are shown in table below.

a) Notional value as a percentage of assets versus restriction on type of derivatives

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	.343	1	.558
Continuity Correction	.000	1	1.000
Likelihood Ratio	.345	1	.557
Linear-by-Linear Association	.314	1	.575
N of Valid Cases	12		

Table 4.23: Chi-Square test - Notional value as a percentage of assets versus restriction on type of derivatives

The above Chi-square (χ) test result indicates p value is 0.558, which is above 0.05, this result reveals there is no statistically significant relationship between statement notional value as a percentage of assets and restriction on type of derivatives. These two variables are independent of each other.

b) Notional value as a percentage of assets versus other market based limits

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.500	1	.221
Continuity Correction	.375	1	.540
Likelihood Ratio	1.552	1	.213
Linear-by-Linear Association	1.375	1	.241
N of Valid Cases	12		

Table 4.24: Chi-Square test - notional value as a percentage of assets versus other market based limits

The above Chi-square (χ) test result indicates p value is 0.221, which is above 0.05, this result reveals there is no statistically significant relationship between statement notional values as a percentage of assets and other market based limits. These two variables are independent of each other.

c) Notional value as a percentage of assets versus restriction on maturity

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	.332	1	.518
Continuity Correction	.000	1	1.000
Likelihood Ratio	.345	1	.557
Linear-by-Linear Association	.314	1	.575
N of Valid Cases	12		

Table 4.25: Chi-square test - Notional value as a percentage of assets versus restriction on maturity

The above Chi-square (χ) test result indicates p value is 0.518, which is above 0.05, this result reveals there is no statistically significant relationship between statement notional value as a percentage of assets and restriction on maturity. These two variables are independent of each other.

4.5 Conclusions

Derivatives have been around for a long time, but only in recent decades have portfolio managers begun to view them as a viable strategy for actively managing financial risk. Properly used, derivatives can protect institutions by separating and trade various types of risks. Derivatives enable business to counterbalance risks by limiting potential losses and stabilizing cash flows. Further more, derivatives offer speed, precision, flexibility, and low transaction costs. Improperly used, derivatives can cause substantial harm. But they are the wave of the future, and managers need to understand them to enable their companies to compete successfully.

according to Eales (2004), derivatives allow investors and business to sell their risk into the financial market. He further adds that no business is immune from risk and financial derivatives can be tailored to meet virtually any risk. This will leave companies free to concentrate free on their core business and investors to analyze company performance.

This chapter presented the findings of the research together with the data discussion. Further discussion of the results and their implication is done in the following chapter. The findings in this chapter are therefore used as a base for drawing of conclusions with

regard to the entire research in the next chapter together with the suggestion for further derivative research.

CHAPTER 5

CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The goal of this survey is to find out whether financial institutions in Namibia use derivatives instruments in the management of their assets and to gain a better understanding on their derivative trading. This survey covered all the portfolio managers that register with the Namibia financial institutions supervisory body. Out of all eighteen sampled institutions, seventeen agreed to voluntarily participate in this study. The sample was chosen for the reason that portfolio managers are usually at the center of derivative trading dealing on behalf of their client and their institutions.

Chapter one outlined, the problem statement, objectives and motivation of the study. In the second chapter, the findings of an intensive literature review were discussed forming the basis of the survey instrument design. Chapter 3 dealt with the research design aspect of this study, specifically looking at the sample design and data analysis techniques. Chapter 4 examined the results of the study using SPSS and excel.

This chapter will conclude the study by stipulating the limitations encountered and answering the research questions as stipulated in chapter 2. Finally in this chapter, recommendations and possible areas for further research will be highlighted.

5.2 Limitations of the study

This study is a research project, in partial fulfilment of a Master degree in Business Administration at the University of KwaZulu Natal. The overall goal of the research project was to do an investigation into the uses of derivative instruments by financial institutions in Namibia.

Although derivatives are used by all industries, due to the resources constraints, this study only focuses on financial institutions. Another limitation was the delay in data collection procedures because all people who are dealing with derivatives are in South Africa; the questionnaires had to be sent to South Africa and the researcher waited for two months before receiving some of the questionnaires.

5.3 Answering of the research questions

The following are the questions posed in Chapter Two. The researcher will answer these questions based on the analysis and findings of Chapter Four and the reviewed literature from Chapter Two.

5.3.1 Research question 1: Do financial Institutions in Namibia use derivatives?

Overall, this survey reveals that financial institutions in Namibia use derivatives instruments, this is confirmed by 64.7% of the sampled institutions. All large institutions sampled use derivatives, 83% of medium institutions use derivatives while only 47% of small institutions use derivatives.

Among those institutions that do not use derivatives, the objective can be met without the use of derivatives was the most common reason followed by increase investment risk when derivatives are used. Large institutions were mainly concerned about the two reasons cited above as well as how derivatives are perceived by public and regulators. For the smaller institutions, the lack of knowledge and the inability to control or monitor their use are the concerns.

Institutions reply that, in generally there are satisfied with their derivative trading. The majority (61.5%) expects their uses to increase as compared to 30.8% who indicate that their usage will remain constant. The remaining 7.7% that mostly comprises of small institutions predicted a decrease in uses over the next financial year. Overall, this result suggests that a significant proportion of derivative users find that derivatives used are helpful that they are choosing to increase their usage.

5.3.2 Research question 2: What are the motives of trading derivatives?

Although institutions use derivatives for different reasons, hedging was rated high among derivative users with 58.3% followed by asset allocation with 45.5%. Access to the market is rated third on the list. This finding is consistent with Stulz (1996) and Tofano (19996) findings that firms primarily use derivatives for hedging purposes. This survey reveals that in Namibia, derivatives are not often used to minimize taxes or timing the market which contradict the findings of Graham and Roger (2002) who find evidence that often institutions use derivatives to reduce the present value of tax liabilities.

5.3.3 Research question 3: What types of derivatives are most common and in which asset class are they mostly traded?

It is found that future contract and swaps are most traded derivative instruments, followed by forward contracts. Portfolio Managers appear to be indecisive between over the counter options and exchange traded options as both are rated number four by 48% of the respondents.

On asset classes, domestic bonds and equity are the most common assets classes that institutions in Namibia are using, followed by cash at number four is a tie between forex and foreign equity. Commodities are the least asset classes that portfolio managers use derivatives while none of the institutions use properties as underlying assets. The survey also suggests that, future contract dominates the equity class while swaps dominate the interest rate class at 75% each. This is followed by bonds swaps and forward contract equity with 58%.

5.3.4 Research question 4: What type of control and reporting procedures do institutions put in place to prevent derivative debacles in Namibia?

Derivative control and reporting appear to be moderate intensive as only 63.6% of the institutions report derivative activity on the monthly basis followed by 27.3% who report on the quarterly basis while 9.1% do not follow a set reporting schedule. Also, only 66.7% of sampled institutions indicated that they have published internal guidelines about the uses of derivatives. All institutions that use derivatives reveal that they perform calculations of measuring derivative risks internally within the institutions, 42% indicate that they also seek calculations from consulting firms and 33% get derivative risk measures from security brokers / dealers whom they transact with.

On techniques used to measure derivative risk, this survey confirms the perception that value at risk is widespread among investors; it used by 83.3% of derivative users in this study, followed by stress testing and Greeks with 8.3% each. Controlling derivative activity is a challenge in any organization. Survey participants indicate that value at risk-based limits is the most common limit put on derivatives activities. 8% of respondents indicate that they place limits on notional value while the remaining 8% indicate that they do not place any limit on they derivative uses.

5.3.5 Research question 4: Do derivative traders have necessary education and qualification to handle them?

In our sample, 76.5% have postgraduate qualification, 33% have postgraduate qualification plus CFA, 17.6% hold undergraduate qualification and 8% obtained undergraduate qualification plus CFA. Regarding the experience, 50% of respondents indicated 7 years or more, 33% indicated 4 – 6 years while 17% indicated 0-3 years. Although figures look good for this question, all the traders referred to here reside in South Africa. Namibians do not have the experience in dealing with this complex matter. Immediate solution in this matter is needed. Among the derivatives trader institutions, 29.4% have an independent derivative department and like traders, none of the institutions has a department in Namibia.

In the light of the above information, the study progress into the recommendations based on the results of data analysis.

5.4 Recommendations

These recommendations can help institutions to manage derivatives activity, to respond to its growth and complexity, and to continue to benefit from its use. By using the following recommendations, institutions in Namibia could prevent another Enron Metallgesellschaft, Proctor and Gamble, and Gibson Greetings debacles to happen in our market.

5.4.1 Recommendation 1: Educating Namibians of derivative uses

The survey reveals that, all the people that deal with derivatives are South Africans and reside in South Africa. Portfolio managers, board members and senior managers in Namibia should be trained on derivative trading. Effective oversight requires knowledge. If board members and senior management have little knowledge or experience with derivatives, it is deemed necessary to provide training sessions on the uses, benefits and risks associated with derivatives. These parties need not have a detailed understanding of the mechanics and pricing of each derivative product. Rather, they need sufficient knowledge to answer fundamental questions regarding the company's financial risk exposures, the potential impact of these exposures on the company, and acceptable

exposure limits. When possible, the company should use an independent consultant rather than a dealer in derivatives to conduct these training sessions.

5.4.2 Recommendation 2: Timely reporting of derivative transactions

With the responsibility for oversight comes the need for feedback. The survey also indicates that 9.1% of respondents do not have set derivative reporting schedule. Senior management and the board of directors must receive timely, accurate, and useful reports on derivative activities so that, when necessary, they can act quickly and decisively to maximize gains and minimize losses. Management reports should cover exposures and hedging activities, as well as hedging effectiveness. Management's report should compare risk management results with corporate goals. The measurement of derivatives risk begins with valuing the derivatives portfolio at current market value to reflect the magnitude of potential losses or gains.

5.4.3 Recommendation 3: Set up effective internal control system

33% of survey participants indicated that they do not have internal guidelines for control purposes. Institutions should develop effective policies to ensure there are sufficient procedures and controls in place to identify measure, manage, mitigate and report on all forms of market risk that may be generated by adverse movements in equity, bond, commodity, currency or other market prices, indices or rates or changes in the volatility of such movements. These policies should include the development of a listing of derivatives instruments approved for hedging, hedging strategies, counterparty guidelines, risk manager responsibilities, lines of authority, and bases for performance evaluation. The responsibility for managing the risks of derivatives used must start and end at the top. The key to managing derivatives risk is to developing the procedures and implementing the necessary controls to ensure the effective management of the market, credit, and legal risks of derivative use. Internal control policies should be consistent with the strategy, objectives, financial position and risk appetite of the organization. These policies should be reviewed as business and market circumstances change. With appropriate procedures and adequate controls, debacles like Metallgesellschaft, Proctor and Gamble, and Gibson Greetings might be able to be avoided in Namibia.

5.4.4 Recommendation 4: Limits on derivative activities

The goal of putting limits on derivative activities is to enable effective oversight. 8% of research participants indicated that, they do not put limits on they derivatives activities. A clear and internally consistent risk management policy with risk exposure limits must be established in all institutions. Portfolio managers should insist on such a policy so that the responsibility for risk management is clearly defined. And, timely reports must be provided to management, identifying and characterizing risk exposures, measuring the magnitude, and recommending appropriate hedging strategies to reduce the risk. A caveat: even a strong internal control system cannot prevent senior officers from making uninformed and speculative choices.

5.4.5 Recommendation 5: Segregation of duties

The survey indicates that 70.6% of participant institutions do not have an independent department that deals with derivatives transactions and on average there are only three people who deal with derivatives in the organizations. To manage risk with derivatives successfully, a company's organizational structure must include controls to ensure that only authorized transactions take place and that unauthorized transactions are detected quickly. To limit derivatives trading irregularities or errors, the company should separate the responsibilities for (1) establishing hedging strategies; (2) approving transactions; (3) executing transactions; (4) gathering, summarizing, and communicating exposure information; (5) management reporting; (6) trade information. In addition, the company should require independent trade confirmation and dual control for all derivative transactions.

5.4.6 Recommendation 6: Stress Simulations

The survey reveals that only 8.3% of derivatives users in Namibia use stress testing. Institutions should regularly perform simulations to determine how their portfolios would perform under stress conditions. Simulations of improbable market environments are important in risk analysis because many assumptions that are valid for normal markets may no longer hold true in abnormal markets. These simulations should reflect both historical events and future possibilities. Stress scenarios should include not only

abnormally large market swings but also periods of prolonged inactivity. Institutions should evaluate the results of stress tests and develop contingency plans accordingly.

5.5 Recommendations for further research

This research was conducted with an aim to facilitate a better understanding of derivative instruments by financial institutions in Namibia. However, with the limited resources and time frame, it proved difficult to explore all areas of derivatives. Therefore, further research would be recommended in the following areas.

- Investigating derivative uses by non financial firms in order to focus on end users, as financial institutions both use and sell derivative instruments.
- Investigate the determinants of corporate hedging policies in Namibia
- Focusing on portfolio to determine whether corporations reducing or increasing risk with derivatives.
- To probe into the types of derivatives and risk separately in order to gain more insight.

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**AN INVESTIGATION INTO THE USES OF DERIVATIVE
INSTRUMENTS BY FINANCIAL INSTITUTIONS IN NAMIBIA**

By

Toini Uusiku

QUESTIONNAIRE

Submitted in fulfillment of the requirement for the

MASTER IN BUSINESS ADMINISTRATION

Graduate School of Business

UNIVERSITY OF KWAZULU-NATAL

Promoter: Professor Sam Lubbe (031-2607280)

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MAY 2006

Note to the respondent

- We need your help to investigate the uses of derivatives instruments by the financial institutions in Namibia.
- Although the survey is voluntary, your input would be extremely valuable.
- Your responses to this questionnaire will remain confidential and will only be used for the purpose of this study.

How to complete the questionnaire

- Please answer all questions with a pen (not a pencil).
- Please answer the questions as best as you can and follow the instructions at each question.

Permission to use my response for academic research	
<p>I..... (full names of participant) hereby confirm that I understand the contents of this document and the nature of the research project, and I consent to participating in the research project.</p>	
<p>I understand that I am at liberty to withdraw from the project at any time, should I so desire.</p>	
SIGNATURE OF PARTICIPANT	DATE
.....	

Explanatory Note: In this survey the word 'institution' is used to refer generally to your organization, whether you are a bank or asset management company.

Section A: General information

- 1. Date : _____
- 2. Institution : _____
- 3. Respondent First Name : _____
- 4. Respondent Surname : _____

5. Position in Organization : _____

6. Department : _____

7. Qualifications : _____

8. What is your experience in Derivatives trading?

9. Is there a department dealing with derivatives in your institution? If yes, explain its objectives.

10. If yes, how long has the department been established? (in years)

11. How many people are employed in the department?

12. Who heads up the derivatives department? (Name and position in organization)

13. If no derivatives department, how does your institution trade derivatives?

SECTION B: DERIVATIVE USES

14. Does your institution use derivatives?

(Please tick the appropriate box)

YES NO

_____ Please go to question 16 if you answered **YES** to QUESTION 14 _____

15. Please indicate the three most important reasons for not using derivatives.

(Please tick the appropriate box. VI= Very important, I = Important, LI= Less important)

	VI	I	LI
a. Lack of knowledge or experience with derivatives	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Inability to adequately monitor or control derivatives use by portfolio managers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Increased investment risks when derivatives are used	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Investment objectives can be met without using derivatives	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Concern about how derivatives are perceived by clients, regulators or other parties	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Other _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

16. For which of the following asset classes does your institution use derivatives?

(Please tick the appropriate box)

	Very often	Often	Never
a. Cash	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Domestic equities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Domestic bonds	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Foreign Equities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Foreign bonds	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Commodities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Foreign exchange	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. Properties	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

17. What is the value of derivatives as a percentage of the value of assets in each of the following assets classes?

(Please indicate the appropriate percent under each exposure category.)

	Cash	Domestic	Foreign	Domestic	Foreign	Foreign	Properties	Commodities
		Equities	Equities	Bonds	Bonds	Exchange		
Derivatives	_____ %	_____ %	_____ %	_____ %	_____ %	_____ %	_____ %	_____ %

18. Which type of derivatives does your institution use the most for each underlying market?

(Please indicate with a tick your institution's usage of the derivatives in the appropriate column, if a combination is not used at all, please leave a blank.)

	Equity	Currency	Interest rate	Commodities	Bonds	Properties
a. Forward Contract	_____	_____	_____	_____	_____	_____
b. Future Contract	_____	_____	_____	_____	_____	_____
c. Exchanged Option	_____	_____	_____	_____	_____	_____
d. OTC Options	_____	_____	_____	_____	_____	_____
e. Swaps	_____	_____	_____	_____	_____	_____
f. Other (Specify)	_____	_____	_____	_____	_____	_____

19. Why is the institution using derivatives? Please tick how often you transact in the derivatives market for each of the following purposes.

(Please tick the appropriate box)

	Very often	Often	Never
a. Hedging	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Achieving incremental Return (e.g. writing covered calls)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Assets Allocation (eg using derivatives rather than cash investment in different assets classes)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Short term market timing (as a substitute for cash market transactions)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Minimizing taxes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. To access markets in which direct investment is limited	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. To obtain greater leverage in investments	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. Other _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

20. What limits do you place on derivatives activities?

(Please tick the appropriate response)

- a) No explicit limits
- b) Notional value
- c) Notional value as a percentage of assets
- d) Value- at- Risk based limits
- e) Other market based limits (delta, duration, etc)
- f) Restriction on the type of derivatives
- g) Restriction on maturity
- h) Restriction on strategies

21. Indicate your degree of concern about the following issues with respect to derivatives.

(Please tick your degree of concern)

- a. Counter party risk
- b. Ability to quantify derivatives
- c. Ability to monitor the use of derivatives
- d. Pricing and valuing derivatives
- e. Reaction by shareholders, board members and other parties to the use of derivatives.
- f. Market liquidity (ability to unwind transactions)
- g. Regulatory issues
- h. Other _____

22. Which technique does your institution use to measure derivative risk?

(Please tick the appropriate box)

- a. Value at Risk
- b. Stress testing
- c. Others (specify)

23. How frequently is derivatives activity reported to the institution's investment committee?

(Please circle the appropriate response.)

- a. Monthly b. Quarterly c. Annually d. As needed / No set schedule e. Other _____

24. Do you have a written policy covering the use of derivatives?

(Please tick the appropriate box)

YES NO

25. Please indicate the sources for obtaining your measures of derivative risk.

(Please circle the appropriate response)

- a. Calculations performed internally within your institution
- b. Calculation provided by external asset managers
- c. Calculation provided by consulting firms
- d. Calculation provided by custodians
- e. Calculation provided by security brokers / dealers with whom you transact
- f. We do not use measure of counter party risk

26. How satisfied are you with the overall reporting on derivatives activities in your institution?

(Please tick the appropriate box)

Degree of satisfaction with derivatives reporting very satisfied satisfied neutral unsatisfied

27. How satisfied are you that your use of derivatives is achieving its intended purpose?

(Please tick the appropriate box)

Degree of satisfaction with use of derivatives very satisfied satisfied neutral unsatisfied

28. What is the value of total assets under management in your institution?

(Please tick the appropriate box)

- Less than N\$3 billion
- N\$ 3 billion to N\$ 5 billion
- N\$ 5 billion to N\$ 10 billion
- N\$10 billion and over

29. What is the value of derivatives as a percentage of total assets under management? _____ %

30. What percentage of assets is invested outside Namibia? _____ %

31. How do you expect your derivatives usage to change over the next year?

(Please tick the appropriate box)

Decrease a lot **Decrease some** **No change** **Increase some** **Increase a lot**

Thank you very much for completing the questionnaire.

If you have further questions or comments, please contact:

Ms Toini Uusiku
Graduate School of Business
University of Kwazulu-Natal
Durban, South Africa
Cell (RSA) +27 722820647
Cell (NAM) + 264 811298875
Email: toini@mailbox.co.za

Monday, 15 May 2006

Attention:
Managing Director
P. O. Box
Windhoek

Dear Mr.

**PERMISSION SOUGHT TO CONDUCT A SURVEY ON THE DERIVATIVE USES BY
FINANCIAL INSTITUTION IN NAMIBIA**

One of the MBA students of the Graduate School of Business, Ms. Toini Uusiku is doing research on the above topic for which she has to survey the portfolio managers that registered with the Namibia Financial Institutions Supervisory Authority. She is being supervised by Prof. S Lubbe. The questionnaire to be used in this research has already been approved by the university research ethic committee. The main objectives of the research are:

- To examine the use of derivative at country level
- To ascertain the assets classes in which derivatives are invested.
- To determine the techniques that institutions uses to measure derivatives risks.
- To assess the risk management practices that institutions put in place in order to prevent derivative losses.

As the Postgraduate Research Coordinator of the Graduate School of Business, I am hereby applying for permission in principle for her to survey the portfolio manager in your institution for the purposes of this research.

- Participation will be on a voluntary basis and participants will be required to sign a declaration on the questionnaire should they consent to take part in this research.
- The survey will be of a constructive nature.
- The research proposal and the questionnaire, to be used in this research will be delivered and collected by the researcher at your institution.

If you have further questions or comments, please contact her directly on toini@mailbox.co.za or her research supervisor, Professor Sam Lubbe, on +27 31 2607280 / slubbe@ukzn.ac.za.

This letter is also being sent by ordinary post.

KIND REGARDS

Prof. R M Klopper

Concept Matrix

	Def	Types	History	Risk Man	Previous res	Risk
An Investigation of the Impact of Derivative Use on the Risk and Performance of UK Unit Trusts <i>J.Fletcher, D.Forbes, A. Marshall. Financial Services</i>				y	y	y
Are derivatives too risky for banks <i>Beckett, Sean. Economic Review Federal Reserve Bank of Kansas City 1993. Vol.78, Iss. 3; pg. 27</i>	y	y				
Use of derivatives by Australian companies R. Heaney, and H. Winata 9 February 2005 Heaney and Winata (2005)					y	
What the world thinks about derivatives <i>McHenry, John I. The Journal of Bank Cost & Management Accounting. San Francisco: 1995. Vol.8, Iss. 1; pg. 5 Iss. 1; pg. 5</i>				y		y
Understanding Derivatives, Brian Eales 2004 London Metropolitan University, www.yieldcurve.com	y	y				
Derivatives: Valuable tool or wild beast? <i>Brian Kettel. Balance Sheet. Bradford: Feb 1999. Vol.7, Iss. 2; pg. 14, 5 pgs</i>	y			y	y	
Derivatives and downside risk, C.S. Pedersen. Derivatives Use, Trading & Regulation. London: 2001. Vol.7, Iss. 3; pg. 251						
Banks and derivatives G. Gorton and R. Rosen (1995)	y			y		
Risk in derivative Market L. Hentschel and C. Smith 1995						
Currency and interest-rate derivatives use in US firms Financial Management Winter, 1998 Shawton D. Howton, Steven B. Perfect				y		
Managing risk with derivatives, Baril, C.P,	y	y		y		

Benke, R.L ,Buetow, Gerald W. Management Accounting. Montvale: Nov 1996.Vol.78, Iss. 5; pg. 20, 6 pgs				
Regulating Derivatives: The Current System and Proposed Changes C.Culp and R. Mackay (2001)	y	y	y	
Not using derivatives could increase your risk <i>R.Scott F.</i> Pension Management. Atlanta: Apr 1995. <i>Vol.31, Iss. 4; pg. 52, 1 pgs</i>	y			
South African pension plans are turning to derivatives <i>Beatrix Payne.</i> Pensions & Investments. Chicago: Mar 20, 2000.Vol.28, Iss. 6; pg. 16				
Five keys to managing derivatives <i>Edwards, Laure.</i> Pension Management. Atlanta Sep 1995.Vol.31, Iss. 9; pg. 20	y	y	y	y
Risk management: Where banks fail <i>Richard Dedman, Simon Robert-Tissot.</i> Balance Sheet. Bradford: 2001.Vol.9, Iss. 2; pg. 16 <i>Dedman andTissot</i> (2001)	y			
Controlling derivatives <i>Ross, Derek.</i> Accountancy. London: Mar 1995 .Vol.115, Iss. 1219; pg. 138	y	y	y	
Why Greenspan likes derivatives, B. Streeter 2002 American Bankers Association. ABA Banking Journal. New YorVol.94, Iss. 12				
Gambling on Derivatives LatinFinance. Coral Gables: Jul/Aug 2005 On the determinants of derivative usage by Australian companies <i>H. Nguyen, R Faff.</i> Australian Journal of Management. Sydney: Jun 2002.Vol.27, Iss. 1; pg. 1, 24 pgs	y			
Derivatives of derivatives of derivatives... <i>Anonymous.</i> Futures. Chicago: Fall 2005.Vol.34, Iss. 12; pg. 18, 2 pgs	y	y	y	

Derivatives revisited, Journal of Accountancy, May, 2000 by Ed McCarthy	y	y		
Derivative Gain/loss, Janikan Supanvanij. Journal of American Academy of Business, Cambridge. Hollywood: Mar 2005.Vol.6, Iss. 2; pg. 16, 8 pgs	Y	Y		Y
Derivatives: Do they have a place in ERM? <i>Michael J Moody</i> . Rough Notes. Indianapolis: May 2003.Vol.146, Iss. 5; pg. 102, 2 pgs	Y	Y	Y	
International Evidence on Financial Derivative use Bartman etal 2004				y
Why do firms hedge? A review of evidence A Judge 2003				
Why corporation should hedge Don Adams				
Hedging derivative risk, G Jiang and R oomen 2001				y
The rise of derivative: Why risk management is the rage Cummis aetal 1997 come back on uses	y	y	y	
How much do bank use derivatives to reduce CR risk B. Mintor, R Stulz and R. Williamson 2005	y	y		
Motive for Corporate Hedging - evidence from uk E. Clark and A. Judge 2005	y			y
How much do firms hedge with derivatives Guay and Kothari 2002	y	y		y
Financial derivatives: Harnessing the benefits and containing the danger W. Thorbecke 1995	y			
Derivatives: State of Debate D. Harowitz and R Mackay 1995				

Derivatives and corporate risk management J. Cummins, R Phillips and S. smith 2001					y
A Survey of Derivatives Use by UK Nonfinancial Companies Ahmed A. El-Masry , 2003					y
Derivatives Usage and Risk Management by Non Financial Firms: A Comparison between Brazilian and International Evidence. Richard Saito and Rafael Felipe Schiozer 2005 Good ref					y
The determinants of the corporate Hedging decision: An Empirical Analysis M. Foo and W. Yu 2005				y	y
Portfolio approach to derivatives <i>Brady, Simon</i> . Corporate Finance. London: Nov 1993., Iss. 108; pg. 33, 2 pgs			y		
Namibia: Financial services EIU ViewsWire. New York: Jul 31, 2003.					
Asymmetric information and corporate derivatives use <i>Peter Dadalt, Gerald D Gay, Jouahn Nam</i> . The Journal of Futures Markets. New York: Mar 2002. Vol.22, Iss. 3; pg. 241		Y	Y		
Controlling derivatives Ross, Derek. Accountancy. London: Mar 1995. Vol.115, Iss. 1219; pg. 138, 2 pgs DEL		Y	Y		
Derivatives by non financial firms in sweden 1996-2003 P. Alkeback, N. Hagelin and B Pramborg 2003					y
Derivatives: Flexibility defines its level usage in Brazilian Financial Market Baasso, L. Kimura, H. and L. Climeni 2005		Y	Y	y	y

Derivatives have place in risk management <i>Chris Clair</i> . Pensions & Investments. Chicago : Apr 30, 2001.Vol.29, Iss. 9; pg. 38, 1 pgs					
On the determinants of derivative usage by Australian companies <i>Hoa Nguyen, Robert Faff</i> . Australian Journal of Management. Sydney: Jun 2002.Vol.27, Iss. 1; pg. 1, 24 pgs					Y
Moving the Market: GM Debt Poses Challenge to Derivatives Market, Henny Sender. Wall Street Journal. (Eastern edition). New York, N.Y.: Feb 16, 2006. pg. C.3					
The impact of institutional differences on derivative usage A comparative study of US and Dutch firms G. Bodnar, A. Jong and V macrae 2002		y		y	y
A derivatives policy framework for manufacturing firms <i>William H Dresnack, Sandeep Singh</i> . American Business Review. West Haven: Jun 1999.Vol.17, Iss. 2; pg. 86, 10 pgs	Y	y		y	
An Analysis of the determinats of financial derivaives use by commercial Banks Katie Hundman		y		y	
Are Corporation reducing or taking risk with derivatives L. Hentschel and S. Kothari 2001 The journal of financial and quantitative analysis vol 36 no1 93-118		y		y	y
Derivatives Risk in Commercial Banking Allen C. Puwalski 2003	Y				
Derivatives under scrutiny <i>Cocheo, Steve</i> . American Bankers Association. ABA Banking Journal. New York: Dec 1993.Vol.85, Iss. 12; pg. 35, 5 pgs		y	y		y
Management Motivation for Using Financial		y			y

Derivatives in Australia <i>Karen Benson, Barry Oliver</i> . Australian Journal of Management. Sydney: Dec 2004. Vol.29, Iss. 2; pg. 225, 18 pgs					
Derivatives debacles <i>Kuprianov, Anatoli</i> . Economic Quarterly - Federal Reserve Bank of Richmond. Richmond: Fall 1995. Vol.81, Iss. 4; pg. 1, 39 pgs	y	y		y	
Derivative Trading, Hedging and bank Risk P. Pai and R. Curcio 2005					y
Derivative Markets Christian Upper 2005					
Bank Hedging and derivative use: The impact on and Sources of Shareholder value and Risk K. Cyree and P. Huang 2005					y
OCC Bank derivatives Report Third Quarter 2005					
Alternative instruments for hedging inflation risk in the Banking industry G. Koppenhaver and C. Lee 1998					
1998 Survey of Derivatives and risk management practised by us institutional investors R. Levich and B. Ripston 1999					
Should we fear derivatives R. Stulz 2004	y	y		y	y
Evidence on Corporate Hedging the journal of financial and Quantitative Analysis S. Mian 1996					y
How are Derivatives Used? Evidence from the Mutual Fund Industry The Journal of Finance J. Lynch and J. Pontiff 1999					y
How Firms should Hedge					y

G. Brown and K. Toft 2002
The Review of Financial Studies

Risk Management of Financial Derivatives y y y y y
Comptroller's Handbook 1997

*Managing Derivatives Risk-Guidelines for end-users of
derivatives* y y y

Pricewaterhouse coopers

Derivatives Best Practices y y y
Bank 1995



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12 MAY 2006

MS. T UUSUKU (204514004)
GRADUATE SCHOOL OF BUSINESS

Dear Ms. Uusuku

ETHICAL CLEARANCE APPROVAL NUMBER: H0606226A

I wish to confirm that ethical clearance was granted for the following project:

"An investigation into the uses of derivatives instruments by the financial institutions in Namibia"

Yours faithfully



MS. PHUMELELE XIMBA
RESEARCH OFFICE

PS: The following general condition is applicable to all projects that have been granted ethical clearance:

THE RELEVANT AUTHORITIES SHOULD BE CONTACTED IN ORDER TO OBTAIN THE NECESSARY APPROVAL SHOULD THE RESEARCH INVOLVE UTILIZATION OF SPACE AND/OR FACILITIES AT OTHER INSTITUTIONS/ORGANISATIONS. WHERE QUESTIONNAIRES ARE USED IN THE PROJECT, THE RESEARCHER SHOULD ENSURE THAT THE QUESTIONNAIRE INCLUDES A SECTION AT THE END WHICH SHOULD BE COMPLETED BY THE PARTICIPANT (PRIOR TO THE COMPLETION OF THE QUESTIONNAIRE) INDICATING THAT HE/SHE WAS INFORMED OF THE NATURE AND PURPOSE OF THE PROJECT AND THAT THE INFORMATION GIVEN WILL BE KEPT CONFIDENTIAL.

cc. Faculty Officer (Commerce)
cc. Supervisor (Prof. S Lubbe)