

**THE MANAGEMENT OF FOREIGN EXCHANGE RISK BY  
JSE-LISTED COMPANIES: AN EMPIRICAL INVESTIGATION**

A thesis presented to

The Graduate School of Business  
University of Cape Town

in partial fulfilment of the requirements for the  
Master of Commerce in Development Finance Degree

by

**GEORGE TSHEGOFATSO MOGALADI**

Supervisor: Lungelo Gumede

**DECEMBER 2016**

The copyright of this thesis vests in the author. No quotation from it or information derived from it is to be published without full acknowledgement of the source. The thesis is to be used for private study or non-commercial research purposes only.

Published by the University of Cape Town (UCT) in terms of the non-exclusive license granted to UCT by the author.

## PLAGIARISM DECLARATION

1. I know that plagiarism is wrong. Plagiarism is to use another's work and pretend that it is one's own.
2. I have used the American Psychological Association (APA) convention for citation and referencing. Each contribution to, and quotation in, this report on **The Management of Foreign Exchange Risk by JSE-Listed Companies: An Empirical Investigation** from the work(s) of other people has been attributed, and has been cited and referenced.
3. This report on The Management of Foreign Exchange Risk by JSE-Listed Companies: An Empirical Investigation is my own work.
4. I have not allowed, and will not allow, anyone to copy my work with the intention of passing it off as his or her own work.
5. I acknowledge that copying someone else's assignment or essay, or part of it, is wrong, and declare that this is my own work.

Signed by candidate

Signature Removed

1 December 2016

**SIGNATURE**

**DATE**

George Tshegofatso Mogaladi

## **ABSTRACT**

This study explored the foreign exchange risk management practices by JSE-listed companies, specifically non-financial companies. The investigation was based on the experienced practices in 2015. A web-based survey was used to source data from the population and yielded a 37% response rate. Transactional risk is the most prioritised form of foreign exchange exposure. Surprisingly, economic exposure is also highly regarded by JSE non-financial firms. Translational risk is the least prioritised form of foreign exchange risk. There is a significant statistical relationship between the frequency at which firms manage economic risk, and the industry to which they belong. Consistent with the prescriptive theory, the study found that a significant majority of firms used internal or operational hedging techniques in combination with financial derivatives. Netting is the predominately used internal hedging technique by the survey respondents. There is a significant relationship between a firm's usage of netting as an internal hedging technique and the percentage of foreign currency denominated expenses. Forward contracts are the preferred financial derivative used to hedge foreign exchange exposure. The study reveals that the manner in which firms use forward contracts is significantly influenced by their percentage of foreign currency denominated expenses. It is noted that a strategic decision with respect to management of foreign exchange risk in JSE non-financial firms falls within the purview of a firm's executive management.

### **Key terms:**

Foreign exchange risk; derivatives instruments; internal hedging methods; Johannesburg Stock Exchange-listed companies; multinational corporates; non-financial companies

## **ACKNOWLEDGEMENTS**

I am greatly indebted to my supervisor, Lungelo Gumede, whose guidance and critical review of my work impelled me to great diligence as I worked on this research project.

I am also grateful to Prof Daniel Makina for his consistent support and advice.

Thanks also to Mrs Jenny Seagreen for the formatting, layout and technical editing of this research document.

To my wife, Nomsa Mogaladi, and my only son, Motheo Mogaladi, the completion of this project would not have been possible had it not been for your loving support and understanding; notwithstanding the difficult life situation that confronted us while in the middle of this study, your love and devotion in faith surpassed. To God be the glory!

## LIST OF ABBREVIATIONS AND ACRONYMS

BIST	Borsa Istanbul
BRICS	Brazil, Russia, India, China and South Africa
CFO	Chief Financial Officers
EDC	Export Development Canada
ICB	Industry Classification Benchmark
IFRS	International Financial Reporting Standards
JSE	Johannesburg Stock Exchange
KES	Kenyan Shilling
LSE	London Stock Exchange
MNC	Multinational Corporate
OTC	Over-the-Counter
S&P	Standard & Poor
SA-GAAP	South Africa Statement of Generally Accepted Accounting Principles
SPSS	Statistical Package for Social Sciences
SSA	Sub-Saharan Africa
SSAP	Statement of Standard Accounting Practice
USA	United States of America
UK	United Kingdom
VaR	Value-at-Risk
ZAR	South African Rand

# CONTENTS

	Page
<b>PLAGIARISM DECLARATION</b> .....	ii
<b>ABSTRACT</b> .....	iii
<b>ACKNOWLEDGEMENTS</b> .....	iv
<b>LIST OF ABBREVIATIONS AND ACRONYMS</b> .....	v
<b>CONTENTS</b> .....	vi
<b>LIST OF FIGURES</b> .....	ix
<b>LIST OF TABLES</b> .....	x
<b>1. INTRODUCTION</b> .....	1
1.1 BACKGROUND.....	1
1.2 FOREIGN EXCHANGE RISK MANAGEMENT .....	2
1.3 THE JOHANNESBURG STOCK EXCHANGE (JSE) .....	5
1.4 THEORETICAL ASPECTS OF FOREIGN EXCHANGE RISK .....	6
1.5 PROBLEM STATEMENT .....	7
1.6 RESEARCH QUESTIONS.....	9
1.7 OBJECTIVE OF THE STUDY .....	10
1.8 SIGNIFICANCE AND JUSTIFICATION OF THE STUDY.....	10
<b>2. LITERATURE REVIEW</b> .....	11
2.1 INTRODUCTION .....	11
2.2 THEORETICAL FRAMEWORK.....	11
2.2.1 Risk management.....	12
2.2.2 Origins of foreign exchange risk.....	12
2.2.3 Nature of foreign exchange risk.....	13
2.2.3.1 <i>Transaction risk</i> .....	14
2.2.3.2 <i>Translation risk</i> .....	14
2.2.3.3 <i>Economic risk</i> .....	15
2.3 RELEVANT EMPIRICAL STUDIES ON THE MANAGEMENT OF EXCHANGE RISK .....	15
2.3.1 Literature related to the correlation of firm characteristics and exchange risk.....	15
2.3.2 Literature related to exchange risk management practices .....	20
2.3.3 Acceptable management practices of foreign exchange risk .....	25
2.3.4 Accounting treatment.....	29

2.4	INTERNAL AND FINANCIAL HEDGING INSTRUMENTS .....	30
2.4.1	Internal strategies .....	30
2.4.1.1	<i>Netting</i> .....	31
2.4.1.2	<i>Leading and lagging</i> .....	31
2.4.1.3	<i>Invoicing</i> .....	31
2.4.2	Types of financial derivative instruments .....	31
2.4.2.1	<i>Forward and future contracts</i> .....	32
2.4.2.2	<i>Swaps</i> .....	32
2.4.2.4	<i>Options</i> .....	32
2.5	CONCLUSION.....	33
<b>3.</b>	<b>METHODOLOGY</b> .....	<b>33</b>
3.1	INTRODUCTION .....	33
3.2	METHODOLOGICAL APPROACHES .....	34
3.3	POPULATION AND SAMPLE .....	37
3.3.1	Population .....	37
3.3.2	Sample.....	38
3.4	RESEARCH DESIGN .....	43
3.5	RESEARCH INSTRUMENT .....	44
3.6	DATA COLLECTION .....	45
3.7	RESPONSE RATE .....	46
3.8	DATA ANALYSIS .....	47
3.9	ETHICAL CONSIDERATIONS .....	48
3.10	CONCLUSION.....	49
<b>4.</b>	<b>PRESENTATION OF RESULTS, ANALYSIS AND DISCUSSION</b> .....	<b>49</b>
4.1	INTRODUCTION .....	49
4.2	DESCRIPTIVE ANALYSIS OF FOREIGN MANAGEMENT PRACTICES BY NON-FINANCIAL FIRMS .....	50
4.2.1	Firm specific characteristics and risk management practices .....	50
4.2.1.1	<i>Firm specific characteristics</i> .....	50
4.2.1.2	<i>Risk management practices</i> .....	52
4.2.1.3	<i>Usage of derivatives and internal hedging methods</i> .....	52
4.2.1.4	<i>Estimation of exposure to foreign currency</i> .....	53
4.2.1.5	<i>Determination of corporate risk management structures and related systems</i> .....	55
4.2.2	Identifying forms of foreign exchange risk.....	57
4.2.3	Evaluating the effectiveness of strategies and instruments .....	61



## LIST OF FIGURES

Figure 1.1:	Risk management framework: South Africa .....	4
Figure 1.2:	ZAR/USD .....	8
Figure 4.1:	Industrial spread by respondents .....	51
Figure 4.2:	Levels of global business involvement.....	51
Figure 4.3:	Levels of importance ascribed to exchange rate risk forms by respondents .....	66
Figure 4.4	Motivation for managing transactional exposure.....	67
Figure 4.5:	Motivation for managing translational exposure.....	68
Figure 4.6:	Internal hedging strategies.....	70
Figure 4.7	Derivative instruments use.....	71
Figure 4.8	Reasons for derivative preference .....	72
Figure 4.8:	Level of internationalisation.....	77
Figure 4.9:	Alternative usage of derivatives .....	78

## LIST OF TABLES

Table 3.1:	Selected previous research types .....	36
Table 3.2:	Sample construction procedure .....	39
Table 3.3:	Sample description by industry and sector.....	42
Table 3.4:	Selected previous studies response rate .....	47
Table 4.1:	Categories describing the nature of the company.....	50
Table 4.2:	Other company specific characteristics and risk management practices.....	53
Table 4.3:	Estimated foreign currency denominated revenue and expenses.....	54
Table 4.4:	Risk management structures, systems and levels of decision-making .....	56
Table 4.5:	Levels of importance associated with forms of foreign exchange risk.....	57
Table 4.6:	Levels of frequency in the management of foreign exchange risk.....	58
Table 4.7:	Transactional risk: reasons for management and sources of exposure .....	59
Table 4.8:	Translational risk: reasons for management or non-active management of exposure .....	60
Table 4.9:	Economic exposure and usage of derivatives for speculative purposes .....	61
Table 4.10:	Combination of internal hedging strategies and derivative instruments .....	62
Table 4.11:	Internal hedging strategies dominance and effectiveness.....	63
Table 4.12:	Derivative instruments dominance and motivation for high preference.....	64
Table 4.13:	Derivative use for purposes other than foreign exchange hedging .....	65
Table 4.14:	Derivative use by industry .....	73
Table 4.15:	Combination of internal hedging and derivative instruments by industry.....	74
Table 4.16:	Firm size .....	75
Table 4.17:	Usage of derivatives by firm size .....	75
Table 4.18:	Combination of internal hedging and derivative instruments by firm's size .....	76

# 1. INTRODUCTION

## 1.1 BACKGROUND

The economic crisis of 2008, which persisted for some years, had a debilitating impact on the entire global economy and also demonstrated the interdependent nature of the global economy. Such interdependence was evidenced by the asymmetric negative impact of the economic recession on both the emerging and developed economies. The negative impact of the recession was, among others, manifested through exchange rate volatility, underperforming international markets measured by market capitalisation as a percentage of Gross Domestic Product (GDP), as well as volatile commodity prices. The aforementioned resulted in inflationary pressure that led to low economic growth and caused job losses in many economies. Business operations in both developed and emerging economies were hit hard by the recession; some firms could not pull through these economic difficulties and subsequently faced an untimely demise.

The importance of foreign exchange risk increased significantly after the abolishment of a fixed exchange system occasioned by the collapse of the Bretton Woods system around 1973 (Popov & Stutzmann, 2003). As a result, Pieters (2009) posits "History has once again taught us that South Africa is part of the global village and is directly affected by global events" (p.1). These remarks were made in the middle of what could be recorded as being one of the eras marred by the highest currency volatility. The South African rand (ZAR), compared to major currencies, that is, the US dollar (USD) and the European Euro (EURO), was highly volatile between 2000 and 2009. The rand/dollar exchange hiked from just over R6 in 2000 and averaged R12 in 2009, whereas an asymmetric rise was observed in the rand/Euro exchange, which moved from closer to R6 and closed at over R15 within a similar period.

The World Bank Report (2013) singled out domestic and global developments, wages and the consistently depreciating exchange rates as main factors causing upward pressure on South Africa's inflation. Furthermore, higher commodity prices taken together with exchange rate depreciation caused an increase in

export earnings. The devaluation of the rand also caused imports receipts to rise, resulting to a narrowed trade deficit by the fourth quarter in 2012 (World Bank 2013). Accordingly, the World Bank Report (2013) stated that larger emerging economies observed strengthening currencies by the first quarter of 2013. However, this was an exception regarding South Africa's rand and the Indian rupee, as both currencies lowered in comparison to Brazilian, Chinese, Mexican, Russian and Turkish currencies (World Bank Report, 2013). The decline in the rand and rupee was attributed to weaker growth concerns in both economies, widening trade account deficits and rising inflationary margins, which resulted in their respective currency's devaluation on a real effective exchange rate basis (World Bank Report, 2013).

Added to the inflationary pressure posed by the importation of foreign currency denominated goods at the backdrop of local currency depreciation, corporates also contended with serious exchange rate volatility. De Lange (2013) stated "The recent volatility in the South African rand has seen many local corporations scrambling to control the impact of the dwindling value of the local currency on their financial results" (p.1). Having provided this compelling narrative regarding the significant impact of the exchange rate as one of the key determinants of economic performance and business viability on a global scale, it is essential to contextualise what foreign exchange risk is and how it is located within the overall theory of risk management. Additionally, it is deemed appropriate to provide a brief overview of the Johannesburg Stock Exchange (JSE)<sup>1</sup> as it constitutes a population from which the sample for this study was derived.

## **1.2 FOREIGN EXCHANGE RISK MANAGEMENT**

In finance the concept of risk commonly refers to the likelihood that an investment will yield a lower return and result in losses. Risk can be categorised into two broad categories, that is, systematic and unsystematic risk. There are various typologies of risk, the most common being political risk, legal risk, reputational risk, financial risk, operational risk and technological risk (Ocran, 2015). Financial risk can be further dissected into market risk and credit risk. Market risk refers to loss in earnings and capital due to changes in interest rates, exchange

---

<sup>1</sup> For the remainder of this paper the acronym JSE will be used.

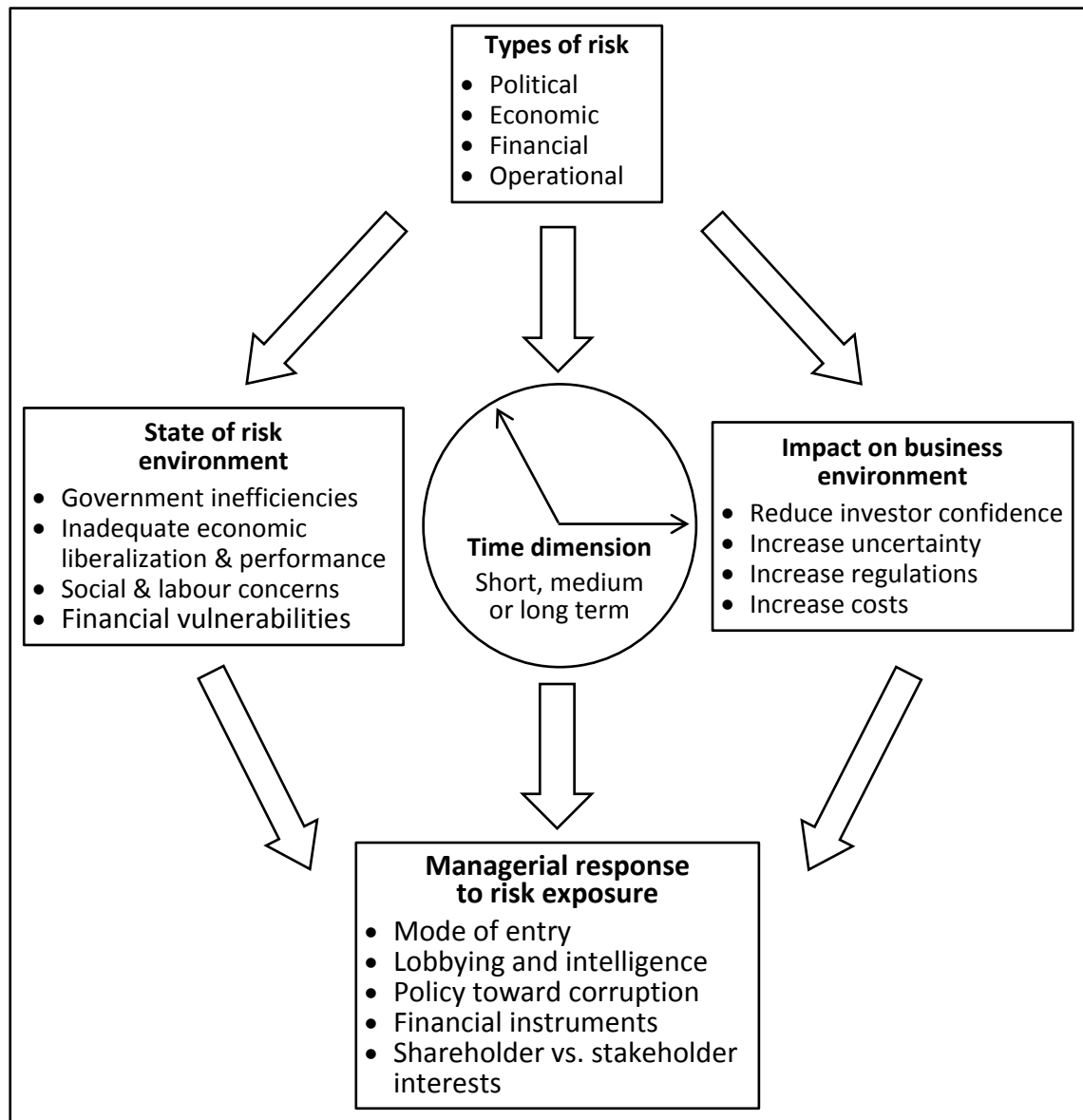
rates, equity or commodity prices (Ocran, 2015). Foreign exchange risk is a subset of market risk, which is defined differently by scholars and specialists in financial risk. However, despite divergent definitions, there is general consensus in respect of the nature of foreign exchange risk and the various forms through which it is manifested.

Dhanani (2003) defines foreign exchange risk as a situation where the corporation's financial performance as measured through conventional financial statements and cash flows is altered due to changes in exchange rates. Bradley and Moles (2002) argue that foreign exchange risk refers to the impact of changes in the exchange rate seen through the reduction of the firm's ability to sell its product outside its home country, and the increment in the firm's cost of foreign denominated inputs, which in turn limits its domestic and global competitiveness. Given the aforementioned definitions, it is evident that common meaning can be deduced around the concept of foreign exchange risk irrespective of divergence in definitions.

According to Dhanani (2003), foreign exchange risk has three broad types: transaction risk, translation risk and economic risk. Transaction risk is the effect of adverse exchange rate movements on already concluded transactions denominated by foreign currency. Translation or accounting risk refers to an impact of exchange rate movement on foreign subsidiary financial statements when they are translated into the currency of the parent company for purposes of consolidation of group statements. Economic risk relates to the long-term effect of exchange rate movements on the firm's future cash flow and consequently the firm's value. Management of risk in general follows a systematic process and the undertaking of certain actions or activities, including risk identification, measurement or profiling, control, mitigation, monitoring and evaluation.

Van Wyk, Dahmer and Custy (2004) demonstrated that there are three fundamentals that underpin risk as a concept: the first entails the accurate determination of level or unit of analysis of risk; the second is the acknowledgement of risk as a broad concept, which is not mutually exclusive from related concepts; and third is understanding risk as a multidimensional concept (Van Wyk et al.,

2004). Risk analysis in a South African context can be undertaken through a four-level risk management framework (see Figure 1.1) (Van Wyk et al., 2004).



**Figure 1.1:** Risk management framework: South Africa

Source: Van Wyk et al. (2004)

The framework as illustrated in Figure 1.1 is adjustable for analysing other forms of risk including foreign exchange risk. This study conducted an empirical investigation on foreign exchange exposure<sup>2</sup> and discerned its potential impact on business viability. It explored various response mechanisms including the internal hedging strategies as well as derivative instruments implemented by companies; it also contextualised the state of this form of risk.

<sup>2</sup> In this paper risk and exposure are used interchangeably.

### **1.3 THE JOHANNESBURG STOCK EXCHANGE (JSE)**

According to the JSE's 2015 Integrated Annual Report (2015), the JSE is at the nerve centre of South Africa's economy, making provision for primary and secondary markets, and is regulated by the Financial Markets Act of 2012. The JSE was established in 1880 to facilitate capital mobilisation for mining companies and their financiers (Yartey, 2008). It has seen tremendous evolution since its establishment and is dominated by non-mining companies (Yartey, 2008). South Africa's JSE is one of the top five stock markets among emerging economies.

According to Yartey (2008), emerging economies exchanges' market capitalisation doubled between 1995 and 2005, growing from a meagre \$2 trillion to \$5 trillion with China being the largest followed by Hong Kong and then South Africa. The JSE's strategic role as a pillar and catalyst for South Africa's economy and the rest of Africa cannot be over emphasised. Over and above its significance to financial liberalisation, the JSE engenders sound corporate governance in domestic business owing to its set of tight listing requirements. These requirements create a balance between the competing interests held by myriad stakeholders including investors, consumers, communities, governments and environmental consideration. Listed companies are required to make certain information available to the public. Transparency and open disclosure in order to enable investors to make informed decisions is one of the cardinal principles propagated and held high by the JSE.

A company's risk management practices are among key determining factors that investors take into consideration before committing their capital. Corporations tend to disclose, through their annual integrated reports, the company's specific risk exposures and actions undertaken to manage such risks. Considering the centrality of the JSE to South Africa's economy, its market capitalisation size and monthly traded value, the JSE listed companies provided an applicable context of analysis for this study. Listed companies are part of the global markets through the JSE's system integration with other exchanges such as the London Stock Exchange (LSE) and are susceptible to various adverse developments in the capital markets including changes in interest rate, commodity prices and foreign exchange risk as composite elements of market risk.

## 1.4 THEORETICAL ASPECTS OF FOREIGN EXCHANGE RISK

The majority of earlier studies on exchange rate risk were conducted outside South Africa, a significant number of which focused on the United States of America (USA) and the United Kingdom (UK). There are few studies on a similar subject conducted with respect to the emerging economies, specifically with regard to sub-Saharan Africa (SSA); hence in the South African context, to the knowledge and understanding of the author, this study will be the first one to have been undertaken. Emerging economies, specifically in the SSA region, are typified by the least developed financial markets and expertise and hence usage of derivatives is always low in the region. South Africa commands a fairly developed financial and stock market in comparison to most countries in the SSA region. The aim of this study, among others, is to assess how South African companies optimise this advantage.

Bodnar, Hayt and Marston (1998) found that a number of firms with significant foreign exchange exposure have an equal split between foreign currency denominated expenses and revenues. Among firms with significant foreign exchange exposure those that undertake to hedge – very few hedge a total exposure (Bodnar et al., 1998). According to Bodnar et al. (1998) a significant majority of firms hedged 50% of transaction exposure. In a comparative study regarding the usage of derivatives in risk management, Bodnar and Gebhardt (1999) found that 78% of German firms were most likely to use derivative instruments compared to 57% of USA firms. Accordingly, both the USA and German firms were found to be using derivatives mainly to manage foreign exchange rate risk (Bodnar & Gebhardt, 1999).

Marshall (2000) investigated risk management practices between large multinational companies (MNC) in the UK, US and Asian countries. Dhanani (2003) consolidated a case study focusing on the foreign exchange risk management practices of a single large multinational. Duangploy and Belk (1997) examined foreign exchange risk management practices by USA multinational enterprises and found varying approaches with respect to levels of importance attached to the three types of foreign exchange risk. Allayannis and Ofek (2001) investigated whether S&P500 non-financial firms in 1993 used derivatives for hedging

or for speculative purposes and found that a significant majority used the derivatives for hedging. This finding corroborated the study's stated hypothesis.

Numerous other studies have been undertaken from the perspective of developed economies. Suffice to state that extensive research on foreign exchange is premised on developed and advanced economies, except for one of the few studies in sub-Saharan Africa by Abor (2005) who studied the management of foreign exchange risk by Ghanaian firms. It is evident that the depth of academic literature in foreign exchange risk is biased towards advanced economies, while little research has been conducted on the subject matter in context of emerging economies including South Africa.

## **1.5 PROBLEM STATEMENT**

In spite of sufficient international research on the practices and application of derivative instruments as well as strategies in the management of foreign exchange risk, there is no consensus on the most effective foreign exchange risk management practices. Earlier studies demonstrated that there is no homogeneous usage of derivatives and internal or natural hedging methods in managing foreign exchange risk among firms with significant exposure to foreign exchange risk. The approach toward the management of foreign exchange exposure widely differs among firms. In general, effective management of risk is essential for the sustainability of a firm beyond it being the fiduciary duty of the firm's board of directors in accordance with governance prescripts, which constitute a precondition for listing on the JSE.

Foreign exchange risk is an important type of risk that, if effectively managed, has a positive effect on a firm's financial performance. Although JSE listed companies are required to make disclosures on risk management through annual integrated reports, such reports are often generic and non-specific. A review of five randomly selected company annual reports revealed that companies report on their risk exposures by making reference to forms of risks faced by their respective companies during a specific financial year<sup>3</sup>. The aforesaid disclosure

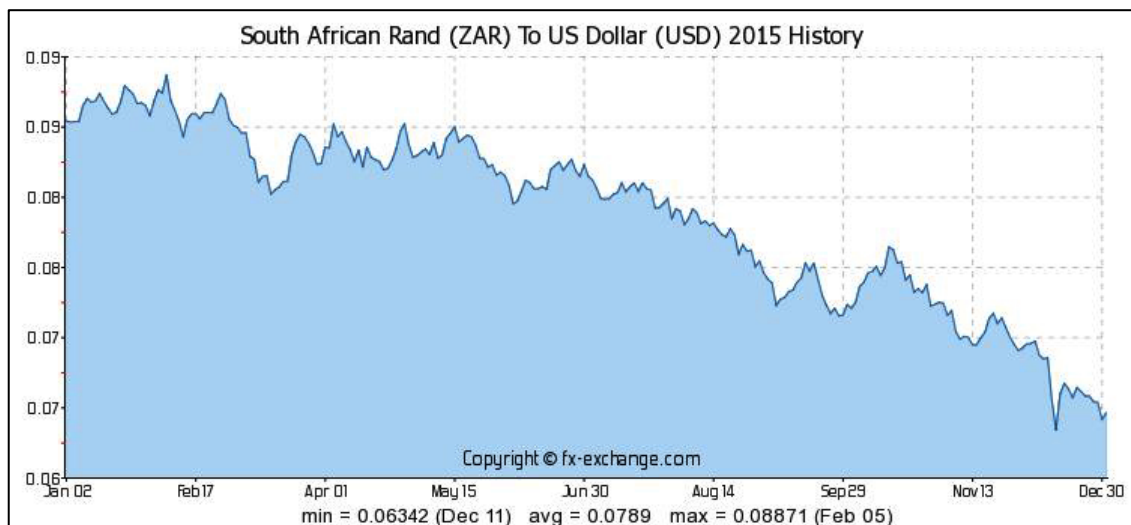
---

<sup>3</sup> One company annual report per sector was selected from five broad industries: Mining, Transport & Logistics, Oil & Gas, Retail & Conglomerate and Hospitality.

is made in order to comply with section 3, paragraph 3.84 of the JSE listing requirements<sup>4</sup>. For example, African Rainbow Minerals (ARM, 2015) reports that exchange rate fluctuation is the second significant principal risk faced by the company after commodity prices and global demand risk. Both these risks are ranked high in the company's three scale risk matrix, which grades inherent exposures as low, medium and high.

It is worth noting that exchange rate fluctuation, commodity prices and global demand are only 3 of the 16 exposures identified in the report to be ranked high in the three-scale risk matrix. It is therefore expected that against the backdrop of exchange rate volatility since 2008, foreign exchange risk should have emerged as one of the most prioritised type of risk, particularly among companies with an international footprint.

Figure 1.2 below, sourced from foreign exchange.com<sup>5</sup>, presents South Africa's rand (ZAR) against the United States of America's dollar (\$) for the year 2015.



**Figure 1.2:** ZAR/USD

Source: Foreign exchange.com

In light of the evident volatility portrayed in Figure 1.2, this study investigated the extent to which companies have prioritised foreign exchange risk as a criti-

<sup>4</sup> Paragraph 3.84 of the JSE listing requirement stipulates key corporate governance that companies ought to comply with, and the disclosure thereof in annual reports.

<sup>5</sup> Foreign exchange.com is a reputable international money transfer and payments company and is a subsidiary of GAIN Capital, which is a New York Stock Exchange listed company. According to its website it provides services to individual and organisation

cal exposure, which needs to be managed through effective implementation of strategies and applicable instruments. While being cognisant of the fact that extensive research has been conducted on foreign exchange management practices by multinational companies, and non-financial companies and firms in specific economic sectors in global context, there is an evident knowledge gap in South African firms.

It is this gap that motivated the undertaking of the present study, which conducted an empirical investigation to discern how the JSE listed non-financial companies within the top 100 range managed foreign exchange risk in the 2015 financial year. The results of this study will provide information to risk specialists, investors, policy specialists, researchers and, most importantly, to companies themselves as they seek to devise alternative strategies and innovative instruments to manage this foreign exchange exposure.

## **1.6 RESEARCH QUESTIONS**

The main purpose of this study is to investigate the risk management practices of non-financial companies listed on the JSE and are among the top 100 looking specifically at the most recent financial year, that is, 2015. The investigation explored and answered the following pertinent questions:

1. How do non-financial companies in the JSE top 100 manage foreign exchange rate risk?
2. Which type of exchange rate risk is prioritised for management and why?
3. Are non-financial companies in the JSE top 100 adopting specific practices or techniques in the management of foreign exchange risks?

As sub-questions to the third question, an exploration of the following questions was undertaken:

- What factors influenced a firm's approach and strategy for management of foreign exchange risk?
- Are strategies or techniques used for any other purposes aside from foreign exchange risk management?
- Which of the adopted techniques dominate and how effective are they?

## **1.7 OBJECTIVE OF THE STUDY**

To establish the foreign exchange risk management practices by non-financial companies in the JSE top 100 of the 2015 financial year.

## **1.8 SIGNIFICANCE AND JUSTIFICATION OF THE STUDY**

This study will benefit companies with significant exposure to foreign exchange risk irrespective of their company specific characteristics. The unpredictable exchange rate movements commonly referred to as currency volatility, have the potential to significantly alter the earnings and long-term value of the companies as well as their competitiveness. This study will also be beneficial to unlisted companies – mainly those that are involved in the import and export trade. Similarly, investors will also derive some benefit from this study in so far as it contextualises the impact of unhedged or unmanaged foreign exchange exposure, which has an impact on company earnings and by extension, has a bearing on share price and consequently investors' own return. Policy-makers in the space of economic development, small businesses development and the treasury may draw from the findings of this study to consolidate related policy interventions.

It is clear that the recent fluctuations of ZAR against major currencies are of economic concern to government, investors and the domestic financial market in general. Recent developments that led to a weaker ZAR added to the residual economic hardships caused by the global economic crisis resulted in the necessity for prudent management of all forms of risks to avert more losses. Makina and Akinboade (2006) conducted a comprehensive study on currency evolution and liberalisation in South Africa. Their analysis covered a period ranging from the first quarter of 1961, when the rand was pegged to a fixed Great Britain Pound (£), as well as the period when the rand became the second worst performing currency up until the declaration of the rand as a freely floating currency in 1999.

All the aforesaid events are events that signify the importance of the assessment of all forms of risks that afflict companies pursuant the changes in the foreign exchange rate. This justifies an empirical investigation to discern how

non-financial companies in the JSE top 100 fared in managing foreign exposure. The JSE is a bond that holds South Africa's economy together; it is a mirror trough from which off-shore potential investors view the country's business environment and investment potential.

This study is divided into five sections. Chapter 1 provided an introduction and background to the study and established its objectives. In Chapter 2 a theoretical framework is presented along with an extensive literature review. Chapter 3 entails the description of the methodological approach of this study and a brief outline regarding the research instrument. Chapter 4 presents the study's results as well as an analysis of results and discussion thereof, while Chapter 5, which constitutes the last chapter of the study, presents major findings and succinctly makes a reflection on limitations of the current study.

## **2. LITERATURE REVIEW**

### **2.1 INTRODUCTION**

This chapter reviews theoretical fundamentals of foreign exchange risk, discusses risk management as a broad concept within which foreign exchange risk is embedded, scientifically examines the composite aspects of foreign exchange risk, reflects on the sources of foreign exchange risk, and conducts an in-depth analysis of relevant empirical literature in the field of foreign exchange risk.

### **2.2 THEORETICAL FRAMEWORK**

Foreign exchange risk affects all companies that undertake business activities beyond their parent company's geographical borders and are required to acquire foreign currency in order to facilitate their business transactions. According to Peddapalli (2014), multinational companies are susceptible to foreign exchange risk when the value their assets or liabilities changes against the backdrop of changes in foreign exchange rate; their level of exposure refers to the total amount that is at risk as a result of international trade.

Dhanani (2003) defined exchange exposure as the situation where a company's financial position is altered due to changes in exchange rates as measured by

conventional financial statements. Similarly, Allayannis and Ofek (2001) defined the exchange rate risk as the effect of exchange rate movements on current and future cash flows and the value of a company as a result of its foreign currency denominated assets or liabilities. In this section an in depth theoretical review is conducted by locating exchange rate risk within the broader concept of risk management and describing the origins and nature of foreign exchange risk.

### **2.2.1 Risk management**

The concept of risk is defined differently to conform to the particular context within which it is applied. In business and investment as stated in Chapter 1, the concept of risk refers to the possibility that an anticipated outcome will not be realised. Risk is a situation where there is uncertainty about the outcomes (Peddapalli, 2014). According to Ocran (2015), risk is defined as a volatility of returns that results to financial loss. Risk is comprehensively defined as “uncertainty associated with exposure to loss caused by unpredictable events and variability in the possible outcomes of an event based upon chance” (Van Wyk et al., 2004, p.261). Risk can be categorised as systematic or unsystematic. Systematic risk refers to a form of risk whose effect is far reaching and is not diversifiable, whereas unsystematic risk can be diversified.

There is a variety of industry specific frameworks that are developed and instituted to manage risk. These frameworks are flexibly adapted in a manner that enables companies operating within such industries to customise and apply such frameworks to their specific company’s circumstances. Risk management is not a static activity, but rather a systematic and multidimensional activity as demonstrated in Figure 1.1. There are costs associated with risk management as organisations are impelled to develop structures and institute control mechanisms to manage risk. Schmit and Roth (1990), through a classic study evaluating the cost effectiveness of risk management practices, found that centralisation of risk management activities and usage of advanced decision-making techniques have no consistent effect on the management of risk associated costs.

### **2.2.2 Origins of foreign exchange risk**

International trade inevitably attracts foreign exchange risk for companies. No company is insulated from foreign exchange risk. Hence, as Salifu, Osei and

Adjasi (2007) stated, small and medium enterprises are indirectly exposed to foreign exchange risk despite not having foreign currency denominated liabilities or assets. The impact of foreign exchange risk on small and medium enterprises is borne by foreign competition and macroeconomic factors. However, multinational companies through their expanded footprint in global business are significantly exposed to foreign exchange risk.

Exporting goods to off-shore markets creates a receivable, while importing production input materials and semi-finished or finished goods from a foreign country based supplier creates a payable. The aforesaid is a typical example meant to demonstrate the source of foreign risk. Each company engaging in international trade generates receivables and payables denominated in foreign currency (Chiira, 2006). The impact of exchange risk also permeates to local small scale companies that are not engaged in international trade (Abor, 2005). Generally companies – irrespective of their involvement or lack thereof in international trade – are not entirely insulated from foreign exchange risk. However, the exposure is significantly higher for companies engaged in international trade. Financial commitments such as foreign currency denominated borrowing and lending exposes a firm to foreign exchange risk (Chiira, 2006).

### **2.2.3 Nature of foreign exchange risk**

As stated in Chapter 1 of this study, foreign exchange risk is derived from financial risk. Along with other types of market risks, that is, equity price risk and interest rate risk, foreign exchange risk is a systematic risk whose affect is not diversifiable. The 2008 economic recession is a typical example of the market risk from which no business, economy, or investment portfolio or markets were spared. Jacque (1981) argued that the systematic risk portion of foreign exchange, if unmanaged by responsible risk managers, might be passed onto the shareholder to manage it through portfolio diversification. Foreign exchange risk is categorised into three broad forms, that is, transaction risk, translation risk and economic risk.

There is consensus among academics regarding the categorisation of foreign exchange risk into the three aforementioned forms. However, one divergent

characterisation worth noting is the one introduced by Salifu et al. (2007). These researchers, in a paper reporting their examination of foreign exchange exposure by Ghanaian firms, highlighted what they call four channels of foreign exchange risk: transactional exposure, translational exposure, operational exposure and contingency exposure. The latter two are uncommon forms of foreign exchange risk, which are rarely found or mentioned in the related literature.

Notwithstanding the unfamiliarity of these two forms or channels of foreign risk, the authors define them in a manner similar to how economic risk and transactional risk would generally be defined in the literature of foreign exchange risk. There is also no advancement of a compelling reason stated by the authors to support these divergent categorisations of foreign exchange risk. Consistent with the majority of researchers, including Allyannis, Brown and Klaper (2003), El-Masry (2006), Glaum (2000) and Abor (2005), for the purpose of this paper, foreign exchange is understood as the extent to which a firm's value is affected by changes in exchange rate that manifest in three broad forms:

#### **2.2.3.1 Transaction risk**

Transaction risk relates to the impact of changes in exchange rates on the company's cash flow evidenced by changes in its receivables and payables (Marshall, 2000). Transaction risk is also known as commitment risk as it emanates from parties in different countries having entered into a contractually binding agreement of trade, which, at the stage when payables are due and receivables realised, the values thereof have changed in line with the prevailing exchange rate (Chiira, 2006). A change of this nature will reflect in loss or gains resulting from movements in exchange rates.

#### **2.2.3.2 Translation risk**

Translational risk entails revaluations of foreign operations as a result of the net effect of exchange rate movement on the financial statements of the foreign subsidiary when restated to a parent company currency for reporting purposes which result in overall profit or loss for the firm (Dhanani, 2003). Additionally, Dhanani (2003) demonstrated the disparities in the handling of translation of foreign subsidiary financial statements. All balance sheet activities are trans-

lated at the closing rate prevailing at the date of the preparation balance sheet while the income statement is translated on the average exchange rate during the financial year (Dhanani, 2003). In contrast, the practice in the USA is that income statements are translated at the closing rate prevalent at the financial year end (Dhanani, 2003).

### **2.2.3.3 *Economic risk***

Economic risk refers to the long-term impact of exchange rate movements on the future cash flows of the company, which result in adverse changes in value of the company and its competitiveness (Eriksen & Wadøe, 2010).

## **2.3 RELEVANT EMPIRICAL STUDIES ON THE MANAGEMENT OF EXCHANGE RISK**

### **2.3.1 Literature related to the correlation of firm characteristics and exchange risk**

Al-Momani and Gharaibeh (2008) assessed whether there is a relationship between firm specific characteristics (firm size, legal structure, level of internalisation and industry) and each of the three types of foreign exchange rate risk, that is, translational, transaction and economic risk. The study found no relationship between the firm size and legal position or management practices implemented by companies to manage transactional risk (Al-Momani & Gharaibeh, 2008). However, a relationship was found between the level of internalisation and industry, and practices adopted towards management of transactional risk (Al-Momani & Gharaibeh, 2008). The study further found that there was a relationship between all firm specific characteristics and practices for managing the economic risk. Similar to Eriksen and Wadøe (2010), Al-Momani and Gharaibeh (2008) cautiously precluded an assessment of a relationship between the firm specific characteristics and translational risk; mainly because of the small number of Jordanian MNCs exposed to this form of exchange rate risk.

Lee, Marshall, Szto and Tang (2001) conducted a cross-regional study with the intention to explore whether there were regional disparities in risk management practices. A survey was sent to a total of 600 large MNCs divided proportionally between the UK, the USA, as well as selected companies from varying Asian

Pacific countries. The study had a 30% response rate and found wide inter-regional differences in foreign exchange risk management practices and structures. The majority of MNCs in the UK and Asian Pacific region have decisions regarding foreign risk management activities approved by a board, while in the USA, MNCs seem to have some level of decision-making decentralised to foreign subsidiaries. An appropriate organisational structure is a prerequisite to the achievement of risk management goals. To this end there should be a clear determination regarding the extent to which such functions are centralised or decentralised (Lee et al., 2001). The study also reveals wide regional differences in choice and usage of derivatives; this difference was largely explained by varying accounting standards. Contrary to Al-Momani and Gharaibeh (2008), the study found no evidence of a relationship between firm specific characteristics, that is, level of internalisation, the size and industry, and risk management practices.

Although the study is quite dated, Duangploy, Bakay and Belk (1997) conducted semi-structured interviews among 22 industrial MNCs in order to discern the concepts, objectives and management structures in the management of foreign exchange risk. The findings of this study are still relevant. However, the inherent methodological bias of this study, which is rarely applicable in similar studies, together with the small sample size of companies surveyed, makes the study and its findings narrow and less representative. Despite these weaknesses, a noteworthy finding was that a significant majority, that is, 14 of the 22 surveyed firms, were highly centralised; five had a low degree of centralisation, and only three were entirely decentralised.

While a centralised risk management structure appears to be dominant and exceedingly beneficial owing to its capability to enhance the development of specialised treasury skills, the advantages must be weighed against the disadvantages of loss of local knowledge and lack of incentive for local managers (Lee et al., 2001). Among the reasons cited by a few companies that have opted for an entirely decentralised approach, is the fact that local managers are more astute in dealing with country specific problems (Duangploy et al., 1997). Of 22 companies surveyed, only one runs its treasury as a profit centre while the other 21 respondents regarded their treasuries as negative cost centres whose prime

objective is not for profit, hence they do not engage in speculative exercise (Duangploy et al., 1997). This finding may be attributed to the fact that this study exclusively focused on industrial firms. Generally speculative activities are neither a strategic objective nor an inherent core business of industrial firms. This perspective shared by Duangploy et al. (1997) is corroborated by Lee et al. (2001), who found that 11% of UK firms thought of entirely decentralised or autonomous foreign exchange risk management structures as being prompted by significant overseas business activity. Firms with a large degree of foreign business involvement are amenable to decentralise and grant freedom to subsidiaries for expeditious decision-making.

Glaum (2000) reports that 45% of the respondents said their companies implemented a highly centralised risk management structure while the remaining 55% indicated a medium level of centralisation. Although the study focused on overall risk management practice and not specifically on foreign exchange exposure, this finding is significant since foreign exchange exposure is embedded within the overall concept of risk faced by firms.

El-Masry (2006) examines the usage of derivatives and risk management practices in the UK. The results went beyond confirming the findings of other previous studies including Bodnar et al. (1995, 1998 and 1999) with respect to the relationship between firm size and usage of derivatives. Similar to other previous studies, the study finds that larger firms tend to use more derivatives compared to medium and small sized firms due to economies of scale considerations. The results also show that industry, ownership status and organisational forms are among firm specific characteristics that cause some of the observed disparities regarding the usage of derivatives. With respect to industrial segregation, the study finds that usage of the derivatives is greater among communications, automobiles, electrical and transport firms while it is significantly smaller among utilities and retailers. The results also demonstrated that public firms are inclined to use more derivatives compared to extremely low usage by private firms. With respect to organisational form, the study showed that international firms use more derivatives compared to firms with multiple sites confined within one country.

El-Masry, Abdel-Salam and Alatraby (2007) examined the exchange rate exposure of UK non-financial firms between 1981 and 2001. All analyses in the study were conducted through the application of a multiple regression model by examining the exchange rate exposure coefficients on numerous foreign activity variables, including firm size, foreign sales, foreign assets and foreign income. The study shows that foreign sales, assets and income are significantly negatively related to exchange rate risk. This implies that firms with large foreign sales benefit significantly at the advent of exchange rate depreciation and are seriously negatively impacted in the case of currency appreciation compared to smaller firms. However, the study does not make a determination with respect to industries in order to portray the extent to which this finding is applicable. Certain industries can withdraw or limit foreign activities much quicker than others at the advent of exchange rate volatility; hence industrial segregation would have shed more light on the effect of currency appreciation and depreciation across industries.

Bodnar et al. (1998) expand on the two earlier survey studies<sup>6</sup> to assess financial risk management practices and the usage of derivatives by non-financial companies in the USA. The survey was conducted on the same sample used in the earlier studies, despite the fact that the number of companies had declined below 2000 during the 1998 survey. The study had a response rate of 20.7% and among other findings was the fact that larger firms are the highest users of derivatives at 83% compared to small firms' 12% (Bodnar et al., 1998). Additionally, the study found that there is an industrial difference in the usage of derivatives; 68% of firms in the primary product used derivatives, 48% of firms in the manufacturing sector used derivatives, and 42% of firms in the service industry used derivatives (Bodnar et al., 1998). Furthermore, a significant number of surveyed firms had internal control in place; a company policy that provides guidance regarding the use of derivatives and reporting procedures to the board of directors regarding the usage of derivatives (Bodnar et al., 1998).

---

<sup>6</sup> The studies are surveys conducted in 1994 and 1995 respectively. The reports thereto can be found in Financial Management 24, fall 1995, and Financial Management, winter, 1996 respectively. This is in accordance with the 1998 report.

Bodnar and Gebhardt (1999) conducted a cross-country comparative study to establish patterns and attitudes on usage of derivatives between US and German non-financial firms. The study found a relationship between firm size and usage of derivatives, and reveals that usage of derivatives increases with firm size. Large firms, being firms with over \$6.66 billion in sales, constituted 15.2% of the usable response compared to 28.6% of German firms of a similar size. An overwhelming 90.0% of USA large firms reported to be using derivatives compared to 75.0% of German firms of a similar size. This result is almost comparable and is consistent with firms in the second largest firms category as 79.2% of USA firms compared to 94.4% of German firms with sales figures ranging between \$6.66 billion and \$3.33 billion used derivatives. The study demonstrated that the larger the sales generated by the firm the more the firm is inclined to use derivatives. Large firms have an incentive to apply a hedging programme at a fixed cost, which can be spread across a number of transactions where application of derivatives is most likely, whereas with respect to smaller firms, the usage of derivatives might be uneconomical despite associated benefits (Bodnar & Gebhardt, 1999).

Chiira (2006) conducted a study on the management of foreign exchange risk by Kenyan oil companies. The study's limitations are twofold: firstly, its scope was limited to the oil sector and thus its findings are not representative of other sectors. Secondly, the qualitative methodological approach adopted in the study precluded substantive statistical analysis to support its findings. Similar to Bodnar and Gebhardt (1999), this study's key finding is the reported correlation between firm size and usage of derivative instruments. The study found that five of six companies with over KES<sup>7</sup> 10 billion in revenue used more derivatives while two of nine companies with KES 10 billion and less in revenue used fewer derivatives. None of the companies with less than KES 5 billion in revenue used the derivatives. This finding provides evidence of a correlation between the firm size as measured by revenue and practices in the management of foreign exchange risk management, and usage of derivative instruments.

In contrast, this study investigated whether there is evidence of cross sector foreign exchange risk management practices; however, firm size is also a con-

---

<sup>7</sup> KES is an acronym for Kenyan Shilling.

sidered a characteristic in the study. This was done through discerning variations across sectors regarding strategies and practices used to manage foreign exchange risk. The section entitled research design in section three of this report expounds on sectors from which a usable response was attained. It is on the basis of this information that exchange risk management practice variations across sectors were determined.

It is in light of these international discrepancies that this study partly seeks to explore the relationship or lack thereof between firm specific characteristics and foreign exchange risk management practices in an emerging economy – South Africa. The survey instrument for this study contains some firm specific questions. These questions, together with other information received from the JSE such as market capitalisation figures, estimated share prices and trade volume, enable a determination to be made regarding the relationship between firm specific characteristics risk management practices, including usage or non-usage of derivative instruments.

### **2.3.2 Literature related to exchange risk management practices**

This section entails a brief analytical review of exchange risk management practices from varying perspectives. Such an analysis departs from the exploration of practices in large and comparatively developed economies before touching base with other small and emerging economies to set a context for one of the objectives of this study. This study partly seeks to examine the exchange risk management practices by JSE firms. Hence this part of the literature review is linked to all three research questions stated under section 1.6 of this thesis.

As stated in section 2.3.2, Bodnar and Gebhardt (1999) found that German firms were more likely to use derivatives than USA firms. Derivatives were also used for management and the hedging of interest rates and commodity prices exposure in both countries. In general, the commonly referred to “plain vanilla” over-the-counter (OTC) instruments, such as forward and swaps as well as options, have dominance over the exchange-traded instruments in both countries. There is evidence for futures being relatively well used by USA firms compared to German firms. The aforementioned finding corroborates the results of

the study by Marshall (2000), which differentiated between internal and external methods to manage foreign exchange risk and found that there is an escalating tendency to use internal methods along with exchange traded derivative instruments.

The majority of firms across the USA and Germany have a documented policy with respect to usage of derivatives (Bodnar & Gebhardt, 1999). The study also reveals the frequency of reporting to the board regarding derivatives activities. The majority of USA firms have a flexible reporting process as they report on the basis of “as and when”. German firms have a more standardised reporting process: they report to the board quarterly regarding their derivative activities. The approach in this study enables an analysis to be made regarding the levels of reporting within the firm in order to formulate a perspective on the emphasis or premium that South African firms attach to risk management activities.

Marshall (2000) shows that, in addition to evident usage of other varying internal methods, the use of forward contracts to manage foreign exchange risk was a popular external method among MNCs. The study also found that the usage of exchange traded derivative instruments was least used by firms that responded to the survey. The study also found regional disparities in respect of the importance ascribed to the three forms of foreign exchange risk. The overall finding in this study is that firms in the UK and the USA exhibited similar practices and policy perspectives with fewer detectable exceptions. On the other hand, the Asian Pacific firms displayed significant notable divergence; hence there is evidence of regional differences in foreign exchange risk management practices. Above all, the study finds that less importance was attached to translational and economic risks.

Dhanani (2003) conducted a case study to discern the risk management practices of a UK multinational corporation. The study found that although there was evidence of non-conformance to theoretically established practices in foreign exchange risk management, it did not necessarily imply total divergence from a broad set of standards. Instead, it was indicative of the company’s preference for a differentiated policy approach. The results show that the company being investigated mostly used forward contracts to hedge transactional exposure. A

short-term hedging strategy was being implemented in accordance with levels of annual profits. The study reveals that the two other forms of exchange rate exposure – translational and economic risk – are not being managed.

Allayannis and Ofek (2001) studied exchange rate exposure, hedging and the use of derivatives by Standard & Poor's 500 (S&P 500) non-financial companies. The study uses a regression model to estimate the exchange rate exposure as well as to examine the impact of usage of currency derivation on exchange rate exposure for the selected non-financial firms. Similar to many other studies, financial companies are excluded from the sample because they are market-makers with respect to exchange derivatives and their purpose for using derivatives is different to the motivation of non-financial firms. The study also finds an existing relationship between the firm's size and degree of international exposure as measured by foreign currency denominated receivables and payables. The nature of the study does not permit for details findings to be made in relation to risk management practices by the sampled firms. However, the study revealed that the firm's exposure through foreign sales has a significant influence regarding its decision on whether to use foreign denominated debt. Suffice to state that foreign debt usage and the level thereof is determined by foreign exchange exposure caused by foreign sales.

Pantzalis, Simkins and Laux (2001) used a time series regression model to study the influence of operational hedges on the management of exchange rate risk in the USA's multinational firms. The study found compelling evidence that a firm's ability to develop operational hedges as determined by that firm's specific variables has a bearing on the firm's exchange risk exposure post the implementation of the operational hedges. Operational exposure refers to long-term change in real assets and liabilities due to changes in the exchange rate (Pantzalis et al., 2001). For the purpose of this study, operational hedges are investigated to analyse whether they are used in conjunction with financial derivatives or separately.

Carter, Pantzalis and Simkins (2001) investigated the impact of firm wide risk management practices on foreign exchange risk. The study focuses on 208 USA multinational corporations over the period 1994 to 1998. The authors

argue that despite numerous previous studies on the broader concept of foreign exchange risk, no study undertook an examination of the combined influence of financial and operational hedges on foreign exchange exposure. These arguments constituted a research gap on which the entire study was founded. In contrast, the argument is found to be relatively non substantive and subjective as there is evidence of an existing study that made such an examination. For example, Marshall (2000) among others found that multinational corporations used a balance of internal and external methods to manage transactional and translational exposure. Despite these contradictions, Cater et al. (2001) made a range of interesting findings. One of the key results is that MNCs were inclined to take an overall encompassing strategic perspective in their approach for the purpose of hedging the total economic exposure of the firm. The results show strong evidence of combined usage of operational and financial hedges. However, it is worth noting that the study does not expand its findings by stating which of the mentioned operational and financial hedge strategies and instruments are dominant.

Popov and Stutzmann (2003) explored how Swiss companies manage foreign exchange risk and found a significant policy disparity among the companies. There was divergence on the type of foreign exchange prioritised for the purposes of management. The study shows that forward and netting are the most preferred instruments for hedging transactional exposure. The study also finds that translational and economic exposure are not prioritised by Swiss firms for management, mainly due to the complex nature that is associated with these two forms of exposure.

El-Masry (2006) finds that 37% of firms responding to the survey stated the management of volatility in cash flows as the most important reason for using derivatives to hedge exchange rate exposure; 29% cited market value as most important and about 19% considered managing volatility in accounting earnings the most important. These results imply that UK firms ascribe more importance to management of transactional risk (37%) and less importance to economic exposure (29%). The least important form of exchange rate exposure according to this study is accounting or translational risk (19%). The results show that risk management practices are mostly centralised. It is also worth noting that the

study found evidence of a lack of knowledge on derivatives as a concern and a hold-back among other non-derivative users. This is an unexpected result in a developed economy since levels of expertise are much higher. This study investigates the importance ascribed to each of the three forms of exchange rate exposure by South African firms.

Yildiran (2015) surveyed Turkish exporting firms to investigate the techniques and methods of financial risk management against the 2008/09 global financial crisis. The survey comprised the top 500 exporting firms listed at BIST<sup>8</sup> and had an overall 21% response rate. The results of the study reveal that 80% of the responding firms perceived foreign exchange exposure as the most important type of financial risk. Foreign exchange risk is important mainly due to high currency transactions, which are central in the business activity of exporting firms. Furthermore, the results show that 22.3% of the firms used financial derivatives, which – according to the author – demonstrated lower usage of derivatives by exporting firms in developed countries. The study revealed that typical financial derivatives used by non-financial firms in Turkey included options, swaps and future contracts with respect to foreign exchange exposure. The overarching result for this study is a finding that Turkish firms usually manage their currency and other types of financial risk by using internal risk management strategies.

Eriksen and Wedøe (2010) investigated the management of foreign exchange by large Norwegian non-financial companies. The study reveals that most companies used short-term derivatives while fewer used long-term derivatives to manage foreign exchange risk. The most compelling motivation for managing foreign exchange risk was to reduce the observed income and costs volatility. A correlation was found between the level of internalisation and usage of natural hedging strategies. It was also found that companies in the oil industry tended to use fewer derivatives whereas companies in the shipping industry used a diverse type of derivatives.

Thirumalvalavan and Padmavathi (2010) studied the foreign risk management practices of exporting firms that are affiliated to the Tirupur Exporters' Association. The study provides a perspective of an Indian market, which is an

---

<sup>8</sup> Borsa Istanbul, abbreviated as BIST, is the stock exchange of Turkey.

emerging economy and is also a member of BRICS<sup>9</sup>. The findings of this study constitute a solid basis as well as a good reflection of this study given that South Africa is one of the five BRICS member countries. Hence, although this study is a non-comparative study, an observation shall be made as to whether the practices in the two countries follow a similar trend. The study consisted of a sample of 155 exporting companies and attained an overall 52% response rate. The results show that, of the responding firms, 43.8% indicated that the management of foreign exchange rate risk falls within the purview of the firm's treasury, whereas 33% of the firms reported that management of foreign exchange risk is the responsibility of their export and import department. It is also worth stating that the study found that a significant majority of firms used forward contracts to manage foreign exchange exposure.

Abor (2005) conducted a study on the risk management practices of Ghanaian firms and discovered that firms in smaller and developing economies tend not to use derivative instruments, but rather rely heavily on internal methods. This finding highlights the need for a holistic review of the state of derivative markets in the African continent, specifically in Africa's emerging markets including South Africa. Abor (2005) found that internal short-term methods highlighted by Marshall (2000) were predominantly adopted by Ghanaian firms to manage foreign exchange rate risk. Given this related study, this study explores the practices from the perspective of a country perceived to be an advanced economy in Africa.

### **2.3.3 Acceptable management practices of foreign exchange risk**

Duangploy et al. (1997) posited that 19 of the 22 surveyed companies closely monitor would take action under specific circumstances; yet would not continuously manage translation risk. The circumstances under which action is taken are not mentioned. Disclosure of specific circumstances that impel firms to take action regarding translational risk would have made a meaningful contribution to the body of knowledge of foreign exchange risk.

---

<sup>9</sup> Acronym for an association involving five emerging economies: Brazil, Russia, India, China and South Africa.

There is no agreement as to which of the three forms of foreign exchange exposure is most important and worthy of emphasis for management (Marshall, 2000). However, it is evident that most companies place much focus on the transactional risk. The process of effective foreign exchange risk management as posited by EDC (2010) comprises four steps: first is the identification and measurement of foreign exchange risk; second is to develop the company's foreign exchange risk management policy; third is to hedge the exposure using trade and other techniques; and fourth is to evaluate and adjust periodically.

Duangploy et al. (1997) demonstrated additional complexities associated with economic exposure by attributing the lack of management thereof to perspectives on the efficient market hypothesis. Analysis regarding company's practices on currency forecast as a proxy for effective planning on economic exposure revealed that only half of the surveyed companies either bought the exchange rate forecasts or attained such data from their respective banks (Duangploy et al., 1997). Above all, the majority of companies agreed on the importance of economic exposure, although there is a correlation between companies not using the exchange rate forecast and their support of the efficient market hypothesis (Duangploy et al., 1997). Similarly, EDC (2010) maintains that other companies may not be aware of hedging and hedging instruments in general, or believe that hedging is a speculative activity.

According to Malkiel (2003), the efficient market hypothesis is associated with "random walk", which refers to a situation where price changes depart from previous prices and that information flow is undistorted and reflects current prices such that no opportunity exists for profiting from a speculative exercise. In a seminal research article, Jacque (1981) reflects on two propositions regarding the interrelationship between the efficient market hypothesis and foreign exchange risk. In efficient capital markets all information is accurately impounded in stock prices and precludes variability in loss and gain for an MNC, hence the notion of translational risk is regarded as mere accounting exposure (Jacque, 1981).

The medium- and long-term competitive strength, which an MNC that has a coherent plan and effective risk management strategies might earn, makes the

entire discussion on efficient market hypothesis more interesting and profound. Subsequent theoretical developments align to the thought expressed by Jacque (1981); translational and economic risk remain a somewhat insignificant concern to most MNCs, while transactional risk is predominantly prioritised by the majority of MNCs according to most recent studies.

A study by Moles (2002), investigating foreign exchange risk management practices by UK firms, found that a significant proportion of the respondents preferred combined marketing, production and financing as a key strategy to manage economic exposure. Fewer than half of the usable respondents indicated that they forecast future foreign currency cash flows for a period over a year, while a significant number of the firms indicated that no forecasting of foreign currency was undertaken (Moles, 2002). This was attributable to the fact that the majority of such firms had foreign sales accounting for less than 20% in foreign-sourced inputs (Moles, 2002). This demonstrates a dynamic ongoing academic contention around the importance and management strategies ascribed by firms to translational and economic exposure in praxis.

Amid structural changes in capital markets, persistent reforms in financial and exchange rate systems, as well as concomitant advancement and innovative managerial approaches, it would have been expected that a comprehensive framework for the management of both translation and economic risks should have been developed by MNCs. Similarly, tremendous progress towards the reconciliation of these two divergent perspectives should have been meted out. Both translational and economic risk are acknowledged as being important, although without consensus regarding effective techniques that firms can implement to manage these two forms of foreign exchange risk. However, according to Duangploy et al. (1997), the latest trend reflects spontaneous integration of economic risk management into long-term strategic planning systems in light of its effect on the firm's competitive position.

The intricacies on the varying approaches and implementation of strategies to hedge or manage foreign exposures are dependent on a variety of factors including firm specific characteristics. Storm (2011) argued that there is a positive relationship between a firm's size, foreign exposure and usage of derivatives.

According to Storm (2011), the industry or sector in which a firm operates determines the firm's approach and treatment of foreign exchange risk.

Abor (2005) discovered that short-term strategies, such as pricing policies mainly implemented through the adjustment of prices to reflect exchange rate movement, are practiced by most companies in Ghana, while derivative instruments such as forward contracts, currency futures, options and swaps were never used. Accordingly, the lack of usage of financial derivative instruments by firms is attributable to a lack of expertise and understanding of the complexities around the derivative instruments. The underdeveloped state of the domestic financial market, which is often endemic among developing countries such as Ghana, constrains the advancement of exchange traded derivatives in such economies.

In a survey conducted to discern the management of foreign exchange risk by Kenyan oil companies, Chiira (2006) found that foreign exchange risk constitutes the second most significant exposure faced by oil companies after volatility in global crude prices. Chiira (2006) discovered that the majority of respondents relied on internal hedging methods to manage foreign exchange risk while only 35% used financial derivative instruments.

Marshall (2000) demonstrated that the USA, UK and Asian Pacific MNCs used a balance of external (forward contracts, currency futures, swaps and options) and internal (matching, netting, leading and lagging balance sheet hedging and pricing policies) methods to manage transaction and translation exposure. The management of economic risk at company level was constrained by the difficulty to quantify, however, it was observed that it had a significant long-term impact on the firm's value. In order to manage economic risk, companies tended to use general management approaches including the implementation of strategies such as the pricing and shifting of production lines. Similar to previous empirical research (Allayannis & Ofek 2001; Duangploy et al., 1997; Storm, 2011), Marshall (2000) found that firms mainly used financial derivative instruments to manage the impact of exchange rate on cash flows rather than currency speculation.

Lee et al. (2001) discovered that the majority of MNCs in the UK and Asian Pacific region had decisions regarding risk management activities approved by

a board while in the USA MNCs, some level of decision-making was being decentralised by foreign subsidiaries. An appropriate organisational structure is a prerequisite to the achievement of risk management goals. To this end, Lee et al. (2001) suggest there must to be a clear determination regarding the extent to which strategic activities as risk management practices are centralised or de-centralised.

It is a pre-requisite that a coherent risk management framework should entail the measurement of identified exposure. Hence, measuring exposure is an important facet of a risk management framework since it influences a firm's decision of whether to hedge, as well as the choice of techniques if the firm does decide to hedge. Chiira (2006) states that firms can effectively forecast exchange rates to which they are exposed and based on the forecasted expectations, make a range of decisions including financing and budget decisions. Papaioannou (2006) reveals that translational and economic risk are difficult to measure, yet places emphasis on the significance of Value-at-Risk (VaR) as the most appropriate measure that firms can use to measure and estimate their level of exposure.

#### **2.3.4 Accounting treatment**

Duangploy et al. (1997) single out accounting systems as a hindrance that precludes the management of translation risk since the extent of exchange rate gain or loss is not revealing of the actual impact of foreign exchange rate volatility on a firm's value. Although it is known that less attention is given to translation risk, there are indicators that companies are considering gearing ratios, which impact on a company's funding arrangements and capital mobilisation capabilities (Dhanani, 2003). Hence translational risk is gaining some recognition as a form of exchange risk with accounting implications.

According to Marshall (2000), accounting systems are an important consideration as they determine how exchange rates manifest in foreign exchange risk. Dhanani (2003) illustrated the manner in which differing accounting requirements influence the treatment of translation exposure. The Statement of Standard Accounting Practice (SSAP) of the UK requires the application of the current

rate method for translation; this implies that the translation of assets and liabilities is made at a prevailing rate at the date of balance sheet consolidation, while the income statement is translated at either the financial year's average exchange rate or at the closing rate (Dhanani, 2003).

In contrast, the Statement of Financial Accounting Standards (SFAS) in the USA prefers translation of the income statement at the rate prevalent on the closing date (Dhanani, 2003). According to Glaum (2000), accounting standards, together with challenges encountered when measuring the risk, ranked high among the biggest problems that German firms contend with in the management of foreign exchange risk. The lack of expertise also features as the third most serious problem (Glaum, 2000). It is reasonable to expect the accounting treatment of foreign exchange risk to constitute greater challenges for firms in emerging economies such as South Africa. Accounting expertise in many developing and emerging markets is regarded as a scarce skill; this is compounded by slow adaptation rapidly changing accounting standards and frameworks. However, this challenge might be countered by development of requisite expertise in the interpretation and consistent application of accounting prescripts. South Africa aligned its local accounting standards – that is, South African Generally Accepted Accounting Principles (SA-GAAP) – to International Financial Reporting Standards (IFRS) with the intention of expanding benefits in cross border investment. However, the adoption of IFRS has not significantly increased cross border ownership (Sherman & De Klerk, 2015). It is important to assess the impact of IFRS prescripts regarding the accounting treatment of foreign exchange risk specifically on translation exposure in South Africa.

## **2.4 INTERNAL AND FINANCIAL HEDGING INSTRUMENTS**

### **2.4.1 Internal strategies**

Natural hedging or internal methods, refers to all other internal strategies that firms use to hedge foreign exchange exposure. Abor (2005) found that Ghanaian firms tend to use natural hedging methods such as netting, leading and lagging, and balance sheet matching. Some of the natural hedging methods are:

### **2.4.1.1 Netting**

Netting is a system that reduces the flow of funds between the affiliates to a netted amount (Abor, 2005). A typical example of effective netting is a situation where a firm with a receivable from a foreign debtor creates an equivalent foreign currency denominated liability to offset the receivable.

### **2.4.1.2 Leading and lagging**

Leading and lagging is the act of adjusting the timing of payments to reflect the expected currency changes (Peddapalli, 2014).

### **2.4.1.3 Invoicing**

Invoicing entails the transfer of the exchange risk to the other party through invoicing its exports in home currency and demanding to be invoiced in its own country's currency (Peddapalli, 2014).

A list of internal methods, which firms use to hedge foreign exchange exposure, is not exhaustible; there are many other internal strategies that companies institute as in-house mechanisms, which are not predominantly reflected upon in the literature of exchange risk management. The methods mentioned above are those that are general and known to most firms.

## **2.4.2 Types of financial derivative instruments**

Reilly and Brown (2006) define a derivative instrument as "one whose ultimate payoff to the investor depends directly on the value of another security or commodity" (p.805). There are various types of derivatives, that is, futures, forward contracts and option contracts (Hull, 2008). Bodnar and Gebhardt (1999) argued that despite firms' extensive usage of derivatives, little is known by the public about firms' attitudes and patterns in usage of such derivatives mainly because firms are not required to publicly report on their use of derivatives. On the other hand, efficient usage of derivatives might constitute itself as a source for competitive advantage, hence public declaration of a firm's derivative activities could be tantamount to revealing that firm's competitive strategy or strength.

### **2.4.2.1 Forward and future contracts**

A forward contract is operationally similar to a future contract since they both entail an agreement to buy and sell the underlying asset on an agreed future date, the distinguishing factor being that future contracts are exchange traded whereas forward contracts are traded over the counter (Reilly & Brown, 2006). On the other hand, a future contract is an agreement between two parties to sell or buy an asset at a stated time in the future for a stated price (Reilly & Brown, 2006). It is important to comprehend this difference between futures and forward contracts given the inherent pros and cons.

According to Reilly and Brown (2006), the fact that forward contracts are negotiated and traded over the counter (OTC) makes them attractive because it enables parties to arrive at attractive and mutually agreeable terms. In contrast, futures are traded in a centralised exchange that is regulated by a set of rules binding to all parties and transactions. However, parties may reverse their positions at any given time. Hull (2008) notes a statistical imparity between forward and futures markets; the over the counter market is large.

### **2.4.2.2 Swaps**

A swap is a derivative instrument that constitutes an agreement between two parties to change cash flows at a given future date for a particular amount (Hull, 2008).

### **2.4.2.3 Options**

There are two basic types of options: a call option and a put option. A call option gives the bearer the right to buy an asset by a stated date for a determined price, while a put option gives a bearer the right to sell an asset by a stated date for a determined price (Hull, 2008). An interesting distinguishing feature is that the futures and forward contracts constitute an agreement between the parties, whereas an option allows a bearer to buy or sell an underlying asset, but it is not mandatory. Hull (2008) emphasised the fact that an option gives the holder a right and is by contrast to futures and forward contract, not a commitment or an obligation, thus the holder reserves the right to decide whether to exercise that right.

## **2.5 CONCLUSION**

Having made a detailed assessment and review of empirical research on exchange exposure management practices in this chapter, it is evident that extensive research has been undertaken internationally. It is interesting to note that most studies, irrespective of the methodological approach, tend to focus on non-financial firms. Although this constitutes an immediate inherent weakness due to selection bias, this is justified through the consideration that financial firms are sellers and buyers of the hedging instruments and possess comparatively advanced expertise in foreign exchange risk management.

It is also considered that the focus of similar studies was on non-financial companies since they are mostly consumers of the derivative instruments. This study shall not divert from this well-informed consideration. This study applies this well-developed theory to the non-financial companies within the top 100 listed firms indexed on the JSE, which makes it interesting and peculiar since it is the first study of its type to be conducted South Africa.

## **3. METHODOLOGY**

### **3.1 INTRODUCTION**

This chapter provides a comprehensive account of the approach and process that was followed in conducting this research. Such an account is immersed within the bounds of sequential processes prescribed for in standard academic research. In order to answer the research questions of this study as stated in section 1.6, and asserting the objective study as reflected under section 1.7 of this report, a systematic research process was followed to generate requisite data for the purposes of analysis and presentation of key findings. This chapter departs from extensive presentations of various research methodological types in order to set a theoretical scene for describing how this study was approached and what strategies were used to construct the sample, collect data and how the data was analysed.

Other important aspects of this chapter include:

- reflection on the applicability of secondary and primary data to this study through a concise review of previous studies;
- an in depth discussion on a population and sample in order to provide a full description of this study's population, and the construction and selection of the sample;
- a brief outline on the selected method for this study; and
- a detailed disclosure regarding the design of the research, the construction of the research instrument, data collection procedure, as well as the study's response rate and data analysis.

The chapter concludes with concise reflections on ethical considerations, which were considered when conducting this study.

### **3.2 METHODOLOGICAL APPROACHES**

There are two known and widely used research methods: qualitative and quantitative methods. Neuman (1997) is of the view that these two methods are immersed in two distinct logics of science. Consequently, there are key features that distinguish between quantitative and qualitative research approaches. Among such differentiating features, Neuman (1997) argues that in qualitative research the researcher is involved, whereas in quantitative research the researcher is detached. From these distinctions there is compelling evidence to warrant a variance in data collection strategies for the two methods. The level of involvement of the researcher might inadvertently influence how the researcher interacts with studied subjects, and thus increase interviewer bias compared to secondary data research.

The other striking distinction drawn by Neuman (1997) relates to the analysis of data. Quantitative research relies on statistical analysis while qualitative research relies on thematic analysis. Welman, Kruger and Mitchel (2005) state that the difference between a quantitative and qualitative approach is that the former adopts a positivistic approach while the latter hinges on an anti-positivist approach. The positivist approach is premised on philosophical and scientific observations that can be measured objectively, while the anti-positivist approach places emphasis on the natural scientific mode of collecting data (Welman et al., 2005).

Kumar (1996) presents a criterion that predetermines the classification of research as either qualitative or quantitative. According to this criterion, research methodology is dependent firstly on the purpose of the study, secondly on the manner in which variables will be measured, and thirdly how the information flowing from the study will be analysed. Kumar (1996) draws a distinct line that in qualitative studies information analysis is done in order to find variations in a phenomenon, situation or problem without quantification, while the intention of quantitative studies is to discern the magnitude of variation in the phenomenon, situation or problem and thereby ascribe quantity to it.

According to Henning, Van Rensburg and Smit (2004), quantitative studies exercise control on the variables through the research instrument and design of the study to the extent that research respondents are constrained to yielding data within the confines of a predetermined instrument. In contrast, qualitative research variables are mostly not controlled and elicit data that is detailed beyond the pre-designed research instrument, which enables the researcher to gain a broader view and understanding (Henning et al., 2004).

Recently, a third method emerged known as the mixed research method. This method, which is less well-known, represents a balance of both the quantitative and qualitative research methods. The mixed research method gives a researcher leverage on the strengths of both qualitative and quantitative methods. Ivankova (2015) posits that the mixed research method, which dominates in social, behavioural, and health science studies, is derived from a thin dichotomy of conventional quantitative and qualitative methods and has rapidly grown in popularity due to its ability to address research problems more comprehensively. This is a method through which the researcher collects and analyses data, makes some findings, and uses such findings to make qualitative and quantitative inferences (Tashakkori & Creswell, 2007).

A review of empirical research with respect to foreign exchange risk suggests two different research approaches. Although quantitative research is popular, qualitative research is also undertaken on a small scale. Some of the few qualitative studies undertaken in foreign exchange risk include Chiira (2006). Quantitative studies in foreign exchange risk are further divided into two types.

The first type of research is one that focuses on measuring foreign exchange exposure using, among other techniques, the Value at Risk (VaR) method, while the second type focuses on the nature and intrinsic content of management practices in foreign exchange risk by popular interest. The first type of research predominantly makes use of secondary data in the form of historic stock return stated against the average market return rates over a set period of time or other selected proxies to determine the level of foreign exchange exposure. In essence, the first type of research in this regard is based on models and intense statistical measurements to arrive at findings and conclusions.

Empirical investigation of foreign exchange risk management practices involves the deployment of a survey on a targeted population. This type of research is conducted at a national level, across regions, as well as at an industry or sectoral level. Simple summative or descriptive statistics are normally used for purposes of data analysis. Table 3.1 below provides a brief reflection of some of the studies representing the two types of research on foreign exchange risk management.

**Table 3.1:** Selected previous research types

Researcher(s) and year	Methodological approach	Models/statistical analysis
<b>Secondary studies</b>		
Carter et al. (2001)	Multi sources data(1996)*	Two-factor market model
Allayannis & Ofek (2001)	One year (1993) notional value of forward contracts	Binary logistical model
El-Masry et al. (2007)	Retrieved LSE** shares data (1981–2001) from data stream	Cross-sectional regression model
<b>Primary studies</b>		
Abor (2005)	Survey study	Descriptive analysis
Moles (2002)	Survey study	Descriptive analysis
Bodnar & Gebhardt (1999)	Survey study	Descriptive analysis
Peddapalli (2014)	Survey study	Descriptive analysis

\* 1996 data collected from various sources including: COMPUSTAT, Disclosure and Swaps monitor

\*\* London Stock Exchange

Source: Self-developed

According to Tustin, Ligthelm, Martins and Van Wyk (2005), secondary data is data that is readily available and can be used to solve a problem. It is advantageous when research is conducted within limited and in light of resource constraints. Usage of secondary data is determined by its suitability and quality (Tustin et al., 2005). In an instant where existing data is not suitable for the purpose of a specific research project, it follows that primary data must be considered. Notwithstanding the tight time lines within which this study was been conducted, the non-availability of secondary data logically dictated that primary data should be collected and used. Hence primary data was collected through a web-based survey.

### **3.3 POPULATION AND SAMPLE**

#### **3.3.1 Population**

Tustin et al. (2005) outline seven steps in developing a sample plan: (1) define population of interest; (2) select data collection method; (3) specify sample frame; (4) select sampling method; (5) determine sample size; (6) develop operational sampling plan; and (7) execute operational sampling plan. Population refers to a group of people, entities or subjects from whom information can be extracted (Tustin et al., 2005).

In this study the listed companies within the JSE Top 100 were a selected population of interest, particularly non-financial companies. The JSE top 100 comprises large, mostly profitable firms<sup>10</sup> as measured by market capitalisation (total number of outstanding shares multiplied by prevailing share price). The JSE top 100 index includes the robust and lucrative JSE top 40 companies. The JSE top 40 index comprises 40 large firms, which accounts for approximately 80% of the JSE's total market capitalisation (Courtney Capital Private Wealth, 2016). Essentially, the JSE top 100 firms together have control over the entire stock market and have a colossal influence and effect on South Africa's economy in general. Performance as measured by profitability and share price is a key determining factor for firms to maintain a position in the JSE top 100 index, hence no firm is guaranteed of its standing.

---

<sup>10</sup> For the purpose of this study the words company and firm are used interchangeably.

The author contacted the JSE's Market Data – Post-Trade & Information Services division via email on 22 March 2016 for a list of JSE top 100 firms. A response was received from a sales support administrator outlining the process that needs to be followed to attain the required information.

A list of the JSE top 100, at the end of second quarter of 2016, was received as requested. Among other differentiating fields categorising the data was the name of the firm, market capitalisation, trade volume, value and closing share price on 7 July 2016. It is worth noting that a JSE top 100 firm on the said date had an average market capitalisation of R146 070 001 752. At least three of the JSE top 100 firms had a market capitalisation valued over a trillion rand. This data set constituted the population for the purpose of this study.

### **3.3.2 Sample**

According to Tustin et al. (2005), the construction of a sample is influenced by various factors including the data collection method. Primary data was collected for the purpose of this study. A sample is a subset of the population and there are two sampling plans: probability and non-probability sampling (Tustin et al., 2005). According to Tustin et al. (2005), probability samples are samples in which elements within the population or universe have a known chance of selection, whereas the chances of selection for non-probability samples are unknown. For the purpose of this study a non-probability purposive sampling is applicable.

The firms within the JSE top 100 index by the end of the second quarter of 2016 (population) had an unknown chance of selection, hence the selection in the sample was not “randomised”, but dependent on a particular criterion that companies needed to satisfy- being non-financial (Tustin et al., 2005). All firms that are classified as financial companies in accordance with the Industry Classification Benchmark (ICB)<sup>11</sup> were excluded. The ICB has four levels of classification, which include (1) Industry; (2) Super sector; (3) Sector; and (4) Sub-sector. The first level, that is, industry, consisted of ten industries (Oil & Gas, Basic Materials, Industrials, Consumer Goods, Health Care, Consumer Services,

---

<sup>11</sup> ICB is an industry classification standard adopted by the JSE to categories listing firms according to industry and sectors of operation.

Telecommunications, Utilities, Financials, and Technology) based on which the JSE classifies sectors and assigns specific unique codes for identification. This is over and above the JSE consolidating all industries into three sectors (SA Resources, SA Financials and SA Industrials) for purposes of indices. As an example, the financial industry is assigned a JSE industry specific code J580 and ICB code 8000 as identification and descriptor codes (JSE, 2016).

The super sectors classified under this JSE J580 as derived from ICB 8000 codes are financial industry companies and include banks, insurance (nonlife insurance and life insurance), real estate (real estate investment and investment trust) and financial services. All companies operating in this sector are deemed financial companies and were not eligible for consideration in this study. The reason for the removal of financial companies is that financial companies are both players and market makers with respect to derivative instruments. The decision to exclude financial companies is in accordance with previous similar research (Allayannis & Ofek, 2001; Bodnar et al., 1998; Bodnar & Gebhardt, 1999). Table 3.2 below outlines in six steps a procedure that was followed to construct the final sample for this study.

**Table 3.2:** Sample construction procedure

Step	Activity	No firms involved	% Change
Step 1	Retrieve list of top 100 firms	100	0
Step 2	Exclude financial firms	56	44
Step 3	Exclude duplicate firms	51	8.9
Step 4	Exclude education provider	50	2
Step 5	Exclude suspended firm	49	2
Step 6	Exclude firms on other basis*	35	28
Final sample size		35	65

\* There are a variety of reasons which are reflected in the text below.

Source: Self-developed

As seen in Table 3.2, the first step included retrieval of a list of top 100 JSE companies, which was preceded by the completion of certain documents. The list contained all companies including financial companies with an ICB classification code 8000. The second step involved the identification of financial firms

and removal thereof from the list. As indicated above, financial companies are both the producers and consumers of derivative instruments, thus including them in a sample will yield biased results. The internet was used in this sifting process; each company name was searched for on Google. Noting that information attained in this manner is not always reliable, the information was validated through the “Who owns who” internet portal, which is a renowned business data portal. Important details reflected in the brief profiles provided by the “Who owns who” portal included industry or sector of operation, the name of the CEO, average share price, and contact numbers of the company’s switchboard or reception.

The contact telephone numbers were considered an important point of entry to connect with the relevant treasury personnel or manager in order to attain their consent to participate in the study, and also to acquire their email addresses through which the email survey and related information about the study would be sent. Based on the indicated industry or sector on the profile, the company was allocated to an industry, super sector or sector in accordance with ICB industries. An additional column was created on the spreadsheet to populate the company’s switchboard or reception contact number. Of the 100 companies retrieved as in step one, 44 companies were identified as financial companies and thus were removed from the list, leaving a total of 56 non-financial companies. Included among these 44 financial companies is the exchange itself – the JSE. In step three, companies with the same management structures or belonging to one group were identified among the 56 non-financial companies.

A total of five companies considered to be members of a group and immersed within the holding company’s management structure were discarded from the list. Only the parent company was left on the list. This was done in order to prevent duplication. Consequently, the list was reduced by 8.9% and comprised 51 non-financial companies. Step four involved the exclusion of one listed education provider. Although this company is non-financial, the nature of its business line, which is education provision, logically did not fit the purpose of this study. Of the remaining 50 non-financial companies, one had its status suspended and its bank accounts were frozen. As a result it no longer complied with all the provisions in the JSE listing requirements. The company was linked

to a major political development in the country at the time, therefore its potential and capacity to participate in a study of this nature was impaired. Consequently, this company was excluded from the list, this activity constituted step five.

The last step of the sample construction procedure (step 6) involved the exclusion of 13 companies on various grounds. As stated in step two above, among the information considered important in the company's profile is the company's switchboard or reception telephone number. The study required the participation of relevant treasury<sup>12</sup> personnel, preferably the treasury manager. Most responses were from treasury managers or personnel within treasury at an operational level; chief financial officers (CFO's) are generally difficult to gain access to. The remaining 49 non-financial companies subsequent to step 5, were each telephonically contacted to provide the direct office numbers of the relevant treasury personnel or treasury managers.

Based on the background provided, in some instances receptionists or switchboard operators were able to identify the correct person to participate in the study and immediately provided his/her telephone number or transferred the call. In other instances, treasury managers, having understood the background through a telephonic discussion, assigned a relevant person to participate in the study. Among the 14 companies that were excluded for other reasons are companies where the following circumstances prevailed and constituted a barrier and basis for their exclusion:

- Nine of the 14 companies are those where a switchboard operator or receptionist transferred a call to the treasury manager, which went unanswered and still went unanswered on follow-up calls. Tustin et al. (2005) recommends two follow-up telephone calls. Such follow-up calls were done mostly a day after the first call or on the day when it was advised to make a follow-up call.
- Three companies' treasury managers declined to provide their email addresses, citing the fact that they were busy with financial year end consolidations and would not be able to participate in the study.

---

<sup>12</sup> Relevant treasury personnel refers heads of treasury, financial managers, CFO's, treasury accountant, risk specialists or other persons responsible for currency related activities within treasury or finance department.

- One was a company whose treasury manager required an email to be written to the company secretary to grant permission before she could provide her email address in order to receive information and a link to the study. An explanatory email was written and responded to. The response stated that the company prohibits participation in similar survey studies.
- In the case of the last company, no correct contact could be established.

The final sample comprised 35 non-financial companies, which constituted 35% of the population of interest. Table 3.3 below differentiates between the 35 remaining non-financial companies in accordance with their ICB industries. The sample is representative of all the industries. Apart from financials, which fall outside the scope of this study, the only industry not represented in the sample is utilities. Until recently there have been efforts to restructure the classifications and reduce ICB industries from 10 to 9 industries by removing utilities, which was the smallest industrial classification with only two sectors (electricity and gas; water and multi-utilities).

**Table 3.3:** Sample description by industry and sector

Industry	Number	Frequency (%)	Sector	Number	Frequency (%)
Basic materials	11	31.4	Mining	8	22.9
			Forestry and paper	3	8.6
Consumer goods	5	14.3	Food producers	4	11.4
			Beverages	1	2.9
Consumer services	9	25.7	Media	1	2.9
			General retailers	1	2.9
			Food and drug retailers	7	20.0
Health care	3	8.6	Pharmaceutical and biotechnology	3	8.6
Industrial	2	5.7	Construction and materials	1	2.9
			Industrial transportation	1	2.9
Technology	1	2.9	Software and computer services	1	2.9
Telecommunications	3	8.6	Fixed line telecommunication	2	5.7
			Mobile telecommunication	1	2.9
Oil and gas	1	2.9	Oil and gas producers	1	2.9
<b>Total</b>	<b>35</b>	<b>100</b>		<b>35</b>	<b>100</b>

Source: Self-developed

It is evident from above that companies within the basic materials industry constituted a large part of the final sample whereas companies in the technology and oil and gas industries constituted a small fraction of the final sample. Neuman (1997) suggests that as a rule of thumb, sample ratios are determined by the size of the studied population. Therefore, with respect to a large population, a small sample ratio of about 10% is acceptable, whereas in the case of a smaller population, a larger sample ratio of about 30% is required. Small populations are described as populations of any size with under 1 000 population elements. With respect to this study, the sample size constitutes 35% of the population and is therefore acceptable and a fair representation of the studied population.

### **3.4 RESEARCH DESIGN**

Tustin et al. (2005) dissects research design into three: exploratory research, descriptive research, and causal research.

This study applied a descriptive research approach. Descriptive research studies are undertaken to answer questions such as who, what, when and where (Tustin et al., 2005). Accordingly, such a design is applicable in the case of a quantitative primary research. An online survey was used to collect primary data from potential respondents. Descriptive studies entail collection of primary data through the application of various methods; however, questionnaires are the dominant method for data collection. Questionnaires have inherent strengths and weaknesses, mainly premised on the nature of questions contained. Neuman (1997) suggests that in the case of large scale surveys, a questionnaire with closed-ended questions is preferable. However, the immediate disadvantage of closed-ended questions is that important information is lost as the respondent is not able to justify or elaborate on selections of specific choices.

In general, closed-ended questions significantly contribute to improving the response rate in survey studies, which are generally associated with low response rates. Open-ended questions are deemed appropriate in exploratory research and in large studies, may be suitable only at the pilot stage (Neuman, 1997). For this study a web-based questionnaire was used to extract primary data.

### 3.5 RESEARCH INSTRUMENT

Primary data collection was unavoidable in this study since secondary data was not readily available to adequately meet the objective of this study. A questionnaire was adapted from previous empirical research in similar studies. This questionnaire was adapted from the survey constructed by Peddappalli (2014), which is derived from the seminal 1998 Wharton survey developed by Bodnar et al. (1998). The questionnaire was first developed in Microsoft Word format and upon approval by the supervisor, was transcribed into a web-based lime survey format. The services of an information technology consultant were sourced for scripting of the developed and approved Microsoft Word questionnaire into a web-based lime survey.

An email containing a hyperlink to the web-based survey was sent to the supervisor for final approval. The questionnaire contained 27 questions, which are mostly closed-ended questions with a selection of predefined alternatives, and a few open-ended questions that provide the respondent the option of “other”, which is followed by a request for specification stated as “please specify”. The questionnaire is divided into three sections. The first section mainly focuses on company specific characteristics and risk management practices. The second section delves into the identification of forms of foreign exchange risk. The third evaluates the effectiveness of strategies and instruments.

The estimated time for completion of the questionnaire was set at 10 minutes since most questions have selected predefined answers. The relevant respondents who, by virtue of the daily responsibilities, are deemed to be well-equipped to respond to the questions, enlisted in the questionnaire. In line with a recommendation by Neuman (1997), the questionnaire contained questions that were phrased in simple and appropriate language. Since the questionnaire was adapted from previous successful empirical studies although in different contexts, it was deemed reliable and valid hence no pilot testing was warranted.

According to Tustin et al. (2005), there are both advantages and disadvantages related to a web-based survey. The advantages deemed important for the purpose of this study as highlighted by Tustin et al. (2005) include:

- **Response rate**

Web-based questionnaires have the ability to generate a high response rate, although surveys are generally known for having a low response rate.

- **Time**

Responses in web-based surveys can be generated quickly.

- **Anonymity**

Web-based questionnaires allow participants to choose whether to include information that reveals their identity. Anonymity was very important for the purpose of this study.

There are other advantages associated with a web survey indicated by Tustin et al. (2005); however, for the purpose of this study much weight is attached to the above mentioned three advantages. These advantages outweighed inherent disadvantages such as generalisability, inappropriate responses, time issues, comparability and inadequate coverage, which are associated with web-based studies as identified by Tustin et al. (2005).

### **3.6 DATA COLLECTION**

An email containing a hyperlink to the web-based questionnaire was first sent to companies in the sample. Emails that bounced back due to incorrectly spelled email addresses were corrected and successfully resent. However, the cardinal principle remained to afford all participants sufficient opportunity to participate in the study as reasonably as was possible. The email was structured in a professional manner starting with the introduction of the researcher and brief reflection on the title of the study.

The hyperlink to the web-based questionnaire was embedded within the email and participants were directed to the hyperlink. (Both the email and a copied version of the web-survey are reflected under Appendix A). The questionnaire was not accessible remotely, thus participants required internet connectivity to complete it. Given the type of participants as well as the nature of their jobs,

lack of access to the internet was not an envisaged constraint. Participants were initially given full two weeks within which to complete the questionnaire.

Due to the lack of response during the first week, the closing date for participation was extended by two weeks. A reminder email was sent to participants three days prior the final date. It is worth mentioning that at least two participants responded to the reminder email. One stated that the information sought in the questionnaire was a source for a strategic competitive advantage thus the financial director declined to approve participation in the study. The other participant stated that the information sought is not relevant to the nature of his company's business and he is therefore unable to participate. The study's final submission was again extended to the month end in order to allow more participation. A follow-up telephone call was made with all targeted participants, excluding those who had responded by email to the reminder. Through telephone contact, one participant stated that the required information entailed questions in the questionnaire that could be a source for strategic competition and he would rather participate in his individual capacity. That was disallowed since the intention of the study was to establish practices within a company. Some participants stated that they had already completed the survey, while others promised to complete the questionnaire as soon as they found the time. The numbers of responses increased after both the email and telephone reminders were made. The number of responses increased by four after the reminder email was sent. After the closing date, data was extracted from the server and exported to excel for observation and to SPSS for the purposes of analysis.

### **3.7 RESPONSE RATE**

A questionnaire was successfully sent to all 35 firms in the sample. In total 15 participants responded to the survey, however, two of these responses were incomplete and thus not usable. Hence the valid response rate is 13. Table 3.4 below tabulates the response rate of selected previous studies for a similar nature.

**Table 3.4:** Selected previous studies response rate

<b>Researcher(s)</b>	<b>Sample size</b>	<b>Response rate (%)</b>
Bodnar and Marston (1998)	1 928	21
Bodnar and Gebhardt (1999)	2 368	20
Peddappalli (2014)	38 (final sample)	31
Glaum (2000)	153	46
Chiira (2006)	27	70
Marshall (2000)	600	30
Abor (2005)	100	68

Source: Self-developed

In light of the response rates as demonstrated from selected empirical studies of a similar nature in Table 3.4 above, it is evident that response rates are typically low. The response rate of this study is 37% and compares favourably with previous studies in percentage terms, although it should be noted that a much higher percentage was expected given that the sample size of this study was significantly smaller than the studies cited in Table 3.4.

### **3.8 DATA ANALYSIS**

Analysis of data was mainly conducted through SPSS and exported to excel to generate descriptive statistics such as frequencies and percentage distributions. Data analysis output was reported through the presentation of frequency tables and graphs. Although there is no formal hypothesis set for this study, cross-tabulation statistical analysis through the application of SPSS generated Pearson's chi-square and Kendall's tau correlation was used to test statistical differences between observed data and some specific firm characteristics. Such characteristics include: (1) number of countries around the world in which companies have subsidiaries or are doing business, that is, importing and exporting – in related literature it is referred to as the degree of internationalisation; (2) average size measured by level of foreign denominated revenue; and (3) on the basis of the nature of industry.

The cross tabulation statistical tests were conducted on the basis of a presumed null hypothesis of no association between the firm's specific characteris-

tics selected responses. In order to conduct this cross-table statistical difference analysis (chi-square) the data that is mainly spread over four industries (Basic Materials, Telecommunication, Industrial and Retail) was merged into two groups in order to attain the precision required for cross tabulation statistics. This is because the data was insufficient when considered over the ten industrial categories as set by the ICB, elaborated upon under section 3.3.2 of this report. To achieve the objective, the JSE's sector indices split was used to consolidate the four industries into two categories. The JSE's South African sector split is derived from the ICB and consolidates all listed companies into three main sectors (JSE, 2016). These three sectors, which represent the indices, are resources, financials, and industrials, and are described according to the JSE hereunder:

- “Resources” is an index that comprises all JSE listed firms that belong to the ICB's Oil & Gas (0001) and Basic Materials (1000) industries.
- “Financials” refers to an index that is composed of all JSE listed companies falling under the ICB financials (8000) industries. It is important to reiterate that financials are excluded from this study.
- “Industrials” is an index of all other JSE listed firms that do not belong under the ICB industries financials (8000), Oil & Gas (0001) and Basic Materials.

Based on the above description, companies that, in their response, identified their sector of operations as telecommunication, industrial and retail, were grouped in one sector, namely, industrials, for the purpose of performing cross tabulation statistical differences. As a result, the analysis (Pearson chi-square and Kendall's tau correlation) was made based on two sectors, that is, resources and industrials.

### **3.9 ETHICAL CONSIDERATIONS**

Tustin et al. (2005) promote ethical conduct in research. Ethical conduct is as important in research as it is in other business functions. Accordingly, Tustin et al. (2005) posit that the researcher has four obligations to participants and four obligations to the user or consumer of the research output. With respect to the participants, Tustin et al. (2005) state that the researcher must ascertain that (1) the participant is not harmed; (2) the participant is not deceived; (3) the par-

participant should be willing and informed; and (4) data should be held in confidence. With regard to obligations to the client, Tustin et al. (2005) prescribe that (1) proper research procedure must be followed; (2) benefits should not be overstated; (3) client information should be kept confidential; and (4) results should not be distorted.

All of the aforementioned ethical obligations and disclosure requirements were taken into consideration in this study (see the appended questionnaire). Participants were assured of confidentiality and were appropriately informed that participation was voluntary and participants were not coerced or deceived into participating despite the evident challenge of the low response rate which constrains the robustness of this study. Analysis of results was conducted through the application of specified statistical methods based on exact data and no effort was made to distort data or fabricate results.

### **3.10 CONCLUSION**

In this chapter a detailed account of the approach and strategies used in the implementation of this study were discussed. This includes the procedure that was followed to construct a sample from the population of interest, the development and implementation of the research instrument, data management and extraction for analysis, as well as ethical considerations that have been made throughout the study. This chapter sets a firm basis for the next chapter, which focuses on the in-depth analysis of the collected data.

## **4. PRESENTATION OF RESULTS, ANALYSIS AND DISCUSSION**

### **4.1 INTRODUCTION**

The purpose of this chapter is to present the empirical results regarding foreign exchange risk management by JSE non-financial companies. The first section of this chapter entails a descriptive presentation of the results as observed from the survey data through graphs and frequency tables. The second section deals with the analysis and concomitant discussion of results.

## 4.2 DESCRIPTIVE ANALYSIS OF FOREIGN MANAGEMENT PRACTICES BY NON-FINANCIAL FIRMS

Similar to previous research (Eriksen & Wadoe, 2010; Storm, 2011; Peddappalli, 2014), descriptive statistics in the form of graphs and frequency tables as well as percentages were used to present the survey results. The results are presented sequentially in accordance with the specific section of the questionnaire.

### 4.2.1 Firm specific characteristics and risk management practices

The presentation of the results of the responding participants with respect to section one of the questionnaire is divided in two sub-sections. The results with respect to firm specific characteristics are presented first, followed by results on risk management practices. This separation is important for the analysis of results, which will be done under section 4.3.

#### 4.2.1.1 Firm specific characteristics

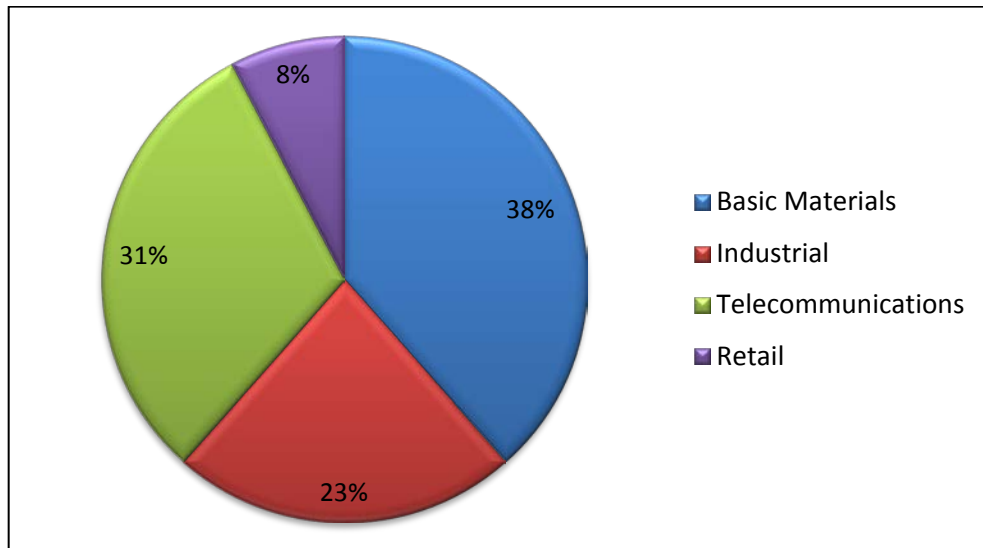
**Table 4.1:** Categories describing the nature of the company

Variable	Percentage	Frequency
<b>Nature of company:</b>		
Multinational corporation	92%	12
Exporter of goods and services	8%	1
Importer of goods and services	0%	0
<b>Total</b>	<b>100%</b>	<b>13</b>

Table 4.1 shows that the majority of respondents (92%) consider the nature of their companies to be multinational corporations whereas 8% are identified as being exporters of goods and services.

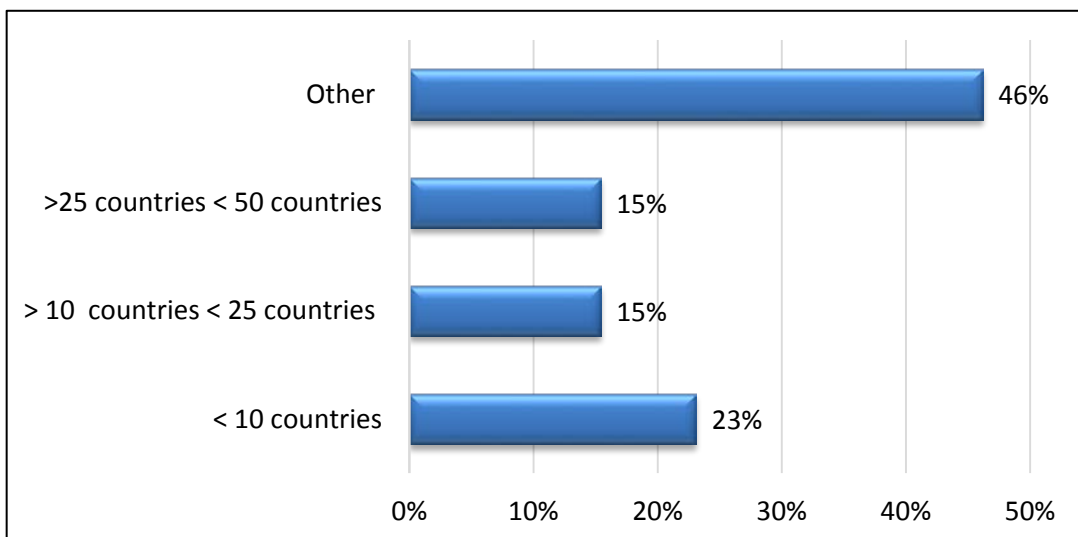
Figure 4.1 demonstrates the segregation of the respondents according to industry. The industrial allocation of respondents was done in accordance with the ICB's industry classification. As seen in Figure 4.1 below, 38%, which constitutes the largest share of the total respondents, came from companies in the basic materials industry. Companies in the telecommunication industry constituted the second largest share of total respondents at 31%, followed by industrial companies, which accounted for 23% of the total respondents. Firms in the

retail sector constituted the smallest share, representing 8% of valid and usable respondents.



**Figure 4.1:** Industrial spread by respondents

Among the total respondents to the questionnaire, 23% had businesses in less than 10 countries; 15.5% were involved in over 10, but less than 25 countries; 15.5% had business involvement in over 26 but less than 50 countries; and most of the respondents (46%) were not specific. Figure 4.2 provides a pictorial demonstration of the levels of global business involvement of the firms that responded to the questionnaire.



**Figure 4.2:** Levels of global business involvement

#### ***4.2.1.2 Risk management practices***

The presentation of results regarding risk management practices is further divided into three sub-topics according to the specificity and sequence of related questions. The first sub-topic presents the results on usage of derivatives and internal or natural hedging strategies, which is a consolidation of the results emanating from questions 4, 5 and 6 of the questionnaire. The second sub-topic presents the results of questions 7 and 8, which estimates the level of foreign currency denominated sales and liabilities. The third sub-topic presents the results of questions 9 to 12, which concludes the first section of the questionnaire.

#### ***4.2.1.3 Usage of derivatives and internal hedging methods***

As seen in Table 4.2, an overwhelming 92% of respondents are users of derivatives whereas only 8% are non-users of financial derivative instruments. Payment netting is a dominant internal or natural hedging method used by non-derivative users to minimise the impact of foreign exchange risk exposure. Only 8% of respondents used internal methods as a substitute for financial derivative instruments. As expected, a total of 92% of respondents did not respond to the question on usage of an internal method as it depended of their response to the preceding question. Similarly, 92% of the respondents did not respond to the question related to provision of reasons for non-usage of derivatives; this was expected as the very same number of respondents indicated they were users of derivatives. Hence only 8% of the total respondents managed to respond to this question and stated that foreign exchange is managed through alternative means.

**Table 4.2:** Other company specific characteristics and risk management practices

Variable	Percentage	Frequency
<b>Usage of derivative:</b>		
User	92%	12
Non-user	8%	1
<b>Total</b>	<b>100%</b>	<b>13</b>
<b>Usage of internal/natural hedging by non-derivative users:</b>		
Payment netting	8%	1
Prepayments	0%	0
Leading and lagging	0%	0
Other	0%	0
No response	92%	12
<b>Total</b>	<b>100%</b>	<b>13</b>
<b>Reasons for non-usage of financial derivative instrument:</b>		
Insufficient internal expertise and comprehension of derivatives	0%	0
The cost of derivatives outweighs the benefit	0%	0
Negligible exposure to foreign exchange risk	0%	0
Foreign exchange risk managed through other means	8%	1
Accounting treatment	0%	0
Investor consideration	0%	0
No response	92%	12
<b>Total</b>	<b>100%</b>	<b>13</b>

#### **4.2.1.4 Estimation of exposure to foreign currency**

The results show that 31% of the respondents said that less than 10% of their firm's 2015 revenue was denominated in foreign currency. Around 8% estimated their firm's foreign currency revenue to have been between 26 and 50%, and a further 8% observed foreign currency denominated revenue of between 51 and 75%. An overwhelming 46% estimated that between 76 and 100% of their 2015 annual revenue was denominated in foreign currency. Another 8% who participated in the survey did not respond to the question.

Regarding foreign currency denominated expenses, 31% of respondents estimated that less than 10% of their 2015 annual expenses were in foreign currency while 8% answered that between 10 and 25% of their annual expenses was in foreign currency. Around 23% estimated foreign currency denominated expenses to have been between 26 and 50%, whereas 31%, which represents the largest share of total respondents, estimated their firm's foreign currency denominated debt between 51 and 75%. Only 8% said that between 76 and 100% of their firm's annual expenses were denominated in foreign currency. The results on foreign currency denominated revenue and expenses are presented in Table 4.3.

**Table 4.3:** Estimated foreign currency denominated revenue and expenses

Variable	Percentage	Frequency
<b>Estimated foreign currency denominated revenue in 2015:</b>		
None	0%	0
Less than 10%	31%	4
10% – 25%	0%	0
26% – 50%	8%	1
51% – 75%	8%	1
76% – 100%	46%	6
No response	8%	1
<b>Total*</b>	<b>100%</b>	<b>13</b>
<b>Estimated foreign currency denominated expenses in 2015:</b>		
None	0%	0
Less than 10%	31%	4
10% – 25%	8%	1
26% – 50%	23%	3
51% – 75%	31%	4
76% – 100%	8%	1
No response	0%	0
<b>Total</b>	<b>100%</b>	<b>13</b>

\* Total is worked out by the number of valid answer per question

#### **4.2.1.5 Determination of corporate risk management structures and related systems**

The majority of respondents, (77%) stated that they have a risk management division in place dedicated to enterprise risk management. Only 23% gave an indication that their respective firms did not have a dedicated risk management division. In an attempt to locate specifically which division of the firms is responsible for foreign exchange risk management, 8% stated that this responsibility falls with the purview of the enterprise risk management division, while 84% said the responsibility of foreign exchange management belonged to the treasury department. Only 8% abstained from answering this question.

As per the results presented in Table 4.4, 69% of respondents stated that the foreign exchange risk management functions are centralised at the firm's headquarters; another 15% reckoned that their firm's risk management function is centralised to their headquarters, however, subsidiary managers do have an input in risk management activities.

**Table 4.4:** Risk management structures, systems and levels of decision-making

<b>Variable</b>	<b>Percentage</b>	<b>Frequency</b>
<b>Existence of risk management division:</b>		
Division in place	77%	10
No division in place	23%	3
<b>Total</b>	<b>100%</b>	<b>13</b>
<b>Division responsible for management of foreign exchange risk:</b>		
Enterprise risk management division	8%	1
Treasury	84%	11
Risk assessment and compliance	0%	0
Foreign exchange division	0%	0
Other	0%	0
No response	8%	1
<b>Total</b>	<b>100%</b>	<b>13</b>
<b>Levels of foreign exchange risk management function centralisation of decentralisation:</b>		
Highly centralised to company's headquarters	69%	9
Centralised to headquarters with input from subsidiary managers	15%	2
Decentralised to subsidiaries	15%	2
Other	0%	0
No response	0%	0
<b>Total</b>	<b>100%</b>	<b>13</b>
<b>Corporate level decision making in respect of foreign exchange risk management strategy:</b>		
Business unit responsible for company risk	23%	3
Executive management level	69%	9
Board level	8%	1
<b>Total</b>	<b>100%</b>	<b>13</b>

The remaining 15% stated that their firms proceeded to decentralise the functions to subsidiaries. Regarding levels of decision-making on company's foreign exchange risk management strategy, 23% of respondents stated that decisions were made at the level of the head of the business unit responsible for the company's risk. A total of 69% said executive management was responsible for

strategic decisions, and 8% indicated that decision-making on foreign exchange risk was located at board level of the company.

#### 4.2.2 Identifying forms of foreign exchange risk

**Table 4.5:** Levels of importance associated with forms of foreign exchange risk

<b>Variable</b>	<b>Percentage</b>	<b>Frequency</b>
<b>Transactional risk:</b>		
Extremely important	61%	8
Important	31%	4
Partially important	8%	1
Least important	0%	0
Not important	0%	0
<b>Total</b>	<b>100%</b>	<b>13</b>
<b>Translational risk:</b>		
Extremely important	8%	1
Important	46%	6
Partially important	31%	4
Least important	0%	0
Not important	15%	2
<b>Total</b>	<b>100%</b>	<b>13</b>
<b>Economic risk:</b>		
Extremely important	54%	7
Important	38%	5
Partially important	0%	0
Least important	0%	0
Not important	8%	1
<b>Total</b>	<b>100%</b>	<b>13</b>

On a four-point Likert scale a total of 61% of respondents considered transactional risk to be extremely important while 31% ranked transactional risk as important. The remaining 8% stated that the transactional risk is partially important. Only 8% regarded translational risk as extremely important, while 46% said it was important. A significant number of respondents (31%) answered that translational risk was partially important, while 15% said it was not important.

The results further show that 54% of respondents regard economic risk as extremely important; 38% regard economic risk as important whereas only 8% said that economic risk was not important.

**Table 4.6:** Levels of frequency in the management of foreign exchange risk

<b>Variable</b>	<b>Percentage</b>	<b>Frequency</b>
<b>Transactional risk:</b>		
All the time	92%	12
Sometimes	8%	1
Never	0%	0
<b>Total</b>	<b>100%</b>	<b>13</b>
<b>Translational risk:</b>		
All the time	54%	7
Sometimes	15%	2
Never	31%	4
<b>Total</b>	<b>100%</b>	<b>13</b>
<b>Economic risk:</b>		
All the time	77%	10
Sometimes	23%	3
Never	0%	0
<b>Total</b>	<b>100%</b>	<b>13</b>

Almost all respondents (92%) said they managed transactional exposure all the time and only 8% rarely managed this form of exposure. Translational risk was managed all the time by 54% of total respondents, whereas 15% rarely managed this form of exposure. A significant number of respondents (31%) never managed translational risk at all. An overwhelming 77% of respondents said they always managed economic exposure while 23% rarely managed this form of exposure.

**Table 4.7:** Transactional risk: reasons for management and sources of exposure

Variable	Percentage	Frequency
<b>Reasons for management – First selection:</b>		
To maximise earnings	54%	7
To minimise the effect of currency volatility on cash flow	46%	6
Reduction of transactional costs	0%	0
Not applicable	0%	0
<b>Total</b>	<b>100%</b>	<b>13</b>
<b>Reasons for management – Second selection:<sup>13</sup></b>		
To minimise the effect of currency volatility on cash flow	83%	5
Reduction of transactional costs	17%	1
Respondents who selected more than one answer	–	7
<b>Total</b>	<b>100</b>	<b>13</b>
<b>Primary source of transactional risk:</b>		
Foreign currency denominated purchases or sales	69%	9
Foreign currency underwritten debt or lending	8%	1
Future sales or purchases contracted with foreign parties	23%	3
Other	0%	0
<b>Total</b>	<b>100%</b>	<b>13</b>

\* Respondents could select more than one predefined answer.

The respondents were granted the latitude to select more than one predefined answer and the option to state any other motivation that necessitates the management of transactional exposure. Most of the respondents (54%) cited the maximisation of earnings as their main motivation for managing transactional exposure. The other main motivation cited by a significant number of respondents (46%) is the minimisation of the effect of currency volatility on cash flow. Of the respondents who exercised the option to select more than one predefined, 83% selected the need to minimise the effect of currency volatility on cash flow as their second reason, while 17% cited the reduction of transactional costs as their second reason.

<sup>13</sup> Presents only those predefined answers checked by respondents who selected more than one predefined answer. Unchecked predefined answer have zero value hence are not reflected to conserve space. This approach is maintained with respect to the presentation of all results of questions that have an option for selection of multiple predefined answers.

When asked to indicate the primary sources of transactional risk, 69% of respondents stated that foreign currency denominated purchases and sales were the main sources of exposure. The second largest source of transactional risk (23%) was future sales or purchases contracted with foreign parties.

**Table 4.8:** Translational risk: reasons for management or non-active management of exposure

Variable	Percentage	Frequency
<b>Reasons for management:*</b>		
Consolidation of company financial statements	38%	5
Mandatory accounting standards (IFRS) requirements	23%	3
Not applicable	31%	4
Other	8%	1
<b>Total*</b>	<b>100%</b>	<b>13</b>
<b>Reasons for non-active management of translational risk:**</b>		
Insignificant	50%	2
Theoretical other than being pragmatic and factual exposure	50%	2
<b>Total</b>	<b>100%</b>	<b>4</b>

\* Respondents had a choice to select more than one predefined answer.

\*\* Only respondents who ticked not applicable in the preceding question (reasons for management of translational risk) were eligible to answer this question.

As seen from Table 4.8 above, 38% of respondents manage translational risk for purposes of consolidating company financial statements; 23% say they do so because of accounting standards. The 8% who elected the option of “other” from the list of predefined answers specified that they managed translational risk to maximise profits and decrease volatility of cash flows. A sizeable number of respondents (31%) were ineligible to answer the question regarding reasons for not managing translational risk since they had answered the question on reasons for managing it.

All respondents who provided reasons for managing translational risk and also answered the question pertaining to provision of reasons for not managing it had their responses discarded. This is in line with data editing procedures as recommended by Tustin et al. (2010). Hence only 31% of total respondents were eligible to receive and answer this question. Of the eligible respondents,

50% stated that they do not actively manage translational risk because it is insignificant, and the other 50% deemed translational risk to be more of a theoretical than a pragmatic and factual exposure.

**Table 4.9** Economic exposure and usage of derivatives for speculative purposes

<b>Variable</b>	<b>Percentage</b>	<b>Frequency</b>
<b>Usage or non-usage of currency forecasting for managing economic exposure:</b>		
User of currency forecasting	77%	10
Non-user of currency forecasting	23%	3
<b>Total</b>	<b>100%</b>	<b>13</b>
<b>Permissibility or non-permissibility of usage of derivative instruments for speculation:</b>		
Permissible	15%	2
Not permissible	85%	11
Other	0%	0
<b>Total</b>	<b>100%</b>	<b>13</b>

The majority of respondents (77%) use currency forecasting to devise interventions in order to manage economic exposure. When asked if usage of derivative instruments for speculative reasons is a permissible practice within their firms, 85% of respondents answered that usage of derivatives for speculation was not permitted. Only 15% of respondents stated that usage of derivatives for speculation was allowed in the firms.

#### **4.2.3 Evaluating the effectiveness of strategies and instruments**

The results show that 70% of total respondents used internal or natural hedging strategies in combination with derivative instruments. An estimated 15% relied on usage of internal hedging strategies in isolation and independent of the derivative instruments. A further 15% stated that the question was inapplicable. In respect of the derivative instruments that are used in combination with internal strategies, forward contracts are the largest derivative instruments used in combination with internal strategies used by 67% of respondents. Options were the second most popular derivative instruments used in combination with

internal strategies by 22% of respondents, while swaps were used by only 11% of valid respondents.

None of the respondents used futures contracts in combination with internal hedging strategies. It must be noted that only 70% of total respondents were eligible to answer these questions. All respondents who answered that internal strategies were being implemented independently of the derivative instruments, or checked the not applicable predefined answer in a preceding question, were not eligible to answer the question regarding the type of derivatives used in combination with internal strategies<sup>14</sup>. Hence the assessment was based on 69% of total respondents.

**Table 4.10:** Combination of internal hedging strategies and derivative instruments

<b>Variable</b>	<b>Percentage</b>	<b>Frequency</b>
<b>Firm's implementation of internal hedging strategies:</b>		
In combination with derivative instruments	70%	9
Independent of derivative instruments	15%	2
Not applicable	15%	2
<b>Total</b>	<b>100%</b>	<b>13</b>
<b>Derivative instruments used in combination with internal strategies:*</b>		
Forward contracts	67%	6
Futures	0%	0
Options	22%	2
Swaps	11%	1
Other	0%	0
<b>Total</b>	<b>100%</b>	<b>9</b>

\* Assessment based on 9 respondents

Table 4.11 shows that payment netting was highly used by 23%, moderately used by 31%, barely used by 8% and never used by 38% of total respondents.

<sup>14</sup> The questionnaire was edited to discard inconsistent responses. Some of the respondents who used internal strategies independently answered the next question on types of derivatives used in combination internal methods thus making such responses erroneous. This inconsistency was addressed in accordance with data editing procedures prescribed by Tustin et al (2005), which allows for the discarding of unsatisfactory portions of questionnaires to address the inconsistencies.

Prepayment was highly used by 8%, moderately used by 46, barely used by 8% and never used by 23%. The results also show that 23% moderately use leading and lagging strategies whereas 8% barely uses this internal hedging strategy and an overwhelming 38% totally never uses leading and lagging.

**Table 4.11:** Internal hedging strategies dominance and effectiveness

<b>Variable</b>	<b>Percentage</b>	<b>Frequency</b>
<b>Payment netting:</b>		
Highly used	23%	3
Moderately used	31%	4
Barely used	8%	1
Never used	38%	5
<b>Total</b>	<b>100%</b>	<b>13</b>
<b>Prepayment:</b>		
Highly used	8%	1
Moderately used	46%	6
Barely used	8%	1
Never used	23%	3
No response	15%	2
<b>Total</b>	<b>100%</b>	<b>13</b>
<b>Leading and lagging:</b>		
Highly used	0%	0
Moderately used	23%	3
Barely used	8%	1
Never used	38%	5
No response	31%	4
<b>Total</b>	<b>100%</b>	<b>13</b>
<b>Effectiveness of internal strategies:</b>		
Ineffective	0%	0
Partially effective	31%	4
Most effective when used in combination with derivatives	53%	7
Not applicable	8%	1
No response	8%	1
<b>Total</b>	<b>100%</b>	<b>13</b>

The majority of respondents (53%) stated that internal hedging strategies are most effective when used in combination with derivative instruments. The results also show that 31% of total respondents said the internal hedging strategies applied by their respective firms were partially effective.

**Table 4.12:** Derivative instruments dominance and motivation for high preference

<b>Variable</b>	<b>Percentage</b>	<b>Frequency</b>
<b>Forward contracts:</b>		
Highly used	69%	9
Moderately used	31%	4
Barely used	0%	0
Never used	0%	0
<b>Total</b>	<b>100%</b>	<b>13</b>
<b>Futures:</b>		
Highly used	0%	0
Moderately used	23%	3
Barely used	31%	4
Never used	23%	3
No response	23%	3
<b>Total</b>	<b>100%</b>	<b>13</b>
<b>Options:</b>		
Highly used	8%	1
Moderately used	31%	4
Barely used	31%	4
Never used	23%	3
No response	8%	1
<b>Total</b>	<b>100%</b>	<b>13</b>
<b>Swaps:</b>		
Highly used	15%	2
Moderately used	23%	3
Barely used	0%	0
Never used	38%	5
No response	23%	3
<b>Total</b>	<b>100%</b>	<b>13</b>

/cont...

<b>Motivation for high preference:</b>		
Flexibility of the derivative market	31%	4
Cost consideration	54%	7
Company's developed expertise in the derivative instruments	7%	1
Other	7%	1
<b>Total</b>	<b>100%</b>	<b>13</b>

The results in Table 4.12 show a strong preference of forward contracts by respondents. Forward contracts are highly and moderately used by 69% and 31% of respondents respectively. Futures are moderately used by 23% of respondents and are barely used by 31%. A small number of respondents (8%) highly used options whereas 31% moderately used these derivative instruments. Options are barely and never used by 31 and 23% of total respondents respectively. Swaps are highly and moderately used by 15 and 23% of the total survey respondents respectively and never used by 38% of total respondents.

With respect to motivation for a respondent's selection of derivatives as highly and moderately used in the preceding question, 31% of respondents consider flexibility of derivative market for the selected derivative instruments as a motivation. The majority of respondents (54%) consider cost as a main motivation for their firm's preference of derivatives, which are highly and moderately used. Of total respondents, only 7% had motivation other than the stated predefined answers on the questionnaire. The alternative motivation provided is that the respondent considers the selection of derivatives as highly and moderately used because it is simple and linked to trade.

**Table 4.13:** Derivative use for purposes other than foreign exchange hedging

<b>Variable</b>	<b>Percentage</b>	<b>Frequency</b>
<b>Use and non-use:</b>		
Yes	54%	7
No	46%	6
<b>Total</b>	<b>100%</b>	<b>13</b>

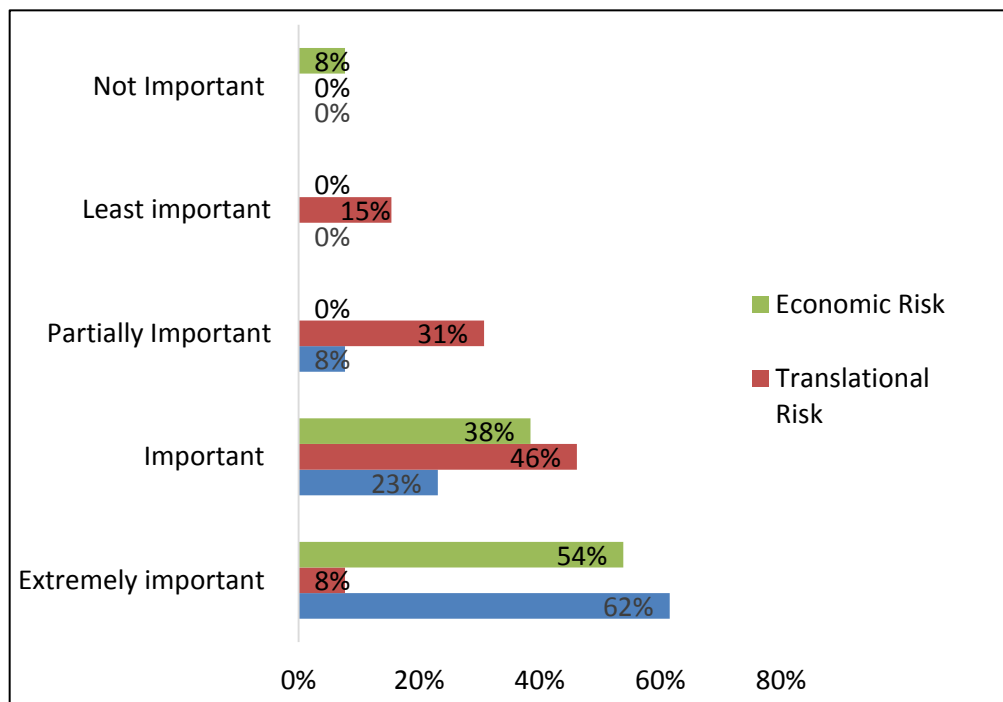
The results show that 54% of respondents use derivative instruments for purposes other than management of foreign risk. Derivative instruments were mostly used to hedge interest rate and credit risk above being used for purposes of hedging foreign exchange risk.

### 4.3 ANALYSIS OF MAJOR RESULTS AND DISCUSSION IN THE CONTEXT OF RELATED PREVIOUS RESEARCH

The results in section 4.2 above primarily provided a descriptive analysis of how surveyed firms manage foreign exchange risk. The descriptive analysis in section 4.2 above mainly aligns to the first research question as stipulated under section 1.6 and, to a larger extent, addresses the overall objective of this study. In this section, an analysis of the other two research questions also stipulated under section 1.6 is conducted.

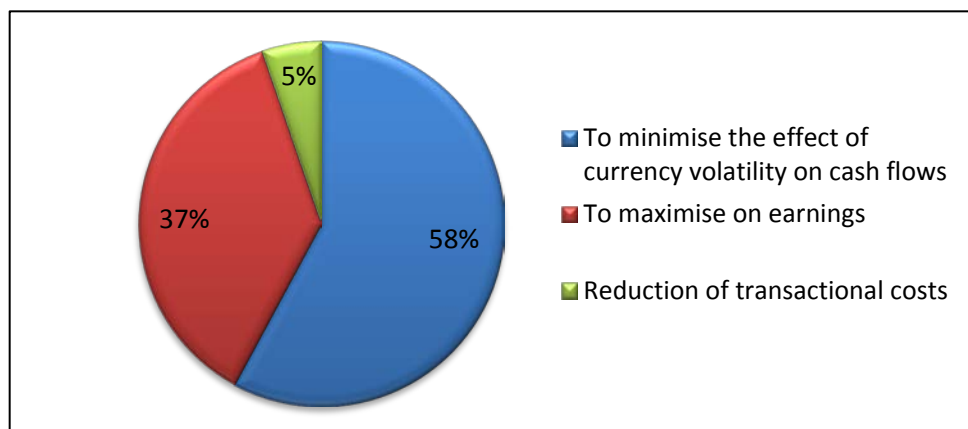
#### 4.3.1 Analysis related to type of foreign exchange rate risk prioritised for management

Figure 4.3 indicates that the majority of respondents attributed high levels of importance to transactional and economic risks while less emphasis was placed on economic risk.



**Figure 4.3:** Levels of importance ascribed to exchange rate risk forms by respondents

Marshall (2000) established that USA, UK and Asian Pacific MNCs placed great emphasis on transactional risk and least emphasis on translational risk. Marshall (2000) also found that respondents placed varying levels of emphasis on economic risk. Transactional risk was ranked to be extremely important by 62% of respondents and important by 23%, whereas economic risk was ranked extremely important and important by 54 and 38% of respondents respectively. Based on the results of the survey, this study established that transactional risk is the most prioritised form of foreign exchange followed by economic risk and least emphasis is ascribed to translational risk. The finding that transactional risk was the most prioritised type of risk in this study is consistent with theory.



**Figure 4.4:** Motivation for managing transactional exposure

The effect of currency volatility on cash flow is the main reason firms managed transactional risk, see Figure 4.4 above. This was expected as the majority of firms ascribed a high level of importance to transactional risk as reported above. It is also worth noting that 80% of firms that ranked transactional risk as being important belonged in the resource sector (refer to Figure 1 under Appendix B). This is associated with the high volume of transactions that is prevalent in the resource industry. Other important reasons for managing transactional risk and ascribing high emphasis to it include a drive to maximise earnings and the reduction of transactional costs.

Duangploy et al. (1997) find that USA firms do not entirely ignore translational risk. Although the majority of USA firms monitor translational risk and would take action as and when circumstances necessitated, there was no evidence of active management of translational risk. This study finds that majority of JSE

listed firms (54%) assign high significant importance to translational risk, although there is a sizable number of respondents (46%) that ranked translational risk as partially important and important.

Figure 4.5 shows that consolidation of financial statements and mandatory accounting requirements are the main reasons for management of translational risk. It is also important to note that a reasonable number of respondents (31%) indicated that translational risk was not applicable. This study also finds that of those firms that did not manage translational risk, 50% regarded it as theoretical rather than being a pragmatic and factual exposure, while the other 50% regarded it as being insignificant. This result is consistent with Dhanani (2003) and other theoretical literature that translational risk has no cash flow implication and is mostly theoretical and insignificant and thus not actively managed.

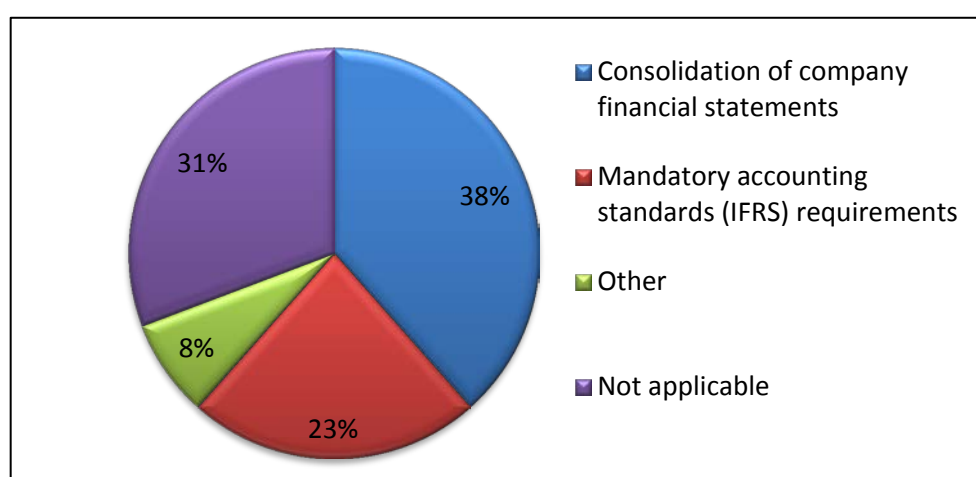


Figure 4.5: Motivation for managing translational exposure

With respect to economic risk, this study finds that 77% of respondents engaged in foreign currency forecasting for purposes of managing these exposures. There is consensus in the literature that currency forecasting is used for purposes of mitigating against the impact of foreign exchange risk on future cash flows and firm value. The high number of respondents who engaged in currency forecasting suggests that a significant majority of the respondents are concerned about the impact of foreign exchange on the firm's future cash flow and its value (economic risk). These results resonate with the finding by Duangploy et al. (1997) who found that firms managed economic risk and

determined their foreign exchange risk management strategy on the basis of cash flow forecast.

Field (2009) argues that in order to conduct an accurate chi-square, the expected frequency must be greater than five. In cases where expected frequencies are low as a result of a small sample, the test statistic results will be an inaccurate approximation of the chi-square; hence Fisher's exact test statistic results should be used. Fisher's test results are used for the purposes of analysis of results in this study since one of the fundamental assumptions on chi-square are not met in this study<sup>15</sup>. The respondents were grouped into two sectors in accordance with JSE indices classification, as stated in earlier chapters of this report, to attain the necessary level of precision for the purposes of statistical analysis.

The statistical test results revealed that there is no association between the sector in which firms belonged and the level of importance they ascribe to any of the forms of foreign exchange risk. The results reveal that there was an insignificant relationship between the sector in which firms belonged and transactional risks  $\chi^2 = 1.381$ ,  $p = 0.739$ . Based on the results it can be concluded that the sector to which firms belong has no significance or relationship with the level of importance they ascribe to any of the three forms of foreign exchange risk. Marshall (2000) also found that there was no significant difference between sectors to which firms belonged and the level of emphasis attributed to management of transactional risk. However, a significant relationship was found between sectors and the management of translational and economic risks.

A finding of no association between the sector to which firms belonged and the emphasis on the management of foreign exchange risk in this study is corroborated by previous empirical research only in respect of transactional risk (Marshall, 2000; Peddappalli, 2014). Deviation from theoretical literature is observed in respect of translational risk and economic risk. It therefore concluded that a presumed null hypothesis, which suggests that sectors under which firms

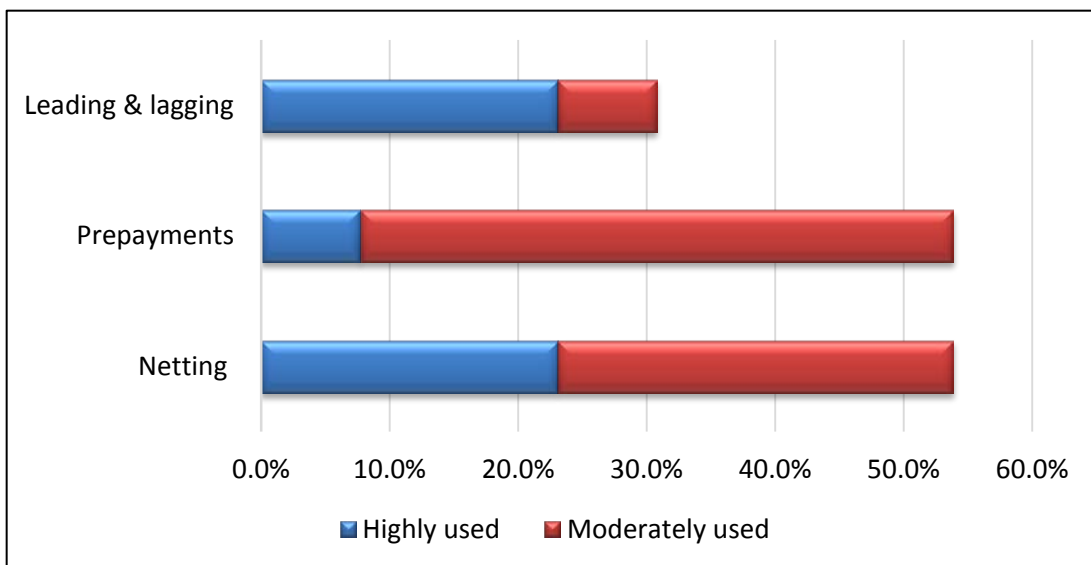
---

<sup>15</sup> See Field (2009) regarding chi-square assumptions including a requirement of not less than 5 counts in each cell.

belong are independent of the level of importance ascribed to a form of foreign exchange, cannot be rejected.

#### 4.3.2 Analysis of results related to practices and techniques adopted by JSE non-financial companies

In this section the results presented above are analysed in order to determine the dominant practices and techniques adopted by companies in managing foreign exchange risk. It is based on these analyses that the third research question and its sub-questions as espoused under section 1.6 on this report is answered. Among the earliest results it is known that 92% of the respondents are users of the derivative instruments. It is also shown under Table 4.10 that 70% of firms use internal or natural hedging strategies in combination with derivative instruments. Field (2009) presents the correlation coefficient as a statistical measurement of the relationship between two variables. In this study we select Kendall's tau non-parametric correlation instead of Pearson and Spearman correlation, given the small size of the sample to conduct the correlation test<sup>16</sup>.

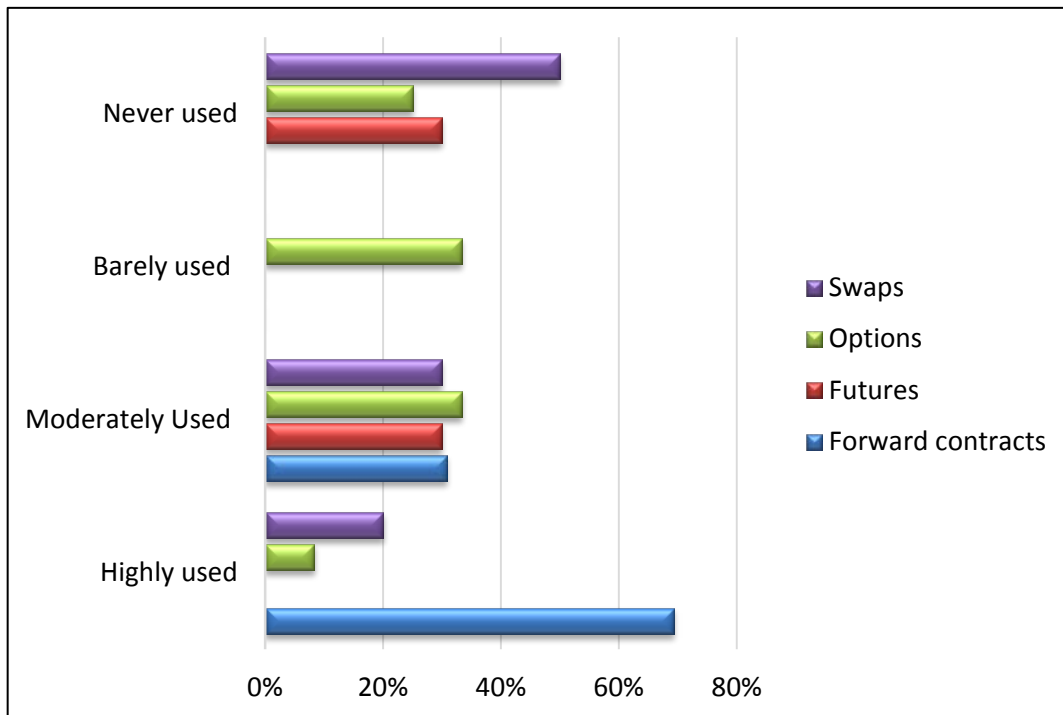


**Figure 4.6:** Internal hedging strategies

Figure 4.6 summarises the internal hedging strategies that are highly and moderately used by JSE firms for the purpose of hedging foreign exchange exposure. The results demonstrated netting is a predominantly used internal or natural hedging strategy with just larger than 20% of firms highly using it and

<sup>16</sup> The collated table of selected correlation tests appears under Appendix C.

the nearly 35% moderately using this natural hedging strategy. There is a significant relationship between the usage of payment netting and the firm's foreign currency denominated expenses,  $\tau = -.656$ ,  $\rho$  (2-tailed)  $< .01$ . This result is unsurprising given that transactional risk is reported in the previous section as a most highly prioritised risk. The results also show a significant relationship between other non-predefined internal hedging strategies and the level of importance ascribed to transactional risk,  $\tau = -.894$ ,  $\rho$  (2-tailed)  $< .05$ .

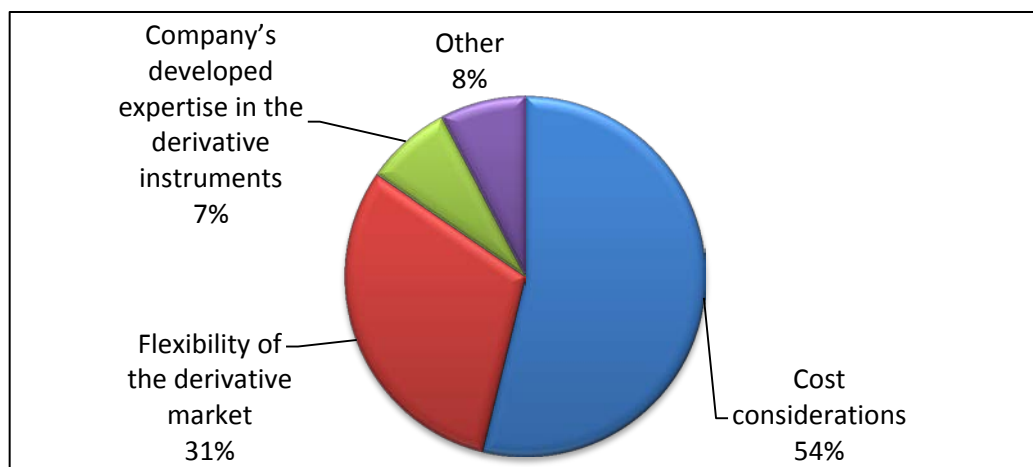


**Figure 4.7:** Derivative instruments use

An analysis regarding usage of derivative instruments was based on a selection of predefined “plain vanilla” derivative instruments such as forward contracts and including swaps, options and futures. Respondents had the option of multiple selections of the predefined instruments and even a choice of “other”; hence they would have been able to make evaluations on the basis of other exotic derivative instruments not predefined such as collars and hybrid debts if applicable. Figure 4.7 shows that forward contracts are popular derivative instruments highly used by nearly 70% and moderately used by around 30% of respondents. This result is consistent with previous research (Duangploy et al., 1997, Bodnar & Gebhardt, 1999; Chiira, 2006), all of whom found that forward contracts were a highly preferred derivative. Usage of forwards by JSE non-

financial firms was found to be significantly related to a firm's foreign currency denominated expense,  $\tau = -.567$ ,  $\rho$  (2-tailed)  $< 0.05$ .

As shown on Figure 4.8, cost associated with derivative instruments appears to be a main concern and determines the choice of derivatives preferred by JSE firms. This justifies the selection of forward contracts as the most highly used derivative instrument given that it is considered comparatively cost effective and is traded in a flexible market – OTC market, which according to Hull (2008) has seen significant growth since 2006.



**Figure 4.8:** Reasons for derivative preference

The narrative of costs being a motivation for the selection of derivative instruments is also supported by Popov and Stutzmann (2003) who found that costs and purpose of use are reasons considered by firms in selection of the derivative.

#### **4.3.3 Factors influencing a firm's strategic approach to risk management**

Much previous research, the latest being that conducted by Peddappalli (2014), contended with establishing the factors influencing firms' risk management practices. The factors considered in this study include the sector to which firms belong, size of the firm, and level of internationalisation.

### 4.3.3.1 Relationship between the industry and risk management practices

**Table 4.14:** Derivative use by industry

			Sector		
			Resources	Industrials	Total
Use financial derivative instruments (forwards, futures, options and swaps)?	Yes	n	4	8	12
		%	80,0%	100,0%	92,3%
	No	n	1	0	1
		%	20,0%	0,0%	7,7%
	Total	n	5	8	13
		%	100,0%	100,0%	100,0%

$\chi^2 = 1.733, \rho > .05$

Fisher's test = no value,  $\rho > .05$

Table 4.14 tabulates usage of derivative instruments against firms in accordance with two broad industries. An interesting finding is that all industrial firms used financial derivative instruments whereas in the resource industry, 80% of firms were users of the financial derivative instruments; the remainder were non-users. Bodnar et al. (1998) found significant industrial differences in usage of derivatives by USA non-financial firms. Greater usage of derivatives was evident among USA primary products producers, which included resource based firms. Therefore, the variation in usage of derivatives across the industries in the context of JSE non-financial firms is consistent with previous research. The Fisher-exact test results show that there is no significant relationship between a firm's industry and usage of derivatives<sup>17</sup>. This finding is in agreement with Eriksen and Wadøe (2010) whose result of selected industries and usage of derivatives also found no significant relationship.

As shown in the results, 70% of total respondents used internal hedging strategies in combination with derivative instruments, mainly forward contracts. Table 4.15 shows that 75% of industrial firms used internal hedging strategies in combination with derivatives compared to 60% of firms belonging to the re-

<sup>17</sup> Statistical test is conducted 90% confidence level. This is maintained consistently for all tests in the study. Determination is made on basis of Fisher's exact test results since the sample is small.

source sector. However, it is worth noting that 25% of industrial firms did not use internal hedges. The test statistic results show there is no significant association between the industry and usage of internal hedging strategies combined or not combined with derivative instrument. Using Kendall's tau correlation, it was found that there is a significant relationship between the frequency in which JSE non-financial firms manage economic risk and the industry to which they belonged,  $\tau = -.693$ ,  $\rho$  (2-tailed)  $< .05$ .

**Table 4.15:** Combination of Internal hedging and derivative instruments by industry

			Sector		
			Resources	Industrials	Total
In the case where a company uses internal or operational hedging methods and other strategies to manage foreign exchange exposure, such methods or strategies are implemented.	Completely independent of financial derivatives	n	2	0	2
		%	40,0%	0,0%	15,4%
	In combination with one or more financial derivatives	n	3	6	9
		%	60,0%	75,0%	69,2%
	Not applicable	n	0	2	2
		%	0,0%	25,0%	15,4%
	Total	n	5	8	13
		%	100,0%	100,0%	100,0%

$\chi^2 = 4.550$ ,  $\rho > .05$

Fisher's test = 3.646,  $\rho > .05$

#### **4.3.3.2 Relationship between firm size and foreign exchange risk management**

The web-based questionnaire was developed in a manner that provided anonymity, hence no biographic information was sourced and the responses thereof could not be associated with any specific participant or firm. As a result, the market capitalisation data per firm in the sample received from the JSE could not be exploited to determine the firm size of the respondents. Consequently, the respondents' answers to question 7 on foreign currency denominated revenue were used as a proxy to determine the size of firms. Therefore, firm size based on foreign currency denominated revenue is determined and shown in Table 4.16.

**Table 4.16:** Firm size

Firm size*	Number of firms (%)
Small-sized firm (Revenue < 50%)	42%
Medium- to large-sized firm (Revenue > 50%)	58%

\* Assessment based on 12 valid responses received on this question

Empirical research presents divergent perspectives regarding the relationship between firm size and derivative usage. Bodnar et al. (1998) established that most large firms used derivatives while very few small firms used derivatives. In contrast, Eriksen and Wadøe (2010) found no significant relationship between large firms and usage of derivatives. This study is in agreement with Eriksen and Wadøe (2010). Table 4.17 shows that all small firms are more inclined to use derivatives.

According to Bodnar et al. (1998), large firms have greater economies of scale and are able to accommodate fixed costs associated with derivatives. This narrative is contradicted by the results of this study. It can be argued that small firms have greater motivation to use derivatives irrespective of accompanying costs. Although cost remains a consideration, this study's results have shown that an inexpensive derivative (forward contracts) rather than exchange traded futures or other exotic derivatives is preferred. Statistically, there is no significant relationship between firm size and usage of derivatives.

**Table 4.17:** Usage of derivatives by firm size

			Percentage of 2015 annual revenue denominated in foreign currency		
			Small	Medium – large	Total
Does your company use financial derivative instruments (forwards, futures, options and swaps)?	Yes	n	5	6	11
		%	100,0%	85,7%	91,7%
	No	n	0	1	1
		%	0,0%	14,3%	8,3%
	Total	n	5	7	12
		%	100,0%	100,0%	100,0%

$\chi^2 = .779, \rho > .05$

Fisher's test = no value,  $\rho > .05$

On operational hedges, the results show that the majority of small and large firms used internal hedges in combination with derivative instruments. Usage of internal hedges is independent of the size of the firm; hence the relationship thereof is statistically insignificant. A total of 71.4% of medium to large companies, as shown in Table 4.18, use internal hedges in combination with derivative instruments. This finding is consistent with Eriksen and Wadøe (2010), who found the prevalence of internal hedges among large Norwegian non-financial firms, was influenced by the number of countries in which firms had subsidiaries.

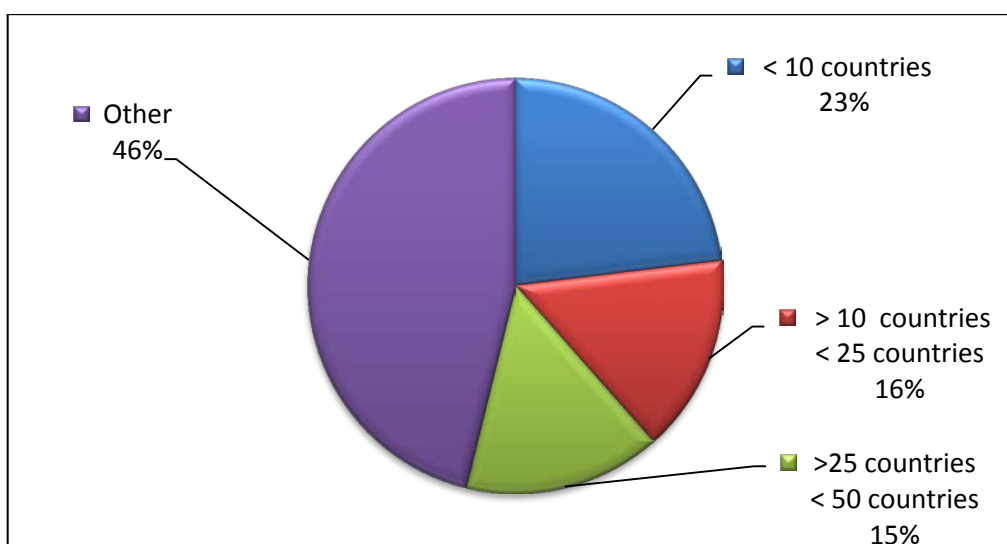
**Table 4.18:** Combination of internal hedging and derivative instruments by firms' size

			Percentage of 2015 annual revenue denominated in foreign currency		
			Small	Medium – large	Total
In the case where the company uses internal or operational hedging methods and other strategies to manage foreign exchange exposure, such methods or strategies are implemented.	Completely independent of financial derivatives	n	0	2	2
		%	0.0%	28.6%	16.7%
	In combination with one or more financial derivatives	n	3	5	8
		%	60.0%	71.4%	66.7%
	Not applicable	n	2	0	2
		%	40.0%	0.0%	16.7%
	Total	n	5	7	12
		%	100.0%	100.0%	100.0%

$\chi^2 = .4.286, \rho > .05$

Fisher's test = 3.471,  $\rho > .05$

Figure 4.8 shows the level of internationalisation of the survey respondents. Most respondents do business in more than 50 countries as stated on the other graph.

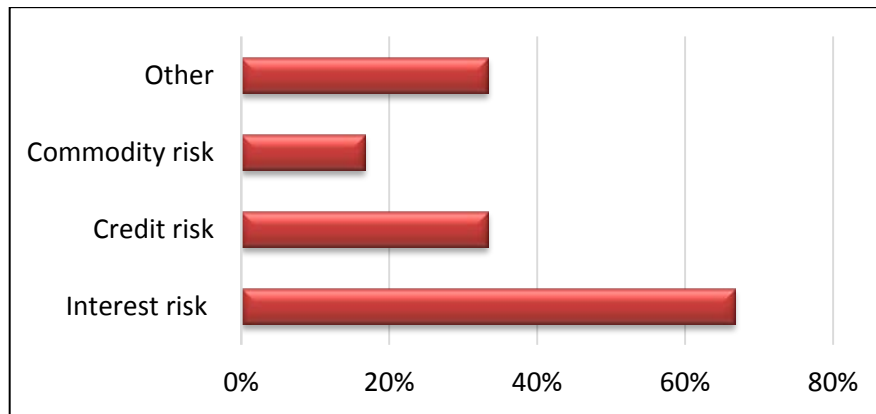


**Figure 4.8:** Level of internationalisation

As stated above, the majority of respondents used derivative instruments. Thus there is no observable variation with respect to usage of derivatives and the numbers of countries across which firms' subsidiaries are spread. Similarly, there is no evidence of association between usage of internal hedges either in combination or independent derivatives. These results are inconsistent with the theoretical perspective by numerous researchers that usage of operational hedging strategies is influenced to a certain extent by the number of countries in which firms' subsidiaries are spread.

#### **4.3.4 Usage of foreign exchange risk management techniques for alternate purposes**

Bodnar and Gebhardt (1999) find that over and above using derivatives for purposes of hedging foreign exchange exposure, German and USA firms also use derivatives to hedge against interest rate risk and commodity risk although at unequal levels. The result of this study shows that 53% of total respondents did have alternate purposes for which derivative instruments were being used. Figure 4.9 shows that similar to German and USA firms as reported by Bodnar and Gebhardt (1999), JSE non-financial firms use derivatives to hedge other risk classes, the dominant one being interest risk followed by credit risk and commodity risk. Respondents also cited other purposes for which they use derivatives, which are not confined to a specific risk class.



**Figure 4.9:** Alternative usage of derivatives

### 4.3.5 Effectiveness of dominant strategies and techniques

Survey results show that 53% of respondents consider internal hedging methods to be highly effective when applied in combination with derivative instruments. This finding is inconsistent with the theoretical perspective expressed by various researchers including Popov and Stutzmann (2003) that firms ought to first derive and apply internal hedges before turning to cost bearing derivative instruments. Payables and receivables netting emerged as a popular internal hedging method. While empirical results suggest that forward contracts are a predominantly used derivative instrument by JES non-financial firms, their effectiveness could not be established in this study. Contrary to Marshal (2000), this study did not distinguish the application of internal hedges and derivative instruments between each of the three forms of foreign exchange risk. This constrained the ability to discern the effectiveness of the dominant derivative – forward contracts.

## 4.4 CONCLUSION

In this chapter the results of the survey were descriptively presented in contingency tables containing percentage spread and frequencies for each of the questions contained in the study’s questionnaire. The results adequately answered the first research question since the results descriptively portray how JSE listed non-financial companies manage foreign exchange risk. The presentation of results was followed by an analysis of the key results in order to answer the two other main research questions as well as sub-questions of the third research question.

## **5. RESEARCH CONCLUSION**

### **5.1 MAJOR FINDINGS**

The overall objective of this study was to establish the foreign exchange risk management practices by non-financial companies in the JSE top 100 in the 2015 financial year. In order to achieve this objective, three main research questions were explored through a web-based survey distributed among firms that formed part of the sample.

Descriptive statistical results show that JSE-listed non-financial companies use both internal and external hedging techniques to manage foreign exchange risk. This result resonates with the findings made by Carter et al. (2001), who proved that combined use of financial hedges and operating hedges is associated with reduced foreign exchange exposure.

This study established that JSE non-financial firms follow a highly centralised foreign exchange risk management structure. This finding is in agreement with Lee et al. (2001) who found that the UK, USA and Asian Pacific MNCs follow a highly centralised risk management structure, which is associated with higher efficiency and propelled by a dedicated risk management organisation within the corporations. Therefore it is not coincidental that this study also reveals that 77% of total respondents had a dedicated risk management division.

Contrary to theory (Bodnar & Gebhardt, 1999; Lee et al., 2001), this study established that decisions regarding foreign exchange risk management strategy are taken at the level of executive management. Lee et al. (2001) finds that board level approval is required for foreign exchange risk management transactions mainly in the UK and in Asian Pacific corporations. Given the fact that firms' executive management are entrusted with decision-making regarding the risk management strategy, it suffices that executive management has the requisite authority to approve individual hedging decisions.

This study finds that transactional risk is the most prioritised type of foreign exchange risk. This is consistent with theory (Bodnar & Gebhardt, 1999; Popov & Stutzmann, 2003; Marshall, 2000). There is a significant relationship between

usage of other non-predefined internal hedging strategies and management of transactional risk. The study also established that a high level of importance is ascribed to economic risk and a lesser level of importance is associated with transactional risk.

Most JSE non-financial firms are concerned with the effect of currency volatility on firm's cash flows. Industrial variations at the level of importance ascribed to foreign exchange risk are also found. There is a significant relationship between how JSE non-financial firms manage economic risk and the industry to which they belong. There is an evident gap between theory and practice. Theoretically, Popov and Stutzmann (2003) suggest that firms tend to first explore usage of internal hedges before turning to external hedges. This theoretical perspective is negated by the results of this study; in practice JSE non-financial firms use internal hedges in combination with derivative instruments.

Payment netting is found to be a dominant internal hedge, frequently used in the management of foreign exchange risk. This is suggestive of voluminous international transactions that give rise to foreign currency denominated receivables and payables. Hence the results also reveal a significant relationship between usage of payment netting and foreign currency denominated expenses.

The results show that forward contracts are the preferred derivative instrument. This is directly linked to fact that the majority of survey respondents also stated that their firm's choice of derivative instrument is premised on cost considerations. There is a significant association between usage of forward contracts and level of foreign currency denominated expenses. There is strong theoretical evidence (Bodnar & Gebhardt, 1999; Marshall, 2000; Popov & Stutzmann, 2003), that OTC derivatives, that is, forwards, swaps and options, are instruments of first choice in managing foreign exchange risk in general, however, forward contracts mostly stand out as the dominant derivative in terms of usage.

The results show that there is no association between the industry and usage of external and internal hedges. A similar finding of no association is made regarding the size of firm and usage of internal and external hedging techniques. These results are to a certain extent consistent with Eriksen and Wadøe (2010).

The number of countries in which firms are spread has no bearing in the application of internal or derivative techniques. Consistent with Bodnar et al. (1998), this study established that interest risk is a second type of risk which respondents managed using derivative instruments.

## **5.2 RESEARCH LIMITATIONS**

One major limitation of this study is the response rate. Non-financial companies in terms of ICB industrial classification adopted by the study constituted over 50% of the JSE's top 100. However, the survey sample ended with a much lower number as some of the potential participants either declined to receive the survey at the outset when contacted, or were not contactable by telephone to establish their correct email addresses. While noting that the study's response rate compares well with other previous research, this study's sample was small compared to the majority of similar studies. Surveys of a similar type are conducted over months whereas for this study, the survey was open for just over one month. This might have had two implications: firstly, the limited time frame factor may have constrained potential participants' chance to participate in the study, and secondly, given the time limitations, the respondents' answers may not be accurate.

In theory, an investigation of management practices with respect to foreign exchange risk is dissected to the level of establishing the application of derivatives and internal hedges to manage each of the three forms of foreign exchange risk, that is, transaction, translational and economic risk. This is done in order to differentiate which derivative instrument or internal hedge is used to manage a specific form of foreign exchange risk. This was not the case with this study, which constitutes a major drawback; hence the results are vague in terms of the application of derivatives and internal hedges by form of exposure. Some of the participants who declined to participate in the study said the information sought in the questionnaire was confidential and a source of competitive advantage. Therefore, some of the participants who responded to the study might not have provided factual information on the hedging practices of their firms.

### **5.3 CONCLUSION**

Despite its limitations this study marks a significant contribution to the foreign exchange risk management body of knowledge, which is conspicuously limited in terms of emerging market perspectives. The study also sets a firm basis for future studies in the South African market. Given the context of this study, future research could involve and explore foreign exchange risk management practices by specific economic sectors – perhaps mining companies given that South Africa is one of the major mining product exporters at a global level. Further research can also be undertaken on the measurement of foreign exchange exposure for non-financial companies.

## REFERENCES

- Abor, J. (2005). Managing foreign exchange risk amongst Ghanaian firms. *The Journal of Risk Finance*, 6(4), 306–318.
- African Rainbow Minerals. (2015). *ARM 2015 integrated report*. Retrieved from: <http://www.arm.co.za/im/files/annual/2015/ARM-IR15.pdf>
- Allayannis, G., Brown, G.W. & Klapper, L.F. (2003). Capital structure and financial risk: Evidence from foreign debt use in east Asia. *The Journal of Finance*, 58(6), 2667–2710.
- Allayannis, G. & Ofek, E. (2001). Exchange rate exposure, hedging, and the use of foreign currency derivatives. *Journal of international money and finance*, 20, 273–296.
- Akinboade, O.A. & Makina, D. (2006). Mean reversion and structural breaks in real exchange rates: South African evidence. *Applied Financial Economics*, 16, 347–358.
- Al-Momani, R. & Gharaibeh, M.R. (2008). Foreign exchange risk management practices by Jordanian non-financial firms, *Journal of Derivatives & Hedge Funds*, 14, 3–4.
- Bodnar, G.M. & Gebhardt, G. (1999). Derivatives usage in risk management by US and German non-financial firms: a comparative study. *Journal of International Financial Management and Accounting*, 10(3), 153–187.
- Bodnar, G.M., Hayt, G.S., Marston, R.C. & Smithson, C.W. (1995). Wharton survey of derivatives usage by U.S non-financial firms. *Journal of Financial Management*, 24(2), 104–114.
- Bodnar, G.M., Hayt, G.S. & Marston, R.C. (1998). 1998 Wharton survey of financial risk management by U.S. non-financial firms. *Journal of Financial Management*, 27(4), 70–91.
- Bradley, K. & Moles, P. (2002). Managing strategic exchange rate exposures: evidence from UK firms. *Managerial Finance*, 28(11), 28–42.

- Carter, D.A., Pantzalis, C. & Simkins, B.J. (2001). *Firmwide risk management of foreign exchange exposure by US multinational corporations*. Working paper series, Oklahoma State University, Department of Finance. Retrieved from: <http://ssm.com/sol3papers.cfm>
- Chiira, Z.K. (2006). *A survey of foreign exchange risk management practices by oil companies in Kenya* (MBA Thesis, School of Business, University of Nairobi, Kenya).
- Courtney Capital Private Wealth. (2016). *JSE top 40 shares*. Retrieved from: <http://www.courtneycapital.co.za/jse-top-40-shares>
- De Lange, G. (2013). *Volatility in the rand – is hedge accounting a feasible solution?* Retrieved from: <http://home.kpmg.com/za/en/home/insights/2013/08/volatility-in-the-rand.html>
- Dhanani, A. (2003). Foreign exchange risk management: a case in the mining industry. *The British accounting review*, 35, 35–63.
- Duangploy, O., Bakay, V.H. & Belk, P.A. (1997). The Management of Foreign Exchange Risk in US Multinational Enterprises: An Empirical Investigation. *Managerial Finance*, 23, 85–99.
- Economic Development Canada. (2010). *White paper: Management of foreign exchange risk*. EDC, Canada. Retrieved from: <http://www.edc.ca>
- El-Masry, A., Abdel-Salam, O. & Alatraby, A. (2007). The exchange rate exposure of UK non-financial companies. *Managerial Finance*, 33(9), 620–641.
- El-Masry, A. (2006). Derivatives use and risk management practices by UK non-financial companies. *Managerial Finance*, 32(2), 137–159.
- Eriksen, K. & Wadøe, O. (2010). *Foreign exchange risk management. How are the largest non-financial companies in Norway managing their foreign exchange rate exposure?* (MSc Thesis Major in Financial Economics, Norges Handelshøyskole).
- Field, A. (2009). *Discovering statistics using SPSS*. (3rd ed.) London, UK: Sage.

- Glaum, A.F. (2000). Risk management practices of German firms. *Managerial Finance*, 26(3), 1–17.
- Henning, E., Van Rensburg, W. & Smit, B. (2004). *Finding your way in qualitative research*. Pretoria, SA: Van Schaik.
- Hull, J.C. (2008). *Fundamentals of futures and options markets*. Upper Saddle River, NJ: Pearson.
- Ivankova, N.V. (2015). *Mixed methods applications in action research*. London, UK: Sage.
- Jacque, L.L. (1981). Management of foreign exchange risk: a review article. *Journal of International Business Studies*, 12(1), 81–101.
- Johannesburg Stock Exchange. (2015). *JSE 2015 integrated report*. Retrieved from: <http://ir.jse.co.za/phoenix.zhtml?c=198120&p=irol-reportsannual#>
- Johannesburg Stock Exchange. (2016). *ICB Industry*. Retrieved from: <https://www.jse.co.za/services/market-data/indices/ftse-jse-africa-index-series/icb-industry>
- Kumar, R. (1996). *Research Methodology: A step by step guide for beginners*. (4th ed.) New Delhi, India: Sage.
- Lee, F.M., Marshall, A.P., Szto, Y.K. & Tang, J. (2001). The practice of financial risk management: An international comparison. *Thunderbird international business review*, 43(3), 365–378.
- Malkiel, B.G. (2003). The efficient market hypothesis and its critics. *Journal of Economic Perspectives*, 17(1), 59–82.
- Marshall, A.P. (2000). Foreign exchange risk management in the UK, USA and Asian Pacific multinational companies. *The Journal of Multinational Financial Management*, 10, 185–211.
- Moles, K.B.M. (2002). Managing strategic exchange rate exposures: evidence from UK firms. *Journal of Managerial Finance*, 28(11), 28–42.

- Neuman, W.L. (1997). *Social research methods: qualitative and quantitative approaches*. Needham Heights, MA: Allyn Bacon.
- Ocran, M. (2015). 4th lecture sessions: International finance for development [PowerPoint Slide]. Retrieved from University of Cape Town, Graduate School of Business portal: <https://vula.uct.ac.za/portal/site>
- Pantzalis, C., Simkins, B.J. & Laux, P.A. (2001). Operational hedges and the foreign exchange exposure of U.S multinational companies. *Journal of International Business Studies*, 32(4), 793–812.
- Papaioannou, M. (2006). *Exchange rate risk measurement and management: Issues and approaches for firms*. International Monetary Fund Working Paper WP/06/255.
- Peddappalli, N. (2014). *Foreign exchange risk: an empirical study of software companies* (PhD Thesis, Osmania University, India).
- Pieters, M. (2009). ZAR – A volatile currency. Funds on Friday. *A volatile currency – insured investment brokers*. Retrieved from: <http://www.iibrokers.co.za/fundsonfriday1>
- Popov, V. & Stutzmann, Y. (2003). *How is foreign exchange risk managed? An empirical study applied to two Swiss companies*. (MSc Thesis, University of Lausanne).
- Reilly, F.K. & Brown, K.C. (2006). *Investment analysis and portfolio management*. (8th ed.) Canada: Thomson.
- Salifu, Z., Osei, K.A. & Adjasi, C.K.D. (2007). Foreign exchange risk exposure of listed companies in Ghana. *The Journal of Risk Finance*, 8(4), 380–393.
- Schmit, J.T. & Roth, K. (1990). Cost effectiveness of risk management practices. *The Journal of Risk and Insurance*, 57(3), 455–470.
- Sherman, T. & De Klerk, M. (2015). International financial reporting standards and foreign ownership in South African Companies. *South African Business Review*, 19(1), 72–88.

- Storm, J.H. (2011). *Survey on financial risk management – Evidence on derivatives usage by Norwegian non-financial firms*. (MSc Thesis, Norwegian Business School, Norway).
- Tashakkori, A. & Creswell, J. (2007). The new era of mixed methods. *Journal of mixed methods research*, 1, 3–9.
- The Institute for Directors in Southern Africa. (2009). *King Code of Governance for South Africa*. Retrieved from: <http://www.iodsa.co.za/?page=DD>
- The World Bank. (2013). *South Africa economic update: Focus on financial inclusion*. Retrieved from: <http://www.worldbank.org/en/country/southafrica/publication/south-africa-economic-update-financial-inclusion-critical-for-south-africa-s-poor>
- Thirumalvalavan, P. & Padmavathi, M. (2010). Managing foreign exchange risk – evidence from an Indian market. *Summer internship society*, II(1), 80–85.
- Tustin, D.H., Ligthelm, A.A., Martins, J.H. & Van Wyk, H.J. (2005). *Marketing Research in Practice*. Pretoria, SA: University of South Africa.
- Van Wyk, J., Dahmer, W. & Custy, M.C. (2004). Risk management and the business environment in South Africa. *Long range planning*, 37, 259–276.
- Yartey, C.M. (2008). *The determinants of stock market development in emerging economies: is South Africa different?* (No.08/32) IMF Working paper. Retrieved from: <https://ssrn.com/abstract=1094214>
- Yildiran, M. (2015). The financial risk management strategies during 2008/09 global financial crisis: a survey on Turkish exporting firms. *International journal of finance and accounting*, 4(3), 163–171.
- Welman, C., Kruger, F. & Mitchell, B. (2005). *Research Methodology*. (3rd ed.) Southern Africa: Oxford University Press.

# **APPENDIX A**

## **RESEARCH DATA EMAIL REQUEST AND QUESTIONNAIRE**

**From:** Mogaladi, Tshego [mailto:ghsgeo001@gsb.uct.ac.za]  
**Sent:** 27 September 2016 10:41 AM  
**To:** donald.rishworth@goldfields.com  
**Cc:** Mogaladi, Tshegofatso <mogalgt@unisa.ac.za>  
**Subject:** Request for participation in a study : MCom  
**Importance:** High

**Dear Respondent**

My name is George Tshegofatso Mogaladi, and I am a postgraduate student pursuing a Master of Commerce degree through the Graduate School of Business at the University of Cape Town. The overall programme entails a thesis component, hence I am undertaking a research project entitled “The Management of Foreign Exchange Risk by the JSE-Listed Companies: An Empirical study” as a study which will be consolidated into a report and submitted for review for partial fulfilment of the requirements needed to complete my degree.

I am therefore writing to enlist your support for participation in the study through completion of a web-based questionnaire which should not take in excess of ten (10) minutes of your invaluable time. The information attained through this questionnaire will be treated with utmost confidentiality and your identity as well as that of your company will not be stated in the report, thus confidentiality is ascertained. I will be delighted to facilitate access to the findings of this research through provision of a copy of my final report upon your request.

Please follow this URL link in order to access the questionnaire:

<http://www.itresolutions.co.za/limesurvey/index.php?r=survey/index/sid/149618/lang/en>

I thank you in anticipation for your acceptance to participate in this exciting study.

Best regards

George Tshegofatso Mogaladi  
MCom Student  
Graduate School of Business, University of Cape Town



**My contact details:**

193 Maple Complex  
Eco-Park Estates  
Centurion  
0147

+2772 224 1256 | Office: +2712 429 8455 | +2786 519 4942

gtmogaladi@gmail.com OR ghsgeo001@gsb.uct.ac.za OR mogalgt@unisa.ac.za

# MANAGEMENT OF FOREIGN EXCHANGE RISK BY THE JSE-LISTED COMPANIES: AN EMPIRICAL STUDY

Dear Respondent

Please answer the questions listed below. The questions are intended to gain information regarding your company's foreign exchange risk management practices for the 2015 financial year. Kindly fill in the required information and tick within the allocated space and boxes. Please note that none of the questions are compulsory. **You can tick more than one answer where applicable.**

This survey will be available until October 31<sup>st</sup>, 2016.

***This survey will take approximately 10 minutes to complete.***

Thank you.

*Please note: LimeSurvey is currently supported on IE9 and all newer comparable browsers (FireFox, Chrome, Opera, etc.) but works best with Chrome. It is not supported in any IE version running in Intranet-mode or Compatibility-mode!*

There are 29 questions in this survey

## Section 1: Firm Specific Characteristics and risk management practices

**1. Which of the following categories describes the nature and operations of your company?**

***You may tick multiple categories.***

Please choose **all** that apply:

- A multinational corporation with at least one subsidiary outside South Africa
- An exporters of goods and services
- Importer of goods and services

**2. What sector does your company belong to?**

***Please specify.***

Please write your answer here:

**3. In how many countries outside South Africa does you company do business?**

***Please state.***

Please write your answer here:

**4. Does your company use financial derivative instruments (forwards, futures, options and swaps)?**

Please choose **only one** of the following:

- Yes
- No

**5. If your company does not use financial derivative instruments, what hedging strategies are used to minimise foreign exchange rate exposure?**

Please choose **only one** of the following:

- Payment netting
- Prepayments
- Leading and lagging

Other (Please state)

**6. Please indicate the most important reason for your company's decision not to use financial derivative instruments. You may tick more than one answer.**

Please choose **all** that apply:

- Insufficient internal expertise and comprehension of derivatives
- The costs of derivatives outweighs the benefit
- Negligible exposure to foreign exchange risk
- Foreign exchange risk managed through other means
- Accounting treatment
- Investor considerations

Please state any other reason not stated above:

**7. What percentage of your 2015 annual revenue was denominated in foreign currency? Please select the closest estimate.**

Please choose **only one** of the following:

- None
- Less than 10%
- Between 10% - 25%
- Between 26% - 50%
- Between 51% - 75%
- Between 76% - 100%

**8. What percentage of your 2015 annual expense was denominated in foreign currency? Please select the closest estimate.**

Please choose **only one** of the following:

- 0%
- Less than 10%
- Between 10% - 25%
- Between 26% - 50%
- Between 51% - 75%
- Between 76% - 100%

**9. Does your company have a risk management division?**

Please choose **only one** of the following:

- Yes
- No

**10. If your company does have a risk management division, which division is responsible for foreign exchange risk management?**

Please choose **only one** of the following:

- Enterprise Risk Management Division
- Treasury
- Risk Assessment and Compliance
- Foreign Exchange Division
- Other (Please specify)

**11. How would you measure your company's level of centralisation in respect to the foreign exchange risk management function:**

Please choose **only one** of the following:

- Highly centralised to company's headquarters
- Centralised to headquarters with inputs from subsidiary managers
- Decentralised to subsidiaries
- Other (Please state)

**12. At what level are decisions regarding the foreign exchange risk management strategy of the company taken?**

Please choose **only one** of the following:

- At discretion of a head of business unit responsible for company risk
- At discretion of the company management
- At discretion of the company board

**Section 2: Identification of forms of foreign exchange risk**

***If your firm is engaged in foreign trade, it is exposed to transaction risk, translation risk and economic risk.***

***Transaction risk is a risk that the value of your company's contractual receivables or payables will change as a result of unexpected currency value changes.***

***Translation risk refers to potential changes in the financial statements of a foreign subsidiary when the financial statements are restated in the home currency of the company.***

***Economic risk refers to an impact of changes in exchange rates on the company's future cash flows.***

**13. Please rank the three forms of foreign exchange risk in order of importance to your company.**

Please choose the appropriate response for each item:

	1 Extremely important	2 Important	3 Partially important	4 Least important	5 Not important
Transactional Risk	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Translational Risk	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Economic Risk	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**14. How often does your company manage each of the three forms of foreign exchange risk?**

Please choose the appropriate response for each item:

	1 All the times	2 Sometimes	3 Never
Transactional Risk	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Translational Risk	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Economic Risk	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**15. For what primary purpose does your company manage transactional risk?  
You may tick more than one answer**

Please choose **all** that apply:

- To maximise on earnings
- To minimize the effect of currency volatility on cash flows
- Reduction of transactional costs
- Not applicable

**16. What are the primary sources of transaction risk to your company?**

**Only answer this question if the following conditions are met:**

Answer was 'Reduction of transactional costs' or 'To minimize the effect of currency volatility on cash flows' or 'To maximise on earnings' at question '16 [Q15]' (15. For what primary purpose does your company manage transactional risk? You may tick more than one answer)

Please choose **only one** of the following:

- Foreign currency denominated purchases or sales
- Foreign currency underwritten debt or lending
- Future sales or purchases contracted with foreign parties
- Other (Please state)

**17. For what reason does your company manage translational risk?**

**Only answer this question if the following conditions are met:**

Answer was 'Reduction of transactional costs' or 'To minimize the effect of currency volatility on cash flows' or 'To maximise on earnings' at question '16 [Q15]' (15. For what primary purpose does your company manage transactional risk? You may tick more than one answer)

Please choose **only one** of the following:

- Consolidation of company financial statements
- Mandatory accounting standards (IFRS) requirements
- Not applicable
- Other (Please state)

**18. The company does not manage translational risk because it is:**

Please choose **only one** of the following:

- Insignificant
- Theoretical other than being pragmatically and factual exposure

**19. Does your company engage in currency forecasting for purposes of economic risk management?**

Please choose **only one** of the following:

- Yes
- No

**20. Is usage of derivative instrument to generate profit (speculation) permissible in your company?**

Please choose **only one** of the following:

- Yes
- No
- Other (Please state)

**Section 3: Evaluating the effectiveness**

**21. In case your company uses internal or operational hedging methods and other strategies to manage foreign exchange exposure, are such methods or strategies implemented:**

Please choose **only one** of the following:

- Completely independent of financial derivatives
- In combination with one or more financial derivatives
- Not applicable

**22. If your company uses internal or operational strategies in combination with financial derivatives; which financial derivative instruments are mostly used?**

Please choose **only one** of the following:

- Forward contracts
- Futures
- Options
- Swaps
- Other (Please state)

**23. Rank the frequency in usage of the following internal hedging methods by your company:**

Please choose the appropriate response for each item:

	1 Highly used	2 Moderately used	3 Barely used	4 Never used
Payment netting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Prepayments	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Leading and lagging	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**24. What statement below best describes your company's situation in respect to the effectiveness of internal hedging methods in use?**

Please choose **only one** of the following:

- Ineffective
- Partially effective
- Most effective when used in combination with derivatives
- Not applicable
- Other (Please state)

**25. Rank the frequency in usage of the following financial derivatives by your company in the management of foreign exchange risk.**

Please choose the appropriate response for each item:

	1 Highly used	2 Moderately used	3 Barely used	4 Never used
Forward contracts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Futures	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Options	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Swaps	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**26. What would you attribute your company's preference of derivatives selected as 1 & 2 in question 25 above?**

Please choose **only one** of the following:

- Flexibility of the derivative market
- Cost considerations
- Company's developed expertise in the derivative instruments
- Other (Please state)

**27. Besides hedging foreign exchange risk, why does your company use financial derivative instruments?**

Please write your answer here:

**Thanks for your kindest participation!**

***Please contact me should you have any enquiry***

**George Mogaladi**

**George Tshegofatso Mogaladi**

**193 Maple Complex**

**Eco-Park Estates**

**Centurion**

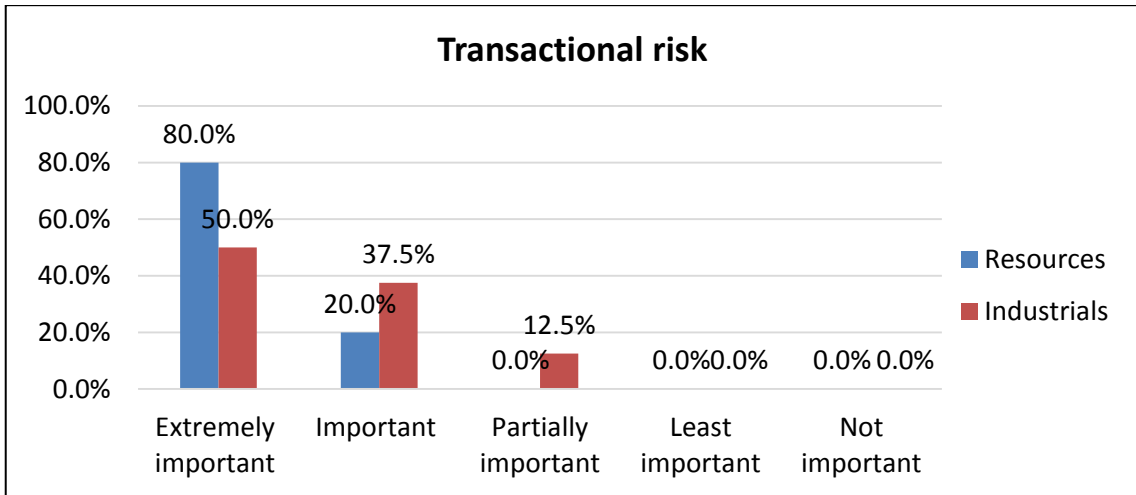
**0147**

**Tel: +27722241256 | Fax: +27(0)865194942**

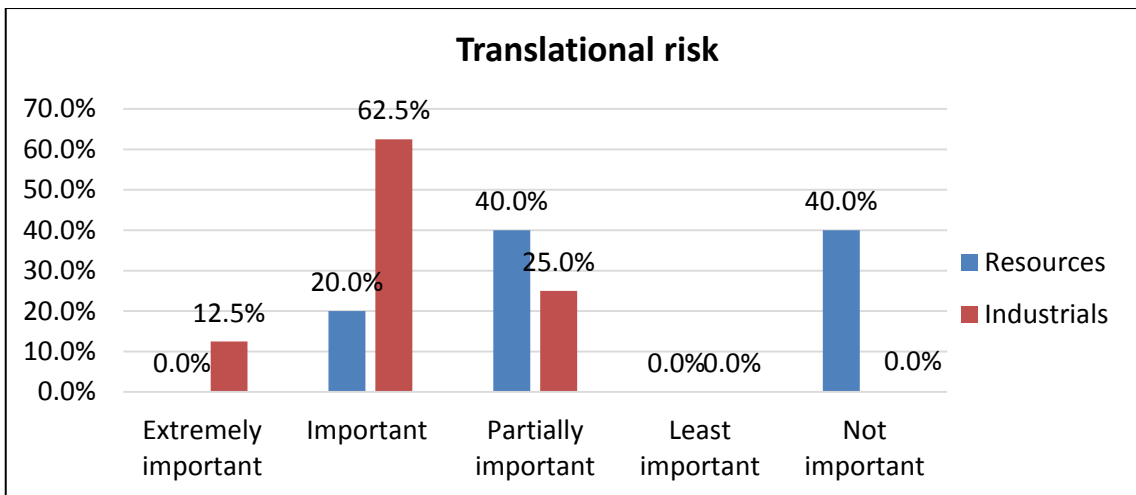
**Email: [gtmogaladi@gmail.com](mailto:gtmogaladi@gmail.com)**

# **APPENDIX B**

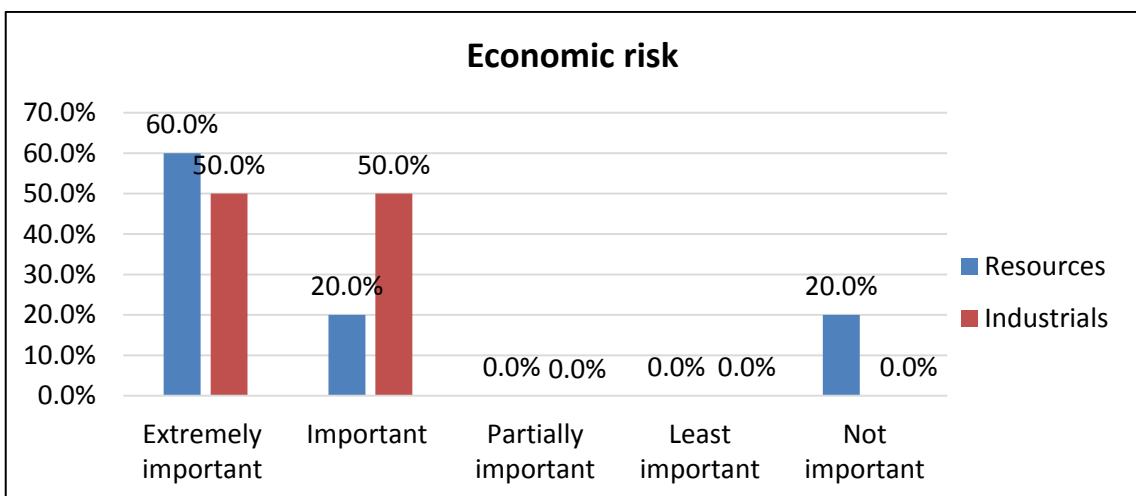
## **IMPORTANT GRAPHS**



**Figure 1:** Level of importance ascribed to transactional risk



**Figure 2:** Level of importance ascribed to translational risk



**Figure 3:** Level of importance ascribed to economic risk

# **APPENDIX C**

## **CORRELATION STATISTICS**

## CORRELATIONS

### Headings relating to numbered columns:

- 2. What sector does your company belong to? (1 = Resources; 2 = Industrials)
- 7. What percentage of your 2015 annual revenue was denominated in foreign currency?
- 8. What percentage of your 2015 annual expense was denominated in foreign currency?
- 14.1 How often does your company manage each of the three forms of foreign exchange risk? (Transactional risk)
- 14.2 How often does your company manage each of the three forms of foreign exchange risk? (Translational risk)
- 14.3 How often does your company manage each of the three forms of foreign exchange risk? (Economic risk)
- 23.1 Rank the frequency in usage of the following internal hedging methods by your company: Payment netting
- 23.4 Rank the frequency in usage of the following internal hedging methods by your company: Other
- 25.1 Rank the frequency in usage of the following financial derivatives by your company in the management of foreign exchange risk: Forward contracts
- 25.2 Rank the frequency in usage of the following financial derivatives by your company in the management of foreign exchange risk: Futures
- 25.3 Rank the frequency in usage of the following financial derivatives by your company in the management of foreign exchange risk: Options
- 25.4 Rank the frequency in usage of the following financial derivatives by your company in the management of foreign exchange risk: Swaps

			2	7	8	14.1	14.2	14.3	23.1	23.4	25.1	25.2	25.3	25.4
Kendall's tau_b	2. What sector does your company belong to?	Correlation coefficient	1.000	-.756**	0.398	-0.365	-0.335	-.693*	-0.082	-0.298	-0.501	0.000	-0.189	-0.257
		Sig. (2-tailed)		0.008	0.130	0.206	0.224	0.016	0.758	0.445	0.083	1.000	0.497	0.418
		N	13	12	13	13	13	13	13	7	13	10	12	10
	7. What percentage of your 2015 annual revenue was denominated in foreign currency?	Correlation coefficient	-.756**	1.000	0.000	0.270	0.477	0.516	-0.253	0.298	0.395	0.264	0.304	0.245
		Sig. (2-tailed)	0.008		1.000	0.344	0.084	0.070	0.339	0.445	0.165	0.400	0.273	0.447
		N	12	12	12	12	12	12	12	7	12	9	11	9
	8. What percentage of your 2015 annual expense was denominated in foreign currency?	Correlation coefficient	0.398	0.000	1.000	-0.327	0.125	-0.414	-.656**	0.138	-.567*	0.029	-0.229	-0.437
		Sig. (2-tailed)	0.130	1.000		0.213	0.621	0.115	0.007	0.713	0.031	0.921	0.369	0.129
		N	13	12	13	13	13	13	13	7	13	10	12	10
	14.1 How often does your company manage each of the three forms of foreign exchange risk? (Transactional risk)	Correlation coefficient	-0.365	0.270	-0.327	1.000	0.367	0.527	0.301	0.422	0.433		-0.253	
		Sig. (2-tailed)	0.206	0.344	0.213		0.183	0.068	0.262	0.280	0.134		0.364	
		N	13	12	13	13	13	13	13	7	13	10	12	10

14.2 How often does your company manage each of the three forms of foreign exchange risk? (Translational risk)	Correlation coefficient	-0.335	0.477	0.125	0.367	1.000	-0.077	-0.018	0.207	0.141	0.156	0.127	0.000
	Sig. (2-tailed)	0.224	0.084	0.621	0.183		0.779	0.943	0.581	0.608	0.602	0.635	1.000
	N	13	12	13	13	13	13	13	7	13	10	12	10
14.3 How often does your company manage each of the three forms of foreign exchange risk? (Economic risk)	Correlation coefficient	-.693*	0.516	-0.414	0.527	-0.077	1.000	0.143	0.596	0.426	0.406	0.135	0.449
	Sig. (2-tailed)	0.016	0.070	0.115	0.068	0.779		0.594	0.127	0.140	0.197	0.629	0.156
	N	13	12	13	13	13	13	13	7	13	10	12	10
23.1 Rank the frequency in usage of the following internal hedging methods by your company: Payment netting	Correlation coefficient	-0.082	-0.253	-.656**	0.301	-0.018	0.143	1.000	0.234	0.456	0.000	0.143	0.375
	Sig. (2-tailed)	0.758	0.339	0.007	0.262	0.943	0.594		0.537	0.089	1.000	0.588	0.210
	N	13	12	13	13	13	13	13	7	13	10	12	10
23.2 Rank the frequency in usage of the following internal hedging methods by your company: Prepayments	Correlation coefficient	-0.420	0.211	-0.301	0.416	0.443	0.436	0.359	.894*	0.311	0.451	0.299	0.217
	Sig. (2-tailed)	0.159	0.454	0.276	0.163	0.126	0.144	0.196	0.022	0.298	0.184	0.304	0.530
	N	11	11	11	11	11	11	11	7	11	8	10	8
23.3 Rank the frequency in usage of the following internal hedging methods by your company: Leading and lagging	Correlation coefficient	-0.653	0.500	-0.348	0.295	.696*	0.295	0.255	0.603	0.280	0.447	0.387	0.357
	Sig. (2-tailed)	0.055	0.118	0.268	0.386	0.034	0.386	0.432	0.142	0.411	0.252	0.218	0.342
	N	9	9	9	9	9	9	9	6	9	7	9	7
23.4 Rank the frequency in usage of the following internal hedging methods by your company: Other	Correlation coefficient	-0.298	0.298	0.138	0.422	0.207	0.596	0.234	1.000	0.298	0.671	0.000	0.530
	Sig. (2-tailed)	0.445	0.445	0.713	0.280	0.581	0.127	0.537		0.445	0.221	1.000	0.264
	N	7	7	7	7	7	7	7	7	7	4	6	5
25.1 Rank the frequency in usage of the following financial derivatives by your company in the management of foreign exchange risk: Forward contracts	Correlation coefficient	-0.501	0.395	-.567**	0.433	0.141	0.426	0.456	0.298	1.000	0.266	0.347	0.274
	Sig. (2-tailed)	0.083	0.165	0.031	0.134	0.608	0.140	0.089	0.445		0.398	0.214	0.386
	N	13	12	13	13	13	13	13	7	13	10	12	10
25.2 Rank the frequency in usage of the following financial derivatives by your company in the management of foreign exchange risk: Futures	Correlation coefficient	0.000	0.264	0.029		0.156	0.406	0.000	0.671	0.266	1.000	.725*	0.462
	Sig. (2-tailed)	1.000	0.400	0.921		0.602	0.197	1.000	0.221	0.398		0.013	0.147
	N	10	9	10	10	10	10	10	4	10	10	10	9
25.3 Rank the frequency in usage of the following financial derivatives by your company in the management of foreign exchange risk: Options	Correlation coefficient	-0.189	0.304	-0.229	-0.253	0.127	0.135	0.143	0.000	0.347	.725*	1.000	.782**
	Sig. (2-tailed)	0.497	0.273	0.369	0.364	0.635	0.629	0.588	1.000	0.214	0.013		0.009
	N	12	11	12	12	12	12	12	6	12	10	12	10
25.4 Rank the frequency in usage of the following financial derivatives by your company in the management of foreign exchange risk: Swaps	Correlation coefficient	-0.257	0.245	-0.437		0.000	0.449	0.375	0.530	0.274	0.462	.782**	1.000
	Sig. (2-tailed)	0.418	0.447	0.129		1.000	0.156	0.210	0.264	0.386	0.147	0.009	
	N	10	9	10	10	10	10	10	5	10	9	10	10

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

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