THE CORPORATE USE OF DERIVATIVES BY LISTED NON-FINANCIAL FIRMS IN AFRICA

Glen Holman*, Carlos Correia**, Lucian Pitt*, Akios Majoni*

Abstract

This paper presents the results of an extensive analysis of derivative use by 692 companies in 20 countries across the African continent. The results show that 29% of non-financial companies in Africa use derivatives but that derivative use is dominated by firms within South Africa. The study finds that 54% of firms in South Africa use derivatives but only 5% of non-financial firms in Africa (excluding South Africa) use derivatives for hedging purposes. The majority of derivative use is directed toward the management of currency risks and the derivative instrument of choice is OTC forwards. Swaps are used to hedge interest rate risk and minimal use is made of OTC or exchange traded options and futures.

Keywords: Derivatives, Currency Exposure, Hedging, Interest Rate Risk, Forwards, Swaps, Options, Commodity Price Risk, Equity Derivatives

** University of Cape Town*
*** Corresponding author, University of Cape Town*
E-mail: carlos.correia@uct.ac.za

Introduction

Markets have been characterised by increased volatility in foreign exchange rates, interest rates, market prices for securities and commodity prices and as a consequence, companies face increased exposure to a broad spectrum of financial risks. There is increasing shareholder expectation that management not only identify but effectively manage the company's exposure to these risks (Bodnar *et al.*, 1999) and risk management has become a key strategic focus for companies. The availability of a variety of derivative instruments may be instrumental in enabling effective financial risk management by companies and can have a positive impact on the value of the firm (Prevost et al, 2000; Nance et al, 1999 and Berkman *et al.*, 1996).

Benson and Oliver (2004) set out the reasons for risk management which include the reduction of financial distress and agency costs, achieving economies of scale at the company level, taking advantage of differing tax rates and the minimisation of the costs of external financing. Increased volatility in earnings and cash flows may result in an increase in the costs of financial distress and the use of derivatives may be effective in reducing the volatility of earnings and cash flows.

Increased volatility in currency rates, interest rates and commodity prices have been matched by a significant growth in the use of derivatives such as swaps, futures, forwards and options. Managers now have a wide range of derivative instruments available to manage a corporation's exposure to volatility in exchange rates, interest rates and commodity prices. Nguyen and Faff, (2002) reported that the notional value of derivatives employed within the corporate sector rose from USD18 trillion in 1994 to USD70 trillion in 1998. This significant growth in the use of derivatives continued over the next decade with the notional value of derivatives used exceeding USD600 trillion by December 2008 (Deutsche Borse, 2009). The total over-the-counter (OTC) derivative contracts outstanding amounted to $632.6 trillion in December 2012 (Bank for International Settlements, June 2013).

Smithson and Simkins (2005) in a comprehensive review of the evidence conclude that risk management and derivative use by the corporate sector adds value and refer to a ISDA study which reported that 92% of the world's 500 largest companies used derivatives, with 92% of the firms using derivatives to manage interest rate risk, 85% of firms using derivatives to manage currency risks and 25% of firms using derivatives to manage commodity price risks.

Derivatives markets can facilitate the management of financial risk exposure, since they allow investors to unbundle and transfer financial risk. The development of derivatives markets in sub-Saharan African countries would enable companies to self-insure against volatile capital flows and reduce their dependence on bank financing (Adelegan, 2009).

Research into the extent of the use of derivatives by the corporate sector and the motives for the use of derivatives by this sector has thus far mainly focused on North America, South America, the UK and Europe, East Asia, Australia and New Zealand. There

is little published research into derivative use in Africa. This paper aims to bridge this gap by analysing the extent to which companies in Africa make use of derivatives, investigating the motives for derivative use and identifying the main instruments used to hedge financial risks. This study addresses the following research questions;

- To what extent do non-financial companies in Africa make use of derivatives?
- Which types of risks are hedged by companies?
- What types of derivatives are most commonly used by firms in Africa to hedge these risks?
- What number of derivative instruments do companies employ?
- To what extent are there regional differences in the use of derivatives by firms in Africa, particularly between South Africa and the rest of Africa?
- How does derivative use in Africa compare to derivative use in other developed and emerging markets?
- What is the derivative use per sector?

An objective of this study is to understand the extent to which the use of derivatives by companies in Africa compares with the use of derivatives in other countries; however there are some limitations attached to such a comparison. Sprčić (2007), Jalivland (1999) and Correia et al (2012) point out that the timing of the studies may have an impact on any comparative analysis of results. Comparisons are more meaningful between studies that have been carried out over the same period or in periods that are as close as possible to each other. Similarly, differences in the scope of the studies undertaken may limit direct comparison of one with the other. As an example, the studies by Junior (2007 and 2011) and Schiozer and Saito (2009), are specifically focused on the use of currency derivatives, this is a narrower focus than the studies based on the Wharton School surveys of Bodnar, *et al.* (1995). This study endeavours to focus on the use of derivatives by non-financial firms so that the use of derivatives by financial institutions are not included as part of this study. The intent is to focus on the use of derivatives for risk management purposes.

This study is organised as follows; the first section consists of the introduction which includes the rationale for the study, the context and the research questions. This is followed by the second section which consists of a review of prior studies undertaken in developed and emerging economies. The third section represents an outline of the data and research methodologies employed in this study. The fourth section sets out the results of the study which includes a detailed descriptive analysis of the use of derivatives by companies in Africa and includes a comparative analysis of the use of derivatives in Africa in relation to derivative use in other parts of the world. A further comparative analysis is undertaken of derivative use by South African companies in relation to the use of derivatives by companies in the rest of Africa.

Literature Review

Format of prior studies

Prior studies of derivative use can be broadly classified into two approaches; firstly, there are those that follow a questionnaire-based survey approach (see Bodnar *et al.* 1995, 1996, 1998, 1999, 2003 & 2008; Jalilvand 1999; Phillips 1995; Berkman *et al.* 1997; Pramborg 2003; Correia, Holman & Jahreskog 2012) and secondly, there are studies of derivative use based on the review of company financial statements (see Berkman & Bradbury 1996; Junior 2007 & 2011; Schiozer & Saito 2009; Martin et *al.* 2009; Marsden & Prevost 2005; Prevost, et *al.* 2000; Shu *et al.* 2003; Ameer *et al.* 2011; Selv *et al.* 2010; Brunzell *et al.* 2011; and Bartram *et al.* 2009). There are also variations. For example, Sprčić, (2007) followed up a survey with interviews with companies whilst Sheedy (2006) used the survey approach introduced by the Wharton school, but completed the surveys by interviewing the treasury staff at the targeted companies. Ameer, *et al.* (2011), followed up his questionnaires with a review of secondary data on derivatives obtained from the 2007 and 2008 annual reports of the companies reviewed in Malaysia.

Limitations of survey questionnaires relate to poor response rates, issues regarding interpretation, non-response bias and comparability issues. The improvement in disclosure required in terms of International Financial Reporting Standards (IFRS), specifically IFRS 7 and IAS 39 relating to mandatory disclosure required in relation to financial instruments, has improved the ability to extract information from annual reports in respect to derivative use. Whilst the use of annual reports may limit the ambit of the study in relation to such issues as investigating the motives for derivative use, the use of annual reports improves the objectivity of such analysis even though such a study may be limited in scope.

In relation to Africa, Modack, Holman and Correia (2012) analysed derivative use of South African companies by reviewing annual financial statements and yet the results of this study of annual reports of the largest 100 companies in South Africa was closely correlated to the results of using a questionnaire survey of derivative use undertaken by Correia, Holman and Jahreskog (2012).

Companies reported to be using derivatives

In the USA, of the companies that responded to the survey by Bodnar, Hayt, Marston, and Smithson (1995), 35% reported the use of derivatives. This is significantly lower than the 63.2% reported by Phillips (1995) for the USA. This difference may stem from the characteristics of the sample of companies targeted in the two studies; Bodnar, Hayt, Marston, and Smithson (1995), restricted their sample to non-financial companies whilst Phillips (1995) included financial and non-financial companies in his study. Studies by Bodnar, Hayt and Marston (1998) indicate a greater intensity of derivative use by companies but this increased intensity is partially explained by a higher percentage of large companies within the sample.

Table 1. Percentage of companies reporting the use of derivatives (USA and Canada)

	Country	**% Companies. using Derivatives**
Bodnar *et al.* (1995)	USA	35.0%
Bodnar *et al.* (1996)	USA	41.0%
Bodnar *et al.* (1998)	USA	50.0%
Phillips (1995)	USA	63.2%
Jalilvand (1999)	Canada	75.0%

Pramborg (2003) reports the percentage of companies using derivatives in Sweden at 81% and this is significantly higher than the 59% of companies that indicated using derivatives by Alkeback *et al.* (2006). Whilst Pamborg (2003) makes no reference to such a distinction, Alkeback *et al.* (2006) restricts their sample to non-financial firms with headquarters inside Sweden. It is therefore not clear whether the difference relates to the sample size employed by Pramborg (250 companies) as compared to that of Alkeback (134 companies). Further, the potential impact of centralised risk management decision-making may explain the huge difference in reported derivative use between the two studies; Alkeback *et al.* (2006) report that up to 60% of companies use centralised risk management decision-making. The growth in the percentage of companies using derivatives from 52% to 59% (Alkeback *et al.* 1999 & 2006) is attributable to a greater intensity of derivative use by medium and small firms.

Bodnar and Gebhardt (1999), Bodnar *et al.* (2001) and De Ceuster *et al.* (2000) report similar levels of derivative usage for Germany, Belgium and the Netherlands respectively. The surveys conducted by Sprčić *et al.* (2008), Spyridon (2008) and Selv, Y. *et. al,* (2010) reported a lower percentage of derivative use amongst companies in Croatia, Greece and Turkey respectively. Table 2 presents derivative use by European companies (excluding the UK);

Table 2. Percentage of companies reporting the use of derivatives (Europe excl. UK)

	Country Covered	**% Companies**
Alkeback & Hagelin (1999)	Sweden	52.0%
Alkeback *et al.* (2006)	Sweden	59.0%
Pramborg, (2003)	Sweden	81.0%
Bodnar & Gebhardt (1999)	Germany	77.8%
Bodnar *et al.* (2003)	Netherlands	60.0%
De Ceuster, *et al.* (2000)	Belgium	65.8%
Sprcic (2007)	Slovenia	65.9%
Sprcic (2007)	Croatia	43.0%
Spyridon (2008)	Greece	33.9%
Selv & Türel (2010)	Turkey	28.0%

A number of studies of derivative use have been undertaken for the UK. Grant and Marshall (1997) report that 90% of companies in the UK use derivatives. This is significantly higher than that reported in other studies for the UK (see Bailly *et al.* 2003, Mallin *et al.* 2001 and El-Masry 2006). Grant and Marshall restricted their sample of companies to 250 of the largest firms in the UK, whereas the studies of Bailly *et al*, (2003), Mallin *et al* (2001) and El-Masry (2006) included smaller companies.

The results of the studies by Bailly *et al.* (2003) supports the premise of a positive correlation between firm size and the intensity of derivative use and this may partially explain the difference in the reported use of derivatives between the study by Grant and Marshall (1997) and Bailly *et al.* (2003), Mallin *et al.* (2001) and El-Masry (2006).

Table 3. Percentage of companies reporting the use of derivatives in the UK

	Country Covered	**% Companies using Derivatives**
Bailly *et al.* (2003)	UK	72.0%
Grant and Marshall (1997)	UK	90.0%
Mallin *et al.* (2001)	UK	60.0%
El-Masry (2006)	UK	67.0%

Studies on derivative use have been undertaken in other countries in Asia as well as Australia, New Zealand and emerging economies. The percentage of companies reporting the use of derivatives in Hong Kong and Singapore is high at 81% and 75% respectively (Sheedy, 2006). As large companies were poorly represented in the sample of companies surveyed by Sheedy (2006), the expectation would have been that the overall rate of derivative use would be low since the level of derivative use is found to be positively correlated with company size (Bodnar *et al.* 1996 & 1998). Yet, derivative use amongst small and medium companies in Hong Kong and Singapore is high and this partially explains the higher overall rate of derivative use by companies in Hong Kong and Singapore.

Berkman, Bradbury and Magan (1997) found that 53.1% of companies in New Zealand used derivatives. A subsequent study for New Zealand by Prevost *et al.* (2000) reported a higher usage rate of 67.1% by companies in New Zealand. Both surveys reported a high percentage of derivative use by large companies[i] which is consistent with other studies, however, Prevost *et al.* (2000) reported a higher percentage of smaller companies using derivatives; with more than 50% compared to 36% reported by Berkman *et al.* (1997). A similar level of derivative use by companies in the Industrial sector (52.8%) and Mining sector (61.5%) was reported by Berkman, Bradbury, Hancock, and Innes (2002) for Australia.

In Malaysia, Ameer, *et al*. (2009), reported a derivative usage rate of 24% and this is supported by Bartram *et al.* (2009) who reported that only 20.9% of firms in Malaysia used derivatives based on a review of financial statements.

[i] For Berkman et al, (1997) company size is based on market value. Large >$250m; Medium < $250m and >$50m and small <$50m For Prevost et al., (2000), large firms are defined as those with sales value in excess of NZ$750m and small firms are defined as those with sales value below NZ$50m.

Table 4. Percentage of companies reporting the use of derivatives (Asia, New Zealand and Australia)

	Country	**% Companies using**
Berkman *et al.* (1997)	New Zealand	53.1%
Prevost *et al.* (2000)	New Zealand	67.1%
Berkman *et al.* (2002)	Australia	(Industrial) 52.8%
Berkman *et al.* (2002)	Australia	(Mining) 61.5%
Sheedy (2006)	Hong Kong	81.0%
Sheedy (2006)	Singapore	75.0%
Shu & Chen (2003)	Taiwan	37.0%
Pramborg (2003)	Korea	51.0%
Ameer (2009)	Malaysia	43.0%

Junior (2007) studied the use of foreign currency derivatives of 212 Brazilian firms, which represented more than two thirds of all publicly traded firms, and found that the growth in the percentage of firms using currency derivatives to be significant. In 1996, 8.2% of firms were found to be using foreign currency derivatives but this had grown to 21.9% by 2004. A change from a fixed to a flexible exchange rate system during this period would have partially contributed to the growth in the use of foreign currency derivatives. Bartram *et al.* (2009) found from a sample of 89 large firms that 69.6% of firms in Latin America use derivatives.

Al-Momani and Gharaibeh (2008) studied the extent to which firms in Jordan engage in the use of derivatives to manage foreign exchange risk. Their study found that 66% of firms engage in the management foreign currency risk. However, only a small fraction of these companies engage in derivative transactions to manage these risks. The most common methods used by firms to reduce foreign exchange risks include the use of "natural hedging techniques" (Al-Momani & Gharaibeh 2008, p.219). In another study, Bartram *et al*. (2009) reported on derivative use in two countries in the Middle East and found that 67.6% of firms in Israel reported to be using derivatives and yet no firms were found to be using derivatives in Jordan. Al-Momani and Gharaibeh (2008) gathered information on the use of derivatives via questionnaires to directors; and these were written in Arabic. Bartram's primary source of information was obtained by matching firms on the Thomson Analytics database with firms that have annual reports in English.

The percentage of companies reporting the use of derivatives in South Africa remained consistent over the period 2006 to 2010 (Correia, Holman & Jahreskog 2012; Modack, Holman & Correia 2012). The study by Correia *et al.* (2012) was carried out by mailing questionnaires to 98 of the largest listed non-financial companies in South Africa in 2006, whilst the study by Madock *et al.* (2012) was carried out by reviewing the annual financial reports in 2009 and 2008 of the largest 100 listed companies in South Africa. This partially explains the high percentage of reported derivative use by companies in these studies. The results are set out in Table 5.

Table 5. Percentage of companies reporting the use of derivatives (South Africa)

	Country Covered	**% Companies using Derivatives**
Correia, Holman & Jahreskog (2012)	South Africa	90.0%
Modack, Holman & Correia (2012)	South Africa	93.0%

2.3 The relationship between the use of derivatives and the size of the firm

Company size has been identified as a significant determinant of derivative use and may be linked to the existence of economies of scale as well as to the greater range of risk exposures that larger companies are expected to experience (Bodnar *et al.* 1999; Bodnar *et al.* 2003). For Canada, Jalilvand (1999) reported that the companies using derivatives are significantly larger than non-users. Table 6 summarises differences in derivative use amongst large (>$250m), medium ($50m-$250m) and small (<$50m) companies in the USA. Company size is based on market capitalisation.

Table 6: Percentage of companies using Derivatives (by company size) (USA)

	Large	**Medium**	**Small**
Bodnar *et al.* (1998)	83%	45%	12%
Bodnar *et al.* (1996)	59%	48%	13%
Bodnar *et al.* (1995)	65%	30%	12%

In studies carried out in the UK and Europe region, the percentage of large companies reporting the use of derivative exceeded 75%; the only exception being Belgium. Only 40% of large companies in Belgium reported the use of derivatives (De Ceuster *et al.* 2000). One of the reasons cited for the low level of derivative use by large companies in Belgium is related to policy restrictions imposed on the treasury department by the board of directors; 90% of non-users cite this as an important consideration in their decision concerning the use of derivatives. As with all other studies, a decrease in the

tendency toward the use of derivatives as company size declines is evident, which supports the premise that derivative use is positively related to company size . Table 7 depicts derivative use by company size for Europe, including the UK.

Table 7. Percentage of companies using Derivatives by company size* (Europe)

	Large	**Medium**	**Small**
Alkeback *et al.* (2006) - Sweden	89%	68%	34%
Bodnar *et al.* (2003) - Netherlands	88%	57%	42%
Bailly *et al.* (2003) - UK	97%	70%	40%
Mallin *et al.* (2001) - UK	100%	63-81%	29-66%
De Ceuster *et al.* (2000) - Belgium	40%	23%	37%
Bodnar & Gerhardt (1999) - Germany	75-94%	84-88%	50-55%

* Definition of company size:

- Bodnar *et al.,* (2003) (the Netherlands) - Company size is based on turnover: Large >$800m; Medium < $800m and >$250m and small <$250m
- Bailly *et al.,* (2003) (The UK) - Company size is based on market value: Small = Market Value < GBP100m; Medium= Market Value between GBP100m and GBP1bn; Large = Market Value > GBP1bn
- Mallin *et al.,* (2001) (UK) - Company size is based on Turnover: Small = BGP0-GBP90m; Medium=GBP91m-GBP1bn; Large=GBP1bn and higher
- De Ceuster *et al.,* (2000) (Belgium) - Company size is based on turnover: Small=,8.23bnBEF; Medium = 8.23bnBEF - 22.43bnBEF; Large=>22.43bnBEF

Bodnar G.M and Gerhardt G (1999) (Germany) - Company size is based on market value: Large >DM3,3b, Medium <DM3.3b and >DM0.66b; Small <DM0.66b

Sheedy (2002) found that companies across all sizes within Hong Kong and Singapore tend to use derivatives. A likely explanation for this high use of derivatives among companies of all sizes in these two countries is cited by Sheedy to be due to a greater international orientation of companies as compared to their American counterparts (Sheedy 2002, p.9). In New Zealand, 100% of large companies reported the use of derivatives (Berkman *et al.* 1997).

Table 8. Percentage of companies using Derivatives by company size (Asia & NZ)

	Large	**Medium**	**Small**
Sheedy, E (2002) - Hong Kong	86%	88%	68%
Sheedy, E (2002) – Singapore	91%	77%	55%
Berkman *et al.,* (1997) - New Zealand	100%	70%	36%
Definition of company size: • Berkman *et al.,* (1997) (New Zealand) - Company size is based on market value. Large >$250m; Medium < $250m and >$5m and small <$50m • Sheedy (2002) does not define the size categories but compares results to the Bodnar et al (1998) and is therefore assumed to apply similar size categorisations as Bodnar.			

With the exception of Belgium, all countries outside of the USA show a greater tendency toward the use of derivatives amongst medium and small firms as compared to their USA counterparts. This result is attributed to the potentially greater currency exposure of many of the countries outside of the USA given the openness of these economies relative to that of the USA (Berkman *et al.* 1997; Bodnar *et al.* 2003;

Sheedy 2002) as well as the international pricing of products in US Dollars. It is also evident that there has been a growth in the use of derivatives by companies of all sizes over time. Alkeback *et al.* (2006), reported that the use of derivatives amongst the medium and smaller companies in Sweden increased significantly from 1996 to 2003. Medium companies who reported the use of derivatives increased from 43% to 68% and smaller companies using derivatives increased from 18% to 34%. This trend is also evident in the studies by Bodnar *et al.* (1994) and Bodnar *et al*. (1998). Junior (2007) in a study of the use of currency derivatives by Brazilian companies reported that larger firms were more likely to use currency derivatives. Shiozer and Saito (2009) reported a greater intensity of derivative use by large firms in Latin America (Argentina, Brazil, Chile and Mexico) and indicated that this may be due to the fact that large firms in Latin America have often had debt stated in foreign currency.

2.4 The relationship between the use of derivatives and industry sector

As with the analysis of the use of derivatives by size of the firm, a number of studies (see Jalilvand 1999; Sprcic 2007;, Alkeback *et al.,* 2006; Bodnar & Gerhardt 1999; Junior 2007 and Schiozer & Saito 2009) did not analyse the use of derivatives use by industry sector. Bodnar *et al.,* (1995, 1996, and 1998) for the USA found the use of derivatives to be most common amongst companies in commodity-based (primary sector) industry sectors and manufacturing industries. Bodnar *et al.* (1998) reported that 68% of commodity based companies used derivatives, 48% of manufacturing companies used derivatives and 42% of transportation, retail / wholesale and services companies used derivatives. The higher percentage of companies using derivatives in the commodity-based industries in the USA is linked to the availability of suitable derivative products and relative maturity of commodities derivatives exchanges in the USA (Bodnar *et al.,* 1995). These percentages had increased since Bodnar et al. (1995) but were consistent across industry classification.

All studies of derivative use in the UK and Europe show consistently that the use of derivatives by firms across all sectors is higher than that of their North American counterparts. Manufacturing firms in the UK and Europe show on average a greater tendency toward the use of derivatives than firms in the primary sector.

Table 9. Percentage of companies using Derivatives by Industry Classification (Europe)

	Primary	**Manufacturing**	**Service**
Bodnar *et al.* (2003) - Netherlands	*not given*	66%	48%
Bailly *et al.* (2003) - UK	77%	75%	*not given*
Mallin *et al.*, (2001) - UK	57%	63%	57%
Alkebach and Hagelin (1999) - Sweden	63%	79%	39%

Alkeback *et al.,* (1999) attributes the trend in the UK and Europe to that fact that economies such as that of Sweden and the Netherlands are characterised as small open economies; as such manufacturing companies in these countries who engage in high levels of international trade are exposed to a high level of foreign exchange risk. Companies in the UK show a higher level of derivative use in the manufacturing sector as compared to their US counterparts (Mallin *et al.* 2001; Bailly *et al.* 2003). There is a greater tendency toward derivative use by firms in the manufacturing sector in countries such as New Zealand, Taiwan and Hong Kong relative to their counterparts in the USA [Berkman *et al.* 1997; Shu & Chen 2003; Sheedy 2002). However, this may also be related these economies being small open economies.

Table 10. Percentage of companies using Derivatives by Industry Classification (Asia & NZ)

	Primary	**Manufacturing**	**Service**
Shu & Chen (2003) - Taiwan	54%	47%	0%
Sheedy (2002) - Hong Kong	93%	81%	58%
Sheedy (2002) - Singapore	100%	85%	63%
Berkman *et al.* (1997) - New Zealand	29%	82-86%	32-86%
Ameer *et al.* (2011) - Malaysia	38%	20%	27%

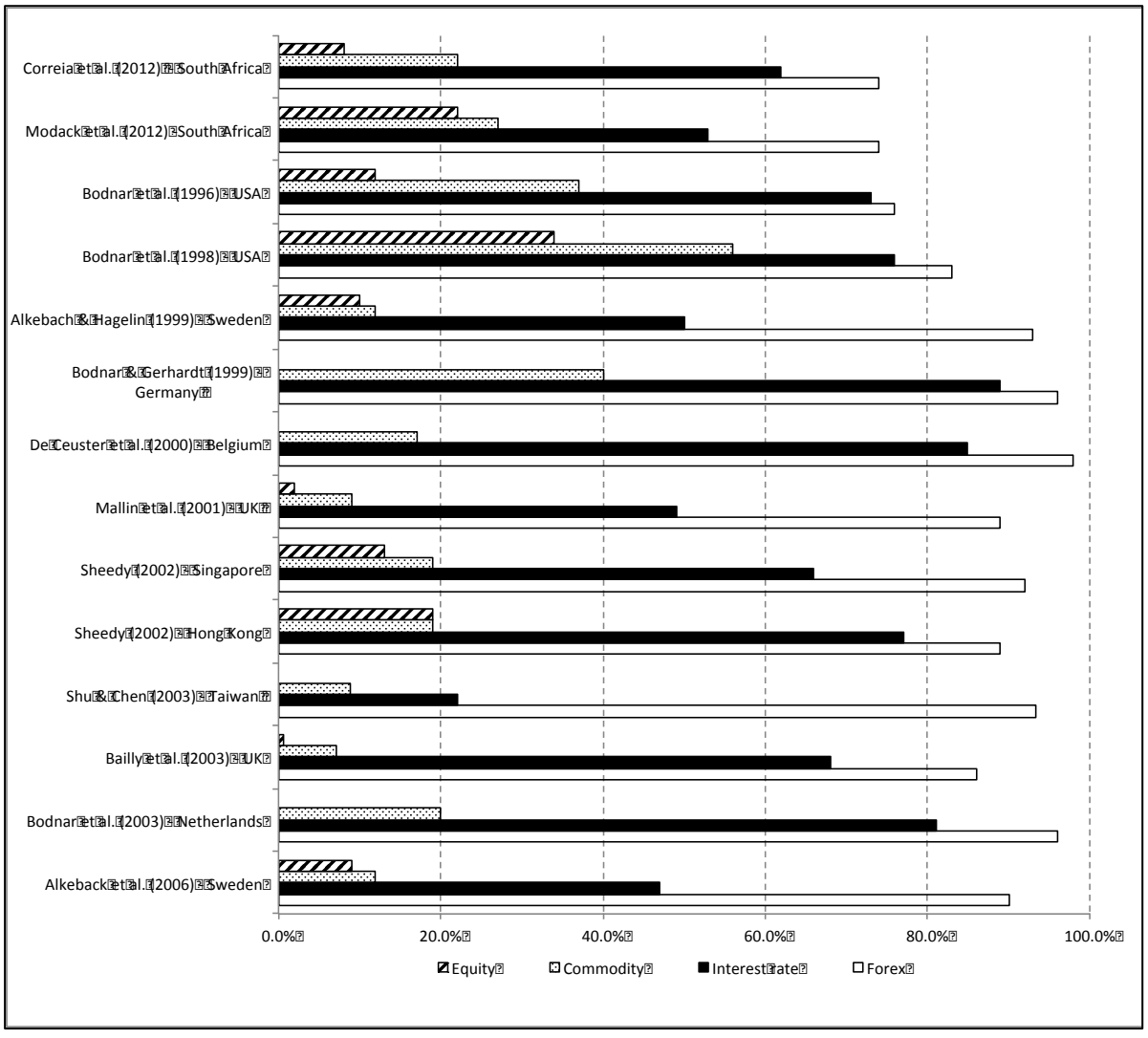
For the New Zealand study by Berkman *et al.* (1997), derivative use for the service category includes services (32%), retail and wholesale (86%) and transport & utility (73%) whilst manufacturing is divided between non-durables (82%) and durables (86%). One of the characteristics of firms in Hong

Kong and Singapore is the higher rate of derivative use across all sectors. The service sector within Singapore and Hong Kong is relatively large as compared to service sectors in many other economies. Bodnar *et al.* (1998) report a lower tendency among service sector firms to use derivatives and this finding is reaffirmed in the studies by Bodnar *et al.* (2003) for the Netherlands, Mallin *et al.* (2001) for the UK, Alkebach and Hagelin (1999) for Sweden. Sheedy (2002) found that there was no significant difference in the percentage of companies using derivatives across all sectors in Hong Kong and Singapore and the service sectors recorded a significantly high level of derivative use of 58% and 63% for Hong Kong and Singapore, respectively.

2.5 Financial price risk exposures and derivative use

Corporate exposure to financial price risk is broadly categorised as foreign exchange, interest rate, commodity and equity exposures and the kinds of derivatives used are generally classified as OTC forwards, futures, swaps, OTC options and exchange traded options. Figure 1 presents the types of risk exposures that are hedged by companies in prior studies. All studies report significant hedging by non-financial companies of foreign currency and interest rate risks and significantly lower hedging or exposure to commodity and equity price risks.

Figure 1. Types of risk exposures hedged by companies



The high percentage of companies using derivatives to manage currency exposure is consistent across all studies and more than 75% of companies in all studies indicated that they use derivatives to manage foreign exchange exposure. The higher percentage of companies using derivatives to manage foreign exchange exposure in many of the economies outside of the USA is often consistent with their status as open economies.

Modack *et al.* (2012) and Correia *et al.* (2012) found for South Africa that the largest 100 companies primarily used OCT forwards to hedge foreign

exchange exposure and interest rate swaps to hedge interest rate risk. OTC options were also used but little use was made of exchange traded options or futures. Modack *et al.* (2012) reported that 65% of swaps were entered into to hedge interest rate risk; 83% of forward contracts were undertaken in order to hedge foreign currency risk and 47% of all option contracts were entered into to hedge equity price risk. The study found that all futures contracts were undertaken to hedge commodity price risk.

Whilst Sprcic (2007), De Ceuster *et al.* (2000), Berkman *et al.* (1997), Bailly *et al.* (2003), Bodnar *et al.* (1996, 1999 and 2003) and Correia *et al.* (2012) found OTC Forwards to be the most preferred instrument for the management of foreign exchange exposure, Alkeback and Hagelin (1999) found that firms in Sweden use a wider range of instruments to manage currency exposure and companies use OTC Forwards, Exchange-traded Forwards, Swaps and Futures. The most preferred instruments to manage currency risks in Malaysia is cited as OTC Forwards (Ameer *et al.* 2011) and this is due to the greater flexibility of Forward foreign-exchange contracts (which are available from licensed local banks) over other standardized foreign-exchange Options and Futures contracts. In New Zealand, OTC Forwards is cited as the derivative instrument of choice to manage currency risk (Berkman *et al.* 1997). Interestingly, Junior (2007) reported a preference by Brazilian firms to use swaps to hedge currency exposure. However, this may be due to the longer term nature of currency exposures of Brazilian firms to foreign currency debt financing.

Interest rate risk exposure is the second most commonly managed exposure cited in all studies. Studies indicate that firms mostly use interest rate swaps to hedge interest rate risk and the growth in the use of swaps to hedge interest rate risk has been impressive. More than 60% of firms in all studies indicated the use of derivatives to manage interest rate exposure; the only exceptions being the UK (Mallin *et al.* 2001), Sweden (Alkebach & Hagelin 1999 and Alkeback *et al.* 2006), South Africa (Modack, *et al.* 2012 and Correia *et al.* 2012) and Taiwan (Shu & Chen, 2003). Alkeback *et al.* (2006) found that the reason behind the lower use derivatives to manage interest rate exposure in Sweden to be size related; they found that only 5% of small companies managed interest rate exposure and that interest rate exposure tended to be managed to a larger extent by larger companies than medium-sized companies. In South Africa, more than 50% of companies used interest rate swaps to hedge interest rate risk (Modack, *et al.* 2012 and Correia *et al.* 2012) but both these studies refer to the use of swaps by large companies. Across all studies the most favoured derivative instrument for the management of interest rate exposure tended to be Swaps. Studies reported a significant growth in the use of swaps to manage interest rate risk exposure (see Bartram *et al.* 2004; Correia *et al.* 2012).

A pattern of significantly lower use of derivatives to manage commodity price risk and equity risk, is consistent across all studies and all countries. The use of derivatives to manage commodity price risk is highest in the USA which is consistent with a larger primary sector and a more developed market for these types of derivatives.

2.6 The most important objective in the hedging decision of firms

The studies of De Ceuster *et al* (2000), Bodnar and Gerhardt (1999), Mallin *et al.* (2003), Bailly *et al.* (2003) and Alkeback *et al.* (2006) conclude that a major objective of European companies in hedging with derivatives is to minimise fluctuations in accounting earnings. An exception relates to the Netherlands (Bodnar *et al.* 2003) where 60% of firms cite the minimisation of fluctuation in cash flow as a major objective. It is believed that the role of accounting and taxation rules has a material influence on the motives for hedging activity in Europe (De Ceuster *et al.* 2000, p. 311).

The initial studies by Bodnar *et al.* (1995 & 1996) indicate a greater concern for the minimisation of cash flow volatility in determining the hedging decision in the USA. The management of cash flow volatility is also cited as a major objective in the hedging decision amongst Korean companies (Pramborg 2003). According to Schiozer and Saito (2009), the important objectives behind the hedging decision by Latin American firms relates to the reduction of financial distress costs and in order to guarantee adequate funding for investment opportunities.

The hedging of the balance sheet involves using derivatives to protect the balance sheet values and balance sheet ratios and will therefore reduce the volatility of asset and liability values (Correia *et al.* 2009, p.22). Yet few companies cited the protection of balance sheet values as a major objective for using derivatives. Alkeback *et al.* (2006) quotes the highest percentage of companies citing the protection of the balance sheet as a major objective (30%); in every other study, fewer than 14% of companies cited protection of balance sheet values as a major objective in the hedging decision.

2.7 Reasons for not using Derivatives

Some of the reasons cited for not using derivatives include the lack of exposure to financial risk (Mallin *et al.* 2001; El-Masry 2006) and the high cost relative to the perceived benefit due to onerous reporting requirements (El-Masry 2006; Sprčić *et al.* 2008). Other reasons for not using derivatives include policy restrictions within the firm, lack of knowledge and concerns about disclosure (De Ceuster *et al.* 2000); Al-Momani & Gharaibeh 2008; Alkebäck & Hagelin 1999). Correia *et al*. (2012) found that companies in

South Africa refrained from using derivatives due to a lack of exposure to movements in interest rates, exchange rates and commodity and equity price risks. In addition, concerns about the accounting treatment thereof and the cost of establishing and maintaining a derivatives program as well as transaction costs were cited as concerns or reasons for not using derivatives.

2.7 Other findings

Jalilvand (1999) found that large multi-national companies are more likely to use derivatives and that derivative users have higher leverage ratios and lower credit ratings than non-users. It is thought that hedging reduce(s) the adverse wealth effects of keeping longer term debt by lowering the firm's default risk (Jalilvand 1999, p.220) Consistent with the conclusions by Jalilvand (1999) for Canada, Sprčić *et al.* (2008), for Croatia and Slovenia, found a positive relationship between derivative usage and foreign ownership and/or the company's status as a multi-national company.

Derivative use by non-financial firms is more likely to be driven by economic factors rather than cultural influences (Alkebäck & Hagelin 1999; Spyridon 2008). This finding was consistent with the findings by Bodnar and Gebhardt (1999) for North America . Bodnar *et al.* (2001) concluded that the higher propensity of Dutch firms to use derivatives, as compared to USA firms, can be explained by the greater openness of the Dutch economy and broader economic factors but not by institutional differences. Schiozer and Saito (2009) concluded that firms operating in economies with sophisticated financial markets, volatile currencies and high level of foreign corporate ownership such as in Brazil and Chile are more likely to use derivatives. Schiozer and Saito (2009) reported that 84.6% and 91.6% of firms were found to be using derivatives in Brazil and Chile respectively. These high rates of derivative use may be driven by the make-up of the sample of companies on which the study was carried out which consisted of companies in Brazil and Chile that were part of the Bank of New York Latin American ADR (American Depositary Receipts) index as at year end 2004. Junior (2007) concluded that larger companies with a higher ratio of foreign sales to total sales and those with higher ratio of foreign debt to total debt were more likely to use derivatives to reduce the probability of financial distress and that firm leverage was positively correlated with derivative usage.

Athough there is little research on derivative use in Africa, the African Fixed Income and Derivatives Guidebook by the African Development Bank Group (2010) sets out country guides on financial markets in Africa. Whilst this guide indicates that there are active if illiquid fixed income markets, and foreign currency markets (many subject to restrictions), there are few active derivative markets in Africa. Adelegan (2009) in an IMF study, reported that the derivatives market had grown significantly in South Africa and that this provided lessons for the rest of Africa which should focus on regional co-operation in the listing and trading of derivative instruments.

3. Data and methodology

3.1 Data collection

The sample of firms include all listed non-financial firms in Africa. This required an extensive search for published annual reports of all listed firms across Africa. Disclosure of derivative use and qualitative and quantitative information should be disclosed in the financial statements and notes to the financial statements. Annual reports are mainly prepared in accordance with International Financial Reporting Standards (IFRS) or in line with local Generally Accepted Accounting Practice (GAAP). In terms of IFRS, annual reports were analysed and reviewed on the basis of the information required to be disclosed in terms of IFRS 7 (Financial Instruments: Disclosures) and IAS 39 (Financial Instruments: Recognition and Measurement). For African companies with annual reports prepared in accordance with local GAAP , a manual search was performed searching for key words such as "derivatives", "forwards", "swaps", "futures", "options", and "hedging".

Several financial resources were employed in order to procure the required annual reports;

- The Bloomberg financial database was used as the initial source of information. However, the searches returned company details that did not include the notes to the financial statements and in some cases financials were not listed at all.
- The BFA McGregor financial database was then used as a secondary source of information. There were approximately thirty financial statements available from this source.
- As a third option, the website *African Financials (www.africanfinancials.com)* was used as a source of information. This website contains a database of annual financial reports of companies trading in Africa. The database has in excess of 4000 current and historical financial reports and proved to be a useful source of financial information.
- As a fourth option the financial-database of the Thompsons Reuters Corporation was used to source information, which was missing from the first three sources.
- Finally, for those firms which were still not available on these data sources, an online search was done for the company's official website from which the relevant financial statements were accessed, if available.

The study was able to access the annual reports of 692 listed non-financial firms trading in Africa although there was an uneven distribution number of companies per country. The study covers the period 2008 and 2009. The list of companies included in the

study was obtained from a Bloomberg database on the 3rd of May 2010; this list formed the basis for the selection of companies included in the study.

3.2 Sample of countries

This study is a comprehensive review of derivative usage by listed companies in Africa. Information on the use of derivatives, the reasons behind the use of derivatives and the instruments used was obtained from annual financial statements of 692 firms within the African continent. Unlike the questionnaire-based survey approach where the data is reliant on the responses of companies, the financial statement review approach adopted in this study allows for a much broader coverage and eliminates to an extent the problems of low response rates and non-response bias associated with the questionnaire-based approach.

The objective of the study was to analyse the use of derivatives in every country on the African continent. However, this was not possible due to lack of information for many countries. The starting point of the study is therefore with countries in which an active stock exchange was available at that point in time. On this basis of this criterion, the initial sample consisted of 28 countries with securities exchanges. Cameroon, Libya, Algeria, Cape Verde, Rwanda and Sudan were excluded due to limited accounting disclosure despite the presence of an active securities exchange.

Mozambique had only 3 listed companies of which only 1 had financial statements but which lacked sufficient information to be considered in the final sample of countries chosen. The final list of countries is recorded in Table 11.

Table 11. Countries included in this study

Benin	Senegal	Kenya	South Africa
Ivory Coast	Tunisia	Uganda	Namibia
Burkina Faso	Egypt	Zambia	Botswana
Togo	Morocco	Malawi	Zimbabwe
Ghana	Nigeria	Tanzania	Mauritius

The countries Benin, Ivory Coast, Burkino Faso, Togo, Senegal and Ghana fall within the West African Economic Monetary Union (WAEMU) and will be grouped and referred to as WAEMU in this study.

3.3 Sample of companies

The initial number of listed companies consisted of 1,383 companies. However, 387 of these are financial services companies and were therefore excluded in line with the objective of the study to analyse derivative use by non-financial firms in Africa. This resulted in a potential population of 996 non-financial listed companies. Despite an intensive search for all annual reports, it was not possible to obtain the annual financial statements of 304 companies and these companies were excluded from the study leaving 692 companies (70%) in the final sample.

Of the countries under review, seven countries had less than ten companies in their final sample, six countries had between twenty and fifty companies in their final sample and two countries (Egypt and South Africa) had more than 50 companies in the final sample. The companies in Egypt and South Africa therefore make up 61% of the total sample of companies in Africa. It would be expected that any regional view taken in the analysis would be dominated by activity within these two countries.

Table 12. Companies making up the final sample

Country	**Listed companies**	**Non- financial companies**	**Companies in the final sample**	**Effective sample rate**
Morocco	76	54	40	74%
Egypt	212	155	118	76%
Tunisia	54	33	25	76%
Nigeria	222	155	49	32%
Uganda	14	6	6	100%
Kenya	58	40	25	63%
Zambia	26	25	16	64%
Namibia	8	1	1	100%
Tanzania	16	10	9	90%

Botswana	21	11	6	55%
WAEMU	69	39	24	62%
Malawi	15	6	3	50%
Mauritius	84	56	22	39%
South Africa	424	328	307	94%
Zimbabwe	84	77	41	53%
Totals	**1383**	**996**	**692**	**69%**
South Africa	*424*	*328*	*307*	*94%*
Africa(excl. SA)	*959*	*668*	*385*	*58%*

A limitation of this type of study relates to the possibility that natural hedges are being used to hedge effectively any longer term risk exposure. For example, exporters of commodities may borrow in the same currency. Further, investors may view forward sales as a negative indicator as has occurred in the gold mining sector as it may be easier for investors to diversify their risks directly. In other words, investors would prefer firms to be exposed to commodity price changes. The other natural hedge may consist of taking advantage of any negative correlation between commodity price movements and changes in the value of the domestic currency. However, in any natural hedging programme, there should be some residual risk exposure and the study refers generally to the use of derivatives.

4. Results of Analysis

4.1 Derivative usage

Across the sample of 692 non-financial companies in Africa, the study found that 201 companies use derivatives and this translates to 29% of the sample population. This is presented per country in Table 13. None of the companies in Zambia, Zimbabwe and Botswana use derivatives whilst countries in which a high rate of derivative usage is recorded generally have very few companies in the sample set. This includes countries such as Namibia, Malawi and Uganda although companies in these countries are generally export orientated. The percentage of use is significantly affected by the number of companies in the final sample but the final results reflect the very low use of derivatives across Africa although there are significant differences on a regional basis.

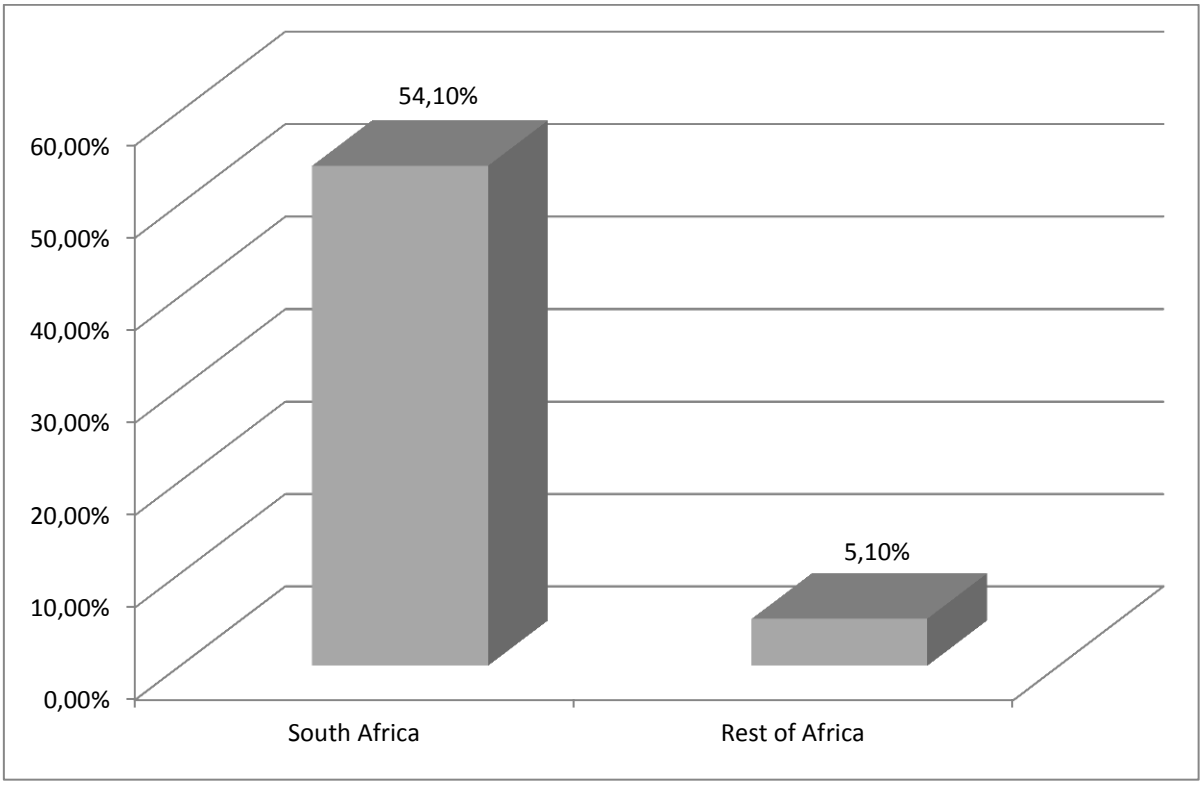
Table 13. The number of companies using derivatives

Country	Number of companies in the final sample	Number of companies using derivatives	Percentage companies using derivatives
Morocco	40	7	17.5%
Egypt	118	2	1.7%
Tunisia	25	1	4.0%
Nigeria	49	2	4.1%
Uganda	6	2	33.3%
Kenya	25	5	20.0%
Zambia	16	0	0.0%
Namibia	1	1	100.0%
Tanzania	9	3	33.3%
Botswana	6	0	0.0%
WAEMU	24	4	16.7%
Malawi	3	2	66.7%
Mauritius	22	6	27.3%
South Africa	307	166	54.1%
Zimbabwe	41	0	0.0%
Totals	**692**	**201**	**29.0%**

At 166, the number of companies in South Africa using derivatives makes up 82.6% of the total companies using derivatives in Africa. This study found that the percentage of companies using derivatives in South Africa is 54.1%, which is significantly higher than the percentage of companies using derivatives in the Rest of Africa (5.1%). This difference in derivative use is placed in stark contrast in Figure 2. This study found further that the percentage of companies using derivatives for South Africa is significantly lower than that recorded by Correia *et al.* (2012) and Modack, *et al.* (2012) which reported derivative use at a rate of 90% and 93% respectively. This difference in derivative use is mostly explained by the fact that the sample of companies used in the Correia *et al.* (2012) and

Modack, *et al.* (2012) surveys were made up of the 100 largest JSE listed companies, whereas this study analysed derivative use by all listed companies in South Africa and therefore includes many smaller companies. This further indicates that there is a positive relationship between firm size and derivative use in South Africa.

Figure 2. The percentage of companies using derivatives in South Africa & Rest of Africa



Given that the number of companies in Egypt and South Africa make up 61% of the total sample of companies in Africa, one would expect that any regional view taken in the analysis would be dominated by activity within these two countries. As is evident from table 6 and figure 3, this view is true for South Africa, but a surprisingly low number of companies in Egypt use derivatives and only 2 out of 188 companies (1.7%) use derivatives. In all Islamic countries the use of derivatives and trading in derivatives is controlled and Ameer, *et al.* (2011) reports that interest rate, foreign currency, and stock index futures do not meet the conditions set out in Islamic law. Yankson (2011) notes that although the Quran prohibits excessive risk in financial transactions, which on the face of it would render derivatives a prohibitive class of investments, if certain pre-conditions are met even trades in seemingly high risk assets such as interest rates swaps could be permitted. However the challenge of meeting these preconditions restricts the development of the market for derivatives in countries subject to Islamic law.

This study found that only 30.4% of companies that indicated the use of derivatives hedge more than one risk and only 1 company in Africa hedges all four risks. The study found that 16 companies (8.0 % of the companies using derivatives) hedge 3 types of risk exposures whilst 44 companies (21.9%) hedge 2 types of risk and 140 companies (69.7%) hedge 1 type of risk. This is presented in Table 14.

Table 14. Concentration of derivative use in Africa

	Number of Risks hedged by companies			
	Four	**Three**	**Two**	**One**
Africa	1	16	44	140
Percentage	***0.5%***	***8.0%***	***21.9%***	***69.6%***
South Africa	1	14	36	115
Percentage	***0.6%***	***8.4%***	***21.7%***	***69.3%***
Africa (excl. South Africa)	0	2	8	19
Percentage	***0.0%***	***11.4%***	***22.9%***	***65.7%***

With the exception of South Africa, this study indicates that the overall percentage of companies using derivatives is extremely low across Africa and these findings are inconsistent with the results of studies of derivative use in developed economies. This may be attributed to the limited availability of active derivative markets in countries in Africa. This view is supported by Martin *et al.* (2009) who stated that the absence of clear regulations and adequate market infrastructures are perceived as major obstacles to the development of derivative markets in a country and the lack of expertise was also suggested to be a significant constraint to derivative usage (De Ceuster *et al.* 2000). The lack of derivative markets beyond South Africa and the possible advantages arising from the establishment of such markets is explained by Adelegan (2009) in an IMF study of derivatives in Africa.

In order to obtain possible reasons for the low level of derivative use in Africa, interviews were conducted with the senior partners responsible for Africa of three of the largest public accounting firms, being PWC, EY and KPMG. In response to a short questionnaire on their views for the reasons for the low level of derivative use in Africa, these three public audit and accounting firms engaged in business in Africa support the views of Martin *et al.* (2009) and Adelegan (2009) but also state that an added reason for the low level of derivative use for countries on the continent outside of South Africa is the tendency for groups to centralise risk management activities at head office level, and many of these head offices are not within the country in which business is conducted. This raises questions as to shareholder bases and risk management in that the shareholders of subsidiaries are not effectively obtaining the risk management benefits of derivative use in relation to the shareholders at the holding company level. Surprisingly, the restriction on derivative use due to capital controls is not cited as a major factor determining the intensity of derivative use in countries in Africa. However, the lack of depth in the money and capital markets in Africa is viewed as a further restriction on the intensity of derivative use. This is because duration in the money market is generally less than one year and although the capital market may have bonds issued for periods that may extend to 5 years, trading in the secondary market is characteristically very thin. As a result, pricing off the yield curve is difficult and as such derivatives are difficult to price and if priced tend to be expensive.

4.2 Types of Risk hedged

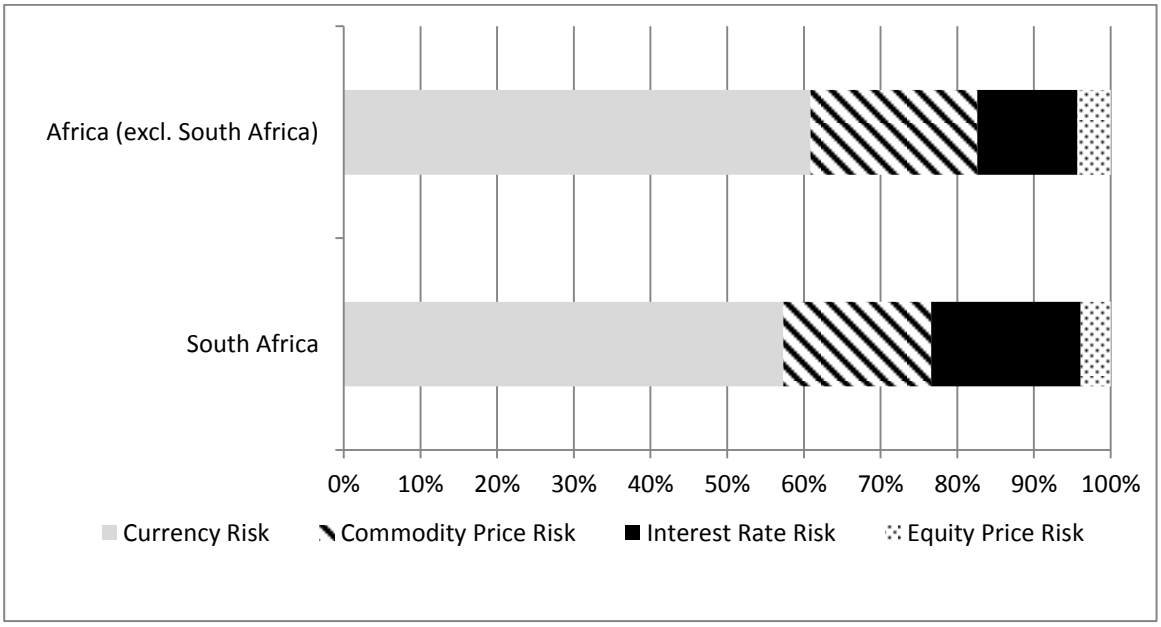
Figure 3 illustrates that derivatives are mainly used to manage currency risks. The analysis indicates that 57.8% of the use of derivatives by companies is devoted to the management of currency risks, whilst 19.6% of the use of derivatives is devoted to the management of commodity price risk and 18.6% and 4.0% of the use of derivatives is devoted to the management of interest rate risk and equity price risk, respectively. The dominance of the use of derivatives to manage currency risks relative to other forms of risk management is consistent with findings of earlier studies in more developed economies such as the USA, UK and Europe.

The use of derivatives to manage commodity price risk ranks second behind that of currency risk, and this trend contradicts the trends found in earlier studies in other regions where the use of derivatives to manage interest rate risk ranks higher than that of commodity price risk. This is mainly true for Africa (excluding South Africa) whilst for South Africa there is a slightly greater focus on hedging interest rate risk (20%) as compared to commodity price risk (19%). The studies by Correia *et al.* (2012) and Modack *et al.* (2012) indicated that a significantly greater number of South African companies were involved in the hedging of interest rate risk as compared to commodity price risk. However, their results apply to the largest 100 companies whilst this study includes all listed JSE companies and therefore includes a greater proportion of smaller listed companies.

The small number of companies per country in Africa that use derivatives, if we exclude South Africa, makes individual country analysis of little value although the major conclusion that derivative use is so low per country is an important finding. Figure 3 therefore analyses derivative use in South

Africa and Africa (excluding South Africa) as separate regions.

Figure 3. Types of risks hedged by firms in Africa



4.3 Derivative Instruments of Choice

Table 15 indicates that companies have an overwhelming preference for OTC Forwards as the main derivative instrument used to hedge risk exposure. The analysis shows that 55.2 % of derivatives used by companies in Africa are OTC Forwards and this is followed by Swaps at 25.6%, OTC Options at 14.3% and Futures at 4.9%.

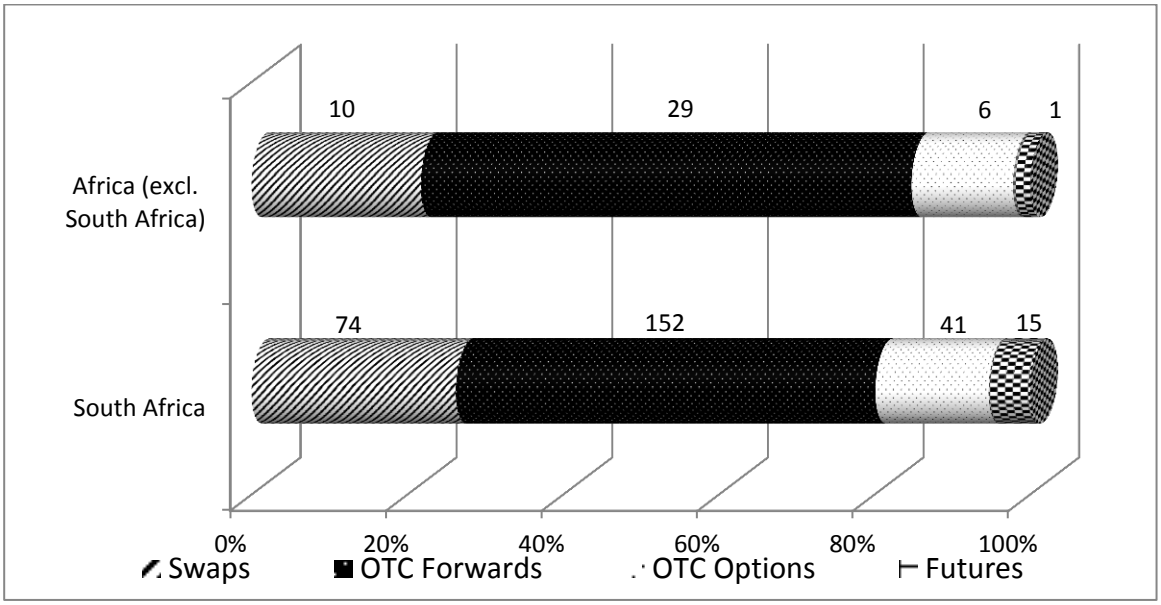
This trend is consistent with the findings of studies in other regions. The low usage of futures is significant given that many African economies are driven by commodities and Ghana's use of futures was nil despite it being actively involved in the trade of cocoa, a commodity that is actively traded on the global futures market. However, this may reflect the absence of domestic derivative markets.

Table 15. Derivative instruments of choice

	Swaps	OTC Forwards	OTC Options	Futures
Morocco	0	5	0	0
Egypt	2	2	0	0
Nigeria	0	0	2	0
Uganda	2	1	1	0
Kenya	2	5	1	0
Namibia	1	1	0	0
Tanzania	0	1	1	1
WAEMU	0	5	0	0
Malawi	1	2	0	0
Mauritius	2	7	1	0
South Africa	74	152	41	15
Total	**84**	**181**	**47**	**16**

Table 15 confirms again the lack of derivative use beyond South Africa and in Figure 4 presents the proportion of the various derivatives employed within South Africa and Africa (excluding South Africa) as well as the number of companies employing such instruments in South Africa and Africa (excluding South Africa).

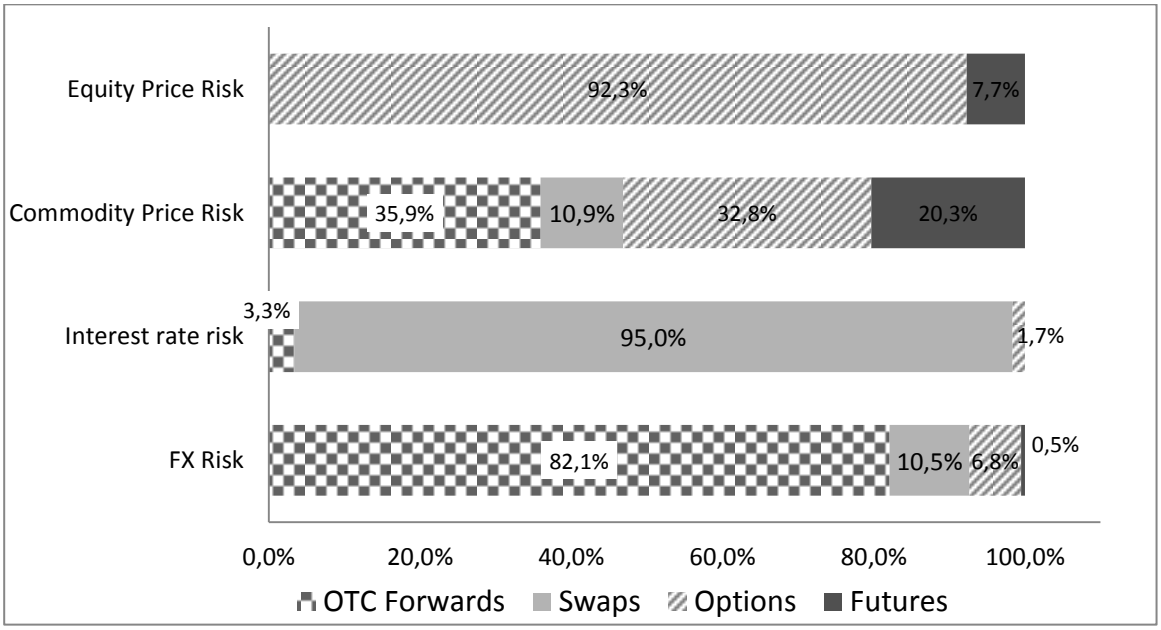
Figure 4. Derivative instruments used by companies in Africa



A further question refers to the derivative instruments used in relation the type of risk exposures. This is set out in Figure 5 which illustrates the derivative instruments employed for the management of each type of risk. For the management of currency risk, OTC Forwards is the instrument of choice as 82.1% of companies that hedge currency risk employ OTC Forwards.

For the management of interest rate risk, Swaps are the preferred derivative employed and the study found that 92.3% of companies that hedge interest rate risk use Swaps. For the management of commodity price risk, companies tend to use a wider array or derivative instruments. It was found that 35.9% of companies that hedge commodity price risk use OTC Forwards but this is closely followed by the use of OTC Options with 32.8% of companies reporting the use of OTC options to hedge commodity price risk. Finally, although very few companies hedge equity price risk, 90.9% of companies that hedge equity price risk use OTC Options.

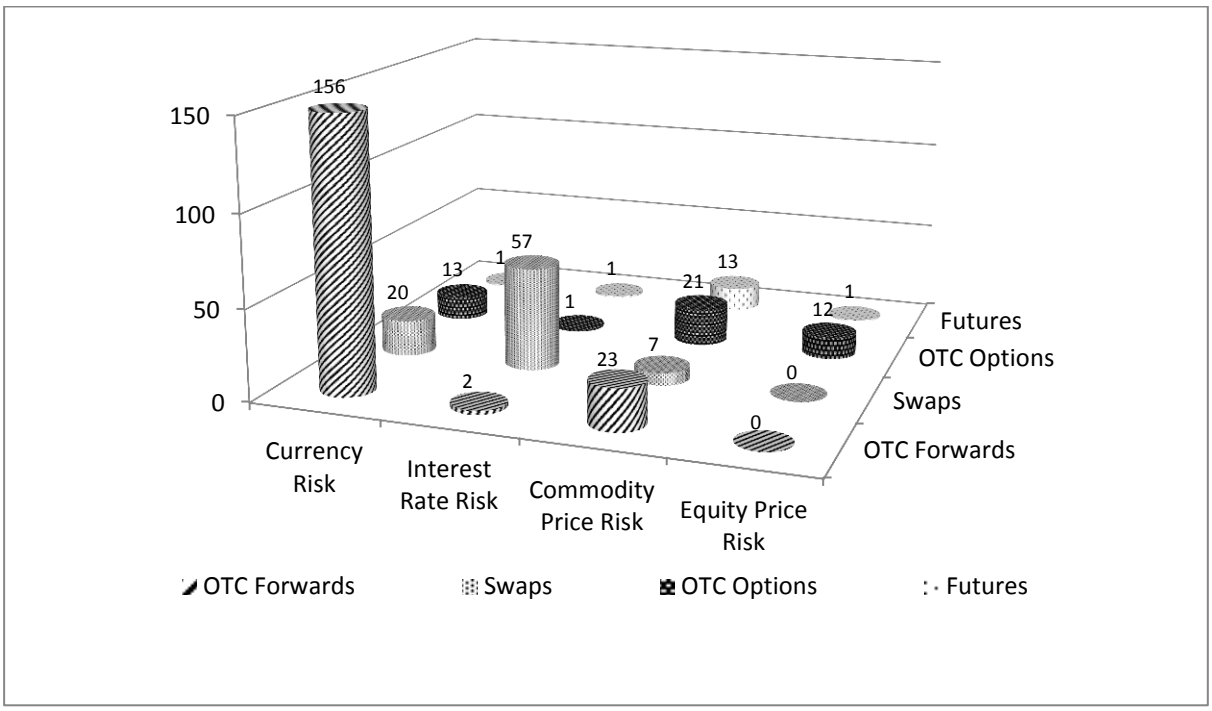
Figure 5. The use of derivatives per type of risk exposure



In order to place this in context in relation to the extent of derivative use per type of risk, Figure 6 sets out the number of companies that hedge each type of risk and the type of derivative employed. This more

clearly indicates the focus on the use of OTC forwards to hedge currency risk and the use of Swaps to hedge interest rate risk.

Figure 6. Derivative instruments employed per type of risk

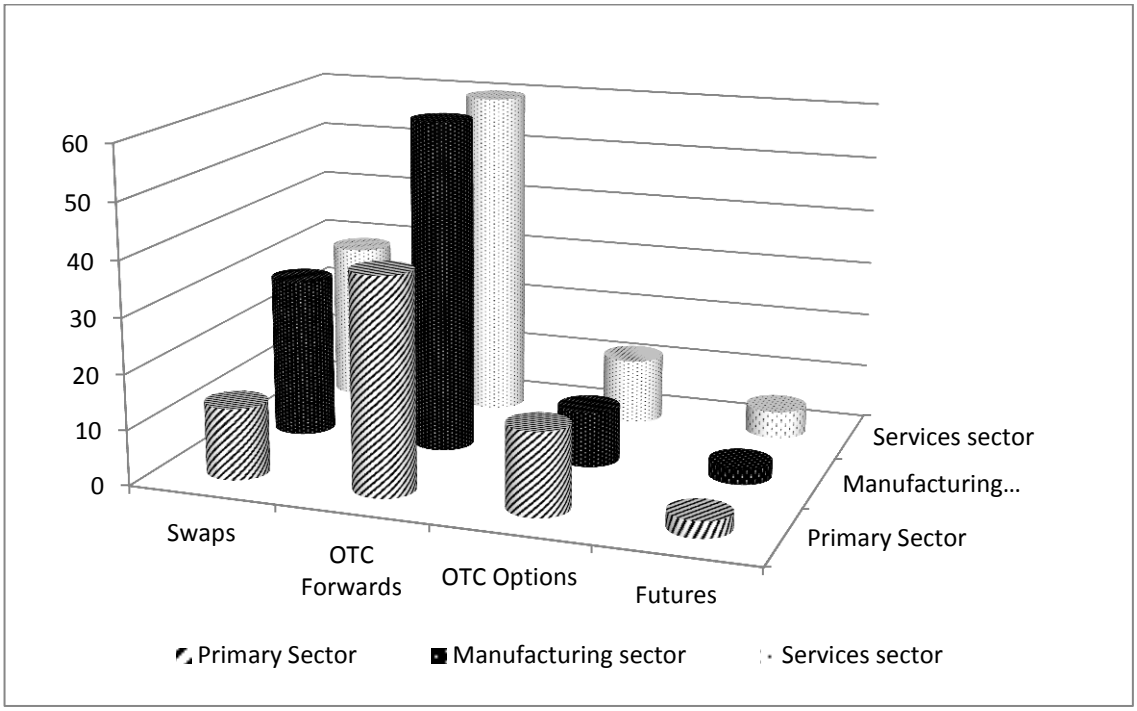


These findings are consistent with earlier studies in other regions which find that OTC Forwards and Swaps are predominantly used for the management of currency risk and interest rate risk respectively. Earlier studies show a trend toward a use of Forwards and Futures for the management of Commodity Price Risk in the USA, UK Europe and East Asia and New Zealand. The African preference for OTC Options ahead of Futures is therefore inconsistent with practices elsewhere. The results for South Africa are consistent with the findings of Correia *et al.*, (2012).

4.4 Derivative use by Sector

Of the companies that use derivatives, 41% are classified under the Manufacturing Sector, 34% under the Services Sector and 25% under the Primary Sector. This trend is consistent with that of the UK and Europe where the tendency to use derivatuives is greater in the manufacturing sector than in the primary sector (see Mallin *et al.* 2001; Alkebach & Hagelin 1999). The experience in the USA is different, here the tendency to use derivatives is greater in the primary sector than in the manufacturing sector, albeit marginally so (Bodnar *et al.* 1995, 1996 & 1998). This trend also differs from that of the countries in East Asia where a high level of derivative use is evident across all sectors. In New Zealand the level of derivative use in the Services sector is dominant (Berkman *et al.* 1997). The dominance of basic materials and manufacturing sectors is consistent with the results postulated by Bodnar et al (1995, 1996 & 1998) and Phillips (1995) who found a high level of derivative use by commodity-based (agriculture, mining & refining) and manufacturing industries. Bodnar *et al.* (1995) concluded that the natural users of derivatives are those firms with exposure to commodities. The derivative use per sector and type of derivatives employed in each sector is presented in Figure 7.

Figure 7. Derivative instruments per sector



OTC Forwards makes up 79.6% of derivatives used in the Primary Sector, 83.1% in the Manufacturing sector and 87% in the Services sector. Swaps makes up 26.5% of derivatives used in the Primary sector, 34.9% in the Manufacturing sector and 42% in the Service sector. OTC Options makes up 30.6% of derivatives used in the Primary sector, 12% in the Manufacturing sector and 17.4% in the Service sector. The use of futures across all sectors is very low. The dominance of OTC Forwards and Swaps as derivative instruments to hedge risk exposures across sectors is consistent with findings in earlier studies.

5. Conclusion

This study examined the use of derivatives by 692 non-financial firms listed in 20 countries in Africa. It uses the disclosure required in terms of international financial reporting standards to determine the extent that companies use derivatives as hedging instruments. The study aimed to understand the extent to which non-financial companies in Africa make use of derivatives, the types of derivatives most commonly used, the types of risks being hedged and the most commonly used derivatives employed for each type of risk exposure. The results indicate that only 201 (29%) companies in Africa engage in the use of derivatives. However, 166 of the 201 (82%) companies using derivatives in Africa are within South Africa. If South Africa is excluded from the analysis then the average number of companies in the remainder of Africa that use derivatives is estimated to be only 5%. This is well below the levels recorded for other countries. This low rate of derivative use is consistent with an under-developed market and trading infrastructure. Consistent with findings in similar studies for other countries, the highest percentage of derivative use is directed at the management of currency risk and for Africa this is estimated at 57.8%. The use of derivatives to manage commodity price exposure ranks second behind that of currency exposure whilst in most other studies, interest rate exposure ranked second to currency exposure as the risk most commonly hedged with derivatives. Companies were found to have an overwhelming preference for OTC Forwards (55.2 %) to hedge and this is followed by Swaps (25.6%), OTC Options (14.3%) and Futures (4.9%). This trend is consistent with the findings of studies for other regions. The low usage of futures is significant given that most African economies are dominated by commodities.

The types of derivatives employed to manage the categories of risk exposures is consistent with prior studies for other regions which indicate that OTC Forwards are predominantly used for the management of currency risk and Swaps are predominantly used to hedge interest rate risk. In contrast to other studies which indicated a trend towards a use of Forwards and Futures for the management of commodity price risk in developed markets, this study found that African firms have a preference for Options ahead of Futures for the management of commodity price risk. The Manufacturing Sector is identified as the largest user of derivatives (41%) followed by the Services Sector (34%) and the Primary Sector (25%). The use of OTC Forwards is identified as the derivative

instrument of choice across all sectors and this is determined by the extent of hedging activity that is concentrated in the hedging of currency risk. The wide use of derivatives to hedge risk exposures is not available to firms in Africa outside South Africa. As derivative use as been found to add value, the lack of derivative use in Africa (outside South Africa) is not aligned to maximising the value of companies in Africa. An important conclusion from this study is the confirmation that companies in less developed countries with less liquid derivatives markets are less likely to hedge, and this applies even for large corporations.

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