Research Report
Derivative usage by listed companies
in
Mauritius, Morocco, Tunisia, WAEMU region
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I certify that it is my own work and all references used are accurately reported in the text.

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1. Introduction

Derivatives have a long history which could be traced as far as in the biblical times, around 1700 B.C when Jacob[1] was granted the right to marry Laban's daughter, in counterparty of seven years of work, an agreement often presented as one of the first option contract in the human history. However, the use of derivatives really expanded over the last three decades. According to the Bank of International Settlement (BIS), the outstanding notional amount of the global over-the-counter (OTC) derivative market reached USD 708 trillion[2] in June 2011.

Derivative markets have a significant role to play in the development of African financial markets. Indeed, through the mechanisms of *price discovery* and *risk transfer*[3]; derivative instruments introduce greater market efficiency and provide market participants the opportunity to hedge their exposure to various financial risks. The development of a derivative strong market in Africa presents a compelling case given the nature of several African economies, predominantly composed of primary commodity producers, open small economies inherently vulnerable to commodity price, foreign exchange volatility, and interest rate risks[4].

There has been extensive research on derivative usage in developed countries particularly in the United States and Europe where more than eighty percent of global derivative activity is concentrated[5]. More recently, academic research about risk management practices in emerging economies have gained ground but so far, there has been a dearth of research on Africa. Part of a broader research on derivative usage in Africa, the purpose of this paper is to investigate on the use of derivatives instruments by listed companies in *Mauritius, Morocco, Tunisia* and countries member of the *West African Economic Monetary Union* (WAEMU) namely *Côte d'Ivoire, Benin, Burkina Faso, Senegal* and *Togo*.

[1] Genesis chapter 29, verse 18

[2] Outstanding notional amount of contracts by June 2011 (BIS Quarterly Review, December 2011)

[3] See "Derivative Market in South Africa: Lessons for Sub-Saharan African Countries", IMF Working Paper, September 2009

[4] See "Fostering the use of Financial Risk Management Products in Developing Countries", Economic Research Paper N° 69, AfdB

[5] See "The global Derivative Market, an introduction" Deutsche Börse Group, 2008. Market share expressed as a percentage of notional amount of outstanding contracts.

One of the pre-requisite to the emergence of a strong derivative market is the existence of an accounting framework[6] characterized by *"high quality, transparent and comparable information"*[7] as advocated by the *International Accounting Standards Board* (IASB) to provide stakeholders information which reflects effectively the financial risk exposure of a given entity. As financial derivative markets have become deeper and more liquid, concurrently, fair value accounting progressively replaced historical cost accounting. In view of these regulatory implications, this paper will also analyze the accounting framework in force in each country under review, their trajectory[8] and their status *vis-à-vis* IFRS, particularly regarding derivative instruments disclosure. Indeed, among other contributions, IFRS has improved transparency in derivatives instruments reporting (IAS 39 - *financial instruments: recognition and measurement* and IFRS 7 - *Financial instruments disclosures)* and employee stocks option programs (*IFRS 2 – Share based payments)*.

Throughout this study, we will determine the intensity of derivative usage, the type of risks hedged and the type of derivative instruments employed by the listed companies in the countries under review. Wherever it is possible, results will be compared with findings from previous studies on derivative usage. Empirical data used in this research was collected from financial reports filed by companies listed on the following stock exchange *Mauritius Stock Exchange* (Mauritius), the *Casablanca Stock Exchange* (Morocco), *Tunis Stock Exchange* (Tunisia), and the *Bourse des Valeurs Mobilières* (WAEMU) for the financial years 2008 and 2009. This paper will focus on *swaps, forwards, futures, options and employee stock option programs* (ESOPs) employed to hedge foreign exchange (FX), interest rate (IR), commodity price (CP) or equity risk exposures.

The paper is structured as follows; the next section offers a definition of derivative instruments. Section 3 reviews prior studies on derivative usage. Section 4 presents the regulatory framework for derivative under IFRS. Section 5 briefly introduces to the different accounting standards in force in the countries under review. Section 6 illustrates methodology and data selection. Section 7 presents the empirical findings and concluding remarks are provided in section 8.

[6] See "Derivative Market in South Africa: Lessons for Sub-Saharan African Countries", IMF Working Paper, September 2009

[7] See http://www.iasb.org/about/constitution.asp

[8] All the countries under review in this paper are former French colonies

2. Derivatives

Below, are provided two definitions of *"derivative instrument"*. The first definition extracted from the white paper on *Global Derivatives Market* provides a financial market perspective which underscores the two principal uses for a derivative instrument and the second definition is from the IASB which identifies the three intrinsic characteristics of derivative instruments under IFRS.

Definition from Global Derivatives Market

" a contract between a buyer and a seller entered into today regarding a transaction to be fulfilled at a future point in time" indicating that they ***" make future risks tradable which gives rise to two main uses for them. The first is to eliminate uncertainty by exchanging market risks, commonly known as hedging [...] the second use of derivatives is as an investment. Derivatives are an alternative to investing directly in assets without buying and holding the asset itself. They also allow investments into underlyings and risks that cannot be purchased directly."***

Definition from International Accounting Standard Board

A derivative instrument is a *"**financial instrument or other contract within the scope of IAS 39 with all three of the following characteristics:***

(a) Its value changes in response to the change in a specified interest rate, financial instrument price, commodity price, foreign exchange rate, index of prices or rates, credit rating or credit index, or other variable, provided in the case of a non-financial variable that the variable is not specific to a party to the contract (sometimes called the 'underlying');

(b) It requires no initial net investment, or an initial net investment that is smaller than would be required for other types of contracts that would be expected to have a similar response to changes in market factors; and

(c) It is settled at a future date."

There are two categories of derivative instruments:

Over-the-counter (OTC) derivatives

OTC derivatives are tailor-made contracts between two counter-parties who agree on the terms of the contract (maturity, price, quality…) based on their respective needs. As such, contractors are exposed to default risks, negotiation or breach in the contract.

Exchange traded derivatives

Exchange traded derivatives are standardized contracts which can be multilaterally exchanged. Derivatives exchanges have few advantages compared to OTC contracts such as lower costs and increased tradability of contracts, reduction of price risk, better availability of information. However, counterparties are still exposed to risk of default. There are approximately 1,700 types[9] of derivative contracts exchanged on the three largest global derivatives exchanges: *Chicago Mercantile Exchange, Eurex and Euronext Liffe.*

As specified in the introduction, this paper will mainly focus on the following derivative instruments:

Forwards

A forward is an OTC transaction between two parties to buy/sell an underlying asset (currency, commodity, shares) for a specified price called the *forward price* and at a pre-defined date called *maturity date*. Forwards are particularly suitable for agents which are looking for flexible contracts as they are customized accordingly to the requirements of both parties. However, forwards have two main limitations: Firstly, it may be difficult to find counterparty, and in the case counterparty is found there is still a problem of *tradability* and *liquidity* involved. Secondly, forward contracts are inherently exposed to default risks.

Futures

A future contract is similar to a forward contract except that the agreement is made between two parties through a clearing house. Future contracts are standardized, thereby increasing liquidity. The position of each market participant is daily *marked-to-market* by a margin system

[9] See "The global Derivative Market, an introduction" Deutsche Börse Group, 2008.

which guarantees the efficiency of the clearing system. Each counterpart has to deposit an initial margin to be able to enter into a futures contract. Futures contracts mitigate liquidity risks encountered with forwards but do not remove counterparty risks.

Swaps

A swap is an agreement to exchange cash flows at a predetermined rate or *reference rate* for a defined period. Swaps can be found in commodity, equity, credit but the most common transactions are ***interest rate swaps and foreign exchange swaps***.

Currency swap are particularly used to exchange principal and interest payments in different currencies giving some flexibility of funding and investment.

Interest rate swaps are an agreement between two parties to exchange risks on the movement of interest rates. Interest rate swaps involved two interest rate payments on a notional amount with one party agreeing to pay a fixed rate and the other a floating rate. Interest rate swaps contribute to optimize financing structure

Options

An option is a contract that gives the owner of an option the right to buy (*call option*) or to sell (*put option*) an underlying asset at a specified exercise or "*strike price*". In a *European-style option*, the option can be exercised only at the maturity of the contract, in an *American-style option* the option can be exercised at any time up to its maturity date. Options can be either negotiated over-the-counter or in traded on a derivative exchange market with standardized features (maturity, strike price, etc).

Employee Share Option Programs

According to the *National Center for Employee Ownership*, there are five types of equity compensation plans. Each of them provides employees special consideration with specific terms.[10]

- *Stock options: A plan which gives employees the right to purchase the company's share at a price fixed at grant date (strike price), for a predetermined number of years in the future*
- *Employee stock purchase plan: Specific plans allowing employees to set aside money over a period of time called offering period at the end of which they can purchase shares often at a discount than the fair market price.*

[10] www.nceo.org

- *Restricted stocks: A plan which gives employees the right to buy or receive shares once certain conditions are met (vesting conditions) such as performance target, number of years within the company.*
- *Stock appreciation rights and phantom stock: Cash bonus plans which grant employees the right to receive a cash or stock payment based on the appreciation of the value of the company's stock.*

Share options programs are generally used by listed companies as part of their strategy to incentivize, retain and attract employees. They can be either restricted to managers as part of a compensation package or broad-based programs open to all the employees of the company. As stated above, share-option plans can either be cash-settled or share-settled. In theory, one of the main advantages of an ESOP is to align interests between employees and shareholders, thus reducing the problems related to principle/agent as developed in the *agency theory*. By motivating employees, value is created. However, granting ESOP may also have a dilutive effect on existing shares.

3. Review of previous studies on derivative usage

3.1. North America

United States

Bodnar et *al.* (1995, 1996, and 1998) three-series investigation on derivative usage by US non-financial firms constituted the cornerstone of many studies on derivative referenced in this paper. **Bodnar et *al.* (1995)** mailed a questionnaire to a sample of 2000 companies collected from the *Compustat* database. Subsequently the database was updated, adding 154 companies from the Fortune 500 in **Bodnar et *al.* (1996)** and reduced to 1928 in **Bodnar et *al.* (1998)**.

530 responses (26.50% answer rate) were received in 1995, 350 (16.25% answer rate) in 1996 and 399 (20.70% answer rate) in 1998. The percentage of firms using derivatives remained relatively constant over the three editions with 35% in 1995, 39%[11] in 1996 and 44%[12] in 1998. In parallel, intensity in derivative usage has scaled up with 42% of respondents declaring an increase in their derivative usage **Bodnar et *al.* (1998).** Firms are mainly using derivatives for hedging purposes. **Bodnar et *al.* (1995)** pointed out that only a marginal portion was using derivatives for speculative purposes.

The three papers showed that firms manage predominantly their foreign exchange (FX) exposure, followed by interest rate (IR) risk and their commodity price (CP) risks. Data revealed that large firms[13] are more likely to use derivatives than medium[14] or small firms[15]. Derivative utilization varied considerably across industries with a higher usage rate observed in commodity-based [16] and manufacturing industries. **Bodnar et *al.* (1995)** suggested that firms with commodity prices exposure for which futures markets were initially created or manufacturing firms involved in foreign operations are natural users of derivatives. However, between 1995 and 1998 the proportion of service firms using derivatives had substantially

[11] Using the modified sample that included the same set of firms over time
[12] Using the modified sample that included the same set of firms over time
[13] Market value > US$ 250m
[14] Market value US$ 50m – US$250m
[15] Market value <US$ 50m
[16] agriculture, mining, refining industries

increased from 14% to 42% supported by the internationalization of the service industry and an increasing demand for hedging tools to manage FX exposure.

The three papers revealed that forwards, swaps and options were the favorite tools to manage FX risks while, swaps (from floating rate to fixed rate) were the most popular IR derivative instruments. Firms privileged futures, swaps and options to manage CP risks.
Bodnar et *al.* (1995) reported that larger firms prefer to use OTC instruments and smaller firms a combination of OTC and exchange traded instruments. **Bodnar et *al.* (1998)** extended research on options and concluded that usage of options was higher among large manufacturing firms with a preference for European-style options.

Bodnar et *al.* (1996) expanded the research on different issues around FX usage and found that firms mainly used FX derivatives to hedge near-term contractual commitments exposure; hence the propensity of firms to use instruments with a maturity of 90 days or less, hedging balance sheet and foreign repatriation were also viewed as important.
Bodnar et *al.* (1996) investigated about firms objective in using derivatives, 49% of respondents affirmed that it was to reduce cash flow volatility and 42% reported that it was to manage accounting earnings. Similar results were found in **Bodnar et *al.* (1998).** Besides, **Bodnar et *al.* (1996, 1998)** found that derivative users were concerned with the lack of specific rules regarding derivatives accounting treatment. However, when the FASB issued new rules on derivatives in 1998, three quarter of respondents declared that the new regulation would not impact on their risk management strategies and derivative usage.

One of the key finding in **Bodnar et *al.* (1996)** substantiated in **Bodnar et *al.* (1998)** was that firms did not use derivative because they did not have significant exposure, or they estimated the cost incurred superior to the benefits expected, and thirdly because they do not have sufficient knowledge about derivatives.

Phillips (1995) surveyed 3,480 financial and non-financial companies, members of the *Treasury Management Association*. 657 companies responded (response rate of 18.9%) of which 63.2% were derivative users. This result is substantially higher than the findings in **Bodnar et *al.* (1995)** even when excluding the 59 derivative users in the financial companies[17] from the sample.

The manufacturing sector is the most important derivative users. Derivative users declared being predominantly exposed to IR (90%), FX (75%) and CP (37%) risks while 30% were exposed to the three categories of risks.

Overall, OTC derivatives were preferred to exchange traded instruments because of their flexibility in matching exposure. The paper also revealed that size of FX derivative contracts did not usually exceeded US$ 10 million.

Canada

Jalilvand (1999) sent a questionnaire to 548 of the largest Canadian non-financial firms selected from the *Montreal Exchange database*. They obtained 154 usable responses with an answer rate of 28% consistent with **Bodnar et *al.* (1995, 1998)**. 75% of respondents declared using derivatives. Results demonstrated that multinational companies are more likely to use derivatives. Besides, scale, operational efficiency and level of integration of treasury operations were suggested as key features for identifying derivative users. The paper also reported that derivative users have higher leverage and lower credit rating than non users.

3.2. Europe

United Kingdom

The survey on *FTSE 250* companies conducted by **Grant and Marshall (1997)** was the first of its kind in UK. The paper exhibited that 90% of the large UK companies used derivatives which primarily used swaps, futures/forwards and options to hedge foreign exchange and interest rate risk exposure. An interesting finding was that significant number of derivative users (90%) stated that they rarely use derivatives to speculate in line with **Bodnar et *al.* (1995).**

[17] Banking (8), Insurance (26) and Services Financial (25)

Mallin et *al.* (2001) analyzed the results of a survey conducted in 1997 with a more diversified sample compared to **Grant and Marshall (1997)** paper. A questionnaire was mailed to 800 non-financial firms. 231 participated (28.9% response rate). 60% of respondents reported using at least one derivative instrument, which is consistent with the 65% usage rate found in **Phillips (1995)**. Firms reported using derivatives to manage accounting earnings**.** Primary reason for non-utilization was lack of exposure to financial risk.

Bailly et *al.* (2003) surveyed a smaller sample than **Mallin et *al.* (2001)** with 629 non-financial companies on the *London Stock Exchange* and part of the *FTSE actuaries*[18], however they obtained a slightly higher response rate (37.2%). 72% of respondents affirmed using derivatives. The survey showed that FX derivatives followed by IR instruments were the most frequently used derivatives. They found a positive relationship between usage of IR derivative usage and firm size, such correlation was not confirmed for FX derivatives. In accordance with previous studies, they found a positive relationship between firm dimension[19] and derivative usage.

A recent survey conducted by **El-Masry (2006)** on 401 non-financial companies collected from the *Fame* database (2001) yielded a higher response rate (43.14%) than previous UK studies. 67% respondents declared using derivatives. The main findings were that the likelihood of derivative usage was greater for multinational companies confirming **Jalilvand (1999)** findings**.** Usage rate was significantly higher (70% to 80%) amongst communication companies such as in New Zealand **(Prevost et *al.* (2000))**, automobile, transport and electrical sectors. Main reasons for non-utilization were lack of significant exposure and exceeding cost over perceived benefit due to the FASB onerous reporting requirement.

Scandinavia

Alkebäck and Hagelin (1999) studied derivative usage in Sweden and contrasted results with findings by **Bodnar et *al.* (1995, 1996)** in the US and by **Berkman et *al.* (1997)** in New Zealand. A questionnaire was mailed to financial directors of 213 non-financial companies listed on the *Stockholm Stock Exchange*. 163 companies participated (76.6% response rate).

[18] FTSE actuaries include FTSE 100, FTSE 200, FTSE 250, FTSE 350, FTSE Small-Cap

[19] Firm size measured by turnover in Mallin et *al.* (2001) and measured by market value in Bailly et *al.*(2003)

The results revealed that 52% of Swedish firms used derivatives compared to 39% in the US and 53% in New Zealand.

Results in Sweden were in accordance with findings in the US regarding the positive correlation between firm size and derivative usage. Besides, similar hedging practices were found in NZ and Sweden, two small open economies, more exposed to macroeconomic risks than the US.

The paper concluded that derivative use by non-financial firms is more likely to be driven by economic factors rather than cultural influences and lack of knowledge about derivatives was the main concern expressed by one third of financial managers in Sweden.

Alkebäck et *al.* (2003) mailed a questionnaire to 261 Swedish non-financial firms with a 51.3% answer rate and contrasted results with results from **Alkebäck and Hagelin (1999).** Between 1996 and 2003, derivative usage among Swedish firms increased from 52% to 59% underpinned by higher usage amongst small and medium firms[20]. FX and IR exposure remained the main risks hedged by firms. Swaps and OTC forwards were the most frequently used instrument to hedge foreign exchange exposure; while Swaps are the most popular to manage interest rate risks.

In contrast with **Alkebäck and Hagelin (1999),** they found that lack of knowledge about derivatives instrument is no longer an obstacle for Swedish firms and that in the future, increased exposure will drive up derivative usage in Sweden.

Brunzell et *al.* (2009) reported the result of a research on derivative usage by 592 Scandinavian companies listed on *OMX Exchange*[21] completed with a secondary research using financial databases and annual reports. They obtained a response rate of 18.92% with the highest rate in Sweden (24.2%) in accordance with **Alkebäck and Hagelin (1999)** and **Alkebäck et *al.* (2003)** and the lowest in Iceland (9.1%).

61.6% of the respondents used derivatives, indicating an increase of derivative usage compared to previous studies for Sweden alone. Companies in the basic materials, energy and industrial sectors were the major derivative users in Scandinavia. This paper revealed that more than half of respondents declared using derivatives for profit purposes in contrast with **Bodnar et *al.***

[20] Between 1996 and 2003, derivative usage rate increased from 18% to 34% for small sized firms and increased from 43% to 68% for medium sized firms.

[21] Listed companies were from Denmark, Finland and Sweden.

(1995) and **Grant and Marshall (1997),** stressing that diversification was positively correlated to the use of derivative for speculation.

Germany

Bodnar and Gebhardt (1999) conducted a comparative study between German firms using results from **Gebhardt and Russ (1998)** and US firms using results from **Bodnar et *al.* (1995).** Both samples were adjusted for better comparability in terms of firm dimension and industry composition.

German firms (77.8%) are more likely to use derivatives than their US counterparts (56.9%). Similar trends were found in the category of risks hedged by firms in both countries but usage intensity was higher in Germany. The paper also indicated that 45% of German firms used derivatives in all three classes (FX, IR and CP) compared to 27% in the US.

Firms in both countries reported that they used derivatives for hedging purposes but they contrasted in their motivations with US firms focusing on reducing cash flow volatility and German focusing on reducing accounting earnings volatility.

The paper suggested that determinants of derivative usage are primarily driven by economic issues rather than country-level specificities, a conclusion also supported by **Alkebäck and Hagelin (1999).**

Belgium

De Ceuster et *al.* (2000) studied derivative usage by 334 large firms in Belgium. They obtained a 22% response rate. 66% of respondents were derivative users which compares to the 65% usage rate in **Bodnar et *al.* (1995)** for US large corporations.

Findings on typology of risks managed and instruments used are also consistent with **Bodnar et *al.* (1995)**. However, Belgian firms are more likely to use currency swaps and FRAs than their American counterparts. In contrast to US firms, Belgian firms used derivatives to manage earnings volatility. This result is similar with findings about German firms in **Bodnar and Gebhardt (1999).** Finally, policy restrictions within the firm, lack of knowledge and concerns about disclosure were perceived as major obstacles for derivative usage.

Netherlands

Bodnar et *al.* (2001) investigated on risk management practices of non-financial listed companies in Netherlands. Results were directly compared with findings by **Bodnar et *al.* (1998)**. From the 399 usable responses obtained in the *1998 Wharton survey*, only 267 firms were retained, 84 out of 164 Dutch firms were kept. Samples were adjusted for better comparability.

Dutch firms (60%) used derivatives more than US firms (44%). In the Netherlands, derivative usage is evenly spread across firms of different size which is not the case in the US. Dutch firms also compare with their US counterparts in terms of typology of risk managed and derivative used. In accordance with **Bodnar and Gebhardt (1999)** and **De Ceuster et *al.* (2000),** Dutch firms primarily engage in derivative programs to manage accounting earnings in contrast with US firms. The difference is imputed to US firms focus on shareholders in contrast with Dutch firms' orientation towards stakeholder. **Bodnar et al (2001)** elicited that differences in derivative usage observed in both countries and the Dutch firms' higher propensity to use derivatives can be explained by the greater openness of the Dutch economy and broader economic factors but not by institutional differences.

Italy

Bodnar et *al.* (2008) analyzed the use of derivatives by Italian non-financial companies which achieved a minimum turnover of €500 million. A questionnaire with the *1998 Wharton survey* format was sent to 464 listed and private firms. 86 firms responded to the survey (18.53% of answer rate) of which 44% were from the manufacturing sector, 14% from the transportation/utility sector, and 11% from the retail/wholesale industry.

Consistent with **Bodnar et *al.* (1998),** the paper showed that FX exposure is the main risk hedged by Italian firms particularly in the manufacturing industry (~ 67%) involved in import/export. Italian firms predominantly used derivatives to avoid large losses from unexpected price volatility, to respond to shareholders expectations in terms of risk management and to manage cash flow and accounting earnings volatility.

Very interesting was the finding that for 70% of surveyed CFOs and risk managers, the new accounting rules (IAS 32 and IAS 39) on risk management had no effect on their risk management practices which is comparable with responses from US firms in **Bodnar et *al.* (1998)** regarding *FASB* new rules on derivatives at that time. The remaining 30% acknowledged that new accounting rules lead them to reduce derivative usage and to change the type of derivative instrument they were using.

Greece

Spyridon (2008) reported the results of a survey sent to 100 non-financial firms listed on the *Athens Stock Exchange* and 10 private companies in 2004. The 62 usable responses have given a reasonable answer rate of 56.36%. The survey was performed concurrently to the enforcement of IAS 32, IAS 39 for listed companies in Greece. 33.9% of the respondents affirmed using derivatives and they were mainly managing IR risk exposures.

The paper revealed that risk management practices by Greek firms were consistent with **Bodnar and Gebhardt (1999)** suggesting that determinants of derivative usage are mainly driven by economic considerations. In contrast with results found by **Bodnar et *al.* (2008)** in Italy**,** Greek derivative users are predominantly concerned about the accounting treatment and disclosure requirements of derivative instruments under IFRS.

Croatia

Sprčić et *al.* (2008) collected data from annual reports and financial statements of 157 Croatian firms and sent a questionnaire to companies for which annual reports were not publicly available. The purpose of the survey was to analyze risk management practices of non-financial Croatian companies.

About three quarter of respondents were actively managing their financial risk exposure of which 43% used derivatives for the period under review (2005) but Croatian firms are more likely to use natural hedge strategies. The paper also found a positive relationship between derivative usage and foreign ownership. Finally, firms primarily hedge to reduce cash flow and accounting earnings volatility which is line with findings reported in previous studies in Europe and the US. Non-users argued that lack of adequate offer in risk management

instruments and the onerous costs of implementing derivative programs were the main factors that deter them to use derivatives.

3.3. Asia and Pacific

New Zealand (NZ)

Berkman et *al.* (1997) performed a survey on 79 non-financial firms listed on the *New Zealand Stock Exchange* and compared the results with prior US survey by **Bodnar et *al.* (1995, 1996).** The main objective was to compare derivative usage between firms evolving in a sophisticated and liquid market such as the US and firms operating in a small open economy and less developed financial market such as NZ.

Unexpectedly, the paper revealed that NZ firms are more active users (53.10%) than US firms when compared with US results (35% in 1995, 39% in 1996) but authors stated that objective behind financial risk management were similar in both countries. The most preferred instruments to manage currency risks were forwards and options and swaps and forwards were the most used tools to manage IR exposure.

The paper also revealed that 100% of the NZ firms with a market cap above US$ 250 million used derivatives whereas only 65% of their US counterparts did. Overall, irrespective of size, derivative usage was more widespread in NZ than in the US firms because NZ firms are more vulnerable to negative external shocks.

Prevost et *al.* (2000) empirically investigated on the use of off-balance sheet risk management instruments in NZ. A questionnaire was sent to 334 companies and 155 participated (44.64% answer rate). The initial sample was larger than **Berkman et *al.* (1997)** as it included both listed and non-listed companies.

Out of 155 firms, 104 (67.10%) reported that they used derivatives which is higher than the 53.10% found by **Berkman et *al.* (1997).** The paper found very similar results compared to developed markets such as US **(Bodnar et al, 1995)**, UK (**Grant and Marshall, 1997)** and Germany **(Bodnar and Gebhardt, 1999)** in terms of derivative usage per firm size, typology of risks and hedging tools.

95% of large firms, 80% of medium firms and 50% declared using derivatives. By sector, the highest utilization rate was amongst utility and communication companies (80%), chemicals (75%) and insurance and energy (67%). NZ firms primarily hedged IR exposure using options and futures, and then FX risks hedged with options and swaps, and finally CP risks using forwards and options.

Hong Kong (HK) and Singapore

Sheedy (2006) exhibited the results of a survey conducted in 2000 in Singapore and Hong Kong. A questionnaire based on the Wharton survey format was sent to 131 non financial firms[22]. The sample was predominantly composed by small and medium sized companies in the service sector, which is in contrast with the population data in **Bodnar et *al.* (1998).** It was found that firms in Hong Kong (81%) and Singapore (75%) used derivatives more extensively than firms in the US (50%).

The difference is particularly emphasized for small and medium companies. It was not surprising to find that 90% of the firms in Singapore and HK used FX derivatives to hedge balance-sheet commitments given the relative dependency of these countries on international trade. This paper also highlighted the tendency of Asian firms to employ more active or speculative risk management style than US firms.

Taiwan

Shu and Chen (2003) investigated the major determinants of corporate hedging in Taiwan. Since January 1996, the *Taiwan Securities Futures Committee* required Taiwanese listed companies to disclose derivative usage (purpose, type of instruments, size of contracts). Data was collected from annual reports of firms [23] for the period 1997 to 1999. Over one third of the companies reported using derivatives. Key findings of the study were that electronic companies were the largest derivative users based on number of users and the volume of open interest at year, derivative usage was positively related to the proportion of long-term debt over total debt and

[22] Sample was composed of 131 non financial listed and non-listed firms of which 72 were from Singapore and 59 from Hong Kong.

[23] Respectively 336, 338 and 348 listed companies in 1997, 1998 and 1999 after exclusion of companies with incomplete annual reports

contribution export sales over total sales. Predominance of currency derivatives in Taiwan is comparable to results found in Honk Kong and Singapore **(Shu and Chen (2003)** and in New Zealand **(Berkman et *al.* (1997).**

Korea

Pramborg (2004) compared derivative usage in Sweden and Korea focusing on FX risk management. The survey was sent to 250 Swedish and 387 Korean firms. 60 responses were received from Korean firms (16% response rate) while 103 Swedish companies (41% response rate) replied to the questionnaire. Results on Sweden were in line with Alkebäck and Hagelin (1999)**.**

The paper also revealed that 51% of Korean firms which reported to hedge FX risks used derivatives and that the decision to use derivatives was depending on firm-specific variables, which is line with **Alkebäck and Hagelin (1999)** and **Bodnar and Gebhardt (1999).** Finally, the paper showed that Korean firms are more likely to use derivatives to manage cash flow volatility.

Malaysia

Ameer (2009) published a paper on the risk management practices of companies listed on the *Malaysian stock exchange*. Data was collected from annual reports of 427 firms for the period 2003 to 2007. The study focused on FX and IR risk management.

104 firms reported using derivatives. It was found that forwards with short term maturity were the instrument of predilection to manage currency exposure and swaps were the predominant instrument for IR hedging. Main derivative users operated in the manufacturing industry, primary sector (plantation), trading services sectors.

This paper showed finally that there was a positive relationship between earnings growth, proportion of export sales over total sales and decision to use derivatives.

3.4. South America

Schiozer and Saito (2009) published a research paper investigating on the use of currency derivatives by 55 non-financial firms from Argentina (3), Brazil (26), Chile (12) and Mexico (14) sampled from the *American Depositary Receipts Index* traded on *NYSE, NASDAQ* and *AMEX* for the period 2001 to 2004. These companies were required to disclose about derivative usage in compliance with *FASB*. The firms in the sample account for more than 50% of the main stock indexes in their respective stock exchanges.

Data showed that more than 75% of the firm used derivatives to manage risks, which is consistent with **Bartram et *al.* (2006).** Only a negligible number portion used derivatives for trading purposes. FX derivatives are the most commonly used.

Key conclusions drawn from this paper were that firms used derivatives to reduce financial distress costs and to guarantee adequate funding for investment opportunities. The paper suggested that firms operating in economies with sophisticated financial market, volatile currency and high level of foreign corporate ownership such as in Brasil and Chile are more likely to use derivatives.

Rivas et al (2010) studied derivative usage of 201 national and foreign banks in Brazil (133), Chile (27) and Mexico (41) during the year 2008. 64% of banks in Brasil, 85% in Chile and 68% in Mexico used derivatives. The study found that derivative users are larger with riskier capital structure (lower equity ratio) and lower income spread than non users. Surprisingly, Latin American banks do not use derivatives to manage their interest risk and credit risk exposure as evidenced by a negative relationship between interest rate exposure and derivative usage. The paper concluded with some recommendation to improve banking regulations towards the use of derivatives for hedging purposes.

Brazil

Rossi Junior (2007) investigated on FX risk management derivatives in Brazil. He used annual reports of 212 non-financial companies listed on the *Sao Paulo Stock Exchange* and financial data from the *Economatica* database. The paper argued that macro-economic environment have an impact on the decision of firm to use derivatives which is evidenced by the increasing use of foreign exchange derivative instruments since Brazil switched from the fixed rate regime to the floating rate regime in January 1999.

Rossi Junior (2010) elaborated on the impact of the exchange rate regime on companies' risk management emphasizing that floating rate regime helped to alleviate companies' vulnerability to currency volatility by leading them to manage to hedge their FX exposure through derivative usage or foreign-denominated debt.

Besides, it was found that larger companies with higher ratio of foreign sales to total sales and those with higher ratio of foreign debt to total debt are more likely to use derivatives to reduce the probability of financial distress and that firm leverage was positively correlated with derivative usage.

Peru

Martin et *al.* (2009) investigated on derivative usage by Peruvian non financial firms. The survey was performed on 65 non-financial firms randomly selected from the *Top 1000* largest private Peruvian firms. 70% of the firms in the sample had sales revenue exceeding USD 100 million and came from various sectors (manufacturing, transportation, communication, retail and financial services). The great majority of the firms in the sample were involved in international trade.

It was found that 33% of the used derivatives. The paper also enumerated the main obstacles for the development of the Peruvian derivative market which were the lack of knowledge and adequate training programs, absence of adequate and transparent regulation and organized market.

3.5. Middle East

Jordan

Al-Momani and Gharaibeh (2008) conducted a survey focused on foreign exchange risk management practices by Jordanian firms. A questionnaire was mailed to 120 firms, statistically representative of the 310 companies deemed suitable for the survey. 73 responses were used for the study (net response rate of 61%) of which 66% of respondents reported managing their foreign exchange exposure. However, usage of derivatives instrument is not widespread due to the perceived level of sophistication of these instruments and the lack of knowledge of managers but also due to the fixed exchange rate between the Jordanian dinar and the US dollar which offer a natural hedge supporting **Rossi (2007)** analysis on the relationship between derivative usage and exchange rate regime.

Turkey

Selv and Türel (2010) performed a survey on derivative usage by listed Turkish companies in the *ISE-100 index* which account for 86% of the market cap of the *Istanbul Stock Exchange (ISE).* Data was collected from financial statements published at the end of financial year 2006. The study found that 35% of non-financial companies whereas 85% of deposit banks used derivatives which is comparable to **Rivas et al (2010)** findings on Chilean banks derivative usage rate. The key findings of this paper were that almost half of the Turkish banks and less than 10 per cent of non-financial Turkish firms used derivatives for trading purposes. On the other hand, only a small portion of the sample used hedge accounting which could be attributed to the onerous requirement for hedge accounting under IAS 39.

3.6. International

Bartram et *al.* (2008) reviewed the 2000 and 2001 financial statements of 6,888 companies from 47 countries. Data was collected from the *Thomson Analytics* database and restricted to actively traded non-financial stocks[24] with financial statements published in English for the period under review. Firms in the sample totaled 61% of overall global market value and 77% of global market capitalization of non-financial firms. First, they search manually for relevant key words in a sample of 200 annual reports; the list of search terms was subsequently refined and automatically tested on a sample of 100 derivative users and non derivative users. The results yielded an average reliability of 96%. In addition, they reviewed manually annual reports of 1709 firms with high probability of errors, thereby increasing the reliability of the sample. In total, they found 60.50% of derivative users. FX (45.5%) using forwards contracts followed by IR (33.1%) using swaps and CP (9.8%) are the most common derivatives

The paper revealed that derivative use is associated with lower cash flow volatility, lower standard deviations of returns, lower total risk and betas. In a lesser extent, derivative usage is related to higher market values. Finally, when analyzing firms' performance for the periods 1998-2003, they found that hedgers have more stable financial performance[25] than non-hedgers

Bartram et *al.* (2009) surveyed derivative usage at a larger scale than the previous paper using a sample of 7319 non-financial companies from the same source of data. The 60.3% derivative usage rate found in the paper was consistent with **Bartram et *al.* (2008)**. Interestingly, Africa and Middle-East and Latin America were the region with the highest usage rate with respectively 78% and 71%.

By industry group, the use of derivatives was prominent in the utility sector (84%) and the chemical industry (78.5%) and the lowest was in the consumer goods (52%). The chemical industry (68.9%) has the highest usage rate of FX derivatives and the lowest rate was found in the retail sector (37%). There was a higher propensity of IR derivatives in the utility sector (61.7%) and the lowest in the mining sector (20.3%). The use of CP derivatives is the highest in the oil industry (50.4%) and the lowest in miscellaneous which includes services (2.8%).

[24] With a minimum of at least non-missing 36 daily stock returns

[25] Earnings, cash flow or ROA used as a proxy.

While analyzing profile of derivative users, the paper concluded that derivatives users were larger and more profitable and characterized by longer debt maturity, higher leverage, higher coverage ratio, fewer liquid asset and lesser tangible assets than non-users which is in line with findings from **Jalilvand (1999).**

ISDA Derivatives usage survey (2009) updated the findings from the 2003 survey conducted on the world's 500 largest companies including financial and non-financial firms. In 2003, ISDA found that 92% of the companies sampled used derivatives. In 2009, 471 out of 500 companies (94%) reported using derivatives of which 93.6% used FX derivatives, 88.3% used IR derivatives, 50.9% used CP derivatives and respectively 30.3% and 21.4% used equity and credit derivatives. The survey found that the use of derivative was uniformly high in developed countries.

Apart from financial firms, the main sectors where derivative usage has been the highest were commodity-based sectors (97%) which primarily manage FX and CP risks, followed by technology companies (95%) health care, industrial goods, and utilities (92% each) and services companies (88%) which all focus on FX and IR risk management. However, utilities tend to use evenly FX, IR and CP derivatives. The second part of the study focused on the **Russian OTC derivative market** highlighting that foreign exchange accounted for almost 90% of daily turnover of OTC derivatives. The survey pointed out that poor legal enforceability of derivatives transactions are among the main constraints that limit the development of derivative markets in Russia.

Mihaljek and Packer (2010) provided an overview of derivative markets in emerging economies which have rapidly and significantly developed[26] on the back of a formidable expansion of international trade and financial activity experienced by these countries. Data was collected from Triennial Central Bank Survey of OTC derivatives market and from *BIS Quarterly Review* in which derivative contracts traded on emerging market exchanges are regularly reported. The main findings of the paper were that Brazil, Korea, Hong Kong and Singapore are the largest exchange-traded derivative markets in EMEs. FX derivatives account for 50% of total turnover dwarfing the still underdeveloped market of IR derivatives and about half of derivative transactions occur over the counter.

[26] Average daily turnover has increased by 300% since 2001 reaching US$ 1.2 trillion in April 2010

4. IFRS framework on derivative instruments

4.1. IAS 32 – Financial instruments: Presentation

Effective since January 2005, IAS 32 establishes the standards for presenting financial instruments. IAS 32 complements IAS 39 on the recognition and measurement of financial assets and liabilities and IFRS 7 about financial instruments disclosure[27].

Scope

IAS 32 is prescribed to all entities and all types of financial instruments. A financial instrument is defined as "*any contract that gives rise simultaneously to a financial asset in one entity and a financial liability or equity instrument in another entity*"[28] and covers *primary instruments* and *derivative financial instruments.*[29] This definition of financial instrument also applies for *IAS 39 - Financial instrument: recognition and measurement.*

Financial assets include

- *Cash,*
- *An equity instrument for another entity,*
- *A contractual right to receive cash or another financial asset or to exchange financial assets and liabilities on potentially favorable terms*
- *Certain types of contract (including derivatives) which, will or may be settled in the entity's own equity instrument.*

Financial liabilities include

- *A contractual obligation to deliver cash or another financial asset to another entity or to exchange assets or liabilities with another entity under conditions that are potentially unfavorable to the entity.*
- *Certain types of contract (including derivatives) which, will or may be settled in the entity's own equity instrument.*

[27] See IAS 32.3
[28] See IAS 32.11
[29] See IAS 32 GA15

Equity instruments include any contract "*that evidences a residual interest in the asset of an entity after deducting all its liabilities*".

IAS 32 does not apply to financial instruments associated with share-based payment transactions covered by IFRS 2[30]. Even so IAS 32 is relevant for all share option plans that can be settled by cash or by exchanging cash with equity instrument.[31] Besides, an employee share option in which the company may decide to settle in cash would be reported as a liability.[32]

4.2. IAS 39 – financial instruments: recognition and measurement

Effective since January 2005, IAS 39 establishes rules for recognition, measuring and disclosing information about financial instruments. The definition for financial instruments under IAS 39 is the same as under IAS 32. In November 2009, IASB introduced IFRS 9 - *financial instruments: classification and measurement* which will supersede IAS 39 effectively by January 2013.

Scope

IAS 39 applies to all entities and all types of financial instruments unless it falls under the following exception[33]:

- *Interests in subsidiaries, associates or joint ventures respectively under IAS 27, IAS 28 and IAS 31*
- *Employers' rights and obligations under employee benefit plans in accordance with IAS 19*
- *Financial instrument issued by a company that meet the definition of equity instrument under IAS 32.16*
- *Rights and obligations under insurance contract under IFRS 4, however IAS 39 applies to derivatives embedded in a contract that fall under IFRS 4 if the derivative itself is not a contract under IFRS 4*
- *Loan commitments subject to IAS 37*

[30] See IAS 32.4
[31] See IAS 32.8
[32] See IAS 32.27
[33] See IAS 39.2

A derivative instrument is a financial instrument within the scope of IAS 39 satisfying all three of the following characteristics:[34]

- *Its value changes in response to an underlying financial instrument*
- *It requires no initial net investment or an initial net investment smaller than would be required for other types of contract expected to have a similar response to changes in market factors*
- *It is settled at a future date.*

Recognition

IAS 39 required recognition[35] of financial instruments including derivative instruments on the balance sheet when and only when the entity becomes a party to the instrument contract.

Measurement

IAS 39 classifies financial instruments in the following categories[36].

<u>At fair value</u>

- *Financial assets or liabilities designated on initial recognition measured at fair value through profit or loss*
- *Financial assets or liabilities held for trading measured at fair value through profit and loss*
- *Available-for-sale (AFS) assets measured at fair value, directly recognized in equity*

<u>At amortized cost using the effective interest method</u>

- *Loans and receivables.*
- *Held-to-maturity investments.*

[34] See IAS 39.10
[35] See IAS 39.14
[36] See IAS 39.45 and IAS 39.47

Derivatives have to be carried at fair value on the balance sheet upon initial recognition[37] irrespective of whether they are held-for-trading or hedging instruments.

Fair value is defined as "*the amount for which an asset can be exchanged, or a liability settled, between knowledgeable and willing parties in an arm's length transaction*".[38] Remeasurement to fair value has to be undertaken at every reporting date; gains or losses in fair value being recognized in the income statement.

Hedge accounting

As specified above, IAS 39 prescribes all derivative instruments to be recorded on the balance sheet at fair market value and marked to market at each reporting period; this could result in substantial volatility in profit and loss. However, derivatives are usually employed to hedge underlying instruments with gain and losses reported in equity or off-balance sheet items, creating a mismatch in the timing of gain and loss recognition.
Hedge accounting seeks to reduce the volatility resulting from marking to market by reporting the gains and losses of the derivative instrument and the risk being hedged as one entry, offsetting the opposing movements.

A hedge relationship qualifies for hedge accounting provided the following pre-requisites are satisfied:[39]

- *The existence of a formal designation and documentation which clearly identify the characteristics of the hedge relationships and the company's risk management objective and strategy.*
- *The hedge is highly effective in offsetting changes in fair value or cash flows of the hedged item attributable to the hedged risk.*
- *Effectiveness of each hedge relationship is reliably measurable and assessed regularly throughout the financial periods for which the hedge relationship has been designated.*

[37] See IAS 39.43
[38] See IAS 39.9
[39] See IAS 39.88

- *For cash flow hedges, the hedged transaction must be highly probable and must be exposed to cash flow volatility that could affect profit and loss*

Hedged items[40]

By definition, a hedged item must generate a risk exposure, which could affect the entity's profit and loss at present or in future periods. In another words, every asset or liabilities that generate a risk exposure can be hedged. The common risks that are hedged include interest rate risk, foreign exchange risk, commodity risk, equity price risk and credit risk.

Hedging instruments

In most cases, derivative instruments qualify as hedging instruments excluding some written options[41]. Non-derivative instruments may qualify as hedging instrument only for foreign currency risk such as foreign currency borrowing to offset currency risk of a net investment in a foreign entity[42]. Hedging instruments only qualify when they are contracted with external counterparties.[43]

Hedge relationships[44]

IAS 39 distinguishes between three types of hedging relationships: *fair value hedge, cash flow hedge, hedge of a net investment in a foreign operation.*

- **Fair value hedge**[45] is applied to reduce the volatility of accounting earnings. The hedged asset or liability measured at cost is adjusted for changes in fair value. The hedging instrument is also measured at fair value and recognized in the income statement[46]. A typical example of fair value hedge is when a fixed-rate loan is converted into a floating-rate loan through an interest-rate swap.

[40] See IAS 39.78
[41] See IAS 39.72
[42] See IAS 39.72
[43] See IAS 39.73
[44] See IAS 39.86
[45] See IAS 39.86a
[46] See IAS 39.89

- **Cash flow hedge**[47] is applied to mitigate the volatility of future cash flows of that could financial assets or liabilities, or future firm commitments. The *effective portion* of the gain or loss from the hedging instrument is recognized in the *statement of comprehensive income* until the hedging relationship is ended and the *ineffective portion* is recognized in the income statement.[48] A common example of cash flow hedge is the use of forward currency contract to hedge future sales in a foreign currency.

Hedge of a net investment in a foreign operation[49] are accounted for similarly to cash flow hedge.

Hedge effectiveness[50]

Under IAS 39, the level of hedge effectiveness is required to be evaluated regularly throughout its life both *retrospectively* and *prospectively*. A hedge relationship is considered to be highly effective if and only the following requirements are met:

- *At the inception of the hedge and throughout its life, the hedge is expected to be highly effective in offsetting changes in fair values or cash flows of the hedged items during the period for which the hedge is designated (prospective effectiveness test)*
- *Results of the retrospective effectiveness test fall between 80% and 125%.*

Disclosure

In 2003, disclosure of financial instruments has been moved to IAS 32, subsequently renamed *IAS 32 Financial Instruments: Disclosure and Presentation*. In 2005, IFRS 7 was introduced and integrated the *disclosure* portion of IAS 32 and IAS 30 effective from January 2007.

[47] See IAS 39.86b
[48] See IAS 39.95
[49] See IAS 21 and IAS 39.102
[50] See IAS 39.142

4.3. IFRS 7 – Financial instruments disclosures

Objective

In August 2005, *IFRS 7 Financial Instrument: Disclosures* was issued to replace *IAS 30: Disclosures in the Financial Statements of Banks and Similar Financial Institutions* and add new disclosures to those required by *IAS 32: Financial instruments: Presentation.*

IFRS 7 was effective for annual reports from 1st January 2007 onwards. The objective of IFRS 7 is to improve the quality of disclosed information regarding *the significance of financial instruments for the entity's financial position and performance*, *the nature and extent of risks arising from financial instruments* while disclosing how the *entity manages the risks*.

Scope

IFRS 7 applies[51] to all entities and all recognized financial assets and liabilities that fall within the scope of IAS 39 and unrecognized instruments that are within the scope of IFRS 7 even if not under IAS 39.
Reporting inherent to the following financials instruments have to be disclosed in the balance sheet or in the notes[52] to enable financial statement users to assess the magnitude of an entity's exposure to financial risks and how those risks are managed. [53]

- *Financial assets or liabilities at fair value through profit and loss;*
- *Held to maturity investments;*
- *Loans and receivables;*
- *Available-for-sale financial assets;*
- *Financial liabilities measured at amortized cost;*

[51] See IFRS 7.5
[52] See IFRS 7.8
[53] See IFRS 7.7

Disclosures in accordance with IFRS 7

As per IAS 1[54], companies have to disclose any significant accounting policy; the basis valuation used when preparing the financial statements and other relevant accounting policies contributing to a better understanding of the financial statements.[55]

When designated as hedging instrument under IAS 39, derivatives fall within the scope of this IFRS[56]. Subsequently, the company is required to disclose the following information separately for each type of hedge described in IAS 39.86:

- *A description of each type of hedge; the nature of risk being hedged and the hedging instrument used measured in fair value.*
- *Specifically for cash flow hedge,[57] details on cash flow specifying when they are expected to impact profit and loss, portion of gain and losses on hedging instrument transferred from equity to income statement.*
- *Gain or losses on hedging instruments and hedged items in a fair value hedge.[58]*
- *Ineffectiveness recognized in profit and loss related to cash flow hedges and net investment in foreign operations.[59]*

Fair value estimation and disclosure

As mentioned in *section* 4.2., each class of financial instruments including derivatives[60] are required to be reported at fair market value on the balance sheet and marked to market at each reporting date. Amendments to IFRS 7, effective on January 2009 required entities to use a three-level fair value hierarchy ranked from the lowest level to the overall fair value[61] categorized as follows:

[54] See IAS 1.108
[55] See IFRS 7.21
[56] See IFRS 7.22
[57] See IFRS 7.23
[58] See IFRS 7.24a
[59] See IFRS 7.24b and 7.24c
[60] See IFRS 7.25
[61] See IFRS 7.27a

- *Level 1: quoted prices (unadjusted) in active markets for identical assets or liabilities.*

→ This implies that the price of the instrument is readily available and regularly updated reflecting occurring market transaction on an arm length basis.[62]

- *Level 2: inputs other than quoted prices included within level 1 that are observable for the asset or liability, either directly (i.e., as prices) or indirectly (i.e., derived from prices)"*

→ In that case, valuation techniques are used to determine the price such as DCF, comparable transaction, option pricing techniques. [63]

- *Level 3: inputs for the asset or liability that are not based on observable market data (unobservable inputs)*

Below, is set out an illustration extracted from *IFRS 7 – improving disclosures about financial instruments* regarding the disclosure of assets measured at fair value[64]

Assets measured at fair value

Fair value measurement at end of the reporting period using

Description	**31 Dec 20X2**	**Level 1 Cu million**	**Level 2 Cu million**	**Level 3 Cu million**
Financial assets at fair value through profit or loss				
Trading securities	100	40	55	5
Trading derivatives	39	17	20	2
Available-for-sale financial assets				
Equity investments	75	30	50	5
Total	**214**	**87**	**115**	**12**

(Note: For liabilities, a similar table might be presented.)

[62] See "Financial Instruments under IFRS, A guide through the maze" 3rd edition, KPMG, 2009
[63] See "Financial Instruments under IFRS, A guide through the maze" 3rd edition, KPMG, 2009
[64] See IFRS 7 – IG13A

IFRS 7A indicates that the level of the fair value hierarchy in which the instrument which is measured is categorized is determined on the basis of "*the lowest level input that is significant to the fair value measurement in its entirety*".

IFRS 7 does not provide a detailed guidance on how to determine the significance of each input used in the valuation, thereby requiring "*judgement*"and "*consideration*" of several factors related to the instruments being measured such as the observability of inputs used in the valuation, the nature of the instrument (actively quoted or not).[65]

IFRS 7 - Other disclosures

- *Qualitative disclosures*[66] include the different risk exposure indicating how they arise, risk management policies put in place to deal with these risks, method used to measure risks.
- *Quantitative disclosures*[67] include details on specific credit risk, liquidity risk and market risk exposures and their concentration if these risks are material enough as defined under IAS 1.

Each hedge type and its hedging instruments measured in fair value have to be disclosed. Compared to prior standards, IFRS 7 has expanded on disclosure requirement regarding the gain or the loss on each hedging instrument which is transferred from equity to income statement, each line-item in the income statement.

[65] See "Classification of financial instruments within the IFRS 7 fair value hierarchy", Ernst and Young, 2009
[66] See IFRS 7.33
[67] See IFRS 7.34 to 7.42

4.4. IFRS 2 - Share based payments

Presentation

Effective since January 2005, IFRS 2 requires that companies report share-based payments arrangement in their financial statements. This study mainly deals with *employee share options*[68]; however the scope of IFRS 2 is much broader than share-based payments between employer and employees. IFRS 2 applies to all share-based payments to be settled in cash, equity instruments or other assets[69]. This IFRS applies to all private and listed companies including those which use their parents or subsidiaries shares or related-equity instruments as consideration for goods or services[70].

Below, are introduced[71] notions that are particularly relevant for our study on *Employee Share Option Programs* (ESOPs).

A share-based payment arrangement is "*an agreement between the entity and another party (including an employee) to enter into a share-based payment transaction, which thereby entitles the other party to receive cash or other assets of the entity for amounts that are based on the price of the entity's shares or other equity instruments of the entity, or to receive equity instruments of the entity, provided the specified vesting conditions, if any, are met.*"

A share-based payment transaction is "*a transaction in which the entity receives goods or services as consideration for equity instruments of the entity (including shares or share options), or acquires goods or services by incurring liabilities to the supplier of those goods or services for amounts that are based on the price of the entity's shares or other equity instruments of the entity.*"

A share option is "*a contract that gives the holder the right, but not the obligation, to subscribe to the entity's shares at a fixed or determinable price for a specified period of time.*"

[68] See IFRS 2.1
[69] See IFRS 2.2
[70] See IFRS 2.3
[71] Definitions were extracted from IFRS 2 statement published in 2004

Equity-settled share-based transaction is "*a share-based payment transaction in which the entity receives goods or services as consideration for equity instruments of the entity (including shares or share options).*"

A common example of equity-settled share-based payment between an entity and its employees consist in giving to employees the right to purchase the entity's shares at a discount price.

Cash-settled share-based transaction is *a "share-based payment transaction in which the entity acquires goods or services by incurring a liability to transfer cash or other assets to the supplier of those goods or services for amounts that are based on the price (or value) of the entity's shares or other equity instruments of the entity."*

A common example of cash-settled share based arrangement between an entity and its employees consist in granting employees a share appreciation right which entitles the employees cash based payment based on the appreciation in the entity's share price.

Recognition

Generally, share option plans are granted as part of a remuneration package and most often as a bonus arrangement rather than a component of a basic remuneration. A company is required to recognize the services received from its employees in a share-based payment transaction as soon as these services are received.[72]

The company is asked to recognize an increase in equity in the case of an *equity-settled share-based payment transaction* or a liability in the case of a *cash-settled share-based payment transaction.* When the services received in the share-based transaction do not qualify for recognition as an asset, then they are recognized as expenses.[73]

Measurement

In accordance with IFRS 2 measurement guidelines for *equity-settled share based payment transactions*, the company is required to measure directly the fair value of goods or services and the corresponding increase in equity at the fair value of the goods or services received.[74]

[72] See IFRS 2.7
[73] See IFRS 2.8
[74] See IFRS 2.10

If fair value cannot be measure reliably then it has to be measured based on the fair value of the equity instruments granted as consideration. The latter case particularly applies for *employee share option plan (ESOP)*. Indeed, the fair value of the service delivered by the employee cannot be reliably measured; therefore, it is based on the fair value of the company's underlying[75] share. Fair value is measured at grant date; quoted equity price is used for listed entities[76], and when the shares are not quoted on an active market then valuation techniques are used[77].

Valuation of employee share options[78]

In many cases, market prices are not available simply because the features of these options cannot be equated with any traded options; in such cases an option pricing model is usually applied to estimate the fair value of these options. As such, the company should take into account all the factors that an independent "*knowledgeable and willing market participant*" would consider to estimate the grant date fair value of the option.

Treatment of vesting conditions[79]

Vesting conditions are sine qua non that must be satisfied for the counterparty to become entitled to receive cash, other assets or equity instruments of the entity, under a share-based payment arrangement. Amendments by the IASB in January 2008 clarified the nature of the two vesting conditions which have to be satisfied:

- *Service conditions* which specify the period during which the counterparty have to perform a service and;
- *Performance conditions[80]* which determine the performance requirements that the counterparty have to meet before being entitled to the grant.

[75] See IFRS 2.12
[76] See IFRS 2.16
[77] See IFRS 2.17
[78] See appendix IFRS 2.B4-B10
[79] See IFRS 2.19
[80] Performance conditions can be whether related to the market price of the entity (market-based performance) or related to the entity's profit (non-market-based performance)

Disclosures

Disclosure requirements under IFRS 2 encompass:

- *The nature and the extent of the share-based payment transaction that existed over the period*[81] *including the terms and conditions (vesting, maximum term of options granted, method of settlement) of each type of share-based arrangement and the number of weighted average exercise prices of share options.*

- *The method used to determine the fair value of the good/services, or the fair value of the equity instruments granted*[82]*.*

- *The impact of the share-based payment arrangement on the entity's income statement and its financial position*[83]*.*

[81] See IFRS 2.44
[82] See IFRS 2.46
[83] See IFRS 2.50

5. Financial reporting

5.1. Financial reporting in Mauritius

Formerly a French colony, Mauritius became officially an English colony in 1814 after the signature of the treaty of Paris. This dual colonial inheritance is reflected in Mauritius mixed legal system which combines the French civil law and the British common law. Though, Mauritius accounting system and practices has been based on the Anglo-Saxon accounting model, more specifically under the UK accounting family such as New Zealand and Australia[84].

Under the common law system, accounting rules are not determined by law but by the accounting regulation body. The influence of Anglo-Saxon political and legal system has facilitated Mauritius progressive convergence towards IAS/IFRS strongly inspired by the Anglo-American model. Under IFRS, financial statements are primarily designed to address capital providers' needs emphasizing the importance of transparency and disclosure to reduce information asymmetry **(Ball et *al.* (2003))**.

After its independence in 1968, Mauritius developed its own accounting standard based on the UK GAAP. As the island opened to global trade and strove to attract foreign capital, a more reliable and transparent accounting system was required to meet investors' increasing need for information **(Nobes, 1998)** ultimately aligning Mauritian accounting standards to international standards (IFRS)

Mauritius experienced several statutory changes since the creation of the *Stock Exchange of Mauritius* in 1989 which was accompanied by the creation of the *Mauritius Accounting and Auditing Standard Committee*, the regulatory body in charge of issuing national standards called *Mauritius Accounting Standards* (MAS). After that, the *Companies Act (2001), Securities Act (2005), Financial Services Act (2007), Listing Rules, and the Financial Reporting (Act 2004)* established the financial reporting rules for listed companies, banking institutions, non-banking financial

[84] Nobes classification of accounting practices (1980)

institutions and insurance companies in full compliance with IFRS. As such, Mauritius has fully adopted international norms of financial reporting.

Following a recommendation by the World Bank and the IMF[85] in 2003, Mauritian authorities enacted the *Financial Reporting Act* in 2004 which established the *Financial Reporting Council* (FRC). The latter provides the framework which sets out the basic principles to be followed in the preparation and presentation of financial statements in line with international standards and accounting principles. The Financial Reporting Council is in charge of reviewing annual reports published by *Public Interest Entities* (PIEs)[86] which are required to fully apply IFRS.

According *Price Waterhouse Coopers*[87], listed companies are required to use IFRS for consolidated and separate financial statements. This rule applies also to both subsidiary foreign companies and subsidiary of foreign companies. Annual reports are required "*to reflect the economic substance of transactions*" and "*represent faithfully the financial position*" of the company. This rule captures the disclosure prescription of all risk arising from derivative instruments under IFRS 7. However, an assessment of compliance with accounting standards performed by the World Bank indicated that IFRS 7 is one of the standards that are most commonly not complied with.

5.2. Financial reporting in Morocco

Morocco was a French colony until 1956 and inherited the French legal tradition of codified law and a National Accounting Plan replicated from the French one[88], designed and established to meet local requirements for both commercial and tax accounting. In 1984, Morocco set up a new accounting plan in accordance with the *European Fourth Directive* followed by the foundation of the National Accounting Council called *Conseil National de Comptabilité (CNC) in* 1989 and operational in 1991.

[85] See Report on the Observance of Standards and Codes, Mauritius (June 2011)
[86] PIEs include public listed companies and private large companies (turnover exceeding Rs 200 million). Are excluded, GBL1 companies under the Financial Services Act 2007. But some listed firms with turnover below Rs 200 million do not qualify as a PIE and hence are not subjected to the FRC.
[87] See IFRS adoption by country (2010) - PWC
[88] See Boolaky (2003)

Moroccan accounting standards are enforced by law[89] and completed by the general code of accounting standards issued by the CNC which is the regulatory body in charge of designing, implementing and proposing accounting standards[90] and developing the use of international accounting standards.

Morocco is currently in a transitory phase prior to a full adoption of IFRS. Since 1994, the Moroccan GAAP has used IAS/IFRS as a benchmark but due to the entrenched legalistic character of the Moroccan accounting framework[91], the convergence of Moroccan GAAP towards IAS has been delayed. Today, both accounting systems still co-exist as IFRS norms are not accepted yet by Moroccan fiscal authorities.

According to Price Waterhouse Coopers[92], IFRS is permitted[93] for consolidated financial statements of listed companies in accordance with the *CNC* regulation issued in May, 26 2005 which does not specify if it refers to the IFRS adopted by the European Union[94] or the IFRS published by the IASB. IFRS is mandatory for consolidated financial statements of banking and financial institutions as required by the Central Bank of Morocco since 2008.

For the period under review in this research paper, it was found that there were companies listed on the Casablanca Stock Exchange were IFRS-compliant. These companies adopted IFRS for various reasons. For instance, some are subsidiaries of a listed European company, others are required by their holding or parent companies to report under IFRS and some companies are seeking to raise funds in European capital markets.

[89] Law N° 9-88
[90] See Reports on the Observance of Standards and Code, Morocco (July 2002)
[91] Tax Laws have a huge influence on accounting principles since financial statements are designed primarily for tax returns purposes
[92] See IFRS adoption by country (2010) - PWC
[93] Stock Exchange Law requires non-financial companies listed on the Casablanca Stock Exchange to choose between IFRS or the Moroccan GAAP
[94] In reference to the European Union regulation on IFRS adoption by European listed Companies issued in July, 19 2002 and effective for the financial year starting in January 2005

5.3.Financial reporting in Tunisia

As a former French colony, Tunisia inherited of the French legalistic approach of financial reporting in which "*accounting rules are incorporated into national law and tend to be highly prescriptive and procedural*"[95].

In the 1990s, Tunisia started to introduce market instruments and needed to modernize its accounting system. Thus, in 1996, was enacted the *Law of 30th December on Enterprise Accounting System* which set up the *National Accounting Council*, the regulatory body responsible for drawing up *Tunisian Accounting Standards* (TAS) and monitoring their application. From then, Tunisia has gradually adjusted its accounting regulation towards international standards.

However, even if inspired from the IFRS, the current Tunisian accounting conceptual framework differ from that required by IAS because TAS does not make provision for existing IFRS requirements and improvements on recognition, measurement and disclosure in many areas including standards on financial instruments covered by IAS 32, IAS 39, IFRS 7 and IFRS 9. The Tunisian *Law on Commercial Companies, Law on Financial Market require* companies listed[96] on the Tunisian Stock Exchange called *Bourse des Valeurs Mobilières de Tunis (BVMT)* to prepare and publish consolidated financial statements in accordance with the TAS[97]. As such, listed companies are not permitted to apply IFRS[98].

The World Bank and the IMF highlighted that in some aspects, Tunisian accounting standards are incompatible with modern financial markets transparency requirements resulting in a lower credibility and comparability of TAS-based financial statements.
It was also observed that many companies (including listed firms) failed to comply with the TAS particularly in terms of disclosure of accounting policies. The World Bank and the IMF

[95] See Choi et al.,(2002)
[96] Tunisian companies are required to adopt a joint stock legal structure *(Société Anonyme)* before being able to be listed on the Tunisian Stock Exchange.
[97] See Reports on the Observance of Standards and Code, Tunisia (May 2004)
[98] See http://www.pwc.com/us/en/issues/ifrs-reporting/country-adoption/country-details/country-details-new/tunisia.jhtml

recommend full adoption of IFRS by *public interest entities* namely listed companies of a certain size[99]. Ultimately, Tunisian authorities are planning to adopt IFRS in 2014.[100]

5.4. Financial reporting in Western African Economic and Monetary Union

The WAEMU was founded by treaty in 1994 and included seven former French colonies namely Benin, Burkina Faso, Cote d'Ivoire, Mali, Senegal and Togo. In 1997, Guinea Bissau, a former Portuguese colony joined the WAEMU. They share a common currency, the West African Franc CFA (XOF) and their economies are predominantly export-orientated.

The WAEMU has a also a common central bank, *Central Bank of Western African States* (BCEAO) founded in 1962, headquartered in Senegal which is the institution in charge of integrating and developing the accounting system for the state members. They have a regional stock market, the *Bourse Régionale des Valeurs Mobilières (BVRM)* created in 1998 headquartered in Cote d'Ivoire with satellite offices in each state member.

Historically, these countries have adopted French accounting system. In 1970, the *OCAM*[101] *accounting plan* was created as a common basis for the future accounting plans in the Western African countries.

This accounting plan was an overseas replicate of the French Accounting System. In 1998, the countries in the WAEMU established a new business framework called OHADA which entailed a new accounting system called *SYSCOA*[102] was enforced to modernize and harmonize the standards of accounting practices in the *WAEMU* zone and enhance the reliability of financial reporting[103]. This new accounting system applies to all entities excluding banks and financial

[99] Measured by the number of employees, the size of balance sheet or the turnover
[100] See http://www.pwc.com/us/en/issues/ifrs-reporting/country-adoption/country-details/country-details-new/tunisia.jhtml
[101] Organisation Commune des Afriques et Madagascar
[102] A chart of accounts in 113 articles established in 1998, in the ambit of the Uniform Act on Commercial Companies and Economic Interests Group (April, 1997) and OHADA Accounting System Uniform Act (February, 2002)
[103] See Moussa (2010)

institutions which are subjected to the standards prescribed under the *Bank Charts of Account (PCB).*

Under SYSCOA, there are three levels of financial reporting requirements depending on the size of the company (based on its turnover). Virtually all the listed companies on the BVRM fall under the most elaborated category called "*normal system*"[104] which requires the publication of a balance sheet, an income statement, a cash flow statement and notes to the account.[105]
At its inception, SYSCOA integrated parts of IAS/IFRS to attract foreign investors but failed to keep abreast of the latest developments of international standards which subsequently held up the convergence process towards international standards.
However, there are ongoing discussions within the WAEMU and OHADA countries members about the convergence of their accounting system towards IFRS. For instance, listed companies are planned to adopt IFRS in 2012[106].

The World Bank and the IMF pointed out that part of the harmonization process, the WAEMU accounting standards have to be simplified and modernized to adjust the differences in terms of recognition, measurement and disclosure between the regional standards and those required under IFRS. For instance, under SYSCOA financial statements are reported on a historical cost basis[107] and the measurement and disclosure[108] under the *Bank Charts of Account* fall short IFRS requirements on fair value accounting and disclosures on financial instruments and risk management practices. Hence the absence of disclosure on derivative usage in financial statements of companies listed on the BVRM.

[104] for companies with an annual turnover above CFA 150 million
[105] See Reports on the Observance of Standards and Code, Burkina Faso (April 2010)
[106] See Reports on the Observance of Standards and Code, Burkina Faso (April 2010)
[107] See Reports on the Observance of Standards and Code, Côte d'Ivoire (Juin 2009)
[108] See Reports on the Observance of Standards and Code, Burkina Faso (April 2010)

6. Research methodology

This study forms part of a broader pan-African study analyzing the use of financial derivative instruments by listed companies on African stock exchanges for the periods 2008 and 2009. This study specifically covers French-speaking African countries namely Mauritius *(Mauritius Stock Exchange)*, Morocco *(Casablanca Stock Exchange)*, Tunisia *(Tunis Stock Exchange)* and the West African countries *(Bourse des Valeurs Mobilières)* member of the WAEMU zone including Benin, Burkina Faso, Ivory Coast, Togo and Senegal.

The approach taken was the manual review of annual reports (financial statements and disclosures in notes) based on a modified version of **Bartram et *al.* (2008, 2009)**. The review of annual reports to investigate on derivative usage has been become more conventional with the application of new rules on derivative instrument disclosure. For instance, review of annual reports was used in **Shu and Chen (2003), Ameer (2009), Brunzell et *al.* (2009) and Selv and Türel (2010)** to investigate derivative usage and risk management practices.

The annual reports or the financial statements analyzed in this paper fall within one of the following categories:

- Financial reports prepared in accordance with IAS/IFRS for which the annual reports were reviewed based on IFRS 7 disclosure requirements on derivatives instruments and on IFRS 2 for Employee Stock Options Plans (ESOPs).

- Financial reports in accordance with local GAAP. For these companies, a manual search was performed searching for key words such as "derivatives", "forwards", "swap", futures", "options", "employee share option plan", "hedging", etc.

It is worth mentioning that 98% of the companies listed in Tunisia, Morocco and the WAEMU region published their annual reports or financial statements in French.

6.1. Data collection

The list of companies was obtained from Bloomberg on the 3rd of May 2010. The initial sample for consists of 253 financial and non-financial companies[109] which represents a total market capitalization[110] of approximately USD 85 billion.

The market capitalization provided by Bloomberg was denominated in the currency of the relevant stock exchange and translated in US dollar using the exchange rate as of 3rd May 2010 as per the website www.ohanda.com. This will provide some homogeneity and comparability within the sample

Companies for which no market value was published by Bloomberg because they were illiquid inactive or delisted were excluded from the sample. This was the case of 23 companies. The initial sample was reduced to 230 companies.

Electronic annual reports and financial statements in PDF format were downloaded directly from the company website, the relevant stock exchange website or from a third party website. At this final stage, we obtained usable annual reports and financial statements for 150 companies which constituted the final sample. Data collected were subsequently populated into a *Microsoft excel spreadsheet* detailing the following information:

- **Market value in US dollars (May, 3rd 2011) and classification of firms under three categories in accordance with Bodnar et al. typology: large cap (market cap > USD 250 million), mid-cap (USD 50 million < market cap < USD 250 million) and small-cap (market cap < USD 50 million)**
- **Industry Sector**
- **Indication of accounting Standard used in financial reporting (IFRS or local GAAP)**
- **Usage of derivatives instruments (yes or no) for the period under review**

[109] 84 were from Mauritius, 76 from Morocco, 54 from Tunisia and 38 from the WAEMU zone.
[110] As of May, 3 2009

- **Category of derivative instruments used: foreign exchange contracts (FX), interest rate (IR), and commodity price(CP)**
- **Type of instruments: Swaps, Forwards, Futures, and Options and the net fair value of each contract at year end.**
- **Existence of any ESOPs arrangements (yes or no) and if yes, the potential dilutive effect is precised.**

However, it was not possible to obtain the financial statements for all years under review for all companies. For certain companies only condensed and abridged financial statements without any notes were obtained and for other no electronic financial statement at all was available.

7. Analysis

7.1. Derivative usage in Mauritius

Of 84 companies listed by Bloomberg, 78 had their market capitalization published and 6 companies without any reported market value. These companies are either not frequently traded or delisted. Only abridged financial statements were available for 43 companies including the firms without information on their market value, six mid-cap firms with market value below USD 100 million and thirty seven small-cap firms with an average market value of USD 18.25 million and a median market value of USD 32.5 million. These companies were not included in the final sample (see annexure 1)

This left only 35 companies i.e. an effective sample rate of 41.6% which compares with **El-Masry (2006), Prevost et *al.* (2000),** and **Pramborg (2004)**. The final sample accounts for 81.60% of the total market capitalization on the Mauritian Stock Exchange which is in majority composed of mid-sized (43%) and small-sized (46%) companies.

Overall, the final sample provides a good benchmark to assess the level of derivative usage in Mauritius. Results are summarized as follows:

Table 1. Population statistics for Mauritius	
Number of companies listed on the Mauritius Stock Exchange	**84**
Number of companies with market capitalization available on Bloomberg	78
Total market capitalization (million USD)	6,155
Number of companies with financial reports available for both years	31
Number of companies with financial reports available for one year	4
Total number of final sample	**35**
Total market capitalization of final sample (million USD)	5,022
Firm size in Mauritius	
Large-cap (Market cap > US$ 250 million)	4
Mid-cap (Market cap US$ 50 million – US$ 250 million)	15
Small-cap (Market cap < US$ 50 million)	16
Total	**35**

25.71% of companies used derivatives, which is lower than the average rate reported in **Bartram et *al.* (2008, 2009).** Similar to **Bodnar et *al.* (1995, 1996, 1998),** derivative users were predominantly found amongst large-sized companies. 100% of large-cap companies used at least one derivative in comparison with **Berkman et *al.* (1997)**.

The sub-sample of large firm includes two banks, two companies from the hotel industry and a firm in the agro-industry. Only 13.3% of mid-cap firms used derivatives and 12.5% of small-cap firms. Findings about small-sized firm derivative use are consistent with **Bodnar et *al.* (1995).**

Table 2. Derivative usage in Mauritius	
Number of companies in the final sample	**35**
Number of derivative users in the final sample	9
Proportion of companies using derivatives	25.71%
Number of companies with more than one derivative type listed	5

Table 3. Typology of derivative instrument used in Mauritius				
	Total	**FX[111]**	**IR**	**CP**
ESOPs	1	na	na	Na
Forward	9	8	1	-
Futures	-	-	-	-
Swaps	4	1	2	1
Options	1	-	-	1

Table 4. Companies using derivatives in Mauritius[112]					
Name of Company	**Sector**	**Size**	**Type of risks hedged**	**Type of instruments used**	**ESOPs**
Air Mauritius Ltd	Transportation & Logistics	Small-cap	CP, IR	Swaps, forwards, options	No
Ciel Investissement Ltd	Financial services	Mid-cap	FX	Forwards	No
Ciel Textile Ltd	Manufacturing	Small-cap	FX	Forwards	No
Gamma Civic Ltd	Construction & Building materials	Mid-cap	FX	Forwards	No
Mauritius Commercial Bank Ltd	Banking	Large-cap	FX	Swaps, Forwards	Yes
Medine Ltd	Agro-industry	Large-cap	FX	Forwards	No
New Mauritius Hotel Ltd	Hotel & leisure	Large-cap	FX	Forwards	No
State Bank of Mauritius Ltd	Banking	Large-cap	IR, FX	Swaps, Forwards	Yes
Sun Resorts Hotels Ltd	Hotel & leisure	Mid-cap	IR, FX	Swaps, Forwards	Yes

[111]Table does not include one company which did not disclose the type of instrument used to covered its currency exposure

[112] More details in annexure 1

Consistent with responses from firms in the Australasian region reported in **Berkman et *al.* (1997), Sheedy (2006) and Shu and Chen (2003)**, the prevalence of foreign exchange hedging using forwards derivatives clearly stands out. In fact, Mauritius is more exposed to exogenous macro-economic risks than larger economies reviewed in prior surveys. In addition, information from annual reports indicated that Mauritian firms were mainly exposed to the South African Rand, Euros, the US Dollar and the British Pound.

With respect to the nature of their activities, it was found that derivative users are all involved in some extent in foreign operations (financial transactions, international trade) either they are in the tourism sector, in the sugar cane industry, textile manufacturing or in the financial services universe. This supports the notion in **Bodnar and Gebhardt (1999)** and **Alkebäck and Hagelin (1999)** that decision to use derivative is primarily determined by firm characteristics rather than cultural factors or country-level specificities.

With a population of 1.3 million and a GDP per capita of USD 6,838 Mauritius is one of the most advanced economies in Africa. Given the export-orientated[113] nature of its economy and the relatively high level of sophistication of its financial sector[114]compared to other African markets, it was surprising to find a low intensity of derivative usage. In fact, in 2007 and 2008, forward contracts represented less than 20% of total foreign exchange transactions in Mauritius[115] and volume of currency options transactions were insignificant.

The creation of the Global Board of Trade (GBOT) in 2010 - the first pan-African multi-classes currency and commodity futures market - is believed to foster derivative usage in Mauritius and in the region in general. In five months of operations, trading volume on the GBOT increased five-fold reaching US$ 35 million in mid-march 2011.

[113] Exports of goods and services accounts for 52.5% of GDP (AfdB – 2009)

[114] Ranked 29 out of 139 by the Global Competitiveness Index 2011 (World Bank) in terms of financial market development with a score of 4.7/5

[115] BIS Review 2009: The first Pan-African Derivatives Exchange in Mauritius (R. Bheenick)

7.2. Derivative usage in Morocco

Market value of companies was available for 75 out of 76 listed companies. There were 54 companies with available and exploitable financial statements of which 20 were IFRS compliant. As stated in *section 5.2.*, non-financial companies listed on the Casablanca Stock Exchange are permitted to publish their financial statements in accordance with IFRS while it is mandatory for banks and financial institutions. 95% of IFRS-compliant financial reports were provided by large-sized firms. Similar to **Alkebäck and Hagelin (1999),** we obtained a reasonable effective rate of 72% which accounts for 81% of total market capitalization. The final population data is mainly composed of 48% of large-cap firms and the remaining firms are evenly spread across mid-cap and small-cap companies. In terms of market value, large firms represent 80% of the final sample.

Table 5. Population statistics for Morocco	
Number of companies listed on the Casablanca Stock Exchange	**76**
Number of companies with market capitalization available on Bloomberg	75
Total market capitalization (million USD)	63,529
Number of companies with financial reports available for both years	41
Number of companies with financial reports available for one year	13
Total number of final sample	**54**
Total market capitalization of final sample (million USD)	51,969
Firm size in Morocco	
Large-cap (Market cap > US$ 250 million)	26
Mid-cap (Market cap US$ 50 million – US$ 250 million)	15
Small-cap (Market cap < US$ 50 million)	13
Total	**53**

Considered as a country in the transition stage[116], Morocco has the most diversified and sophisticated financial market in the Maghreb region, though the derivative market is still in its infancy. According to the AfdB[117], the Moroccan local derivatives market offers FX forwards, FX options (maturity maximum 1 year) IR swaps (limited to 2 years) and FRAs (6X6), the offshore market is only limited to forwards of 2 years maximum. The creation of a futures market is also under way since the enactment of a law in May 2010 by the Moroccan Government[118].

[116] Africa Competitiveness Report (2011)
[117] AfdB – African fixed income and derivative markets guidebook (2010)
[118] The Report: Morocco 2011 – Oxford Business Group

Table 6. Derivative usage in Morocco	
Number of companies in the final sample	**54**
Number of derivative users in the final sample	11
Proportion of companies using derivatives	20.37%
Number of companies with more than one derivative type listed	4

The number of derivative users compare with results from Mauritian corporations. It is interesting to mention that all the derivative users were found amongst large-firm firms which reported under IFRS standards. Disclosure of derivative usage is not required under Moroccan GAAP.

El-Masry (2006) suggested that firms were not using derivatives because derivative accounting treatment is perceived as onerous. It can be fairly assumed that Moroccan firms which report under local GAAP are not incentivized to report their derivative usage. 62% of the firms in the sample used Moroccan GAAP therefore the results obtained may not genuinely reflect the real trend. Besides, a survey conducted by master students at the *Goteborg University*[119] investigating on the pertinence of a derivative exchange market in Morocco found that 60% of respondents[120] declared using OTC derivatives. There is a significant difference between their results obtained from a questionnaire and the review of annual reports undertaken in this paper. 60% usage rate is comparable to results by **Bodnar et *al.* (2001)** in Netherlands**, Mallin et *al.* (2001)** in UK and **Bartram et *al.* (2009)** globally. The paper also demonstrated that 92% of Moroccan companies are exposed to interest rate risks, and 79% to FX risks. Interestingly, they found that respectively 79% and 38% of companies declared IR and FX exposures were not properly managed by available instruments in Morocco which go along with our findings on the prevalence usage of FX derivatives compared to IR derivatives.

Table 7. Typology of derivative instrument used in Morocco				
	Total	FX	IR	CP
ESOPs	1	na	na	na
Forward	7	**6**	-	1
Futures	-	-	-	-
Swaps	**-**	**-**	**-**	**-**
Options	**2**	**2**	**-**	**-**

[119] Chavez and Guedira (2006)

[120] A questionnaire was mailed to 50 firms in the *Morocco All Share Index* (MASI index). They obtained 23 responses (effective response rate of 46%)

In terms of typology of risk, we found that foreign exchange exposure is widely hedged with forward contracts, which is consistent with previous international studies. The population of derivative users is almost equally spread across the banking sectors (4), the manufacturing sector (2), primary production industries (1) and a holding company involved in manufacturing and primary production. In spite of the small size of the sample, this compares with findings from **Bodnar et *al.* (1995, 1996, and 1998).**

It was also very interesting to note some similarities with results in **Selv and Türel (2010)** in Turkey and **Rivas et al (2010)** in Peru in regard to the propensity of derivative usage by banks. In Morocco, data showed that 83% of banks were derivative users compared to 85% in both Turkey and Peru. One Moroccan bank (BMCE S.A.) reported using derivatives only for trading purposes and another one (BMCI S.A.) was using derivatives for both hedging and trading.

Table 8. Companies using derivatives in Morocco[121]

Name of Company	**Sector**	**Size**	**Type of risks hedged**	**Type of instruments used**	**ESOPs**
Attijariwafa Bank	Banking	Large-cap	CP, FX, IR	Not specified	Yes
BMCE Bank	Banking	Large-cap	CP, FX, IR	Forwards, Options	No
BMCI Bank	Banking	Large-cap	FX	Forwards	No
Cosumar	Agro-Industry	Large-cap	Not specified	Not specified	No
Crédit du Maroc	Banking	Large-cap	FX	Forwards	No
Lafarge Ciments	Construction & Building materials	Large-cap	FX	Not specified	No
Lesieur Cristal	Manufacturing	Large-cap	Not specified	Not specified	No
Managem	Metal & Mining	Large-cap	CP, FX	Forwards	No
ONA S.A.	Holding	Large-cap	CP,FX	Forwards, Options	No
SAMIR S.A.	Oil & gas	Large-cap	FX	Forwards	No
Sonasid S.A.	Construction & Building materials	Large-cap	FX	Not specified	No

[121] More details in annexure 1

Below are summarized the findings on the number of companies which did not disclose (1) the type of instrument they used to hedge their financial risk exposure, (2) neither the category of risk exposure nor the instrument used.

Instruments	FX	IR	CP	No specification
Number of firms	4	2	2	2

7.3. Derivative usage in Tunisia

Six companies without market value data were excluded from the initial sample. Three of them were actually delisted. We obtained an effective sample rate of 80% corresponding to 99% of the total population in terms of market cap which is line with responses rate reported by **Alkebäck and Hagelin (1999), Al-Momani and Gharaibeh (2008).**

Only one company published its financial report in English and only two companies used IAS/IFRS standards to report usage of derivative financial instruments. Both companies are operating in the financial services sector (bank, leasing). One company used IAS 39 to recognize and measure at fair value a derivative contract it has arranged.

The population survey is relatively homogeneous with 31.8% of large firms, 29.5% of medium firms and 38.6% of small firms. In terms of sector breakdown, financial companies (banks, insurance and other financial services) make up for 40% of the population survey and 63% of its total market value, followed by the manufacturing sector.

Table 9. Population statistics for Tunisia	
Number of companies listed on the Tunis Stock Exchange	**54**
Number of companies with market capitalization available on Bloomberg	48
Total market capitalization (million USD)	8,760
Number of companies with financial reports available for both years	43
Number of companies with financial reports available for one year	1
Total number of final sample	**44**
Total market capitalization of final sample (million USD)	8,694
Firm size in Tunisia	
Large-cap (Market cap > US$ 250 million)	14
Mid-cap (Market cap US$ 50 million – US$ 250 million)	13
Small-cap (Market cap < US$ 50 million)	17
Total	**44**

According to the AfdB[122], Tunisian derivatives market is limited to OTC transactions through commercial banks which offer vanilla FX forwards (3 years maturity maximum) and cross-currency forward (12 months) and recently available risk management tools also included Forward rate agreements (FRAs).

The significant representation of financial institutions would suggest a high degree of derivatives utilization. However, only three companies in the sample reported using derivatives. It can be assumed that as Tunisian Accounting Standards do not provide any guidelines regarding hedge accounting, as such the review of annual reports would not yield substantial results.

In addition to the absence of adequate disclosure, the literature review provided some insights on the reasons that can explain a low level of derivative usage. In **Martin et *al.* (2009),** it was stated that absence of clear regulation and adequate market infrastructures are perceived as major obstacles against the development of derivative markets in a country. Lack of expertise was also suggested to be a significant constraint to derivative usage in **De Ceuster et *al.* (2000).** As revealed in **Chavez and Guedira (2006)** Morocco and **Sprčić et *al.* (2008)** in their paper on Croatia, the lack of adequate offer with respect to risk management instruments can also be an impediment. In some extent, Tunisian firms are dealing with these issues.

Table 10. Derivative usage in Tunisia	
Number of companies in the final sample	**44**
Number of derivative users in the final sample	3
Proportion of companies using derivatives	6.81%
Number of companies with more than one derivative type listed	-

Table 11. Typology of derivative instrument used in Tunisia				
	Total	FX[123]	IR	CP
ESOPs	-	Na	na	Na
Forward	1	1	-	-
Futures	-	-	-	-
Swaps	1	-	-	1
Options	-	-	-	-

[122] AfdB – African fixed income and derivative markets guidebook (2010)

[123] Table does not include one company which did not disclose the type of instrument used to covered its currency exposure

Table 12. Companies using derivatives in Tunisia[124]					
Name of Company	**Sector**	**Size**	**Type of risks hedged**	**Type of instruments used**	**ESOPs**
Arab Tunisian Bank	Banking	Large-cap	FX	Forwards	No
Arab Tunisian Lease	Financial services	Mid-cap	CP	Swaps	No
Tunisair	Transportation & Logistics	Mid-cap	FX	Not specified	No

7.4. Derivative usage in the West African Economic and Monetary Union

The population survey is comprised of 38 companies from Ivory Coast and the balance was spread amongst Benin (1), Burkina Faso (1), Togo (1) and Senegal (1). Total market capitalization of *BVRM* is estimated at USD 6,557 million.

No market capitalization information was available for 10 companies. Furthermore, it was quite difficult to find financial statements for the 28 remaining companies. Indeed, half of these companies do not have websites or no investor relation section with downloadable financial reports on their websites. Added to that, the BVRM stock exchange does not systematically publish updated electronic version of financial statements on its website. Alternatively, research has been performed in third party websites with comparatively low success.

A second screening left us with 17 usable financial reports and financial statements providing a reasonable effective sample of 53.13%. This is in line with responses rates from **Bodnar and Gebhardt (1999)** in Germany, **Prevost et *al.* (2000)** in New Zealand, **El-Masry (2006)** in UK, **Alkebäck et *al.* (2003)** and **Pramborg (2004)** in Sweden.

In terms of market value, the size of the effective sample is USD 5,667 million which is equivalent to 86% of the BVRM total market capitalization.

It should be noted that since the accounting framework in force within the WAEMU region does not require any disclosure on derivative usage neither permit fair value accounting, therefore, there is a caveat to the results which may not reflect the current reality.

[124] More details in annexure 1

All the listed companies published their financial statements following the OHADA accounting system. *Ecobank Transnational* is the only company that published a financial statement in accordance with IFRS as it is also listed on the *Ghana Stock Exchange* and the *Lagos Stock Exchange* where compliance to IFRS is required or permitted.

There are three large-cap companies namely *Sonatel*[125] (from Senegal) with USD 3,277 million of market cap, *Ecobank Transnational* in Togo with a market cap of USD 912 million and another telecom company *Onatel*[126] (from Burkina Faso) with USD 320 million. With a combined market value of USD 4,508 million, these three firms account for 80% of the total market cap of the sample and 69% of the entire BVRM. The sample is quite heterogeneous in terms of industry origin. It was also found that half of the companies were subsidiaries of foreign corporations.

Table 13. Population statistics for WAEMU region	
Number of companies listed on the BVRM	**38**
Number of companies with market capitalization available on Bloomberg	28
Total market capitalization (million USD)	6,557
Number of companies with financial reports available for both years	10
Number of companies with financial reports available for one year	7
Total number of final sample	**17**
Total market capitalization of final sample (million USD)	5,667
Firm size in WAEMU region	
Large-cap (Market cap > US$ 250 million)	3
Mid-cap (Market cap US$ 50 million – US$ 250 million)	8
Small-cap (Market cap < US$ 50 million)	6
Total	**17**

WAEMU members share a currency CFA franc (XOF) pegged on the Euros. As suggested in **Rossi Junior (2010),** a floating exchange rate regime is more conducive for the development of FX derivative usage; therefore we can assume that the fixed rate regime in place has a material impact on the low level of derivative usage in the region.

[125] Sonatel is a subsidiary of the French telecom company Orange Group
[126] Onatel is indirectly a subsidiary of Orange Group via Maroc Telecom

Based on the global competitive index[127], countries in the WAEMU have scores below average in terms of financial market efficiency. The derivative market in the region is in the pre-emerging phase with a relatively illiquid limited to foreign exchange OTC forwards transaction with a maturity of 3 to 6 months.

Ecobank Transnational was the only company which reported its results under IFRS; it is also the only company which reported any derivative usage during the period under review, hence the low percentage of derivative usage (5.88%) which is similar to the results obtained in Tunisia. It can be inferred that the reasons for such a low result are similar for both countries.

Table 14. Derivative usage in WAEMU region	
Number of companies in the final sample	**17**
Number of derivative users in the final sample	1
Proportion of companies using derivatives	5.88 %
Number of companies with more than one derivative type listed	1

Table 15. Typology of derivative instrument used in WAEMU				
	Total	FX	IR	CP
ESOPs	1	Na	na	Na
Forward	1	1	-	-
Futures	-	-	-	-
Swaps	2	1	1	-
Options	-	-	-	-

Table 16. Companies using derivatives in WAEMU region[128]					
Name of Company	**Sector**	**Size**	**Type of risks hedged**	**Type of instruments used**	**ESOPs**
Ecobank Transnational	Banking	Large-cap	FX,IR	Forwards, Swaps	Yes

[127] Africa Competitiveness Report (2011)
[128] More details in annexure 1

7.5. Employee Share Option Programs (ESOPs)

Table 17. Employee Stock Option Plans		
Countries	ESOP	Number of companies with ESOPS
Mauritius	Yes	3
Morocco	Yes	1
Tunisia	No	-
WAEMU	Yes	1

We found that the percentage of companies with ESOPs was very low. 4 out of the 5 companies which put in place share options plans for the period under review were large banks namely *Mauritius Commercial Bank* and *Standard Bank of Mauritius* (Mauritius), *Attijariwafa Bank* (Morocco) and *Ecobank Transnational* (Togo). The last one was Sun Resorts Hotel which specified that the company had no broad-based option plan but offers an executive scheme plan for key senior executives which assist them in the acquisition of shares at market prices under certain conditions. One interesting finding is that ESOPs users were the in the top five largest firms[129] in terms of market capitalization in their respective stock exchange.

In Mauritius, 14 companies (i.e. 40%) specifically reported in their annual reports that they do not have any employee share option plan in place. In Morocco, Attijariwafa Bank did not reported on the portion of shares under ESOPs but rather indicated that the company set a goal of 3% of employee stock ownership.

Table 18. Companies with Employee Stock Option Plans		
Countries	Country	Dilutive effect
MCB ltd	Mauritius	0.21%
SBM ltd	Mauritius	1.05%
Sun Resorts Hotels ltd	Mauritius	Not specified
Attijariwafa Bank	Morocco	3% (maximum)
Ecobank Transnational	Togo	3.49%

Based on the review of financial statements, the dilutive effect of ESOPs is quite low, not exceeding 3%.

[129] MCB ltd (1st), SBM ltd (2nd), Sun Resort Hotels (5th), Attijariwafa Bank (2nd), Ecobank Transnational (1st)

7.6. General statistics

Effective sample rate

Figure 1. Effective sample - sector

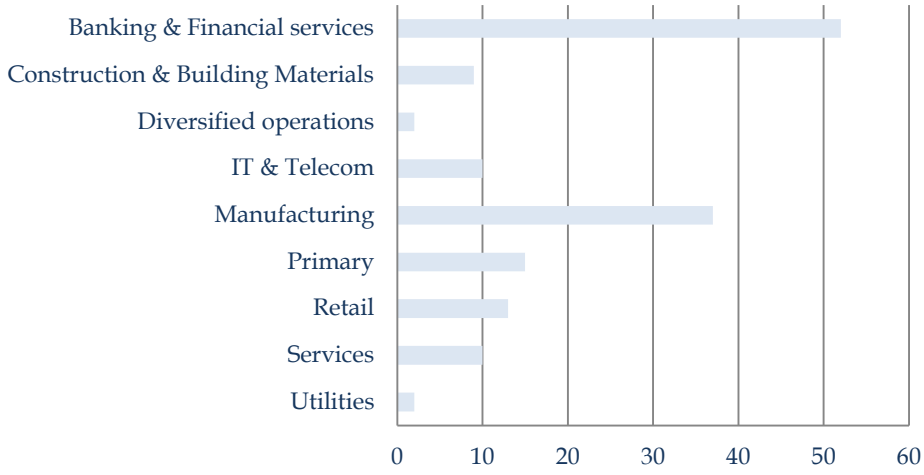


Figure 2. Effective sample - market cap

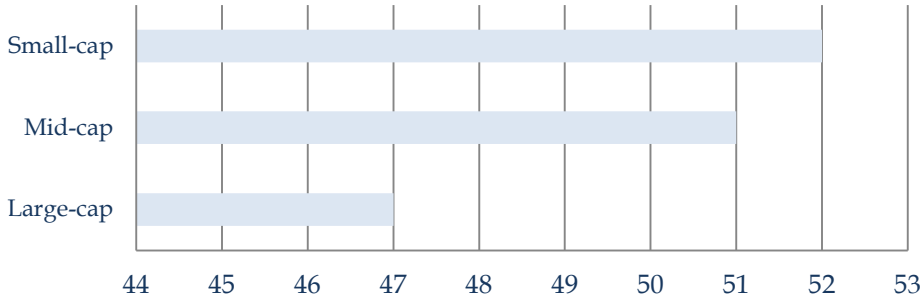
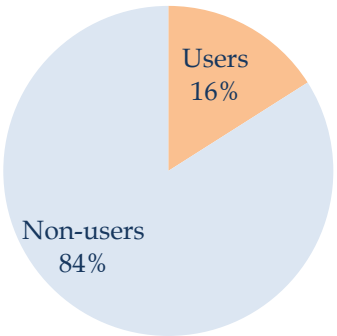


Figure 3. Derivative usage



Profile of derivative users

Figure 4. Derivative users by country

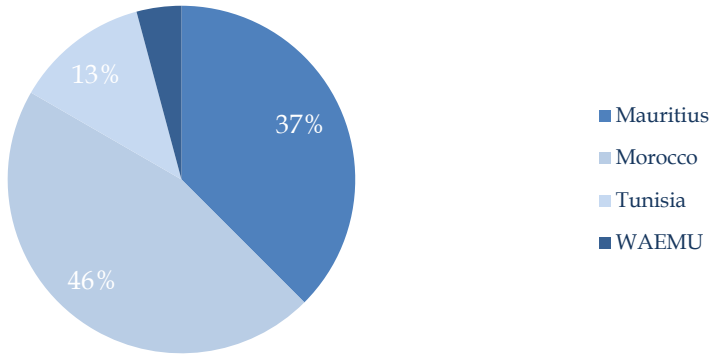


Figure 5. Derivative users by industry

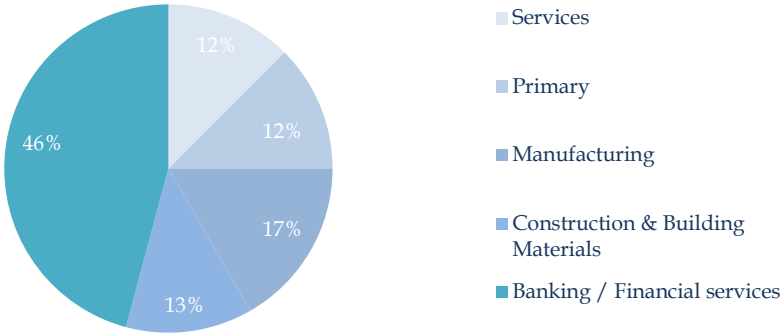
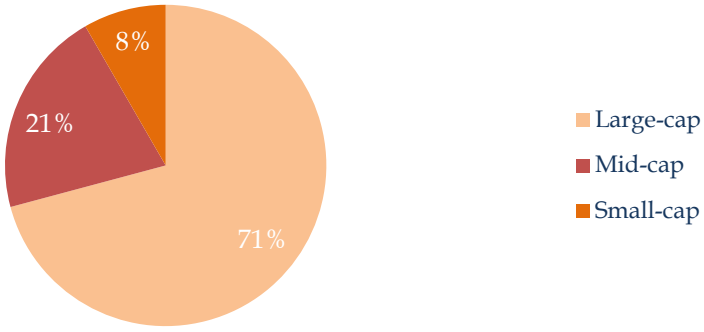


Figure 6. Derivative users by market cap



Typology of derivative usage

Figure 7. Derivatives used to hedge exposures

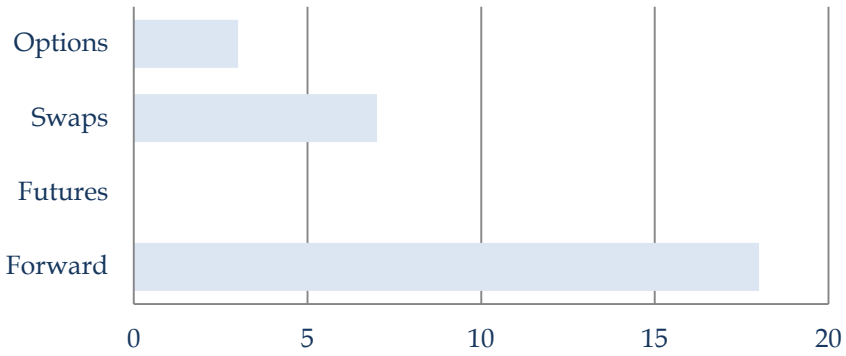


Figure 8. Type of risks hedged by firms in the sample

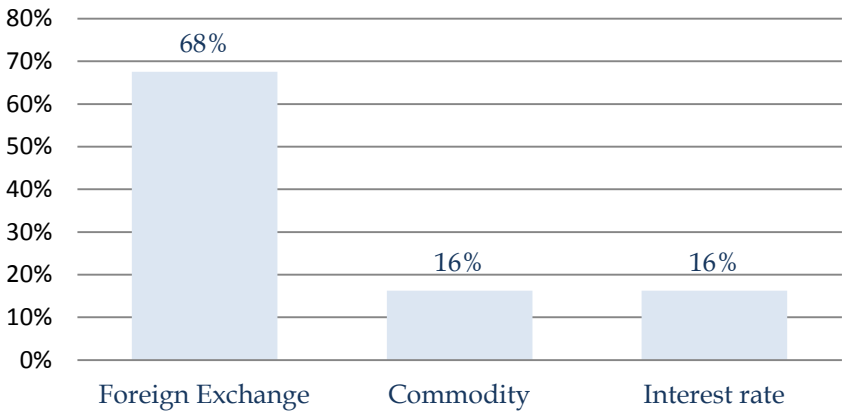
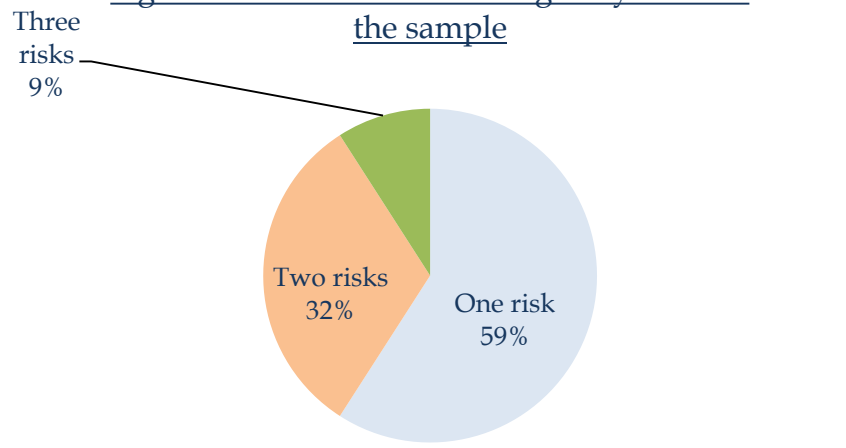


Figure 9. Number of risks hedged by firms in the sample



8. Conclusion

The population data surveyed in this paper was predominantly composed by firms operating in the banking/financial services, manufacturing, primary production, or the retail sectors ***(see figure 1)***. From an initial population survey of 243 companies, a reasonable effective sample rate of 61.72% (150 companies) was obtained including a majority of small-sized and medium-sized financial and non financial firms ***(see figure 2).***This effective sample rate is by far, higher than the responses obtained by half of the papers referenced in the literature review but compares to the average sample rate obtained by peer studies undertaken by students[130] from the *University Of Cape Town* covering other African countries: Botswana (76%), Ghana (75%), Namibia (25%), Nigeria (78%), Zambia (53%) and Zimbabwe (73%).

Over the periods under review, 16% of the firms in the effective sample reported using derivatives ***(see figure 3)***. Derivative users were mainly found in Mauritius and Morocco where financial markets are amongst the more sophisticated in Africa ***(see figure 4)*** and they were predominantly large-sized firms operating in the banking/financial services[131] or the manufacturing sectors ***(see figure 5).*** Results were skewed by the inclusion of financial firms in the sample. When adjusting the sample to include only non-financial firms, the percentage of derivative users falls to 11.22%[132].

The low derivative usage rate found in this paper is in line with results from studies on the African countries mentioned above. Indeed, derivative usage was in the range of 14%-30% when excluding outliers such as in Zambia and Zimbabwe where no derivative users were found and Namibia where 100% of the firms in the final sample (2 out of 2 firms) declared using derivatives. Research papers on South African listed companies[133] demonstrated that 51.5% of

[130] UCT Mcomm in Financial Management Students: Henning (2011) covering Ghana and Nigeria Crnovic (2011) covering Botswana, Namibia, Zambia and Zimbabwe.
[131] Banking / financial services sectors include banks, insurers, leasing firms, real estate investors and investment companies. It was also found in Botswana and Nigeria that derivative users were mainly large banks and financial services firms.
[132] Based on an effective sample of 98 non-financial firms
[133] UCT Mcomm in Financial Management Students: Modack (2011) covering 100 largest companies on the JSE main board, Jacobs (2011) covering 2nd 100 largest companies on the JSE main board, Donaldson (2011) covering 3rd tier South African listed companies, and Pitt (2011) covering companies on the JSE ALTX

quoted South African firms were using derivatives with the highest density of derivative users amongst the 100 top largest firms (93%) and the lowest density amongst small-cap firms (17% of derivative users only in the Altx).

With regard to the typology of risks and derivative instruments used, currency exposure stands out clearly as the most hedged risk, followed by interest risk and commodity price risk ***(see figure 8)*** which is in line with international trends as per **ISDA Derivatives usage survey (2009).** OTC Forwards and swaps are the most preferred instruments ***(figure 7).*** Lower usage of exchange traded instruments such as futures derivatives could be attributed to the absence of derivatives exchange in these countries.

Only five companies (31% of derivative users) reported using ESOPs. A similar trend was observed in Ghana and Nigeria where respectively 37% and 25% companies had employee share option programs. In South Africa, the use of share-based programs to incentivize managers and employees is more widespread with up to 90% of largest firms using it[134]. It was also acknowledged that black economic empowerment (BEE) policy[135] has contributed to foster the use of such programs by South African firms.

Overall, results found were consistent with trends reported in international studies referenced in the literature review with respect to the relationship between firm size and derivative usage, the pattern of risk typology and hedging instruments.

We can only draw a limited conclusion with regards to derivative usage in the countries covered in this paper. Indeed, this study clearly evidenced that companies which were not prescribed to use IFRS disclosed very little or no information at all about their risk management practices. Therefore, it was not possible to determine if they were using derivatives or not. This was the case of virtually all companies in Morocco, Tunisia, and WAEMU region. Even if some Moroccan and Tunisian firms reporting under local GAAP have voluntarily released financial information on their derivative exposure, this is still an anecdotal fact and only full adoption of IFRS such as in Mauritius by companies operating in Tunisia[136], Morocco and WAEMU[137] will

[134] See Modack (2011)
[135] See Jacobs (2011)
[136] Planned in 2014
[137] Planned in 2012 (SMEs)

ensure that companies would disclose effectively the use of financial instruments, risk exposure related to these instruments and how those risks are managed.

Literature review evidenced that lower derivative usage can be associated with absence of clear regulation, lack of knowledge, insufficient or inadequate offer in terms of risk management instruments, and unsophisticated financial market. These factors are in some extent applicable to the countries analyzed in this paper. Therefore, it is believed that newly implemented or fledging laws/regulation; infrastructure to promote and create derivative exchanges platforms in Mauritius and Morocco will support the growth of derivative market at a local and regional scale and will also contribute to accelerate the convergence of local GAAP towards IFRS.

The findings in this paper present a strong argument towards the application of IFRS in the countries covered in this paper. Adoption of IFRS will ineluctably induce costs, changes across companies' organization and reporting system and require training and higher financial expertise from managers. These factors could be perceived as major constraints and some companies may argue that the benefits do not outweigh the costs involved, as evidenced in the literature review; however, in the long-term, it is acknowledged that stakeholders and particularly investors value information quality and transparency as it contributes *to increase company's access to capital markets and enhance attractiveness of their shares to current and prospective investors by reducing their cost of information gathering.*[138]

The main advantage of reviewing financial statements remains in the fact that they are the primary medium of communication between listed companies and stakeholders; therefore, they are, *per se*, a reflection of the transparency of a given company. However, investigating derivative usage using financial reports limits the scope of investigation to a descriptive analysis on profiles of derivative users and non-derivative users, typology of risk managed and instruments used. Further research, using the *Wharton Survey methodology* of questionnaires will enable to get access to information such as African firms risk management objectives, their perception about their specific risks exposures, derivatives instruments, and their readiness and apprehension towards IFRS.

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10. Annexure 1

Mauritius

Name of the company	Market Cap US$ (Mio)	Industry	Published Financial Reports	Derivative usage	Swaps	Forwards	Futures	Option	ESOPs
ABC Motors Company Ltd	N/A	Retail	No	-					
Air Mauritius Ltd	47.26	Transportation & Logistics	2008/2009	Yes	CP	IR	-	CP	-
Alma Investments Company Ltd	28.00	Financial Services	No	-					
Anglo-Mauritius Ltd	25.82	Insurance	2008/2009	No					
Associated Commercial Ltd	2.54	Retail	No	-					
Automatics Systems Ltd	14.83	Hotel & Leisure	No	-					
Belle Mare Holding Ltd	18.96	Financial Services	No	-					
Black River Investments Co Ltd	51.65	Financial Services	No	-					
British American Investment Ltd	35.68	Financial Services	2008/2009	No					
BYCHEMEX ltd (MCFMI group)	1.85	Chemical	No	-					
Caudan Development	38.50	Real Estate	2008/2009	No					
Chemco ltd (MCFMI group)	3.07	Chemical	No	-					
Ciel Agro-industry Ltd	82.95	Agro-industry	2008/2009	No					
Ciel Investment ltd	200.63	Financial Services	2008/2009	Yes	-	FX	-	-	-
Ciel Textile ltd	27.09	Manufacturing	2008/2009	Yes	-	FX	-	-	-
Compagnie des Villages de Vacances de l'Isle de France Ltd	15.50	Real Estate	No	-					
Compagnie Magasins Populaire Ltd	N/A	Retail	No	-					
Constance La Gaiete Ltd	24.79	Real Estate	No	-					

Mauritius (continued)

Name of the company	Market Cap US$ (Mio)	Industry	Published Financial Reports	Derivative usage	Swaps	Forwards	Futures	Option	ESOPs
Constance Hotels Services Ltd	96.09	Hotel & Leisure	No	-					
Deep River Investment ltd	33.18	Financial Services	No	-					
ENL Commercial	15.43	Retail	2008/2009	No					
ENL investment Ltd	89.83	Financial Services	2008/2009	No					
ENL ltd	18.75	Diversified operations	2008/2009	No					
Excelsior United Development Ltd	34.12	N/A	No	-					
Fincorp Investment Ltd	49.45	Financial Services	No	-					
Flacq United Estates	95.78	Agro-industry	No	-					
Forges Tardieu Ltd	14.78	Manufacturing	No	-					
Forward Investment and Development Enterprises Ltd	21.54	Real Estate	No	-					
Gamma Civic Ltd	71.05	Construction & Building Materials	2008/2009	Yes	-	FX	-	-	-
Harell Frères Ltd	210.02	Agro-industry	2009	No					
Harell Mallac ltd	37.25	Retail	2008/2009	No					
Hotelest ltd	49.14	Hotel & Leisure	No	-					
Innodis ltd	33.80	Agro-industry	2008/2009	No					
Ireland Blyth Ltd	100.47	Retail	2008/2009	No					
Knowledge Economies Ltd	0.57	Financial Services	No	-					
Les Gaz Industriel Ltd	9.48	Chemical	No	-					
Les Moulins de la concorde - Food Allied	14.93	Agro-industry	No	-					
Livestock feed Ltd	13.97	Agro-industry	2008/2009	No					
Margarine Industrie Ltd	N/A	Manufacturing	No	-					

Mauritius (continued)

Name of the company	Market Cap US$ (Mio)	Industry	Published Financial Reports	Derivative usage	Swaps	Forwards	Futures	Option	ESOPs
Mauritius Chemical & Fertilizer industry ltd	17.22	Chemical	No	-					
Mauritius Commercial Bank Ltd	1,026.64	Banking	2008/2009	Yes	FX	FX	-	-	yes
Mauritius Cosmetics Limited	6.48	Manufacturing	No	-					
Mauritius Development & investment trust	49.14	Financial Services	No	-					
Mauritius Eagle insurance Ltd	15.02	Insurance	2008/2009	No					
Mauritius Freeport Development Company Ltd	16.34	Transportation & Logistics	No	-					
Mauritius Leasing	36.62	Financial Services	2008	No					
Mauritius Oil refineries ltd	20.83	Oil & Gas	No	-					
Mauritius secondary industries Ltd	0.68	Industrial Goods	No	-					
Mauritius stationery Manufacturers company Ltd	3.91	Publishing	No	-					
Mauritius Union Assurance Ltd	74.49	Insurance	2009	No					
Medical and Surgical center	32.24	Healthcare & Pharmaceuticals	No	-					
Medine ltd	272.00	Agro-industry	2009	Yes	-	FX	-	-	-
Medine share holdings Ltd	50.08	Diversified operations	No	-					
Morning Light Company	57.59	Hotel & Leisure	No	-					
Naiade Resorts Ltd	82.63	Hotel & Leisure	2008/2009	No					
National Investment Trust Ltd	10.29	Financial Services	2008/2009	No					
New Mauritius Hotels Ltd	631.63	Hotel & Leisure	2008/2009	Yes	-	FX	-	-	-

Mauritius (continued)

Name of the company	Market Cap US$ (Mio)	Industry	Published Financial Reports	Derivative usage	Swaps	Forwards	Futures	Option	ESOPs
Omnicane Ltd	167.77	Agro-industry	2008/2009	No					
P.O.L.I.C.Y Ltd	48.52	Manufacturing	2008/2009	No					
Paper Converting Ltd	2.23	Forestry & Paper/Related Products	No	-					
Phoenix Beverage Ltd	84.82	Brewery	2008/2009	No					
Phoenix Investment	20.46	Financial Services	No	-					
Plastic Industry Mauritius	4.79	Manufacturing	No	-					
Promotion & D-PF Ltd	109.55	Real Estate	2008/2009	No					
Quality Beverage Ltd	2.89	Financial Services	No	-					
Rainbow Insurances Ltd	N/A	Insurance	No	-					
Robert le Maire Group Ltd	16.28	Manufacturing	No	-					
Rogers & CO Ltd	223.17	Hotel & Leisure	2008/2009	No					
Rose Hill Transport Holding Ltd	11.80	Transportation & Logistics	No	-					
Savannah Sugar Estates Company Ltd	149.30	Agro-industry	2008/2009	No					
Shell Mauritius Ltd	105.48	Oil & Gas	No	-					
Soap & Allied Ltd	3.97	Manufacturing	2008/2009	No					
Southern Cross Tourist Company Ltd	17.37	Hotel & Leisure	No	-					
State Bank Mauritius Ltd	703.62	Banking	2008/2009	Yes	IR	FX	-	-	yes
Sun Resorts Hotels Ltd	225.36	Hotel & Leisure	2008/2009	Yes	IR	FX	-	-	yes
Swan Insurance Ltd	39.13	Insurance	2008/2009	No					

Mauritius (end)

Name of the company	Market Cap US$ (Mio)	Industry	Published Financial Reports	Derivative usage	Swaps	Forwards	Futures	Option	ESOPs
Tropical Paradise Co ltd	12.37	Hotel & Leisure	No	-					
Union Flacq Ltd	49.14	Agro-industry	No	-					
Union Sugar Estates Company Ltd	13.61	Agro-industry	No	-					
United Basalt Product Ltd	69.80	Construction & Building Materials	2008/2009	No					
United Bus Service Ltd	N/A	Transportation & Logistics	No	-					
United Docks ltd	29.75	Financial Services	No	-					
United Investment Ltd	10.82	Financial Services	No	-					
Vital Water Bottling Ltd	N/A	Manufacturing	No	-					

Morocco

Name of the company	Market Cap US$ (Mio)	Industry	Published Financial Reports	Derivative usage	Swaps	Forwards	Futures	Option	ESOPs
Acred	54.75	Financial Services	No	-					
Afriquia Gaz	549.84	Oil & Gas	2009	No					
Agma Lahlou Tazi	70.86	Insurance	No	-					
Alliance Developpement Immobilier	968.15	Real Estate	2008	No					
Aluminium du Maroc	71.23	Manufacturing	No	-					
Attijariwafa Bank	6,391.89	Banking	2008/2009	Yes	not specified				yes
Auto Hall	457.41	Retail	2008	No					
Auto Nejma	186.05	Retail	2008/2009	No					
Banque Centrale Populaire	2,045.31	Banking	2008/2009	No					
Berliet Maroc	39.99	Banking	No	-					
BMCE Bank	4,645.20	Banking	2008/2009	Yes	-	FX	-	FX	-
BMCI Bank	1,376.97	Banking	2008/2009	Yes	-	FX	-	-	-
Brasseries du Nord Marocain	141.02	Brewery	No	-					
Cartier SAADA	9.69	Manufacturing	2009	No					
Centrale Laitière	1,156.56	Agro-industry	2008/2009	No					
Ciments du Maroc	1,531.02	Construction & Building Materials	2008/2009	No					
Colorado	98.65	Chemical	No	-					
Compagnie d'Assurances et de Réassurances Atlanta	647.01	Insurance	2008/2009	No					
Compagnie Générale Immobilière	3,566.85	Real Estate	No	-					

Morocco (continued)

Name of the company	Market Cap US$ (Mio)	Industry	Published Financial Reports	Derivative usage	Swaps	Forwards	Futures	Option	ESOPs
Compagnie Minière Touissit	255.96	Metal & Mining	No	-					
Cosumar	745.37	Agro-industry	2008/2009	Yes	not specified				-
Crédit du Maroc	786.84	Banking	2008/2009	Yes	-	FX	-	-	-
Crédit Immobilier Hôtelier	978.81	Financial Services	2008/2009	No					
CTM	37.77	Transportation & Logistics	No	-					
Dari Couspate	26.97	Manufacturing	2009	No					
Delattre Levivier	49.62	Manufacturing	2008/2009	No					
Delta Holding	398.16	Construction & Building Materials	2009	No					
DIAC SALAF	16.85	Financial Services	2009	No					
Distrisoft	41.33	Retail	2008	No					
Douja Promotion Group Addoha	3,591.74	Real Estate	No	-					
Eaux Minérales d'Oulmes	126.80	Manufacturing	2008/2009	No					
Eqdom	322.32	Financial Services	2008/2009	No					
Fenie Brossette	75.92	Retail	2008/2009	No					
Fertima	33.11	Retail	2008/2009	No					
Holcim Maroc	1,002.51	Construction & Building Materials	2008/2009	No					
IB Maroc.com	20.23	IT & Telecom	2008/2009	No					
Involvys	9.16	IT & Telecom	2008/2009	No					
Itissalat Al- Maghrib	15,522	IT & Telecom	2008/2009	No					
Label Vie	319.95	Retail	2008/2009	No					
Lafarge Ciments	3,425.84	Construction & Building Materials	2008/2009	Yes	not specified				-
Legler S.A	N/A	Manufacturing	No	-					
Lesieur Cristal	347.21	Manufacturing	2008/2009	Yes	not specified				-

Morocco (continued)

Name of the company	Market Cap US$ (Mio)	Industry	Published Financial Reports	Derivative usage	Swaps	Forwards	Futures	Option	ESOPs
LGMC	44.92	Agro-industry	No	-					
Lydec	362.61	Utilities	2008/2009	No					
M2M Group	45.60	IT & Telecom	2008/2009	No					
Maghreb Oxygene	22.35	Chemical	No	-					
Maghrebail	72.90	Financial Services	2009	No					
Managem	296.25	Metal & Mining	2008/2009	Yes	-	CP,FX	-	-	-
Maroc Leasing	91.08	Financial Services	2008/2009	No					
Matel PC Market	65.47	IT & Telecom	2008/2009	No					
Med Paper	34.70	Forestry & Paper/Related Products	No	-					
Mediaco Maroc	8.89	Construction & Building Materials	2008/2009	No					
Microdata	26.98	IT & Telecom	2008/2009	No					
Nexans Maroc	61.94	IT & Telecom	2008/2009	No					
ONA S.A.	2,845.19	Holding	2008	Yes	-	CP,FX	-	FX	-
Promopharm S.A.	85.08	Healthcare & Pharmaceuticals	No	-					
Rebab Company	8.47	Metal & Mining	No	-					
RISMA Maroc	184.86	Hotel & Leisure	2009	-					
Salafin	168.27	Financial Services	2008/2009	No					
Samir S.A.	867.42	Oil & Gas	2009	Yes	-	FX	-	-	-
SNEP	129.17	Chemical	2008/2009	No					

Morocco (end)

Name of the company	Market Cap US$ (Mio)	Industry	Published Financial Reports	Derivative usage	Swaps	Forwards	Futures	Option	ESOPs
Société Chérifienne des Engrais et Produits Chimiques	24.84	Chemical	No	-					
Société des Brasseries du Maroc	1,071.24	Brewery	2009	No					
Société Immobilière BALIMA	38.98	Real Estate	No	-					
Société Métallurgique d'Imiter	190.79	Metal & Mining	2008/2009	No					
Société Nationale d'Investissement S.A.	2,410.29	Holding	No	-					
Sociétés de Réalisation Mécaniques	17.14	Retail	2008/2009	No					
SOFAC Crédit	54.56	Financial Services	2008/2009	No					
Sonasid	914.82	Construction & Building Materials	2008/2009	Yes	not specified				-
Sothema	158.79	Healthcare & Pharmaceuticals	2008/2009	No					
Stokvis Nord Afrique	7.91	Manufacturing	2008/2009	No					
Taslif	56.23	Financial Services	2008/2009	No					
Timar	5.95	Transportation & Logistics	No	-					
Unimer	56.70	Agro-industry	2008/2009	No					
WAFA Assurances	882.83	Insurance	No	-					
Zellidja	72.63	Oil & Gas	No	-					

Tunisia

Name of the company	Market Cap US$ (Mio)	Industry sector	Published Financial Reports	Derivative usage	Swaps	Forwards	Futures	Option	ESOPs
Accumulateur Tunisien	84.47	Manufacturing	2008/2009	No					
Adwya S.A.	60.17	Healthcare & Pharmaceuticals	2008/2009	No					
Air Liquide S.A.	183.27	Chemical	2008/2009	No					
Amen Banque	408.52	Banking	2008/2009	No					
Arab Tunisian Bank	479.14	Banking	2008/2009	Yes	-	FX	-	-	-
Arab Tunisian Lease	62.62	Financial Services	2008/2009	Yes	not specified				-
Ateliers Mecaniques du Sahel	5.67	Manufacturing	No	-					
Attijari Bank de Tunisie	504.76	Banking	2008/2009	No					
Attijari Leasing	44.00	Financial Services	2008/2009	No					
Banque de l'Habitat	350.84	Banking	2008/2009	No					
Banque de Tunisie	810.11	Banking	2008/2009	No					
Banque de Tunisie et des Emirats	90.36	Banking	2008/2009	No					
Banque Internationale Arabe de Tunisie	851.65	Banking	2008/2009	No					
Banque Nationale Agricole	296.46	Banking	2008/2009	No					
Compagnie d'Assurance et de Réassurance ASTREE	190.83	Insurance	2008/2009	No					
Compagnie Internationale de Leasing	71.70	Financial Services	2008/2009	No					
El Wifack Leasing	37.33	Financial Services	2008/2009	No					
Electrostar	11.18	Manufacturing	2008/2009	No					
Essoukna	13.38	Real Estate	2008/2009	No					
Générale Industrielle de Filtration	38.31	Manufacturing	2008/2009	No					
Groupe Artes	211.87	Retail	2008/2009	No					
Karthago Airline	N/A	Transportation & Logistics	No	No					
Les Ciments de Bizerte	N/A	Construction & Building Materials	2008/2009	No					
Palm Beach Hotel	N/A	Hotel & Leisure	No	No					

Tunisia (continued)

Name of the company	Market Cap US$ (Mio)	Industry sector	Published Financial Reports	Derivative usage	Swaps	Forwards	Futures	Option	ESOPs
Poulina Group Holding	823.96	Diversified operations	2008/2009	No					
SERVICOM	N/A	Construction & Building Materials	2008/2009	No					
Simpar	20.71	Real Estate	2008/2009	No					
Société Chimique Alkimia S.A.	37.48	Chemical	2008/2009	No					
Société de Production Agricole Téboulba	24.43	Agro-industry	2008/2009	No					
Société des Industries Chimiques du Fluor	31.40	Chemical	2008/2009	No					
Société des Industries Pharmaceutiques de Tunisie	22.18	Healthcare & Pharmaceuticals	No	-					
Société El Mazraa	N/A	Agro-industry	No	No					
Société Frigorifique et Brasserie de Tunis	562.23	Brewery	2008/2009	No					
Société Immobilière Tuniso-Saoudienne	37.81	Real Estate	No	-					
Société Industrielle d'Appareillage et de Matériels Electriques	42.68	Manufacturing	2008/2009	No					
Société Industrielle des Textile	10.79	Manufacturing	2008	No					
Société Industrielle Tunisie Lait	37.32	Agro-industry	2008/2009	No					
Société Magasin Général	150.90	Retail	2008/2009	No					
Société Moderne de Céramique	39.47	Manufacturing	2008/2009	No					
Société Nouvelle Maison de la Ville de Tunis	325.32	Retail	2008/2009	No					
Société Tunisienne d'Assurances et de Réassurances	265.24	Insurance	2008/2009	No					
Société Tunisienne de Banque	272.83	Banking	2008/2009	No					
Société Tunisienne de Sucre	N/A	Agro-industry	No	-					

Tunisia (end)

Name of the company	Market Cap US$ (Mio)	Industry sector	Published Financial Reports	Derivative usage	Swaps	Forwards	Futures	Option	ESOPs
Société Tunisienne de Verreries	82.99	Manufacturing	2008/2009	No					
Société Tunisienne d'Entreprises de Télécommunication	28.08	IT & Telecom	2008/2009	No					
Société Tunisienne d'Equipement	11.92	Construction & Building Materials	2008/2009	No					
Société Tunisienne des Industries de Pneumatique	9.99	Manufacturing	2008/2009	No					
Société Tunisienne des Marchés de Gros	9.85	Retail	No	-					
Sotrapil	27.20	Oil & Gas	2008/2009	No					
Tunisair	179.14	Transportation & Logistics	2008/2009	Yes	CP	-	-	-	-
Tunisie Leasing	114.07	Financial Services	2008/2009	No					
Tunisie Profilés Aluminium	149.31	Manufacturing	2008/2009	No					
Union Bancaire pour le Commerce et l'Industrie	377.77	Banking	2008/2009	No					
Union Internationale de Banque	268.10	Banking	2008/2009	No					

WAEMU

Name of the company	Market Cap US$ (Mio)	Industry sector	Published Financial Reports	Derivative usage	Swaps	Forwards	Futures	Option	ESOPs
Bank Of Africa	65.80	Banking	2008/2009	No					
ONATEL	319.60	IT & Telecom	2008/2009	-					
SIVOA	17.30	Chemical	2008/2009	-					
BERNABE CI	11.02	Retail	No	-					
BICICI	110.00	Banking	No	-					
Bollore Africa Logistics	N/A	Transportation & Logistics	No	-					
SETAO	1.24	Construction & Building Materials	No	-					
CEDA	N/A	Forestry & Paper/Related Products	No	-					
CFAO	321.00	Retail	No	-					
Compagnie ivoirienne d'electricite	89.60	Utilities	2008/2009	-					
Crown Siem S.A.	N/A	Manufacturing	2008/2009	-					
Filtisac S.A.	21.86	Manufacturing	No	-					
NESTLE CI S.A.	150.08	Manufacturing	2008/2009	-					
Nouvelles Editions Ivoiriennes	N/A	Publishing	2009	-					
Palmci	48.04	Agro-industry	No	-					
SAEC ASTRAL	N/A	Chemical	No	-					
SAFCA	5.98	Financial Services	No	-					

WAEMU (end)

Name of the company	Market Cap US$ (Mio)	Industry sector	Published Financial Reports	Derivative usage	Swaps	Forwards	Futures	Option	ESOPs
SAGA CI	N/A	Transportation & Logistics	No	-					
Servair ABIDJAN	3.06	Servair	2008/2009	-					
Shell CI	31.50	Oil & Gas	2008/2009	-					
SITAB - Imperial tobacco	130.82	Manufacturing	2009	-					
SAGECO CI	N/A	Manufacturing	No	-					
SAPH S.A.	132.80	Agro-industry	No	-					
SARI S.A.	11.92	Retail	No	-					
SOGB S.A.	67.00	Manufacturing	2009	-					
Société de Distribution Peyrissac	N/A	Retail	No	-					
SOLIBRA S.A.	248.24	Brewery	2009	-					
SGBCI S.A.	231.46	Banking	2009	-					
SICABLE S.A.	4.14	Manufacturing	2008/2009	-					
SICOR S.A.	6.00	Agro-industry	2009	-					
SIVOM S.A.	4.44	Transportation & Logistics	2008/2009	-					
SMBC S.A.	N/A	Construction & Building Materials	2008	-					
Total CI S.A.	109.56	Oil & Gas	2008	-					
TRITURAF S.A.	3.84	Agro-industry	No	-					
Unilever CI	224.94	Manufacturing	No	-					
Uniwax S.A.	N/A	Manufacturing	2008/2009	-					
Sonatel	3,276.60	IT & Telecom	2009	-					
Ecobank Transnational	912.13	Banking	2008/2009	Yes	FX	FX			Yes

11. Annexure 2

Without ESOPs

	Air Mauritius Ltd (AML MP) Transportation & Logistics $47,263,000	SWAPS			FORWARDS			OPTIONS			FUTURES	ESOP
1	Has the company entered into the following during											
2	- the financial year ended 2009	yes			yes			yes			no	
	- the financial year ended 2008	yes			yes			yes			no	
3	If so, specify	IR	CP	FX	IR	FX	CP	CP	FX	Share	CP	
	- the financial year ended 2009	no	yes	no	yes	no	no	yes	no	no	no	no
	- the financial year ended 2008	no	yes	no	yes	no	no	yes	no	no	no	
3	Quantify the fair value as at the year end	K Euros										
	- 2009	-	-30,021	-	3,091	-	-	-	-	-	-	-
4	Dilutive effect of share options as at end of 2009											

With ESOPs

	Ecobank (AML MP) Banking $912,133,908	SWAPS			FORWARDS			OPTIONS			FUTURES	ESOP
1	Has the company entered into the following during											
2	- the financial year ended 2009	yes			yes			no			no	No
	- the financial year ended 2008	yes			yes			no			no	No
	If so, specify	IR	CP	FX	IR	FX	CP	CP	FX	Share	CP	
	- the financial year ended 2009	yes	no	yes	no	yes	no	no	no	no	no	Yes
	- the financial year ended 2008	yes	no	yes	no	yes	no	no	no	no	no	
3	Quantify the fair value as at the year end	US$										
	- 2009	-	-	-22,000	-	17,000	-	-	-	-	-	-
4	Dilutive effect of share options as at end of 2009	3.49%										

12. Annexure 3

Author	Source of data	Year	Region / Country covered	Instrument Focus	Number of companies in initial sample	Effective sample rate	% of derivative user	1st most used derivative
Bodnar et al	Survey	2008	Italy	FX / IR / CP	464	18,4%	nc	FX
Sheedy	Survey	2006	Hong Kong	FX / IR / CP	59	100,0%	81%	FX
Pramborg	Survey	2003	Sweden	FX	250	41,2%	81%	na
Bodnar et al	Survey	1999	Germany	FX / IR / CP	-	34,2%	77,80%	FX
Schiozer and Saito	Financial report	2009	Argentina, Brasil, Chile, Mexico	FX	55	100,0%	75%	na
Jalilvand	Survey	1999	Canada	FX / IR / CP	548	26,4%	75%	IR
Sheedy	Survey	2006	Singapore	FX / IR / CP	72	nc	75%	FX
Bailly et al	Survey	2003	UK	FX / IR / CP	629	37,2%	72%	FX
K. Prevost et al	Survey	2000	New Zealand	FX / IR / CP	334	46,4%	67,10%	na
El Masry	Survey	2006	UK	FX / IR / CP	401	43,1%	67%	na
Momani & Gharaibeh	Survey	2008	Jordan	FX	120	60,8%	66%	na
de Ceuster et al	Survey	2000	Belgium	FX / IR / CP	334	21,9%	65,8%	FX
Philips	Survey	1995	US	FX / IR / CP	3480	18,9%	63%	IR
Brunzell et al	Financial report	2009	Scandinavia	FX / IR / CP	592	18,9%	61,60%	FX
Batram et al	Financial report	2008	Global	FX / IR / CP	6888	100,0%	60,50%	FX
Batram et al	Financial report	2009	Global	FX / IR / CP	7319	100,0%	60,30%	FX
Bodnar et al	Survey	2001	Netherlands	FX / IR / CP	164	51,2%	60%	FX
Mallin et al	Survey	2001	UK	FX / IR / CP	800	28,9%	60%	FX
Alkeback	Survey	2003	Sweden	FX / IR / CP	261	51,3%	59%	FX
Berkman et al	Survey	1997	New Zealand	FX / IR / CP	79	64,2%	53,10%	FX
Alkebäck & Hagelin	Survey	1999	Sweden	FX / IR / CP	213	76,5%	52%	FX
Pramborg	Survey	2003	Korea	FX	384	15,5%	51%	na
Bodnar et al	Survey	1998	US	FX / IR / CP	1928	20,7%	44%	FX
Sprčić et al	Financial report	2008	Croatia	FX / IR / CP	157	31,2%	43%	FX
R Ameer	Financial report	2009	Malaysia	FX / IR	427	24,4%	40,38%	na
Rossi Junior	Financial report	2007	Brazil	FX	212	nc	nc	na
Rossi Junior	Financial report	2010	Brasil	FX	-	nc	nc	na
ISDA Survey	Survey	2009	Global	FX / IR / CP	500	100,0%	94,00%	FX
Bodnar et al	Survey	1996	US	FX / IR / CP	2154	16,3%	39,00%	FX
Selv & Turel	Financial report	2010	Turkey	FX / IR / CP	100	100,0%	35%	FX
Bodnar et al	Survey	1995	US	FX / IR / CP	2000	26,5%	34,53%	FX
Shu and Chen	Financial report	2003	Taiwan	FX / IR / CP	341	100,0%	34,33%	FX
Kapitsinas & Spyridon	Survey	2008	Greece	FX / IR / CP	110	56,4%	33,90%	IR
Martin et al	Survey	2009	Peru	FX / IR / CP	65	100,0%	33%	FX