

DERIVATIVES USAGE IN NON-FINANCIAL FIRMS

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ABSTRACT

Derivatives are commonly used by financial firms in order to protect themselves from unforeseen losses due to currency fluctuations. The degree of usage should demonstrate the equivalent level of risk the firms intend to cover, hence the bigger the foreign exchange exposure, the bigger the coverage. This study attempted to describe derivative usage in non-financial firms. Cross section data from developed and developing countries were used to assess the degree of usage. The findings revealed that while in developed countries the usages are very rigorous, derivatives are also becoming popular in developing countries. The reason for the usage also indicated similarity between developed and developing countries.

INTRODUCTION

This paper is a literature review on financial derivative usage as a means of managing financial risk exposures by non-financial firms. The 'backdrop' of this literature review will be based on two domains, i.e. the financial risk management and non-financial firms. Financial risk management can generally be regarded as the act of identifying, containing, assessing and monitoring the risk level of a firm by utilizing a wide range of financial hedging instruments. The financial hedging instruments, also famously known as financial derivatives, are instruments whose returns are derived from those of other instruments (Chance, 1998). In other words, their performances are dependent on other underlying assets or liabilities performance. Amongst the commonly used derivative products are forward contracts, future contracts, swaps and options. As financial risk management is synonym with the use of financial derivatives, a great deal of effort will be focussed in addressing and discussing the issues of derivative instruments usage.

In contrast with financial hedging instruments, a firm can always engage in operational hedges. Operational hedge is best defined as a firm's ability to leverage on its operational flexibility. It relies on the firm's competitive positions across several different markets and products by adjusting its raw materials sourcing locations, re-locating its production plants, fixing its external financing with specific desired currency and centralizing its treasury activities, to name a few. Bradley and Moles (2002) termed operational hedges as commonly called 'natural hedge' where the main objective is to match the input and output sensitivities so as to reduce the degree of exposure. According to Pantzalis et al (2001), operational hedges are more effective in managing long run exposure whereas financial hedges are more effective and relevant for the shorter term.

This paper concentrates on the notion of financial hedges as a means of managing a firm's financial risk exposures. The rationales of confining the research to financial hedges are, firstly, not many firms are inclined to engage in operational hedges mainly because operational hedges require a wide range of operational 'networking' established in many different countries. Only multi-billion dollar firms that normally consist of manufacturing, automobile and pharmaceutical industries have the 'privilege' to relocate their plants and supply-chain networks. Secondly, it is relatively difficult to measure the direct impact between a firm's risk management values and a firm's decision to relocate its activities. Thirdly, operational hedges require a longer period to depict the value of risk management.

At the same instance, financial hedges are chosen to dominate the research theme because, firstly, most firms that engage in international financial transactions are in one way or another involved in foreign exchange rate exposure that needs to utilize financial hedging instruments. This is regardless of the firm's size, business activity and sales volume. On this note, financial hedges have a wider application base as compared to operational hedges. Secondly, the impact between a firm's value of risk management and its decision to use financial hedges can be measured easily and directly. Thirdly, a firm has more flexibility in adjusting its size, assets/liabilities maturity, and/or denomination of its financial instruments than in adjusting its operating strategies. Thus, it is more likely that financial hedges are used to manage a firm's financial risk management. Finally, the usage of financial hedges have attracted much interest and concern from the accounting bodies, government authorities, practitioners and academic circles as compared to operational hedges.

Meanwhile, the decision to limit this paper to non-financial firms is drawn from the fact that almost all (if not all) banks and financial institutions use financial hedging products, such as derivatives for trading purposes or for performing dealer activities for their clients. Financial derivatives form part of their products offered to their clients. The decision to exclude financial firms in this and subsequent studies is consistent and in line with most studies in financial risk management literature.

HISTORICAL DEVELOPMENT OF FINANCIAL DERIVATIVE TRADING

The Growth

Kettell (1999) estimated the rate of growth of derivative usage was approximately 26% per annum from the year 1990 to 1998. From approximately 780 million numbers of contracts traded in year 1990 to a hefty figure of 2,104 million in less than 10 years. This statistics only relates to the exchange traded derivative contracts. Below is a summary table of global exchange traded derivatives contract volumes for that particular period :-

Year	Number of Contracts Traded
1990	777,195,380
1991	815,488,373
1992	967,380,722
1993	1,198,210,062
1994	1,592,779,422
1995	1,669,013,772
1996	1,673,632,379
1997	1,856,379,771
1998 (Jan-Nov)	2,104,313,325

(Source: Kettell, 1999, page 15)

Whilst no one is able to reveal the true and accurate amount for the Over the Counters (OTC) derivative based trading, Loong (2002) believed that the total notional amount of the outstanding derivative contracts worldwide stood in the region of US\$ 118 trillion as at mid-2001. This is according to the report by Bank of International Settlement (cited in Loong, 2002, pg. 47).

Meanwhile, in the same article by Loong (2002, pg. 46-7), it was estimated that the notional amount outstanding for derivative trading in the Asian region was approximately US\$ 1.4 trillion. This figure has been increasing significantly and is still growing despite the 1997's Asian financial crisis.

In relation to the Asian-Pacific region, Sheedy and McCracken (1997) reported that for the year 1996, foreign exchange derivative products in Australia alone achieved the turnover of approximately US\$ 9,000 billion whilst interest rate based products exceeded US\$ 1,000 billion.

Admittedly, this surge in derivatives demand has been, if not all, primarily attributed to the increase in financial volatility in the global equity and capital markets. Based on Miller and Reuer (1998) study on all major US's manufacturing firms, they found that at least 13% to 17% of the sample firms were exposed to foreign exchange rate movements.

Similar empirical evidences were found in the case of New Zealand and Sweden non-financial firms. Alkeback and Hagelin (1999) in their survey studies indicated that approximately 52%-53% of non-financial firms in Sweden and New Zealand utilized derivative instruments as part of their risk management policy in order to contain the foreign exchange rate volatility.

Equally interesting to note is the surge in demand in the energy-related derivative contracts globally. For instance, the daily average volume of energy-related futures contracts traded on the New York Mercantile Exchange increased from merely 7,340 contracts in 1982 to a substantial figure of 467,042 in the first half of 2002. This is according to a report published by the Energy Users News in its April 2003 publication.

Despite the benefits of and increased demand for derivative products, the use of derivatives has also notoriously gained a bad and ugly reputation. Instead of utilizing it as a means of reducing risk (if not to totally eliminate the risk), it has gained popularity of increasing risks. To a larger extent, all the notable financial institution collapses and contagion effects were partly linked to some form of derivative activities. Derivative's characteristics of being an off balance sheet item and tool for leveraging products, coupled with the lack of knowledge and expertise of the users, have successfully placed derivatives as speculative instruments in practice.

As much as eliciting the benefits and growth of derivative products used as part of risk management policy, it is also the responsibility of this paper to present equally balanced views of the dangers posed by them. The following section specifically discusses the past and potential economic 'disasters' that may or have been triggered by derivative misusages.

The dangers

According to Copeland (1996), not all foreign exchange exposures require hedging through derivative instruments. In fact, he argued that foreign exchange risk management program might possibly destroy value instead of protecting it. This arises from the fact that foreign exchange is only a minor contribution to the total risk affecting a firm's financial performance. Certain large US multinational corporations, such as Kodak, Exxon and 3M choose not to use derivatives as their hedging tool (Guay, 1999). They argued that the high cost and riskiness of engaging derivatives in the current volatile markets, together with the imperfectness of hedging itself, does not make it a necessity because the benefits do not always justify the cost of hedging.

To a greater extent, Randall Dodd (2000), who is currently in-charge of US's Derivative Study Center (based in Washington), commented that the derivatives usage in East Asia (especially in Thailand) had negative impacts towards the 1997's crisis. Dodd (2000) claimed that derivative trading was the culprit of 1997's Asian financial crisis. His analysis was mainly drawn from the following facts :-

1. Reducing transparency – most derivative products are OTC in nature and treated as off-balance sheet items. As such, it is difficult to capture the 'true' risk of the firms ;
2. Regulating avoidance/lack of regulation – most Asian governments were new to the concept of hedging. They essentially required more time, expertise and experience in drafting a proper, tight and effective regulation, control and monitoring system. Given this fact, derivatives were used to manipulate the deficiencies and gaps in the monetary system of these countries ;
3. Increased systemic and contagion effects – most derivative transactions were done by large private multinational firms and government owned agencies. These transactions were normally transacted on a large scale and were foreign currency denominated in nature. Failure to meet the derivative commitments would have triggered national economic risks as the domino effects were passed down to the lower stream of the society and at the same time affecting the country's balance of trade and payments.

However, some researchers in this field disputed Dodd's (2000) arguments. According to Haddock (2000), it is believed that the 1997 crisis was substantially exaggerated because Asian based multinational corporations (MNCs) and financial institutions were unhedged. This exposed them to the sudden and unexpected adverse movements in the foreign exchange and interest rates.

This view is supported by Kregel (2000) where he argued that one major explanation of 1997's crisis was due to the fact that a large proportion of foreign borrowing by Asian corporations was left 'naked'. The prevailing rationale then was the borrowers' perception of having a steady and continuous stable exchange rate.

Nevertheless, it is interesting to note that Kregel (2000) in the same article highlighted that, based from 1997 and 1998's US's financial institutions quarterly reports, the US's major banks have taken a position to write-off their derivative-based credit swap contracts extended to the East Asian corporations and financial institutions. With these information, Kregel (2000, pg. 58-59) admittedly wrote "... at least in the case of US's banks, certain type of derivatives have appeared to play some roles in the flows of funds to Asia, and thus in the instability of these flows."

As far as the Asian derivatives market is concerned, most financial researchers opined that the Asian derivatives market is still in its tender age. It is reported from the Bank of International Settlements (cited in Loong, 2002, pg. 46-47) that the notional amount

outstanding for derivative trading in the Asian region is approximately US\$ 1.4 trillion, as at mid-2001, compared to worldwide figure of US\$ 118 trillion. This is merely about 1.2% of world's derivatives "consumption". Nevertheless, derivative losses in Asian countries have also created massive lawsuits, such as the case for Korean's SK Securities and JP Morgan. The total value of the suits amounted to US\$ 300 million, which mostly consisted of currency swap derivatives.

At the same instance, there is another possible danger of using derivative products as a hedging tool, which is the existence of credit risk. Credit risk can be defined as "the risk that the interest or principal, or both, on securities and loans will not be paid as promised" (Hempel, Simonson, and Coleman, 1994, p. 67). This credit risk is high especially in OTC derivatives market. This is because they are privately negotiated, unique, tailor-made and could be really complex and sophisticated.

Presented below is a summary table highlighting the major losses due to financial derivative transactions :-

Major losses due to derivative transactions since August 1993

Loss (US\$ m)	Dealer or end user to suffer losses	Area of losses
40	CS First Boston Investment Management	Currency linked and other derivatives
50	Medani	Structured notes
51.3	Harris Trust & Savings Bank (Bank of Montreal)	Mortgage derivatives
67.9	Pacific Horizon Funds (BOA)	Structured notes derivative
78	Eigen Haard (Dutch Housing Association)	Interest rate options
90	AIG	Derivative revaluation
90	Investor Equity Life Insurance Co.	Bond futures
96	Colonia (Germany Holding Co.)	Interest rate and exotic options
99.6	Florida State Treasury and Florida League of Cities	Mortgage derivatives
100	Cargill (Minnetonka Fund)	Mortgage derivative

(continued)

Loss (US\$ m)	Dealer or end user to suffer losses	Area of losses
113	Air Products	Leverage and currency swaps
150	Glaxo Holding plc	Mortgage derivatives
157	P&G	Leveraged DEM and US\$ spread
200	Codelco Chile	Copper and precious metals futures and forwards
600	Askin Securities	MBS model
1,240.5	Baring Brothers plc	Options & futures
1,340	MG Corp (Metallgesellschaft)	Energy derivatives
2,000	Orange County	Reverse repos and leveraged structured
4,000	Long Term Capital Management (LTCM)	Betting on differences between bond and future prices

(Source: Kettell, 1999, page 19)

Although the losses are substantial and getting scarier, many MNCs are still gauging in derivative activities that are speculative in nature. A study conducted by Bodnar et al. (1998, pg 14), revealed that 40% of the sample firms (US's MNCs) have, "... a profit-based approach to risk managed evaluation. Such an approach can provide incentives for risk managers to take a position that may ultimately increase the total riskiness of the firm".

Despite all the criticism and dangers posed by the misuseage of financial derivative products, Mr. Alan Greenspan, the current US Federal Reserve Chairman, has voiced his ever undying support for the products. In an address to the American Bankers Association Annual Convention in early October 2002, Greenspan, once again proved to be the advocate of financial derivative products (ABA Banking Journal, 2002) where he cited that, "Financial derivatives, more generally, have grown at a phenomenal pace over the last fifteen years," Greenspan continued, "... these increasingly complex financial instruments have been especial contributors, particularly over the past couple

of stressful years, to the development of a far more flexible, efficient, and resilient financial system than existed just a quarter-century ago.” (ABA Banking Journal, 2002, pg. 37).

As so much attention was given to the usage of financial derivatives, it is the objective of this research paper to further explore and investigate the past and current empirical evidence on the world’s usage pattern of these products. In line with the objective, the authors have decided to dedicate the following section to review most of the major works, articles, and literature with regards to the use of financial derivatives.

FINANCIAL DERIVATIVE : PRODUCTS USAGE PATTERNS

This review will focus on two major parts of financial risk management, the first one being the past and recent empirical findings on financial derivative usage by non-financial firms, and the second one will be the empirical evidence on hedging determinant theories by non-financial firms. The empirical studies which will be reviewed include, amongst others, research questionnaires, interviews, companies’ financial reporting, and government economical and statistical publications.

General consensus on financial derivative usage pattern

Generally, the consensus are segmented into various discussion headings. They ranged from goals or objectives of derivative usage, types of derivatives used, firm’s concerns or issues about derivatives and derivative usage by business sector and size. Most survey studies found that on average half of the total sample firms chosen decided to utilize derivative products as a means of their risk management policy. According to Alkeback and Hagelin (1999), 52% of Swedish firms had used derivative as part of their risk management practices. In the case of non-financial firms operating in Belgium, De Ceuster et al (2000) found that approximately 66% of their 73 sample firms had used financial derivatives product in their risk management practices. In a separate study of derivative usage by Canadian non-financial corporations, Jalilvand (2000) found that 75% of the 548 sample firms confirmed that they have had used derivative products.

A similar finding was reported in the case of UK non-financial listed firms. Mallin et al (2001), in 1997 surveyed 800 UK non-financial firms randomly chosen from across the range of listed firms in which, 231 firms responded. Of the 231 respondents, 138 (60%) reported to have had used at least one financial derivative instrument. This figure was consistent with a different study by Adedeji and Baker (2002). The authors surveyed 982 UK firms in the FT-All Share Index in 1996 resulting in a final sample size of 140 firms. Of these 140 firms, 63% were categorized as derivative users.

On the other hand, 50% or 200 out of 399 US based non-financial firms were reported to have had used derivatives (Bodnar et al., 1998). Similarly, Goldberg et al (1998) reported that about 57% of their 410 US non-financial sample firms were defined as derivative users. The figure was much higher in the case of Barton (2001). Barton (2001) examined 304 Fortune 500 firms using 1994-96 data in which approximately 72% of the 304 sample firms were categorized as the derivative users. Conversely, a lower figure was obtained in an empirical study conducted by Geczy et al (1997). They found that approximately 41% of their sample US non-financial firms had used a form of currency derivative products as a means of their hedging policies.

However, a similar study conducted by Fatemi and Glaum (2000) on German non-financial firms with a sample size of 71 companies indicated that approximately 88% of the sample firms did use derivative instruments. In a two country comparison study between US and German non-financial firms by Bodnar and Gebhardt (1999), the authors found that, in general, German firms were more inclined to use derivatives than US firms, with 78% of German firms using derivatives compared to 57% of US firms.

Berkman et al. (1997) in their study of non-financial New Zealand firms found that 53% of their sample firms had decided to use derivative instruments as part of their risk management practices. A subsequent study by Prevost et al (2000), revealed that the demand for derivatives products had increased to approximately 67%, in which 104 of their 155 New Zealand non-financial sample firms reported to have had used derivatives. This increment was more apparent compared to 1994's study conducted by Bradbury and Berkman (1996), where they found that approximately only 48% of 116 New Zealand Stock Exchange listed firms were defined as derivative users.

Meanwhile, Nguyen and Faff (2002) examined a set of 500 largest Australian companies that were listed on the Australian Stock Exchange for the financial years of 1999 and 2000. They obtained 239 firms in 1999 and 230 firms in 2000 resulting in a final sample size of 469 firm/year observations. Of these sample firms, 74.2% were reported to have had used derivative products.

In relation to the Asian/South East Asian financial derivative usage, Yu (2002) in his article titled "Risk Management of Shanghai Enterprises with Financial Derivatives", found that merely 3% of the interviewed (via telephone) firms used derivative products. This situation, however, should not be interpreted literally. Yu (2002) commented that, in the case of Shanghai enterprises, certain large financial institutions were approved by the state administration to engage in the business of foreign exchange futures on *commission*. "Exclusively foreign-invested enterprises, private enterprises and enterprises with trading backgrounds could entrust these financial institutes with "Licenses to Engage in the Business of Foreign Exchange Futures" on financial derivatives" (Yu, 2002, pg. 117). As such, most firms that were in reality engaged in derivative instruments, were in fact 'ignorant' of their derivative usage as this is licensed and exclusively handled by the large financial institutes.

In relation to the types of derivative products used, most literature found that majority of the user firms opted for 'plain-vanilla' derivative based instruments. These are the simple, straightforward and 'ready-to-use' derivative products, such as forward, swap and futures. Fatemi and Glaum (2000) revealed that currency forward contracts and interest rate swaps were the two derivative products most frequently used by the German firms.

This is consistent with the study conducted by Prevost et al (2000) in examining derivative usage among the New Zealand firms. In particular, forwards are used predominately to manage the FX risk, while swaps stood out as the most common means of controlling interest rate exposure.

In a different survey study conducted by Bodnar et al. (1998) on US non-financial firms, the findings revealed that approximately 68% of the 200 derivative-using firms in their sample size opted for options based derivative products. Within this percentage, foreign exchange based options were the most commonly used followed by interest rate and equity.

As far as the UK's non-financial firms are concerned, the general consensus indicate that OTC forwards are by far the most commonly used by the UK's firms in managing the currency risk, followed by options and swaps. In relation to interest rate risk management, swaps based products, followed by OTC options, are in fact the most frequently engaged by the UK's firms. This is according to the study by Mallin et al in year 1997 (Mallin et al, 2001).

On a separate note, Khim and Liang (1997) investigated the derivative usage as part of Singaporean firms' financial risk management practices. The authors found that foreign exchange futures instruments were the most commonly transacted by the Singaporean firms in the category of exchange-traded derivatives. Expectantly, foreign exchange forwards came out as the most frequently used in the OTC derivatives market. Below is a table tabulating the findings by Khim and Liang (1997) in respect to types of derivative instruments used :-

Types of Derivative Instruments	Users (%)	Non Users (%)
Exchange-Traded :		
(a) Foreign exchange future	80	20
(b) Interest rate future	54	46
(c) Foreign exchange option	67	33

(continued)

(d) Interest rate option	50	50
(e) Index securities	20	80
Over the Counter :		
(a) Foreign exchange forward cover	83	17
(b) Interest rate swap	48	52
(c) Floating rate agreement	41	59
(d) Foreign exchange swap	43	57
(e) Interest rate caps, collar and floor	39	61
(f) Collateralised mortgage obligations	37	63
(g) Floating rate note	37	63

(Source: Khim and Liang, 1997, page 28)

Whilst the trend of derivative usage among the non-financial firms is getting more substantial and significant, there are also issues and concerns that need to be taken into consideration. These issues include accounting treatment, liquidity risk, monitoring and evaluating hedging results, inadequate knowledge on firm's exposure and counter party credit risk. The findings derived from each and every survey study varies from one case to another.

Nevertheless, it is possible to generalize the overall findings into three broad categories, which are :-

- a. Concerns on accounting treatments compliance ;
- b. Market Risks – the unforeseen changes in the market value of the derivative positions ; and
- c. Derivative knowledge and expertise among the firm's personnel

In the case of US non-financial firms, Bodnar et al. (1998) found that accounting treatment was the key issue causing the most concern among the derivative users. Approximately 37% of the sample firms indicated a high degree of concern on the US's Financial Accounting Standard Board (FASB) compliance, followed by market risks. The firms ranked monitoring and evaluating hedging position third with a response rate of 29%.

The results obtained by Bodnar et al. (1998) were in fact in line with Fatemi and Glaum (2000) in the case of 71 non-financial German firms. The only slight differences were that, German firms ranked "measuring the risk of derivatives" before the accounting

treatments; and they also placed greater emphasis on adequate expertise and knowledge compared to the US's firms. Ranked somewhat lower were liquidity risk, transaction costs and public perception (Fatemi and Glaum, 2000).

On the other hand, Wallace (1998), revealed that majority of the sample firms in his study were concerned with the effectiveness of the information technology systems which ran in their firms. Their main worry centered on the systems' ability to capture fully, instantaneously and at the same time integrate the firm's overall risk management systems. On average, 70% of the sample firms had relied on their own in-house developed pricing and simulation software models for all the derivatives they used. 14% had depended on third party systems with the balance of 16% using no analytical hedging derivative systems at all (Wallace, 1998).

Corporate hedging determinant

The second part of this literature review is to highlight and discuss the hedging determinant theories. In a nutshell, hedging determinant theories dictate that the firms' decision to hedge very much depends on certain aspects of the firms' specific characteristics. Smith and Stulz in their 1985 research paper, published in the *Journal of Finance and Quantitative Analysis*, developed a positive theory of the hedging behaviour of value-maximizing firms. The authors developed a set of 3 major groups of variables that is deemed to affect a firm's decision to hedge. The three determinants are (1) taxes, (2) contracting and financial distress costs, and (3) managerial risk aversion. Applying extensive financial economic value-maximizing models coupled with mathematical calculation, the authors showed that the above three hypothesized factors formed major hedging determinants of firms in deciding their hedging structure.

Based on these models, the non-homogenous elements among the firm's hedging policies could be, to a large extent, explained. This is simply because every firm differs in terms of its effective tax rate, probability of financial distress that are represented by different gearing ratios and employees' benefit and compensation packages.

Many subsequent studies and empirical surveys that were conducted by financial risk management scholars were based on the analysis, hypothesis and theories developed by Smith and Stulz. From the many subsequent studies, more important discoveries were made in understanding the hedging behaviour of firms.

In 1993, Nance et al tested the Smith and Stulz's (1985) hypotheses empirically by using a set of questionnaires to survey among 535 firms in the Fortune 500 and S&P 400. Comparisons were made between the hedging firms and non-hedging firms with regards to the specific firm's characteristics. This was followed with statistical testing such as regression analysis, Logit analysis and Pearson Correlation of Coefficient tests. The statistical regressions strongly support the tax rate proposition as hypothesized by Smith and Stulz (1985).

A more specific examination on hedging determinant theories was carried out by Tufano (1996). Tufano investigated the hedging behaviour in managing financial risk exposure in the US's gold mining industry. In addition to the hedging determinants proposed by Smith and Stulz (1985), a newly proposed determinant of average tenure of a firm's CEO/CFO was also included. The research databases were gathered from a sample size of 48 firms whose primary business activities were related to the gold mining industry. The data collection method was based on secondary sources where substantial portions were obtained from earlier survey research, annual financial reporting and COMPUSTAT. The author found little empirical evidence supporting the hedging determinant theories in maximizing the firms' shareholders value. However, the statistical regression showed that there was a strong negative relationship between the tenure of firm's CFO and degree of financial derivative usage.

On the other hand, Geczy et al (1997) examined the use of currency derivatives as part of their research theme in analyzing firms' hedging behaviour. As currency derivatives was the theme of the research, considerable amount of emphasis was given to looking into the firm's foreign exchange rate exposures and its sources. Additional potential currency hedging determinants were also included in this study, specifically the institutional ownership element and number of investment firms with analysts following the performance of the sample firms.

The sample size consisted of 372 companies selected from Fortune 500 non-financial firms in 1990. Approximately 41% of these sample firms had used a form of currency derivative products as a means of their hedging policies. This article by Geczy et al (1997) is one of the first cross-sectional studies (in risk management field) to examine the hedging determinants by employing new annual report disclosures required by the Financial Accounting Standard Board (FASB), rather than survey data or secondary data obtained from COMPUSTAT.

In the case of Howton and Perfect (1998), the authors examined the use of derivatives among 451 companies in the Fortune 500 and S&P 500 (FSP) along with 461 firms that were randomly selected. Descriptive statistics revealed that approximately 61% of FSP companies and 36% of the random firms used derivatives. The most common products were swap based interest-rate contracts and forwards/futures based currency contracts. For the FSP sample firms, the authors tested the prevailing theories of hedging determinants. In general, the statistical testing verified that derivative use is directly related to financial distress costs, external financing costs, tax considerations and hedging substitutes. For the randomly chosen firms, derivative use is unrelated to most of the proxies hypothesized for the theoretical hedging determinants.

Mian (1996) on the other hand reported rather contradictory statistical findings. Data on hedging was obtained from 1992 annual reports from a sample of 3,022 firms. Out of that, 771 firms were classified as hedgers. The statistical findings revealed that, (1) evidence is inconsistent with financial distress cost models, (2) evidence is mixed with respect to contracting cost, capital market imperfections, and tax-based models, and (3)

evidence uniformly supports the hypothesis that hedging activities exhibit economies of scale.

In examining the hedging determinants of New Zealand's non-financial corporations, Berkman and Bradbury (1996) sampled 116 non-financial firms listed on the New Zealand Stock Exchange in which 55 firms (48% of the sample size) held derivatives financial instruments at the balance sheet date. In brief, the hedging decisions made by New Zealand firms were largely determined by the firm's economies of scales, tax structures, managerial risk-aversion, financial distress cost and liquidity level. These findings were very much consistent and in line with theoretical concepts of the corporate hedging determinant behaviour.

On the other hand, Adedeji and Baker (2002) investigated the interest rate derivative usage in the case of UK non-financial firms. This study was confined to one specific type of derivative, i.e. interest rate based products. The results supported strongly the hypothesis of positive relationship between the firms' interest rate derivatives usage and the risk of financial distress. Meaning to say that the greater the probability of financial distress occurrence, the more likely the firms will engage in interest rate derivatives.

Whilst Berkman and Bradbury (1996) presented an examination of the determinants of derivative used by New Zealand based firms, Nguyen and Faff (2002) on the other hand provided an equal and similar empirical study on Australian corporations. The text analyzed the firm's characteristics with respect to its financial hedging practices from a sample size of 469 Australian firms. All the sampled firms were public listed companies on the Australian Stock Exchange for the financial years 1999 and 2000. The descriptive statistics reveal that approximately 74% of the 469 sample firms used derivative products. Within these 74% user firms, about 84% engaged in foreign currency derivative products, followed by interest rate and commodity. In summary, the overall results indicated that Australian corporations used derivatives with an intention to enhance the firm's market value rather than maximizing managerial wealth.

FUTURE RESEARCH

All the above literature and other studies of similar focus have made significant and substantial contribution to the field of financial risk management practices. These are more apparent in recent times where the financial markets have become more volatile and uncertain. Yet, none of the literature and related studies have been comprehensive or exhaustive enough to provide us with a complete picture.

These are even demonstrated in the discussion above, where in some areas, there were clear indications of contradiction of the findings. For instance, German firms were 'proven' to be among the highest derivative users (study by Fatemi and Glaum, 2000) globally, yet surprisingly they were not termed as the most risk averse firms. This

inconsistency calls for potential future research especially in probing into the underlying attributes that derived the differences.

Despite the increasing number of articles and journal articles published in addressing the financial derivative usage, few are found to discuss the differences of hedging behaviour among firms from different countries. This is even more scarce in the case of Asian based corporations. The comparisons on financial derivative usage behaviour by MNCs between Western or developed countries and Asian countries are even 'scarcer'. These deficiencies prove to us that we are far from conclusive in depicting the factors contributing to the differences.

A more disturbing fact is that, there is a clear gap and lack in the development of the literature and related studies themselves conducted between western or developed countries and developing countries, particularly in the South East Asian countries. In this part of the world, little has been done to investigate the development, pattern and trend of the derivative usage as part of their risk management policy.

As derivative products become more complex, sophisticated and varied, any development impairment of derivative studies between these two parts of the world would make future studies more difficult and tedious to catch up. With the past and current increasing demand for derivative instruments by firms in these South East Asian countries, it will implicate the imbalance situation further.

This is indeed a serious and precarious predicament. If the current imbalance of development persists, there would be *potential* manipulation of derivative trading by more 'matured' derivative players to the firms in these countries. And this, if it happens, would be a very costly experience indeed, not only to the victimized firms but also to the government.

Another justification for the urgent need for financial risk management practices studies in the South East Asian countries is to furnish the respective governments with the domestic general information and concerns from the derivative users. These in turn will assist the government and authoritative bodies to formulate effective, transparent and user-friendly accounting standards, monetary regulations and monitoring systems of risk management policies for the firms.

On the other hand, I hypothesize that the next wave of financial risk management research would be the roles of the origin countries of the firms. In a short period of time, the scholars of financial risk management will observe (or already have observed) that each country's base firms will portray a specific and peculiar set of hedging determinants that differ significantly from one country to another. These variance factors may arise from different government regulations, different fiscal policies, different work ethics, mentality, unequal domestic liquidity level or simply the lack of awareness or knowledge on hedging. Whatever the factors are, one could associate them with a specific country.

Thus, similarly with the management literature field, we will evidence the Japanese hedging culture, Western hedging culture or South East Asian hedging culture.

In a nutshell, all these proposed future empirical studies on financial risk management practices would basically serve to enhance the respective country's databases. This is crucial to understand the derivative pattern specifically and financial risk management behaviour generally for the countries. More importantly, it would make the future secondary studies in risk management field possible.

CONCLUSION

The primary objective of this paper is to review the general literature findings on the world's financial risk management practices. The review tells us that there are certain areas of derivative usage that are commonly shared among most countries and some are in contrast. Those similarities and dissimilarities were delineated, compared and critically analyzed.

Several concerns arise from this literature review analysis; (1) there is a clear direction that the financial derivative usage is becoming more vital in corporate financial risk management practices, (2) it appears that there are some distinct qualities that are synonymly associated between derivative usage pattern and the firms' country of origin, (3) hypothetically, most dissimilarities of the findings are possibly due to the non-standardization or inconsistency of *comparable* research material used or the statistical regression technique utilized, and finally, (4) there is a clear gap of similar focus of research studies among Asian or specifically, South East Asian based countries as compared to western/developed countries.

Amongst all those issues highlighted above, it is the lack and insufficient empirical survey studies of similar research in the South East Asian region that concern the authors most. For the various reasons presented and discussed in Section 4 above, there is an immediate and critical need to close this gap as urgently as possible. The responsibility to initiate and spur the research lies not only in the hands of the South East Asian governments and academia but also with the practitioners and private sectors. The information gathered from these financial risk management studies will serve as *infrastructure* in building and shaping out the country's financial market.

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