2.1 Introduction

Currency exposure management being important in the context of global trade and investments, voluminous literature on the subject is available worldwide. Developed economies account for a big chunk of empirical literature on currency exposure management for obvious reasons. Some literature is available relating to emerging and developing economies also, which may be of greater help to the present research. To facilitate a better review of literature, studies conducted abroad are presented first followed by studies conducted in India. The following is an exhaustive list of investigations conducted in foreign countries.

2.2 Empirical Studies Conducted Abroad

Belk and Glaum (1990) report the results of an empirical study undertaken during 1988 on how UK multinational corporations try to manage their foreign exchange exposure. The study was based upon research conducted in 17 major UK industrial companies. Majority of the respondents feels transaction exposure management was seen a centerpiece of their foreign exchange risk management. Despite the financial literature demonstrating that accounting exposure is not a useful concept for foreign exchange risk management, the study found that a majority of companies were inclined to manage their accounting exposure actively. Further surveyed MNC’s showed a lower degree of centralization and the majority of respondents described their companies as ‘totally risk averse’.

Wai (1993) conducted a survey of 61 listed companies in Singapore with an objective to investigate the general practice adopted in foreign exchange risk
management. Investigation revealed that foreign exchange risk management is an integral part of the operations of many companies in Singapore. The results of his survey show that a majority of the companies, accounting for 75 percent, adopt a centralized foreign exchange management system; 85 percent of the respondents feel that they operate their treasuries as a cost centre; the survey results show that some of these companies are prepared to take risks by leaving some of their exposure un-hedged or by taking position in currencies. He reports that 92 percent of Singapore companies hedge their foreign exchange exposure on a case-by-case basis; only a negligible proportion goes for cent per cent exposure cover. Survey finds that short-dated forward contracts are the most widely used hedging techniques of Singapore companies; other derivative instruments like futures, options and swaps are not popular amongst the said companies.

**Batten, Mellor and Wan (1993)** conducted industry-wide, cross-sectional study on *foreign exchange risk management* practice and product usage of large Australian-based firms. Results are discussed from an empirical field study of seventy-two firms operating in Australia. Study finds that all firms hedge foreign exchange exposure. Survey finds that 61 percent of the Australian firms manage transaction exposure only, 8 percent manage transaction and translation and 17 percent manage all three exposures (other 14% have not given their response). They found that Australian firms were using both physical and synthetic products to offset the cash flows generated by the firm’s *foreign* operations and trade. The synthetic products used by these sample firms included futures, options, swaps and option products. The physical products included spot, forwards, forward-forwards and short and long-term physical swaps. The survey suggested extensive use of synthetics by the corporate sector with 35 firms (49 percent) using both physical and synthetic products, four firms (6 percent) using only synthetic products and the remaining 33 (46 percent) using physical products exclusively.
Bodnar, Hayt and Marston (1995) conducted a survey of derivatives usage by US non-financial firms. Out of 350 firms took part in the survey, 176 from the manufacturing sector, 77 from the primary products sector which includes agriculture, mining, and energy as well as utilities, and 97 from the service sector. The study found that 76 percent of all derivatives users in their survey manage foreign exchange risk using some foreign currency derivative or the other. This percentage makes foreign currency derivatives the most commonly used class of derivatives among the surveyed respondents. Among the types of foreign currency derivatives the firms use, the forward contract is the most popular choice. More than 75 percent of firms rank the forward contract as one of their top three choices among foreign currency derivative instruments with over 50 percent ranking it as their first choice. OTC options are also a popular foreign currency derivative instrument, with about 50 percent of the firms choosing this as one of their top choices. Among the remaining instruments, swaps and futures are the most popular.

Jesswein, Kwok and Floks (1995) analyses and documents the extent of awareness and use of currency risk managements products by US Corporations. Based on the survey of Fortune 500 Companies, they concludes that traditional forward contract is the most popular derivative product with 93% using the same followed by currency swaps (53%) and OTC Options (49%). Many recent hybrid products were least preferred by respondents.

<table>
<thead>
<tr>
<th>Type of Product</th>
<th>Awareness (In %)</th>
<th>Usage (In %)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forward Contract</td>
<td>100</td>
<td>93.1</td>
</tr>
<tr>
<td>Foreign currency Swaps</td>
<td>98.8</td>
<td>52.6</td>
</tr>
<tr>
<td>Foreign currency futures</td>
<td>98.8</td>
<td>20.1</td>
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<tr>
<td>Exchange traded currency options</td>
<td>96.4</td>
<td>17.3</td>
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<tr>
<td>Exchange traded futures options</td>
<td>95.8</td>
<td>8.9</td>
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<tr>
<td>OTC Currency options</td>
<td>93.5</td>
<td>48.8</td>
</tr>
<tr>
<td>Cylinder Options</td>
<td>91.2</td>
<td>28.7</td>
</tr>
<tr>
<td>Synthetic forwards</td>
<td>88</td>
<td>22</td>
</tr>
<tr>
<td>Synthetic options</td>
<td>88</td>
<td>18.6</td>
</tr>
<tr>
<td>Participating forwards, etc.</td>
<td>83.6</td>
<td>15.8</td>
</tr>
<tr>
<td>Product</td>
<td>Hedging</td>
<td>Non-Hedging</td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>-----------</td>
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</tr>
<tr>
<td>Forward exchange agreements, etc.</td>
<td>81.7</td>
<td>14.8</td>
</tr>
<tr>
<td>Foreign currency warrants</td>
<td>77.7</td>
<td>4.2</td>
</tr>
<tr>
<td>Break forwards</td>
<td>65.3</td>
<td>4.9</td>
</tr>
<tr>
<td>Compound Options</td>
<td>55.8</td>
<td>3.8</td>
</tr>
<tr>
<td>Lookback Options. Etc.</td>
<td>52.1</td>
<td>5.1</td>
</tr>
<tr>
<td>Average across products</td>
<td>84.4</td>
<td>23.9</td>
</tr>
</tbody>
</table>

**Milan (1996)** provides empirical evidence on the determinants of corporate hedging decisions. In his paper he examines the evidence in the light of mandated financial reporting requirements in general and constraints placed on anticipatory hedging in particular. Data on hedging is obtained from the 1992 annual reports for a sample of 3022 US firms. Out of 771 firms classified as hedgers, 543 firms disclose information in their annual reports on their hedging activities; the remaining 228 firms report use of derivatives but no information on hedging activities is provided. Study finds robust evidence that larger firms are more likely to hedge.

**Grant and Marshall (1997)** conducted a survey of large UK companies to ascertain their usage of derivatives. They examined the extent of derivatives usage, the reasons behind their usage, the perceived risk associated with derivatives, the control mechanism to monitor the derivatives used and the reporting practices which governed the usage of derivatives. The results of the survey indicated widespread usage of derivatives like swaps, forwards and options. The primary reason for their use was to manage interest rate and currency risks. There was a rather limited but growing use of derivatives to manage commodity and equity risks. Treasurers of the sampling firms reported that they were somewhat cautious about more exotic types of derivatives, primarily because of concern over the illiquidity of the underlying market for these derivatives. Interestingly, they revealed that they viewed control and the nature of their counterparty as the main risk in using derivatives. Finally, the use of derivatives was accompanied by significant control mechanism within the
companies and treasurers were using sophisticated methods to quantify their expose to derivatives before they were reported at board level.

**Berkman, Bradbury and Magan (1997)** presents the result of survey of derivatives use by 79 New Zealand firms and compare the use of derivatives between non-financial firms in New Zealand and the United States. Although New Zealand is a small open economy with an under-developed financial market compared to US, across all firm sizes, relatively more NZ firms use derivatives. This greater use of derivatives despite higher transaction costs reflects the relatively high exposure of NZ firms. The study finds that 68.6% derivative users felt that USD was the main currency to which the firm was exposed and 29% felt it was Australian Dollar. 62% of respondents mentioned reducing the fluctuations in earnings is the major objective behind the usage of derivatives. Study also find that NZ firms report more frequently on their derivative positions to their boards of directors than US firms. However, the types of transactions that derivatives are being used to hedge and the objectives of risk management are very similar between NZ and US firms.

**Makar and Huffman (1997)** examined how foreign exchange derivatives (FXDs) were used by 64 U.S. multinationals facing potentially significant economic exposure, to manage currency risk. The results indicated that FXD use was positively associated with foreign currency exposure. Moreover, there was evidence that these results were not sensitive to industry membership or other differences across firms and reporting years. Evidence of the use of multiple hedging techniques was also provided.

**Bodnar, Martson and Hayt’s (1998)** conducted a Wharton survey of financial risk management by 399 US non-financial firms. The results show that foreign currency derivatives are the most commonly used class of derivatives with 83 percent of derivatives-using firms utilizing them. They asked firms to indicate their percentage of total revenues and costs in foreign currency. A reasonable percentage of firms reported neither foreign currency revenue nor foreign currency costs. On the other hand, 40 percent of the firms reported foreign

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currency revenues of 20 percent or more of total revenues, while 36 percent of the firms reported foreign currency expenses of 20 percent or more of total expenses. So, many firms in the survey had significant foreign currency exposure. The survey showed that the most frequently cited motivation for transacting in foreign currency derivatives markets was for hedging near-term, directly observable exposures. The most commonly hedged exposures were on-balance-sheet commitments (89 percent hedged frequently or sometimes), transactions anticipated within one year (85 percent hedged frequently or sometimes), and foreign repatriations (78 percent hedged frequently or sometimes). Partial hedging appeared to be a normal practice of these firms. Results reveal that the majority of firms hedge less than 25 percent of their perceived exposure. This suggests that reducing the exposure is preferred over completely eliminating them. Study reveals that options are less frequently used than forwards. Furthermore they find that options are mainly used in long-term exposures. Firms avoid using options either because of the cost they incur in order to get the options or because they find another instrument that is better suited for the given exposure.

Howton and Perfect (1998) examined use of derivatives in samples of 451 Fortune 500 / S&P 500 (FSP) firms and 461 randomly selected firms operating in USA. The study was based purely on the secondary data available in the company’s annual report. They found that over 61 percent of the FSP firms and 36 percent of the random firms used derivatives. In the two samples, forwards and futures were the most-often used currency contracts. The results are consistent with the argument that fewer firms in the random sample are using currency derivatives as compared to FSP firms and for those random sample firms, the main consideration is exposure to currency movements. For the FSP sample derivatives use is directly related to financial distress and external financing costs, tax considerations, and currency-risk exposure, and inversely related to hedging substitutes. The results for the random sample differed considerably from previous studies. Derivatives use in the random sample is unrelated to most of the proxies for the theoretical hedging determinants.
Marshall (1999) conducted a simultaneously survey of the foreign exchange risk management practices of large UK, USA and Asia Pacific multinational companies (MNCs). He investigated whether foreign exchange risk management practices vary internationally. From 179 (30%) usable responses it is shown that there are statistically significant regional differences in the importance and objectives of foreign exchange risk management, the emphasis on translation and economic exposures, the internal/external techniques used in managing foreign exchange risk and the policies in dealing with economic exposures. In general, UK and USA MNCs have similar policies, with a few notable exceptions; however, Asia Pacific MNCs display significant differences. To control for regional variations in the characteristics of respondents the results are also compared by size, percentage of overseas business and industry sector. It was found that either the size of the respondent or the industry sector could also explain the emphasis on translation and economic exposure and use of external hedging instruments.

Kedia and Mozumdar (1999) examine the role of foreign currency denominated debt in firms' risk management activities. In a sample of large US firms, they found a strong relationship between the aggregate foreign exchange exposure and foreign currency denominated debt. This relationship between exposure and foreign currency denominated debt also holds at the individual currency level. Firms' choice of denominated debt in Australian Dollar, Canadian Dollar, French Franc, German Mark, Italian Lira and British Pound is related to their exposure in these currencies. However, firms' choice of denominated debt in Swiss Franc and Japanese Yen is influenced not by exposure in these currencies, but by the high liquidity offered by the debt markets in these currencies. The evidence also suggests that creditors' rights and information asymmetries influence the choice of the currency of debt. However, the authors find no evidence in favour of tax arbitrage-induced currency preferences in the denomination of debt.
Lodder and Pichler (2000) conducted a survey of risk management practices of Swiss Industrial corporations. Study analysed whether Swiss firms are conscious of their currency exposure. They found that less than 40 percent of the firms are able to quantify their risk. They are able to come out with two major reasons to explain why firms do not measure their foreign currency exposure - it is difficult to measure the risk and firms believe their exposure is small. Study reveals that guaranteeing cash flows, reducing financing cost, simplifying planning, preventing losses and reducing taxes are the main reasons for managing currency risk. They found that most often transaction exposure is hedged by Swiss companies. Translation and economic exposures appear to be less important from their perspective. It is observed that firms often manage economic exposure by lending and borrowing in foreign currencies. They cite the following reason for not hedging economic exposure: firms are unable to anticipate the size and the currency of future cash flows with confidence; the firms already hedge transaction exposure and hence believe that in the long term currency fluctuations offset each other. Surprisingly, the cost of hedging economic exposure is not regarded as an obstacle.

Glaum (2000) conducted a survey of foreign exchange risk management by 74 large German non-financial corporations. The study concludes that the majority of the firms are concerned about managing their transaction exposure. Most firms adopted a selective hedging strategy based on exchange rate forecasts. Only a small minority of firms did not hedge foreign exchange risk at all, and only few companies hedge their transaction exposure completely. Looking in more detail at the management of the firms’ exposure to the US-dollar, the survey found that only 16% of the firms were fully edged. The majority of firms had realized hedge ratios between 50 and 99%. There were numerous German non financial firms which were concerned about managing their accounting exposure and some firms are actively managing it. This is in contrast to the exposure concept supported by academic literature which holds that economic exposure is of little importance in practice. The most interesting finding from an academic point of view, however, is the widespread use of exchange rate forecasts and of
exchange risk management strategies based on forecasts (selective hedging). By adopting such strategies, the managers indicate that they do not believe that the foreign exchange markets are information efficient and they are able to beat the market with their own forecasts. The academic literature, on the other hand, emphasizes that it is very difficult indeed to make systematically successful exchange rate forecasts.

Baba and Fukao (2000) explore a new aspect of currency exposure of Japanese firms with overseas operations. For the purpose of the study authors chose the firms classified in electric and precision machinery listed on the Tokyo Stock Exchange. This was because they are generally highly dependent on international operations such as exports, imports of primary materials, and overseas production. The number of the sample firms turned out to be 84, of which 74 firms belong to the electric machinery industry and the remaining 10 firms belong to the precision machinery industry. Empirical results show that in response to JPY’s depreciation (appreciation), the values of the firms that are dependent on overseas production declined (rose) after controlling for the effects via the dependency on exports and imported primary materials. The result is consistent with the prediction of the static version of currency risk exposure model.

Christie and Marshall (2001) explore the impact of the introduction of Euro on foreign exchange risk management of UK’s multinational companies. The study was based on primary and secondary data of 49 large UK Multinational companies. The study has shown that Euro will undoubtedly affects the foreign exchange risk management in many UK MNCs, despite the UK governments’ decision not participate in EMU. The survey reveals that 55 percent of respondents believe that Euro has decreased their exposure to foreign exchange risk. Theoretically, it could be expected that the reduction in the currency risk results in reduced hedging, but survey indicates that majority of respondent’s hedging remains unchanged. Only 39 percent of the respondents replied that they would alter their foreign exchange risk management policy and hedge less
as a result of the Euro. It was found that the methods of internal and external hedging unchanged by Euro.

**Carter, Pantzalis and Simkins (2001)** investigates the impact of firm wide risk management practices on the currency exposure of 208 U.S. multinational corporations (MNC) based on various source of secondary data over the period 1994 to 1998. Firm wide risk management is referred to as the coordinated use of both financial hedges, such as currency derivatives, and operational hedges, described by the structure of a firm’s MNC foreign subsidiary network. Study found that the use of currency derivatives, particularly forward contracts, is associated with reduced levels of foreign-exchange exposure. To conclude, the survey results strongly support the view that MNCs hedging in a coordinated manner can significantly reduce exposure to currency risk. These results strongly suggest that operational and financial hedges are complementary risk management strategies.

**Popov and Stutzmann (2003)** investigate how two Swiss companies, Kudulski and Logitech manage their foreign exchange risk. They find that transaction exposure is the most managed foreign exchange exposure, but translation and economic exposures are not well identified and managed mainly because firms believe it is unnecessary or too complex. Study also reports that whenever possible netting is used by both the companies as it has no cost. Forward is the main external hedging instrument, as options are expensive tool to manage foreign exchange risk, both Kudulski and Logitech use it rarely. Finally, firms hedge their exposure but never fully due to the high cost of hedging.

**Jonuska and Samenaite (2003)** based on the response of 18 companies, studies the state of currency exposure management in Lithuanian companies. The study focuses on the characteristics of currency exposure management in exporting companies and the problem encountered while using currency derivatives. Most of the companies in Lithuanian are aware of the currency exposure they face especially after pegging their home currency Litas to Euro. Most of the companies try to manage currency exposure by employing internal
methods of hedging. Study show that currency derivatives are not popular with Lithuanian companies. The hindrance in usage of derivatives is the relatively high cost, lack of managers’ knowledge, mistrust in bank and complicated accounting procedure. Those respondent companies who use derivatives, mostly dependent on forward contract. Majority of derivative user felt that they are not willing to pay option premium, since they consider this derivative to be more complex to apply in risk management. Dairy, oil and chemical industries are among the most highly exposed to US dollar fluctuations, yet the specifics of those industries and financial markets make hedging non-beneficial. Survey results reveal that the cost of hedging indeed exceeds the benefit.

**Alkeback, Pramborg and Hagelin (2003)** analyse Swedish non-financial firms' use of derivatives in 2003 and compare the results with results from an earlier study which investigated Swedish firms in 1996. The results show, among other things, that: 59 percent of the Swedish firms used derivatives in 2003 compared to 52 percent in 1996; the use of derivatives for hedging the balance sheet among Swedish firms in 2003 is higher than that for other countries but lower than that for Swedish firms in 1996 suggesting that Swedish firms conform to international practice; and the issue of greatest concern to Swedish firms in 1996, viz., lack of knowledge about derivatives within the firm, no longer exists in 2003.

**Pramborg (2004)** compares the hedging practices of Swedish and Korean non-financial firms. Analysis is based upon the response from 163 companies which includes 60 from Korea and 103 from Sweden. The findings suggest similarities between firms in the two countries, with notable exceptions. The aim of hedging activity differed between the countries, Korean firms being more likely to focus on minimizing fluctuations of cash flows, while Swedish firms favored minimizing fluctuations of earnings or protecting the appearance of the balance sheet. The proportion of firms that used derivatives was significantly lower in the Korean than in the Swedish sample. This could not be captured by firm characteristics such as foreign exchange exposure, size, liquidity, or leverage. This may be due
to the higher fixed costs incurred by Korean firms initiating derivatives programs. These higher costs could result from the relative immaturity of Korean derivatives markets, and, perhaps more importantly, from Korean authorities’ heavy regulation of OTC derivatives use. Korean firms relied to a larger extent on alternative hedging methods, suggesting that the decision to hedge was not country specific but rather driven by firm-specific variables, such as the level of foreign exchange exposure and firm size. It was further argued that Korean firms were less rigorous in monitoring their risk positions than Swedish firms. Finally, a large proportion of firms in both countries used a profit-based approach to evaluate the risk management function.

Hegelin and Pramborg (2005) investigate Swedish firms’ use of financial hedges against foreign exchange exposure. Their survey data lets them distinguish between hedging translation exposure and transaction exposure. Survey responses indicate that over 50 percent of the sample firms employ financial hedges and that transaction exposure is more frequently hedged than translation exposure. The likelihood of using financial hedges increases with firm size and exposure. Importantly, the existence of loan covenants accounts for translation exposure hedging, suggesting that firms hedge translation exposure to avoid violating loan covenants.

Schena (2005) explores the sensitivity of firm-level Chinese stock returns to changes in a trade-weighted index of the RMB, as well as against the currencies of China’s major trading partners, over the five-year period from 1999 to 2003. In assessing the exposure and management of foreign exchange risk by Chinese-listed companies, the analysis suggests that despite the currency peg, internationally oriented Chinese firms have experienced significant foreign exchange exposure. Study finds that approximately 34% of sample displays a significant exposure to changes in the value of one or more of the currencies of China’s major trading partners against which the RMB is not pegged. Indeed, the exposure is particularly acute against the yen. Furthermore, there was no
empirical evidence to suggest that Chinese firms are engaged in hedging activities.

Chan-Lau (2005) assesses foreign exchange exposure in the corporate sector in Chile and opines that foreign exchange exposure in Chile is lower than other countries in the region and similar to that observed in small industrialized countries. The most exposed sector is the financial sector. However, this is not a major source of systemic risk since a recent assessment of financial sector in Chile suggests that banks can withstand severe exchange and interest rate shocks successfully. Managing currency exchange risk has been facilitated by a well-functioning forward market in Chile.

Abor (2005) reports on the foreign exchange risk management practices among Ghanaian firms involved in international trade. The results indicate that close to one-half of the firms do not have any well-functioning risk-management system. The study found that among Ghanaian firms foreign exchange risk is mainly managed by adjusting prices to reflect changes in import prices resulting from currency fluctuation and also by buying and saving foreign currency in advance. The main problems the firms face are the frequent appreciation of foreign currencies against the local currency and the difficulty in retaining local customers because of the high cost of imported inputs, which tend to affect the prices of the final products sold locally. The results also show that Ghana’s firms involved in international trade exhibit a low level use of hedging techniques.

Yazid and Muda (2006) examines the extent of foreign exchange risk management among Malaysian multinationals and investigates the purpose of managing foreign exchange risks, the types of risks managed and the extent of management control and documentation of the foreign exchange risk management. The study which was based on response from 54 MNCs, indicate that Malaysian multinationals are involved in foreign exchange risk management primarily because they sought to minimize the losses on operational cash flows which are affected by currency volatility. Another finding of the study is that the
majority of multinationals centralized their risk management activities and at the same time imposed greater control by frequent reporting on derivative activities. It is likely that huge financial losses related to derivative trading in the past led to top management being extra cautious. Similarly study proves that Malaysian multinationals focused on managing short term transactions exposure rather than other exposures.

**Davies, Eckberg and Marshall (2006)** examines *foreign exchange* hedging by Norwegian exporting firms to provide empirical evidence on the determinants of the hedging decision. The paper contributes to prior studies by, first, focusing on exporters to ensure that the companies in the sample have *foreign exchange* exposure, thereby allowing a more rigorous test of the theoretical determinants of hedging, and, secondly, in contrast to most previous studies that have focused on *foreign exchange* external hedging instruments, the use of both internal and external instruments is examined. The firm size, extent of internationalization and liquidity--are found to be related to the decision to hedge *foreign exchange risk*. Unlike empirical studies for other countries the evidence for Norwegian firms does not support the hypothesis that the avoidance of financial distress and the need to resort to external capital markets is a significant determinant of the hedging decision. Whilst the evidence suggests that country-specific factors may play a role in determining the use of *foreign exchange* hedging, it does not imply that the different policies adopted are necessarily inconsistent with the firm value maximization hypothesis.

**Salifu, Osei and Adjasi (2007)** examined the foreign exchange exposure of listed companies on the Ghana Stock Exchange over the period January 1999 to December 2004. The study was based on the secondary data of 20 listed companies. The study found that, all the major currencies of international transaction of the country are sources of foreign exchange risk to listed firms on the GSE. The US dollar turned out to be the most dominant source of exchange rate risk at both the firm and sector levels. Most firms had negative exposure coefficients and this suggests that, the majority of the listed firms could
experience an adverse valuation effect when the local currency (cedi) depreciates substantially against other foreign currencies and benefit when the cedi strengthens in value relative to these currencies. About 55 per cent of firms in the sample have a statistically significant exposure to the US dollar while 35 per cent are statistically exposed to the UK pound sterling. Sector specific exposure results show that the manufacturing and retail sectors are significantly exposed to the US dollar exchange rate risk. The financial sector did not show any risk exposure to any of the international currencies. The most dominant source of exchange rate risk exposure is the US dollar. Study revealed that, though there are a number of techniques such as balance sheet hedging, use of derivatives, leading and lagging amongst others available to manage foreign exchange risk in most developed countries, these measures tend to be rather too sophisticated and difficult to implement in developing countries like Ghana with undeveloped financial systems.

Study concludes that, given the degree of exposure revealed, corporate managers and investors in Ghana should endeavor to apply a combination of simple tools such as the use of forward contracts and swaps to supplement price adjustments and investment in foreign currency in order to minimize their exposure to exchange risk. Despite the short-comings of the financial system in terms of availability of tools for managing foreign exchange risk exposure, instruments are still available to manage the risk exposure.

Faseruk and Mishra (2008) examine the impact of US dollar exchange rate risk on the value of Canadian non-financial firms. The sample includes all non-financial Canadian firms with sales over $100 million. The study segregates firms into hedging and non-hedging groups and applies statistical techniques to test if hedging enhances value. A total of 194 firms were selected for the study which was carried on the basis of secondary data in the form of annual reports. The paper has two major contributions. First, this is the first study that examines the US dollar risk management by Canadian firms. Second, it documents that it is important to hedge US dollar risk for the firms that have US exports. Firms are
better off by implementing both operational and financial hedging of US dollar risk. As expected, Canadian firms that have higher levels of US sales tend to use derivatives more often and tend to have higher levels of US$ exposure. However, firms with both US sales and US assets tend not to use financial hedging as often. The US assets provide some sort of natural operational hedging for US sales of Canadian firms. Firms that have at least one US subsidiary (or reported assets) and that use financial instruments to hedge US dollar risk tend to have higher values than other firms. Hence, the use of operational hedging in conjunction with financial hedging of US$ risk by Canadian firms is value enhancing.

Based on the study of currency exposure management 100 Malaysian manufacturers **Yazid, Hussain and Razai (2008)** reports that majority of Malaysian manufacturers (55%) are not involved in management of foreign exchange exposure. The study shows that considerable number of manufacturers totaling to 46% are not involved in managing currency exposure due to insignificant exposure. On analysis of annual reports of the respondents, it was found that total of 20% of manufacturers who were not involved in hedging the risk by using derivative products used natural hedge by borrowing in foreign currency. This study which was based on annual reports of the companies shows that manufacturers with large asset base and more employees are more likely to involve in currency exposure management. Majority of respondents who are managing the currency exposure are making use of Forward contract as it is simple and easy to understand. They use foreign currency derivatives only for hedging purpose.

**Al-Momani and Gharibeh (2009)** studied the foreign exchange risk management practices of Jordanian firms. The results of the study indicate that the use of foreign exchange risk management techniques such as financial derivatives is not a common practice by Jordanian firms. The most common methods used by Jordanian firms to manage foreign exchange risks are matching, netting, using local currency, and price policy. In addition, this study
concludes that there are no relationships between firm size and legal structure and the management practices toward transaction exposure.

**Gonzalez, Bua, Lopez and Santomil (2010)** analyzes the factors that determine the use of foreign currency debt to manage currency exposure for a sample of 96 Spanish non-financial companies. Study found that on one hand the decision to hedge with foreign debt is positively related to the level of foreign currency exposure, size. On the other hand, the extent of hedging is related positively to the foreign currency exposure, size, managerial risk aversion and negatively to the costs of financial distress.

**Aabo, Hog and Kuhn (2010)** applies an integrated foreign exchange risk management approach with a particular focus on the role of import in medium-sized manufacturing firms in Denmark. Study found that a strong, negative relation between import and the use of foreign exchange derivatives on the aggregate level. Their findings are consistent with the notion that firms use import to match the foreign exchange exposure created by foreign sales activities.

**Kang and Lee (2011)** conducted an empirical analysis of the exchange rate exposure of 392 Korean firms by employing not only changes in the exchange rate but also the standard deviation of exchange rate. The empirical results in the case of using the standard deviation of exchange rates suggest that: the number of firms showing significant exchange rate exposure has been relatively increasing; exchange rate exposure is more likely for export-oriented manufacturing industries than for nonmanufacturing industries; and large firms using hedging methods are likely to show a low degree of exchange rate exposure.
2.3 Empirical Studies Conducted in India

As stated earlier, concept of currency exposure itself is new to Indian business enterprises. Consequently, empirical literature on the same is also limited. Most of the empirical investigations in India are carried out to know the impact of appreciation of Indian rupee against other major currencies, especially USD. The following is the list of such investigations.

Yadav and Jain (2004) studied the risk management practices relating to international operations of public sector companies in India. The study included political risk, interest rate risk and exchange risk. With reference to exchange risk, study found that significant transaction that causes exchange risk is import activity. Majority of public sector companies were not found to use forward to cover foreign exchange risk.

FICCI (2004) conducted a survey during last quarter of 2004 to analyse the ‘Impact of rupee appreciation on Indian exporters’. The survey which was conducted in the light of appreciation of Indian rupee against USD reveals that than 73 percent of the respondents feel that rupee appreciation is a very serious problem. Survey indicated that 73% respondents use USD exclusively for conducting exports and exporters who use more than one foreign currency, the dollar on average accounts for nearly 75% of the total billing portfolio. Majority of the respondents felt that appreciation is putting pressure on revenue and in turn on margins, with 86% complaining on the same. In the survey 89 percent exporters prefer Euro as transaction currency over USD, but they felt that Indian exporters are not in a strong position in this regard and may find it difficult to move towards another currency. More significant aspect of the billing practice is that none of the exporters have any inbuilt protective clause in their contracts. Government support is called for but not in the form of maintaining a weak currency. Pointing to the Chinese Renminbi, Indian exporters have said that it is the stability of the domestic currency that is more important.
A survey was conducted by FICCI (June 2007) to analyses the impact of rupee appreciation and hardening of interest rates on Indian manufacturing sector. Among various sectors impacted by rupee appreciation, readymade garments sector seems to be worst hit. Minimum fall in the level of exports is reported to be 20 percent and maximum is in the range of 40 to 50 percent. Rupee appreciation has made garment exporters uncompetitive to the tune of 8 percent to 15 percent in terms of price in the international market. Buyers are increasingly moving towards neighboring countries like Bangladesh, Pakistan etc. This will have negative impact on the investments in future. Similarly textile sector has also seen a fall. It was 25 to 40 percent for many textile exporters in the month of April & May 2007. Export realizations are down by 6 to 6.5 percent in some cases. In terms of price, exports are uncompetitive now to the extent of 8 to 10 percent and exports of cotton yarn adversely affected as buyer are increasingly sourcing from Pakistan.

ASSOCHAM (2007) conducted a survey of 400 large, medium and small exporters on the adequacy of the Rs.1400 crore export package announced by government to the rupee appreciation-hit exporters. An overwhelming majority of 80 percent complained that a 10 percent rise in rupee has rendered the exports proceeds uncompetitive. About 68 percent expressed anguish citing that delay in implementing service tax exemption as declared by government was adding to their woes while about 90 percent unanimously held that government response in identifying and promoting potential export markets for them was almost `negligible'. 80 percent of the exporters surveyed felt that the margins of SMEs had been wiped out on account of appreciation; government should facilitate invoicing in rupees rather than US dollars and other currencies, the relief package will not give much benefit to sustain export growth. Respondents took part in the survey felt that the countries like Thailand, Indonesia, Malaysia, Pakistan and Bangladesh will give stiff competition to Indian exporters in lieu of Rupee appreciation. The Indian rupee has appreciated a lot as compared to
currencies of these countries against USD, making the Indian exports uncompetitive in the international market.

**FICCI (May 2007)** Survey on exports conducted during April May 2007 reveals that while the adverse movement in the country’s exchange rate is affecting a significantly high 75 percent of the participating companies, just about 30 percent of the participating companies have put in place or have resorted to a mechanism that provides cover for currency exposure. Further, 82 percent of the companies reported that in their agreements with their clients they do not have a clause that allows revision of rates in case of a sizable adverse movement in the exchange rate. Exporters are also on the lookout for clients and markets where Euro could be replaced as a medium of exchange for US$. Many exporters are also trying for a complete shift in the medium of exchange from US dollar to Euro in their existing contracts. Several companies have already started engaging their international clients and are negotiating an upward revision in the prices for their products – a task, which they say, is extremely difficult.

An **E&Y (2007)** survey on corporate treasury reports that foreign exchange risk management practices among the corporate are short-sighted with hedging horizon generally being less than three years. The findings further reveal that corporate hedging exercises were largely within a 12-month band with 33 percent resorting to ‘opportunistic’ hedging. While forwards and currency swaps are still the most commonly used instruments, as many as 44 percent of the corporates have growing exposures to exotic structures. The independent survey, covering 34 large companies across India, found that while around 85 percent of the respondents had a separate treasury operation, most said that their treasury division was nothing but a cost centre. The study, which covered companies in several industries, said that except for regulatory compulsion, the forex risk management practices of most Indian companies are still short-sighted.
A Mecklai and Business Standard (2007) survey says most Indian companies are still quite far from having good risk management processes. Some of this may have to do with the fact that it is only recently -- say, the last four or five years -- that the forex market has started throwing up surprises in terms of two-way movements. Again, it is only recently that many companies have come to realise that they are, indeed, on their own in the global market and need to create systems that will protect them when things get rough. Only 17 companies out of 45 taken part in the survey identify exposures for risk management on the date of the contract; in all other cases, it is later - either on the date of invoice or on the date the exposure is reported to the treasury. This suggests that in the majority of companies, risk is identified very late in the game. Twenty-seven companies used only forwards as hedging instruments and nine used the entire gamut of instruments, including structured products. The responses showed, however, that only four of these nine companies have documented risk management policies.

Jain (2007) in her study relating to Developing MIS For Foreign Exchange Exposure Management reports that almost 90% of the finance directors who opined that their company faces foreign exchange risk, had a risk exposure management system in place and 76.9% of all sample companies and 63.2% of Indian MNC's said that their company had an information system for management of foreign exchange risk exposure. On the state of information system for management of foreign exchange risk exposure, 96.7% of respondents said that their information system was cost effective, 89.7% said that their information system was regularly reviewed to ensure its cost effectiveness and 93.1% of all respondents had a formal system for calculation of foreign exchange exposure. Respondent constituting 73.1% of total sample calculated transaction exposure only followed by 19.2% companies that calculate transaction and translation exposure. No company calculated economic exposure which only a very small percentage of companies (7.7%) calculated translation exposure only. Finally the study which has a sample size of 47 found
that company size has a hearing on the type of exposure formally calculated by the information system i.e. the two are not independent.

**Anand and Kaushik (2008)** examine what motivates the management to use foreign currency derivatives in corporate India; they compare the significant differences, if any, in the motivation of the firms which either use foreign currency derivatives or have a documented foreign exchange risk management policy in place, with those which do not. They also examine the motivation behind the use of foreign currency derivatives in a factor-analytic framework. Most of the respondent firms (70.4 percent) have documented foreign exchange risk management plan/policy/programme. Transaction exposure as a foreign currency risk is more critical to the firms (74.5 percent) followed by translation exposure (58.3 percent manifested a moderate degree of risk) and economic exposure (54.3 percent manifested a low degree of risk). To reduce the volatility in profit after tax, cash flows and the cost of capital and thus increase the value of the firm on the one side and to reduce the risks faced by the management on the other are among the major reasons which motivate the firms to use foreign currency derivatives in India. Firms with a high debt ratio are more likely to use foreign currency derivatives. The major objective of using derivatives is hedging the risk (96.1 percent ranked it as the number one objective), arbitrage (55.3 ranked it as number two objective) and price discovery (36.4 percent assigned it rank two and 33.3 percent assigned it rank three). Speculative objective is the least preferred option (62.1 percent assigned rank four).

**Dash and Madhava (2008)** analyses the impact of INR/USD exchange rate fluctuation on the Indian IT sector. The analysis is performed on a random sample of fifty major IT companies. This survey was conducted in the light of drastic appreciation of INR against USD during last part of 2007. The results of the study showed that foreign exchange exposure was especially alarming for a small fraction of small-cap IT companies. The mid-cap and large-cap IT companies had relatively low/moderate exposure levels. The majority of large-cap companies
had already hedged their foreign exchange risk, and were not significantly affected by their respective foreign exchange exposures.

**Sivakumar and Sarkar (2008)** attempt to evaluate the various alternatives available to the Indian corporates for hedging currency exposure. The study was based on 2006-07 annual report of 8 listed companies. By studying the use of hedging instruments by Indian firms from different sectors, the paper concludes that most Indian firms use forwards and options to hedge their foreign currency exposure. This implies that these firms chose short-term measures to hedge as opposed to foreign debt. This preference is possibly a consequence of their costs being in rupees, the absence of a Rupee futures exchange in India and curbs on foreign debt. It also follows that most of these firms behave like net exporters and are adversely affected by appreciation of the local currency. There are a few firms which have import liabilities which would be adversely affected by rupee depreciation.

**Jain, Yadav, and Rastogi (2009)** examines and compares the policies of foreign exchange risk and interest rate risk management followed by public Sector, private sector business houses and foreign controlled firms in India. The study reveals that Indian firms are aware of their foreign exchange and Interest rate risk. However, all the risks are not managed and the type of ownership control significantly influences the usage of the techniques to manage exchange rate risk and interest rate risk. ‘Exposures are not large enough’ is the most widespread and prominent reason for not managing risks. Ownership has been observed to be a significant determinant of firms' strategy towards risk management.

**FICCI (2010)** survey on exports states that the Indian exporters are still apprehensive of the appreciating rupee and the aggressive Chinese moves to push exports. Exporters have also indicated in the Survey that the stimulus measures provided them with reasonable cushion and support to compete with the exporters from other countries.
2.4 Conclusion

It thus emerges from the literature reviewed that currency exposure management is too important to be ignored by businesses across the world, including emerging world. Businesses which did not take cognizance of this ground reality have paid the penalty. It is easier to point out that some businesses have thrived and perhaps still thrive without actively managing foreign exchange risk, but such businesses are too few in number to be taken seriously. In view of the nature of activity they are into, business enterprises are bound to follow various methods to measure currency exposure. More or less, a similar line of argument can be applied to businesses that hedge partly. If from experience, business enterprises are convinced that only a part of their inflows or outflows is to be hedged, so be it. As long as such decisions emerge from sound rationale, it cannot be questioned. A similar argument can be extended in respect of the type of currency exposure that businesses manage. Most businesses tend to manage transaction exposure. This amounts to taking a risk although a calculated one. Even this calculated risk is not advisable because things can go wrong in spite of taking all the precautions. The hedging instrument used could be business-specific since the nature of the business and the ambience the said business operates in by and large has a role to play in deciding upon the instrument to be used for hedging. Therefore, there can be no two views on it. However, in this area, there is immense scope to innovate and that could prove a blessing to businesses which are always proactive in foreign exchange risk management. Such innovation can lead them to hedge the risk optimally.
2.5 Research Gaps

An in-depth perusal and the review of the research studies in India and abroad reveal the following gaps.

1. Very few studies have taken place in India relating to currency exposure management.
2. Most of the surveys in India are undertaken by trade and industry bodies to assess the momentary impact of rupee appreciation or depreciation. No comprehensive study has taken place in India to analyse the management of currency exposure.
3. No research carried out in India covers various facets of currency exposure management viz., assessment of exposure, techniques to manage it, role of the government, etc.

The present study is different from empirical investigations carried out in India because of the following reasons.

1. Surveys such as FICCI (2004), FICCI (May 2007), ASSOCHAM (2007), FICCI (June 2007) and FICCI (2010) were carried out by trade bodies FICCI (federation of Indian Chamber of Commerce and Industry) and ASSOCHAM in 2004 and 2007 to know the adverse impact of appreciation of Indian rupee against major currencies, especially USD. All the three above studies were concerned with the reactions of exporters in general about the problem of appreciation of Indian rupee in the international market as felt by exporters. They failed to delve on the management and defensive procedures already adopted or proposed by Indian exporters.

2. Yadav and Jain (2004) studied the risk management practices relating to international operations of public sector companies in India and ignored the impact of currency fluctuations on private sector companies indulged
in export trade. The scope for studying the currency exposure management was limited as the study covers all types of risks. Our present study concentrates exclusively on the problem of currency exposure and its management.

3. **E&Y (2007)** conducted a survey of corporate treasuries to know the various aspects associated with functioning of corporate treasuries. Similarly **Mecklai and Business Standard (2007)** conducted a risk management survey of Indian corporate. These surveys were mainly conducted to know how companies are managing adverse effect of appreciation of Indian Rupee against USD during 2007. Moreover these surveys are restricted to limited aspects of currency exposure management.

4. **A study conducted by Jain (2007)** was just restricted to Developing MIS for Foreign Exchange Exposure Management. Similarly, study by **Anand and Kaushik (2008)** confined to use foreign currency derivatives in corporate India. These surveys were limited just to a very limited aspect of currency exposure management in India whereas the present research is a comprehensive survey relating to almost all aspects of currency exposure management.

5. A study conducted by **Dash and Madhava (2008)** analyzed the impact of appreciation of Indian rupee that took place in 2007 on Indian IT sector. The study was restricted just to know the impact of rupee appreciation and that too only on IT sector. Whereas the present study relates to overall management of currency exposure of different categories of business enterprises.

6. A study by **Sivakumar and Sarkar (2008)** was an attempt to know what type of derivative products are being used by Indian corporate for hedging currency exposure. The study covered just 8 firms and that too based only
on one year annual report. Whereas the present study covers not only details regarding the derivative instruments used by business enterprises, but also various other aspects of currency exposure management as stated earlier. Moreover, present study is based on primary data and sample size is also substantial.

7. Jain, Yadav, and Rastogi (2009) examine and compare the policies of foreign exchange risk and interest rate risk management followed by public Sector, private sector business houses and foreign controlled firms in India. The study was limited to know the awareness of Indian firms about the foreign exchange risk and interest rate risk but study fails to discuss in detail the management of these risks. But the present study is comprehensive survey relating to almost all aspects of currency exposure management.

The present study is different from other empirical investigations carried out in India relating to the problem of currency exposure. Hence there is a need for the present study. $