Chapter 2

Review of Literature
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The one of the most useful literature is in Workbook for NISM-Series-I: Currency Derivatives Certification Examination. This workbook had been developed for NISM by Mr. Amit Singhal, Founder & CEO, Cube Edugains Pvt. Ltd. Parts of the content of this workbook have been provided by BSE, NSE and MCX-SX. The publication contains information, statements, opinions, statistics and materials that have been obtained from sources believed to be reliable and the publishers of this title have made best efforts to avoid any errors. In pursuance of the announcement made by the Finance Minister in his Budget Speech in February 2005, Securities and Exchange Board of India (SEBI) had established the National Institute of Securities Markets (NISM) in Mumbai. SEBI, by establishing NISM, had articulated the desire expressed by the Indian government to promote securities market education and research. NISM had launched an effort to deliver financial and securities education at various levels and across various segments in India and abroad. To implement its objectives, NISM had established six distinct schools to cater the educational needs of various constituencies such as investor, issuers, intermediaries, regulatory staff, policy makers, academia and future professionals of securities markets. NISM brings out various publications on securities markets with a view to enhance knowledge levels of participants in the securities industry.

2.1 Various reviews occur in current newspapers and magazines.

- Currency derivatives volume may outstrip equity market soon. Average daily trading volumes in an Indian currency market have shown a significant jump; they may eventually outgrow volumes in equity derivatives. (Money life, personal finance Magazine, April 28, 2010)

- SEBI introduce more currency derivatives product: Bhave, Chairman of SEBI. C B Bhave today said the market watchdog is planning to introduce more currency derivatives products, beginning with options, to give a wider choice to investor. (The Economic Times, April 16, 2010.)
• India raises trading limits in currency derivatives. India’s capital market regulator had allowed companies to increase their exposure to the currency derivatives market by raising position limits for clients and non-bank trading members. (Retures, March 25, 2009.)

• India currency derivatives trade seen touching. 1 trillion by FY 2012. Average daily trade volume in currency derivatives market in India is expected to surge to Rs. 1 trillion in 2011-12 from Rs. 300 billion currently. Pramit Brahmbhatt, Chief Executive Officer, Alpari Forex (India) said Thursday. (Sulekha.com Money, May 20, 2010.)

• Though several brokers and Banks, such as state bank of India (SBI) and Axis Bank, offer the currency trading platform, the participation of retail investors is yet to pick up. “Currently the awareness level is extremely low and currency futures are viewed as an asset class is meant only for banks, traders and corporations. Worldwide, retail is the very active in the forex market, but lot of education is needed in India” Says Narayanasami. (Business Today, Betting on the money game, January 31, 2011.)

2.2 Indian Currency Futures: An Analytical Study Of Its Performance

Author Dr. Devajit Mahanta in his paper has found that currency derivative trade in India had experienced explosive growth, both in volumes and value over the years across all the four currencies contracts that were in operation in INRUSD, INRGBP, INREUR and INRJPY. However in terms of the open interest currency derivatives trade in MCX is more as compared to the NSE. By consider both stock and commodity exchanges for launching currency futures contracts government of India had done a commendable job which is expected to increase the number of quality players, introduce healthy competition and boost trading volumes of Indian currency futures. The global markets (mainly USA) become active only after Indian markets close at 5.00 pm and as a result there is an evident fear about the risks associated with overnight fluctuations in the currency pair. Therefore the functioning as well as the profitability in Indian currency futures is effected by the current performance of the international currency futures market. It is imperative that any evaluation, projection on Indian currency futures market should be undertaken keeping the international market in perspective.
According to the RBI-SEBI standing technical committee report (RBI-SEBI, 2008) in the context of liberalization of the capital and commodity futures market most of the participant from the both markets felt that hedging opportunity through currency trading enhance the flexibility to manage their currency risk dynamically. Even international experience shows that exchange traded currency futures contracts facilitate efficient price discovery. The launch of currency derivatives in India follows the recommendations made jointly by the Securities and Exchange Board of India and the Reserve Bank of India in May 2008. Indian currency futures contracts would be quoted and settled in Indian rupee and the maturity of the contracts would not exceed 12 months. The futures date and price will be fixed on the purchase date. Only US dollar-Indian rupee contracts would be allowed and the contract size will be of 1,000 US dollars and the tick size (minimum price fluctuation) will be 0.25 paisa. In this regard Guru (2009) revealed that the contract size is insignificant compared with global standard like the Chicago Mercantile Exchange offers lot sizes of 12.5 million Japanese yen or Australian $100000 for a single contract. Due to small trading contract size currency futures trading not going to help existing market participants like banks but it will help small and medium size enterprises those who do not have sufficient financial strength to participate on the over-the-counter (OTC) market. However Nath and Lingareddy (2008) pointed that with increased depth of Indian currency trading, which had reached to a daily volume of around Rs. 2000-3000 crore, despite small contract size and low daily limits for individuals and trading partners. Within a year of its inception, MCX-SX had achieved stupendous growth in average daily turnover and open interest. The average daily turnover increased from Rs. 355.66 crore during the first month of operations to Rs. 16,980 crore for the month of February 2010. On the other hand, one should not forget that the Dubai exchange introduced a USD: INR currency futures contract in the middle of 2007 but volumes have not really picked up, belying expectation based on the fact that there is a significant commercial interest in the rupee because of exposures to the diamond and gold trade. Speaking of the ‘limited scale’, only US dollar-rupee contract (with a size of $1,000 each) is allowed now; also the trading will take place only on the platform for this exclusive purpose created by the National Stock Exchange. Choudhary (2009) revealed that uncertainties still loom large among traders and brokers as they look forward to India’s largest commodity exchange, Multi Commodity Exchange of India Limited (MCX) after SEBI gave its approval to the bourse to start Currency Futures trading. MCX as a commodity exchange falls under the regulator FMC (Forwards market Commission) whereas currency futures are regulated...
by SEBI (Securities and Exchange Board of India). In this regard Shah (2007) mentioned that the Government of India had not clarified as to which regulator will play an anchor role for currency derivative trading. If all the three regulators RBI the Forex market regulator, SEBI which oversees the capital market and FMC which regulates the commodity futures market – intervene without proper interaction between them, the growth of currency futures market could be seriously undermined. Nair (2004) observed that in most of the countries, where currency futures have really flourished, the trading takes place on multiple commodity exchanges, rather than stock exchanges. Besides, since foreign operators – NRIs, FIIs etc. – are barred from participating, the new exchange means the contract can be traded only within India and that too, without involving any outflow of funds.

A study by Guru (2009) indicated that the global markets (mainly USA) become active only after Indian markets close at 5.00 pm and as a result there is an evident fear about the risks associated with overnight fluctuations in the currency pair. Once the Indian markets close, the positions cannot be reversed by the traders till the next day. The tax treatment of the gains/losses in the futures currency market would this be treated as business income as in the case of equity derivatives also not make it clear by the regulator?

2.3 Dynamics of Currency Futures Trading and Underlying Exchange rate Volatility in India

Dhananjay Sahu (2012) examined the impact of currency futures on exchange rate volatility of EURO after the introduction of currency futures trading in India. He concluded that the introduction of currency futures trading had no impact on the spot exchange rate volatility of the foreign exchange market in India. Further, the results are also indicative of the fact that the importance of recent news on spot market volatility had increased and the persistence effect of old news had declined with the introduction of currency futures trading.

Butterworth (2000) also argued that introduction of the derivatives trading leads to more complete market enhancing the information flow. Derivatives market allows for new positions and expanded investment sets and enables to take position at lower cost. Derivatives trading bring more information to the market and allows for quicker disseminations of the information. The transfer of the speculative activity from spot to futures market decreases the spot market volatility. Bologna and Cavallo (2002) argued that the speculation in the derivatives market also leads to stabilization.
of the spot prices. Since derivatives are characterized by high degree informational efficiency, the effect of the stabilization permits to the spot market. The profitable speculation stabilizes the spot price because informed speculators tend to buy when the price is low pushing it up and sell when the price is high causing it to fall. These opposing forces constantly check the price swings and guide the price towards to the mean level. Uninformed speculators are not successful and are eliminated from the market. This profitable speculation in the derivatives market leads to a decrease in spot price volatility.

Chang and Wong (2003) examined the usefulness of currency futures/forwards and concluded that currency risk can be minimized through futures/forward hedging. Rothig (2004) reported a strong causal relationship between the futures trading volume and GARCH-based exchange rate volatility for different currencies.

Bhargava and Malhotra (2007) analyzed futures trading on four currencies over the time period of 1982-2000 and found the evidence that day traders and speculators destabilize the market for futures but it is not clear whether hedgers stabilize or destabilize the market. Exchange rate movements affect expected future cash flow by changing the home currency value of foreign cash inflows and outflows and the terms of trade and competition. Consequently, the use of currency derivatives for hedging the unexpected movement of currency becomes more sensitive and essential.

Sharma (2011) investigated the impact of currency futures trading in India by establishing relation between volatility in the exchange rate in the spot market and trading activity in the currency futures. The results show that there is a two-way causality between the volatility in the spot exchange rate and the trading activity in the currency futures market.

A synthesis of the empirical literature on the impact of currency futures trading on underlying market volatility purported that majority of studies are in the context of developed markets and in most of the cases, the exchange rates of currencies in US dollar have been used. The literature in the context of emerging markets is scanty except few studies and EURO had not been considered in any study since its introduction. Further, the outcomes of various studies asserted that the impact of introduction of currency futures trading had been different in different markets with respect to different span of time and it is difficult to arrive at a consensus with respect
to the impact of currency futures introduction on the volatility of spot exchange rate. Again, looking at the typical characteristics of emerging economies emanating from structural and institutional changes, the exchange rate of domestic currency is witnessing unusual behaviour in terms of volatility against other currencies. The aforementioned fact had provided impetus to explore the influence of currency derivatives in the context of emerging markets which in turn, necessitates further empirical investigation on the impact of currency futures trading on spot exchange rate volatility.

2.4 Role of Currency Potential in Indian Capital Market

Authors, Dr. Devendra Singh, Dr. Gaurav Aggarwal, Ms. Satinder Kaur Professor(2011) found that forward contracts they had entered into for hedging their currency risks themselves turned into risks. To cover the risk involved in currency exchange, the RBI and SEBI jointly formed a committee which recommended starting currency future trading in India, consequently NSE started in dealing currency futures from August, 2008, improving our Capital Market.

V D M V Lakshmi (2008) have quoted the decision taken by RBI to allow exchange traded currency future in India as a gift to traders and investors as well since it is a standardize and transparent instrument to hedge their exposure to the currency risk. He also described how the currency future can be used by market participant to cover the risk due to fluctuation in exchange rates in currency market besides the legal framework and sanction approval procedure from authorized agencies.

Nirvikar Singh (2008) stated that off-shore non-deliverable forward markets have existed in India and Reserve Bank of India also oversees domestic currency forward trading but exchange traded currency future were simply banned. However, in June 2007, trading of rupee future started on Dubai Gold and Commodities Exchange prompting the RBI to set up a Committee to look into this possibility for India. The paper described that during 2007 rupee future trading on DGEX and despite the fact that it was not controlled by the RBI, so there were no restriction on trading and participation beyond those that would be normal for an exchange and it clearly seemed that the new market was being used for short-term hedging, probably by parties engaged in international trade. He concluded with stated the RBI role should be of macroeconomic management not microeconomic details if India is serious about financial sector development.
S. B. Kamashetty (2008) threw a light on trading mechanism of currency future with the average daily traded volume in the global forex market and in India as well. He also mentioned the guidelines for the currency future trading with its flip slide and shortcomings. The author also suggested granting the permission in dealing with three-four major currencies besides USD, in which India had strong underlying traded.

Krishnan Sitaraman and Satish Prabhu (2010) described the currency future with mitigating exchange Rate risk with illustrative support. They have also showed the progress, operational aspect and new developments of currency future in India. The paper also suggested introducing the currency option in the market.

Padmalatha Suresh (2010) had admitted that currency future helped the under nourished Indian financial markets in a big way and described how exchange traded futures are the answer to preventing systematic risks in the future. He also thanked to the RBI decision to extend the currency futures market to include three more currency pairs as earlier stated financial advisors were saying and appears that currency options, as natural extension at the currency future market, are also on the anvil. He also reviewed the performance of currency futures in December, 2009 since the inception of trading, and presents some interesting insights i.e. both OTC markets (INR and other currencies) and currency futures (only INR/USD) traded on NSE and MCX showed a remarkable increase in the turnover of derivatives as a percentage of OTC forward turnover. The paper also quoted some reasons for inefficient and liquid market in India such as inadequacy of financial firms, Regulators and structured barriers, Frictions caused by taxes and suggested that currency futures are not an end in themselves but more positive actions from the regulators and government are expected to nourish the market without being over protective.

2.5 Hedging Foreign Exchange Risks with Currency Derivatives

Title: Hedging Foreign Exchange Risks with Currency Derivatives
Authors: Anurag Pahuja and Nitika Sehgal and Anu

Anurag Pahuja, Nitika Sehgal And Anu (2012) stated that High economic growth and capital account liberalization led to increased currency exposures of both domestic entities and foreign counterparts, leading to a rise in the demand for risk management instruments for hedging
exposure linked to real and financial flows. This volatility in financial markets requires investors (individual as well as corporate) to be aware of the risks associated with currency fluctuations and the use of Foreign Exchange derivatives market for minimizing the risks due to exposure to foreign currencies. Most individual and corporate investors use currency derivatives for effectively managing their foreign exchange exposures. This research paper focuses on the various alternatives available to the Indian corporate for hedging financial risks and the perceptions, apprehensions and expectations of common investors who are investing/ would be investing in currency derivatives market.

Harvey (1991) examined the volatility implications of round-the-clock foreign exchange trading with transaction data on futures contracts from the Chicago Mercantile Exchange and the London International Financial Futures Exchange. They found higher U.S.-European and U.S.-Japanese exchange-rate volatilities during U.S. trading hours and higher European cross-rate volatilities during European trading hours. While the disclosure of private information through trading may partly explain these volatility patterns, they concluded that the increased volatility is more likely driven by macroeconomic news announcements. An analysis of inter- and intra-day data also revealed that volatility increases at times that coincide with the release of U.S. macroeconomic news.

Bessembinder (1992) examined the uniformity of risk pricing in futures and asset markets. Tests against a general alternative do not reflect complete integration of futures and asset markets. As predicted, estimates of the 'zero-beta' rate for futures are close to zero, and premiums for systematic risk do not differ significantly across assets and futures. There is, however, evidence consistent with a specific alternative model presented by Hirshleifer (1988). Returns in foreign currency and agricultural futures vary with the net holdings of hedgers, after controlling for systematic risk. These results imply a degree of market segmentation and support hedging pressure as a determinant of futures premiums. McCurdy (1992) studied weekly data for foreign currency futures prices are examined for evidence of risk premium. Covariance risks are measured with respect to the excess returns from benchmark portfolios for consumption and wealth. When the parameters representing the prices of the covariance risks are held constant, no risk premiums are detected. However, when these prices are allowed to vary with the conditional expected returns and variances of the benchmark portfolios, possibly reflecting changing investment opportunities,
strong evidence of risk premiums is obtained. The article by Glen and Jorion (1993) focused on “buy and hold” strategies, constructed purely as hedges, which are described in a later section. A number of studies on foreign exchange markets claim that foreign exchange movements contain a predictable component

Glen and Jorion (1993) and Levich and Thomas (1993) showed that by taking positions in foreign exchange derivatives based on forecasts of exchange rate movements, it is possible to earn “excess returns.” The key unresolved issue regarding these returns is whether they represent compensation for risk exposure. Exploiting apparent foreign exchange market inefficiencies may offer the potential to enhance expected return without increasing risk.

Samant (1997) suggested that external commercial borrowings have emerged as a cheaper financing option due to the interest rate differential in foreign currency as compared to Rupee borrowings. Though the foreign loan is cheaper in terms of interest rate, it is fraught with risks, viz. exchange rate risk, forward premium levels and economic factors like influence of RBI on spot rates etc. and therefore a detailed hedging strategy along with proper internal control systems is to be laid down by corporate. It is necessary for the company to ascertain the risk bearing capacity and specifically realistic projections of imports and exports over the tenure of the loan and realistic projections of profitability during the currency of loan to be made so as to absorb the exchange rate movement.

Deosthalee (1997) while analysing the Monetary and Credit Policy 1997-98, elaborated on two measures aimed at providing flexibility to corporate in foreign exchange dealings and enabling the Forex market to gain in depth. Firstly, allowing corporate to book forward contracts based on likely receivables and payables according to business projections subject to maximum of average export-import turnover in the preceding two years. This measure is aimed at facilitating the development of long term forward transactions since companies, which have long-term receivables, and payables can take a long-term view. Secondly, the credit policy allows the development of Rupee-Forex Swap market. This gives freedom to Ads to run a swap book within their open position limits and thereby facilitates development of currency swap market and long-dated forward market in India. All these measures provide considerable freedom to corporate treasury. Their success will however, hinge on how they review and formalize their risk
management policies and control mechanisms. In a liberalized environment, risk management could make all the difference between success and stagnation. Bodnar et al. (1998) confirmed that options are less frequently used than forwards. Furthermore, they found that options were 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 given exposures. According to them, German and US companies use derivatives primarily to manage foreign exchange risk. They said that the main purpose of using derivatives in exchange rate risk management is to minimize the variability of cash flows.

Allayannis and Ofek (2001) found significant evidence that exporters prefer the use of foreign currency derivatives when hedging their operations. They explained this by nature of exporting, which can require customized, short term contracts that are better served by derivatives rather than by long term foreign debt. The advantage of derivative is that they have predetermined cost and are accessible by all companies whereas foreign debt is limited to large firms.

Figlewski (1980) investigates the futures contracts for Treasury Bills (GNMA pass-through certificates) and provides evidence that futures market activity increases the volatility of cash prices. More recent study by Bae, Kwon and Park (2004) focuses on the effect of the introduction of index futures trading in the Korean markets on spot price volatility. The authors concluded that introducing the futures and options trading on the Korean stock exchange resulted in both larger spot price volatility and greater market efficiency (allowing for quicker adjustment of market prices to information). Still, many other studies find some evidence for the stabilizing effect of futures trading on the spot market or no evidence for any casual relationship between futures trading and the cash market volatility.

Darrat, Rahman and Zhong (2002) find that index futures trading cannot be blamed for increased volatility in the spot market. On the contrary, their empirical results suggest that the volatility in the futures market is itself an outgrowth of a turbulent spot market. A study by Bessembinder and Seguin (1992) examines whether greater S&P500 futures-trading activity is associated with greater equity volatility. Their evidence indicates that equity volatility is positively related to spot-trading activity and to contemporaneous futures-trading shocks. Moreover, they argue that equity volatility is actually mitigated when the background futures activity is high.
These findings contrast significantly with other empirical studies that suggest positive relation between futures trading and spot market variability.

Gulen and Mayhew (2000) provide mixed evidence in their study on 25 countries. Their results indicate that after the listing of stock index futures, spot volatility may have increased in the largest two markets, the United States and Japan, while it decreased or stayed roughly the same in the remainder. Furthermore, in most countries volatility tends to be lower in periods when open interest in stock index futures is high (the only two cases of the opposite results are again the United States and Japan). In some cases, volatility is higher in periods when futures volume is high, but this is driven by the unexpected component of volume, not the expected component. Board, Sandmann and Sutcliffe (2001) critiqued the traditional econometric tests (GARCH, ARIMA etc.) for being inconclusive and misleading and instead used elaborate stochastic volatility models that provided no evidence for hypothesis that FTSE 100 futures trading instantly destabilizes the spot market. There are relatively few studies that analyze the trading volume versus price volatility in the context of currency futures. Despite the size of the currency market and the fact that futures contracts are only one of three popular means with which speculators and hedgers can assume positions on future exchange rates (the other two being currency forwards and options), there are some indications that the level of futures trading may affect currency price volatility. Some of the studies provide evidence on the increase in the spot exchange rate volatility due the trading in currency futures. For instance, the study by Chatrath, Ramchander and Song (1996) explicitly examines the relationship between level of currency futures trading and the volatility in the spot rates of the British pound, Canadian dollar, Japanese yen, Swiss franc and Deutsche mark. The researchers provide strong evidence on the causality between futures trading volume exchange rate volatility, as it is found out that the trading activity in futures had a positive impact on conditional volatility in the exchange rate changes, with a weaker feedback from the exchange rate fluctuations to the futures volatility. Moreover, futures trading activity is found to decline on the day following increased volatility in spot exchange rates. Grammatikos and Saunders (1986) studied the same foreign currency futures traded on the International Monetary Market over the period of 1978-1983. After using numerous causality tests, the researchers could not reject the null hypothesis that volume (price variability) causes price variability (volume) – a finding that is consistent with the presence of significant bidirectional causality in futures market.
transactions. Many researchers studied also the particular effect that different groups of investors in futures can have on the cash market. According to Adrangi and Chatrath (1998) the overall growth in currency futures commitments had not caused exchange rates to be more volatile, but the surges in the participation of large speculators and small traders do destabilize the markets. Moreover the conclusion is drawn that margin requirements that “penalize” speculators and small savers may serve to promote stability in the market. The recent study by Bhargava and Malhotra (2007) focuses on trading in futures on four currencies over the time period of 1982-2000. The authors find evidence that day traders and speculators destabilize the market for futures. Furthermore it is in conclusive whether hedgers stabilize or destabilize the market. Exchange rate movements affect expected future cash flow by changing the home currency value of foreign cash inflows and outflows and the terms of trade and competition. Hence, the usage of currency derivatives for hedging the unexpected movement of currency becomes more important and essential and its importance is heightened. Literature had established that currency risk can be minimized through futures/forward hedging (Solnik(1974), Black (1990), Glen and Jorion (1993), and Chang and Wong (2003)). Early research illustrated the benefits of conventional hedging strategies (Ederington (1979) and Hill and Schneeweis (1982), among many others). Recent research recognizes the time varying nature of exchange risk and adopts GARCH (generalized autoregressive conditional heteroskedasticity) models to generate dynamic hedging strategies (Kroner and Sultan (1993), Lien, Tse, and Tsui (2002), Guo (2003)).

However there is no direct evidence that derivatives are actually used to hedge. Hentchel and Kothari (1997) and Simkins and Laux (1997) examine directly firm’s use of currency derivatives. The former doesn’t find any evidence and latter finds only weak evidence that their use influence exposure. Derivatives can also be used for speculative purposes. The debacle story of Metal lgesellschaft and its reasons are well known to everyone. This speculation can also increase the manipulation of market by big players and hence can increase the volatility in spot market (Kumar and Seppi (1992), Jarrow (1992)). So there can be the case that currency future trading activity increases the spot volatility.
2.6 Hedging Of Forex Exposure through Currency Derivatives-Evidence From select Indian corporate

Title : Hedging Of Currency Exposure by Indian Corporate: Evidence from Selected Indian IT Companies

Authors: Budheshwar Prasad Singhraul, Gnyana Ranjan Bal

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Gnyana Ranjan Bal stated that The Indian firms were given the opportunities to effectively manage the foreign exchange risk exposure and to hedge their foreign exchange risk by using the currency derivatives. This paper attempts to evaluate the various alternatives available to the Indian corporate for hedging financial risks and this had been evaluated in select corporate enterprises.

In the year 1985 Collier and Davis had made a study about the organisation and practice of currency risk management by multi-national companies of U.K. They found those MNC were following centralised control of group currency risk management and formal exposure management policies. They were actively managing their risk of currency transactions. In the year 1992 the study of practice of foreign exchange risk management and product usage of Australia based firms by Batten, Metlor and Wan. Among the 72 firms they had in their study around 70% firms were attempted to get maximum returns by trading their foreign exchange exposures and acting as foreign exchange risk bearer. Transaction exposure emerged as the most relevant exposure. In 1993 Jesswein et al had made a study on use of derivatives by U.S. corporations. He categorises foreign exchange risk management products under three generations. (1) First Generation; includes Forward contracts, (2) Second Generation includes Futures, Options, Futures-Options, Warranties and Swaps and (3) Third Generation includes Range, Compound Options, Synthetic Products and Foreign Exchange Agreements. In his Study the result showed that the use of the third generation products was generally less than that of the second-generation products, which was, in turn, less than the use of the first generation products. Here the size of company had not significant impact on use risk management product; however it was significantly related to the company’s degree of international involvement.

Phillips had made a study by focusing on derivative securities and derivative contracts. He concludes that financial risk exposures were faced by organisations of all sizes. In the year 1998 the pattern of use of derivatives by a large number of U.S firms was studied by Howton and
Perfect. In this study it was found that 60% of firms used some type of derivatives contract while only 36% of the randomly selected firms used derivatives. In both types of firms over 90% of the interest rate contracts were swaps, while over 80% of currency contracts were futures and forward contracts. In the comparison made by Hentschel and Kothari (2000) between the risk exposure of derivative users and the risk exposure of nonusers, it was found that economically small differences in equity return volatility between derivative users and nonusers. They also find that currency hedging had little effect on the currency exposure of firms' equity, even though derivatives use ranges from 0.6% to 64.2% of the firm's assets. In the year 2010 Dr. Hiren M Maniar in his paper Hedging of Foreign Exchange Risk by corporate in India presented at 6th finance conference at Portugal had made a study on different hedging instruments available to Indian corporate. And in the paper corporate hedging of foreign exchange risk in India by Anuradha Sivakumar and Runa Sarkar had made a study hedging instruments used by Indian corporate for short term and long term hedging and hedging instruments available to corporate in India.

Financial deleveraging and abrupt reversal of foreign capital flows due to the systemic risk emanating from manifold international occurrences has magnified the quantum of currency exposure in India and making the currency exposure to reach to an alarming state which need to be addressed meticulously in order to counter the evil effects of currency exposure on the economy. In consonance with the international practice of using currency derivatives, market regulators in India introduced derivatives trading and initiated the trading of currency futures in INR-EURO pair of currency in February, 2010 at National Stock Exchange. With the belief that currency derivatives would be able to provide a mechanism to alleviate currency exposure and strengthen the microstructure of Indian forex market, market participants started to apply currency futures in the process of risk management and the turnover in currency futures has magnified substantially. However, the impact of derivatives trading on spot market is a polemic issue and the financial literature is evidencing varied and contradictory opinions both in theoretical and empirical orientations. In general, derivative markets have been criticized for bringing destabilizing force. It is argued that the inflow of and existence of speculators in derivatives market may produce destabilizing forces, which among other things create undesirable “bubbles”. Further, transactions in derivative markets bring excess volatility into the underlying spot market due to the presence of
uninformed noise and speculative trades induced by low transactions costs (Figlewski, 1981; Stein, 1987; Ross, 1989). On the contrary, it is argued that the introduction of derivatives trading leads to more complete market; enhances information flow and thereby improves the investment choices facing investors. Market-wide information may be more efficiently impounded in the derivatives market with its low transaction costs which in turn leads to a reduced price disparity and low cash market volatility (Danthine, 1978; Butterworth 2000; Bologna and Cavallo, 2002). Moreover, derivatives markets play an important role within the price discovery process of underlying assets and currency futures have relatively lower transaction costs and capital requirement. Further, the arrival of external information is quickly incorporated into exchange rate as participant’s expectations are updated and providing a phillip to market efficiency. The issue of what impact derivatives trading would have on underlying cash market has been extensively explored in equity markets (e.g., Edwards, 1988; Harris, 1989; Bansal et. al., 1989; Bessembinder and Seguin, 1992; Antoniou et. al., 1998; Kyriacou and Sarno, 1999; Gulen and Mayhew, 2000; Bologna and Cavallo, 2002; Ryoo and Smith, 2003; Spyrou, 2005; Alexakis, 2007 among many others). However, the same issue has not been studied extensively in the context of currency markets. Some of the early studies pertaining to the introduction of currency futures in developed and emerging markets and their impact on spot exchange rate volatility are far from any consensus. Several studies evidenced a decline in spot exchange rate volatility with the introduction of currency derivatives whereas contradictory conclusions of magnification in exchange rate volatility were also noticed in the context of developed and emerging markets. The aforementioned fact has provided impetus to explore the influence of currency derivatives in Indian context. The present paper is aimed at analyzing the impact of the introduction of currency futures in INR-EURO pair on the spot exchange rate volatility. The rest of the paper is as follows: Section two discusses the existing literature; Section three specifies the data used; Section four deliberates on methodological issues; Section five analyses the data and interprets the result of analysis followed by Section six where conclusions and possible implications have been documented.

Title : Role Of Currency Potential In Indian Capital Market
Authors: Dr.Devendra Singh, Dr.Gaurav Aggarwal, Ms. Satinder Kaur Professor
Over the time, the foreign exchange market in India achieved some sophistication and vibrancy. However the volatility in exchange rates remained an issue. With global trade and business increasing exponentially, Indian companies had to find ways of hedging currency risk. The only instruments available were forward, swap and option contracts but all were customized and OTC. However, when the sub-prime crisis hit the US, Europe and other major economies of the world, the exchange rates went away. Indian companies were unable to realize the full value of their business dealing abroad. Worse still, the forward contracts they had entered into for hedging their currency risks themselves turned into risks. To cover the risk involved in currency exchange, the RBI and SEBI jointly formed a committee which recommended starting currency future trading in India, consequently NSE started in dealing currency futures from August, 2008. This plays a vital role in improving our Capital Market.

Each country has its own currency through which both national and international transactions are performed. All the international business transactions involve exchange of one currency for another. The currency units of one country are exchanged with the currency of another country. The price of one currency in terms of another currency is known as Exchange-rate. The foreign exchange market of a country provides the mechanism of exchanging different Currencies with one another and thus, facilitating transfer of purchasing power from one currency to another. With the multiple growths of international trade and finance all over the world, trading in foreign currency has grown tremendously over the past several decades. Since the exchange rates are continuously changing, so the firms are exposed to the risk of exchange rate movements.

A Currency Future Contract provides a simultaneous right and obligation to buy and sell a particular currency at a specified future date, at a specified price and a standard quantity. The foreign currency futures were started for the first time in the year 1972 at the International Money Market – a division of Chicago Mercantile Exchange of Chicago. The major currencies which at this exchange launched were British Pound, Canadian Dollar, Deutsche Marks, French Franc, Japanese Yen, Swiss Franc and Australian Dollars. Currency Future contract are similar to other future contracts like that of commodities, interest rates and metals etc. In the other words, in currency future market, the different currencies are sold and purchased at the specified future date, at predetermined price and at a specified quantity on a particular recognized exchange.
Today’s Forex market began to develop in 1973; however, foreign currency trading has been around since Pharaonic Egypt’s advent of coinage, and the ancient Babylonian’s usage of paper money. More relevant to today’s market however, are the post World War II alterations to the international exchange rate. World War II left the United States an industrial giant unscathed by the war, at least in comparison to the European powers. Worldwide confidence in the dollar made it the reserve currency of choice. To prevent a recurrence of the global depression, the Bretton Woods System, ratified by all the major capitalist countries, pegged international currencies to the dollar, which had its value, in turn, fixed in gold. This led to a system of fixed exchange rates, and the dollar’s role as de facto reserve currency was formalized. This arrangement lasted for the next three decades. In the early seventies, however, deteriorating confidence in the strength of the dollar led to market-driven currency values, and a new system of floating exchange rates took hold. The modern Forex market arose from this new arrangement.

Corporate Hedging for Foreign Exchange Risk in India

In 1971, the Bretton Woods system of administering fixed foreign exchange rates was abolished in favour of market-determination of foreign exchange rates; a regime of fluctuating exchange rates was introduced. Besides market-determined fluctuations, there was a lot of volatility in other markets around the world owing to increased inflation and the oil shock. Corporates struggled to cope with the uncertainty in profits, cash flows and future costs. It was then that financial derivatives – foreign currency, interest rate, and commodity derivatives emerged as means of managing risks facing corporations. In India, exchange rates were deregulated and were allowed to be determined by markets in 1993. The economic liberalization of the early nineties facilitated the introduction of derivatives based on interest rates and foreign exchange. However derivative use is still a highly regulated area due to the partial convertibility of the rupee. Currently forwards, swaps and options are available in India and the use of foreign currency derivatives is permitted for hedging purposes only. This study aims to provide a perspective on managing the risk that firm’s face due to fluctuating exchange rates. It investigates the prudence in investing resources towards the purpose of hedging and then introduces the tools for risk management. These are then applied in the Indian context. The motivation of this study came from the recent rise in volatility in the money markets of the world and particularly in the US Dollar, due to which Indian exports are fast gaining a cost disadvantage. Hedging with derivative instruments is a feasible solution to this
situation. This report is organised in 6 sections. The next section presents the necessity of foreign exchange risk management and outlines the process of managing this risk. Section 3 discusses the various determinants of hedging decisions by firms, followed by an overview of corporate hedging in India in Section 4. Evidence from major Indian firms from different sectors is summarized here and Section 5 concludes.

Firms dealing in multiple currencies face a risk (an unanticipated gain/loss) on account of sudden/unanticipated changes in exchange rates, quantified in terms of exposures. Exposure is defined as a contracted, projected or contingent cash flow whose magnitude is not certain at the moment and depends on the value of the foreign exchange rates. The process of identifying risks faced by the firm and implementing the process of protection from these risks by financial or operational hedging is defined as foreign exchange risk management. This paper limits its scope to hedging only the foreign exchange risks faced by firms.

**Kinds of Foreign Exchange Exposure**

Risk management techniques vary with the type of exposure (accounting or economic) and term of exposure. Accounting exposure, also called translation exposure, results from the need to restate foreign subsidiaries’ financial statements into the parent’s reporting currency and is the sensitivity of net income to the variation in the exchange rate between a foreign subsidiary and its parent.

Economic exposure is the extent to which a firm's market value, in any particular currency, is sensitive to unexpected changes in foreign currency. Currency fluctuations affect the value of the firm’s operating cash flows, income statement, and competitive position, hence market share and stock price. Currency fluctuations also affect a firm's balance sheet by changing the value of the firm's assets and liabilities, accounts payable, accounts receivables, inventory, loans in foreign currency, investments (CDs) in foreign banks; this type of economic exposure is called balance sheet exposure. Transaction Exposure is a form of short term economic exposure due to fixed price contracting in an atmosphere of exchange-rate volatility. The most common definition of the measure of exchange-rate exposure is the sensitivity of the value of the firm, proxied by the firm’s stock return, to an unanticipated change in an exchange rate. This is calculated by using the partial derivative function where the dependant variable is the firm’s value and the independent variable is the exchange rate (Adler and Dumas, 1984).
Necessity of managing foreign exchange risk

A key assumption in the concept of foreign exchange risk is that exchange rate changes are not predictable and that this is determined by how efficient the markets for foreign exchange are. Research in the area of efficiency of foreign exchange markets has thus far been able to establish only a weak form of the efficient market hypothesis conclusively which implies that successive changes in exchange rates cannot be predicted by analysing the historical sequence of exchange rates. (Soenen, 1979). However, when the efficient markets theory is applied to the foreign exchange market under floating exchange rates there is some evidence to suggest that the present prices properly reflect all available information. (Giddy and Dufey, 1992). This implies that exchange rates react to new information in an immediate and unbiased fashion, so that no one party can make a profit by this information and in any case, information on direction of the rates arrives randomly so exchange rates also fluctuate randomly. It implies that foreign exchange risk management cannot be done away with by employing resources to predict exchange rate changes.

Hedging as a tool to manage foreign exchange risk

There is a spectrum of opinions regarding foreign exchange hedging. Some firms feel hedging techniques are speculative or do not fall in their area of expertise and hence do not venture into hedging practices. Other firms are unaware of being exposed to foreign exchange risks. There are a set of firms who only hedge some of their risks, while others are aware of the various risks they face, but are unaware of the methods to guard the firm against the risk. There is yet another set of companies who believe shareholder value cannot be increased by hedging the firm’s foreign exchange risks as shareholders can themselves individually hedge themselves against the same using instruments like forward contracts available in the market or diversify such risks out by manipulating their portfolio. (Giddy and Dufey, 1992). There are some explanations backed by theory about the irrelevance of managing the risk of change in exchange rates. For example, the International Fisher effect states that exchange rates changes are balanced out by interest rate changes, the Purchasing Power Parity theory suggests that exchange rate changes will be offset by changes in relative price indices/inflation since the Law of One Price should hold. Both these theories suggest that exchange rate changes are evened out in some form or the other. Also, the Unbiased Forward Rate theory suggests that locking in the forward exchange rate offers the same...
expected return and is an unbiased indicator of the future spot rate. But these theories are perfectly played out in perfect markets under homogeneous tax regimes. Also, exchange rate-linked changes in factors like inflation and interest rates take time to adjust and in the meanwhile firms stand to lose out on adverse movements in the exchange rates. The existence of different kinds of market imperfections, such as incomplete financial markets, positive transaction and information costs, probability of financial distress, and agency costs and restrictions on free trade make foreign exchange management an appropriate concern for corporate management. (Giddy and Dufey, 1992) It has also been argued that a hedged firm, being less risky can secure debt more easily and this enjoy a tax advantage (interest is excluded from tax while dividends are taxed). This would negate the Modigliani-Miller proposition as shareholders cannot duplicate such tax advantages. The MM argument that shareholders can hedge on their own is also not valid on account of high transaction costs and lack of knowledge about financial manipulations on the part of shareholders. There is also a vast pool of research that proves the efficacy of managing foreign exchange risks and a significant amount of evidence showing the reduction of exposure with the use of tools for managing these exposures. In one of the more recent studies, Allayanis and Ofek (2001) use a multivariate analysis on a sample of S&P 500 non-financial firms and calculate a firm’s exchange-rate exposure using the ratio of foreign sales to total sales as a proxy and isolate the impact of use of foreign currency derivatives (part of foreign exchange risk management) on a firm’s foreign exchange exposures. They find a statistically significant association between the absolute value of the exposures and the (absolute value) of the percentage use of foreign currency derivatives and prove that the use of derivatives in fact reduce exposure.

Foreign Exchange Risk Management Framework

Once a firm recognizes its exposure, it then has to deploy resources in managing it. A heuristic for firms to manage this risk effectively is presented below which can be modified to suit firm-specific needs i.e. some or all the following tools could be used.

- Forecasts: After determining its exposure, the first step for a firm is to develop a forecast on the market trends and what the main direction/trend is going to be on the foreign exchange rates. The period for forecasts is typically 6 months. It is important to base the forecasts on valid assumptions.
Along with identifying trends, a probability should be estimated for the forecast coming true as well as how much the change would be.

- Risk Estimation: Based on the forecast, a measure of the Value at Risk (the actual profit or loss for a move in rates according to the forecast) and the probability of this risk should be ascertained. The risk that a transaction would fail due to market-specific problems should be taken into account. Finally, the Systems Risk that can arise due to inadequacies such as reporting gaps and implementation gaps in the firms’ exposure management system should be estimated.

- Benchmarking: Given the exposures and the risk estimates, the firm has to set its limits for handling foreign exchange exposure. The firm also has to decide whether to manage its exposures on a cost centre or profit centre basis. A cost centre approach is a defensive one and the main aim is to ensure that cash flows of a firm are not adversely affected beyond a point. A profit centre approach on the other hand is a more aggressive approach where the firm decides to generate a net profit on its exposure over time.

- Hedging: Based on the limits a firm set for itself to manage exposure, the firms then decides an appropriate hedging strategy. There are various financial instruments available for the firm to choose from: futures, forwards, options and swaps and issue of foreign debt. Hedging strategies and instruments are explored in a section.

- Stop Loss: The firms risk management decisions are based on forecasts which are but estimates of reasonably unpredictable trends. It is imperative to have stop loss arrangements in order to rescue the firm if the forecasts turn out wrong. For this, there should be certain monitoring systems in place to detect critical levels in the foreign exchange rates for appropriate measure to be taken.

- Reporting and Review: Risk management policies are typically subjected to review based on periodic reporting. The reports mainly include profit/loss status on open contracts after marking to market, the actual exchange/interest rate achieved on each exposure and profitability vis-à-vis the benchmark and the expected changes in overall exposure due to forecasted exchange/interest rate movements. The review analyses whether the benchmarks set are valid.
Based on inputs from Kshitij Consultancy Services

For example, the foreign exchange market of a developing country may be highly regulated and thus exposed to sudden swings due to frequent policy changes.

**Hedging Strategies/ Instruments**

A derivative is a financial contract whose value is derived from the value of some other financial asset, such as a stock price, a commodity price, an exchange rate, an interest rate, or even an index of prices. The main role of derivatives is that they reallocate risk among financial market participants, help to make financial markets more complete. This section outlines the hedging strategies using derivatives with foreign exchange being the only risk assumed.

- **Forwards:** A forward is a made-to-measure agreement between two parties to buy/sell a specified amount of a currency at a specified rate on a particular date in the future. The depreciation of the receivable currency is hedged against by selling a currency forward. If the risk is that of a currency appreciation (if the firm has to buy that currency in future say for import), it can hedge by buying the currency forward. e.g. if RIL wants to buy crude oil in US dollars six months hence, it can enter into a forward contract to pay INR and buy USD and lock in a fixed exchange rate for INR-USD to be paid after 6 months regardless of the actual INR-Dollar rate at the time. In this example the downside is an appreciation of Dollar which is protected by a fixed forward contract. The main advantage of a forward is that it can be tailored to the specific needs of the firm and an exact hedge can be obtained. On the downside, these contracts are not marketable, they can’t be sold to another party when they are no longer required and are binding.

- **Futures:** A futures contract is similar to the forward contract but is more liquid because it is traded in an organized exchange i.e. the futures market. Depreciation of a currency can be hedged by selling futures and appreciation can be hedged by buying futures. Advantages of futures are that there is a central market for futures which eliminates the problem of double coincidence. Futures require a small initial outlay (a proportion of the value of the future) with which significant amounts of money can be gained or lost with the actual forwards price fluctuations. This provides a sort of leverage. The previous example for a forward contract for RIL applies here also just that RIL will have to go to a USD futures exchange to purchase standardised dollar futures equal to the amount to be hedged as the risk is that of appreciation of the dollar. As mentioned earlier, the tailor
ability of the futures contract is limited i.e. only standard denominations of money can be bought instead of the exact amounts that are bought in forward contracts.

- Options: A currency Option is a contract giving the right, not the obligation, to buy or sell a specific quantity of one foreign currency in exchange for another at a fixed price; called the Exercise Price or Strike Price. The fixed nature of the exercise price reduces the uncertainty of exchange rate changes and limits the losses of open currency positions. Options are particularly suited as a hedging tool for contingent cash flows, as is the case in bidding processes. Call Options are used if the risk is an upward trend in price (of the currency), while Put Options are used if the risk is a downward trend. Again taking the example of RIL which needs to purchase crude oil in USD in 6 months, if RIL buys a Call option (as the risk is an upward trend in dollar rate), i.e. the right to buy a specified amount of dollars at a fixed rate on a specified date, there are two scenarios. If the exchange rate movement is favourable i.e. the dollar depreciates, then RIL can buy them at the spot rate as they have become cheaper. In the other case, if the dollar appreciates compared to today’s spot rate, RIL can exercise the option to purchase it at the agreed strike price. In either case RIL benefits by paying the lower price to purchase the dollar.

- Swaps: A swap is a foreign currency contract whereby the buyer and seller exchange equal initial principal amounts of two different currencies at the spot rate. The buyer and seller exchange fixed or floating rate interest payments in their respective swapped currencies over the term of the contract. At maturity, the principal amount is effectively re-swapped at a predetermined exchange rate so that the parties end up with their original currencies. The advantages of swaps are that firms with limited appetite for exchange rate risk may move to a partially or completely hedged position through the mechanism of foreign currency swaps, while leaving the underlying borrowing intact. Apart from covering the exchange rate risk, swaps also allow firms to hedge the floating interest rate risk. Consider an export oriented company that has entered into a swap for a notional principal of USD 1 mn at an exchange rate of 42/dollar.

The company pays US 6months LIBOR to the bank and receives 11.00% p.a. every 6 months on 1st January & 1st July, till 5 years. Such a company would have earnings in Dollars and can use the same to pay interest for this kind of borrowing (in dollars rather than in Rupee) thus hedging its exposures.
Foreign Debt: Foreign debt can be used to hedge foreign exchange exposure by taking advantage of the International Fischer Effect relationship. This is demonstrated with the example of an exporter who has to receive a fixed amount of dollars in a few months from present. The exporter stands to lose if the domestic currency appreciates against that currency in the meantime so, Corporate Hedging for Foreign Exchange Risk to hedge this, he could take a loan in the foreign currency for the same time period and convert the same into domestic currency at the current exchange rate. The theory assures that the gain realised by investing the proceeds from the loan would match the interest rate payment (in the foreign currency) for the loan.

Choice of hedging instruments
The literature on the choice of hedging instruments is very scant. Among the available studies, Géczy et al. (1997) argues that currency swaps are more cost-effective for hedging foreign debt risk, while forward contracts are more cost-effective for hedging foreign operations risk. This is because foreign currency debt payments are long-term and predictable, which fits the long-term nature of currency swap contracts. Foreign currency revenues, on the other hand, are short-term and unpredictable, in line with the short-term nature of forward contracts. A survey done by Marshall (2000) also points out that currency swaps are better for hedging against translation risk, while forwards are better for hedging against transaction risk. This study also providesecdotal evidence that pricing policy is the most popular means of hedging economic exposures. These results however can differ for different currencies depending in the sensitivity of that currency to various market factors. Regulation in the foreign exchange markets of various countries may also skew such results.

Determinants of Hedging Decisions
The management of foreign exchange risk, as has been established so far, is a fairly complicated process. A firm, exposed to foreign exchange risk, needs to formulate a strategy to manage it, choosing from multiple alternatives. This section explores what factors firms take into consideration when formulating these strategies.

Production and Trade vs. Hedging Decisions
An important issue for multinational firms is the allocation of capital among different countries production and sales and at the same time hedging their exposure to the varying exchange rates.
Research in this area suggests that the elements of exchange rate uncertainty and the attitude toward risk are irrelevant to the multinational firm's sales and production decisions (Broll, 1993). Only the revenue function and cost of production are to be assessed, and, the production and trade decisions in multiple countries are independent of the hedging decision. The implication of this independence is that the presence of markets for hedging instruments greatly reduces the complexity involved in a firm’s decision making as it can separate production and sales functions from the finance function. The firm avoids the need to form expectations about future exchange rates and formulation of risk preferences which entails high information costs.

**Cost of Hedging**

Hedging can be done through the derivatives market or through money markets (foreign debt). In either case the cost of hedging should be the difference between value received from a hedged position and the value received if the firm did not hedge. In the presence of efficient markets, the cost of hedging in the forward market is the difference between the future spot rate and current forward rate plus any transactions cost associated with the forward contract. Similarly, the expected costs of hedging in the money market are the transactions cost plus the difference between the interest rate differential and the expected value of the difference between the current and future spot rates. In efficient markets, both types of hedging should produce similar results at the same costs, because interest rates and forward and spot exchange rates are determined simultaneously. The costs of hedging, assuming efficiency in foreign exchange markets result in pure transaction costs. The three main elements of these transaction costs are brokerage or service fees charged by dealers, information costs such as subscription to Reuter reports and news channels and administrative costs of exposure management.

**Factors affecting the decision to hedge foreign currency risk**

Research in the area of determinants of hedging separates the decision of a firm to hedge from that of how much to hedge. There is conclusive evidence to suggest that firms with larger size, R&D expenditure and exposure to exchange rates through foreign sales and foreign trade are more likely to use derivatives. (Allayanis and Ofek, 2001) First, the following section describes the factors that affect the decision to hedge and then the factors affecting the degree of hedging are considered.
Firm size: Firm size acts as a proxy for the cost of hedging or economies of scale. Risk management involves fixed costs of setting up of computer systems and training/hiring of personnel in foreign exchange management. Moreover, large firms might be considered as more creditworthy counterparties for forward or swap transactions, thus further reducing their cost of hedging. The book value of assets is used as a measure of firm size.

Leverage: According to the risk management literature, firms with high leverage have greater incentive to engage in hedging because doing so reduces the probability, and thus the expected cost of financial distress. Highly levered firms avoid foreign debt as a means to hedge and use derivatives.

Liquidity and profitability: Firms with highly liquid assets or high profitability have less incentive to engage in hedging because they are exposed to a lower probability of financial distress. Liquidity is measured by the quick ratio, i.e. quick assets divided by current liabilities). Profitability is measured as EBIT divided by book assets.

Sales growth: Sales growth is a factor determining decision to hedge as opportunities are more likely to be affected by the underinvestment problem. For these firms, hedging will reduce the probability of having to rely on external financing, which is costly for information asymmetry reasons, and thus enable them to enjoy uninterrupted high growth. The measure of sales growth is obtained using the 3-year geometric average of yearly sales growth rates. As regards the degree of hedging Allayanis and Ofek (2001) conclude that the sole.

Determinants of the degree of hedging are exposure factors (foreign sales and trade). In other words, given that a firm decides to hedge, the decision of how much to hedge is affected solely by its exposure to foreign currency movements. This discussion highlights how risk management systems have to be altered according to characteristics of the firm, hedging costs, nature of operations, tax considerations, regulatory requirements etc. The next section discusses these issues in the Indian context and regulatory environment.