CHAPTER 2

RESEARCH METHODOLOGY

Study of literature related to the current topic of FX risk management both in India and abroad is covered in this chapter. In addition, the methodology adopted to carry out the Research study is dovetailed.

2.1 REVIEW OF LITERATURE

A research work to be more realistic, rightly directed, properly analysed, critically evaluated, better conclusive and not duplicated is possible only when the review of the ‘Area of research’ is undertaken. It may be noted that review of the existing literature plays an equally important role than the research work itself, as it gives the lead to embark on expanding the existing research area or explore new areas for study.

2.1.1 Existing research studies on the proposed research topic in India:

Research has been carried on related topics by Avadhoot Nadkarni and Rajat Acharya. Studies have been undertaken in Czech Republic by Lacinaand; in USA by Sajjid Chinoy relating to the subject of study.

Avadhoot Nadkarni carried out doctoral thesis, “India’s Exchange Rate under the Basket Arrangement: An Exposition and Evaluation” at Department of Economics, St. Xavier College, University of Mumbai, which was awarded EXIM Bank International Trade Research Annual Award 1996 by Export Import Bank of India in Sept. 1997.

The study examines India’s exchange rate management, i.e. the mechanism for the determination of rate and its exchange rate policies, especially vis-à-vis the level of the rate, over the period 1975-1991. In particular (a) the study provides an exposition of the basket-peg mechanism for the determination of an exchange rate; (b) it discusses the way in which the mechanism was used to manage the rate in India, (iii) it develops measures for the determination of the level of the rate in India in nominal and real terms and (d) it evaluates India’s exchange rate policies over the period, i.e. it examines the extent to which stabilisation was attained by the Indian basket.

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5 Avadhoot Nadkarni Dr. St. Xavier College, Mumbai, Sept. 1997, India’s Exchange Rate under the Basket Arrangement: An Exposition and Evaluation, Export Import Bank of India, Occasional Paper No. 57
arrangement, as also, in the framework of a model, it examines the extent to which the
devaluation brought about by managing the rate was effective in improving the trade
balance. The findings were as follows: (a) the Indian Rupee was not rigidly pegged,
within narrow margins around the parity, to a basket of currencies, except initially, i.e.,
for a little over three years since 1975. Over a major part of the period the Rupee was
being managed against the basket. The management achieved a nominal devaluation of
the Rupee at an annual rate of about 10% over the period 1981-91 against a basket of 4
major currencies (USD, GBP, Japanese Yen and Deutsche Mark). This nominal
deviation resulted in a real devaluation of a little over 5% p.a. against a thirty-
currency basket over the same period. The basket arrangement did result in
stabilisation of exchange rates. (b) The devaluation of the Rupee brought about by
managing the basket rate comes across as effectual in improving the trade balance if
we abstract from the inflationary effects of this devaluation. The price elasticities of
supply/demand for exports/imports are such that devaluation will lead to an
improvement in trade balance in dollar terms because of an import compression, which
outweighs the accompanying fall in the dollar value of exports. If inflation feedback
effects of devaluation are allowed for the fall in the dollar value of exports is arrested
to some extent because of price setting power in export markets which implies that
highest domestic prices translate into higher export prices and hence higher export
values. The inflation, however, also means that relatively cheaper imported inputs tend
to be substituted for costlier domestic inputs and the dollar value of imports is higher
than it would be without inflation. The latter effect of inflation outweighs the former
implying that devaluation is not as effective in improving the trade balance as would
seem from an examination of the trade elasticities.

Rajat Acharya carried out doctoral thesis, "Theoretical Aspects of Liberal Trade
Policies in Transition Economies: Exchange Rate, Competition and Exports" at
Department of Economics, University of Burdwan, West Bengal, which was awarded
EXIM Bank International Trade Research Annual Award 1997 by Export Import Bank
of India in March 1998. The study attempts to analyse different aspects of the liberal
trade policies in the transition economies taking into account the specificities in market
and production structures. The following issues were focussed: (a) Efficacy of

6 Rajat Acharya Dr., March 1998, Dept. of Economics, University of Burdwan, West Bengal; Theoretical Aspects of Liberal Trade Policies in Transition Economies: Exchange Rate, Competition and Exports, Export Import Bank of India, Occasional Paper No 62
exchange rate policies like devaluation and convertibility of domestic currency in removing the balance of payments constraint and generating employment; (b) Macroeconomic implications of devaluation, particularly on black market premium on foreign exchange and under invoicing of exports; (c) Post liberalisation domestic market structure, output and welfare in the presence of cost-efficient, capacity-constrained domestic firms and (d) Impact of trade liberalisation on quality innovation and the choice between minor and major innovations by large and small firms. The conclusions were (a) the trade balance effect crucially depends on the direction of Real Exchange Rate movement, but there is not much to be worried about the employment changes on this account. The serious threat to employment changes comes from the demand for non-traded goods through devaluation-induced changes in the black market exchange rate. (b) It is demonstrated that the post-liberalisation domestic market structure, output and welfare critically depend on the size of the domestic market and the degree of asymmetry in cost of domestic and foreign firms. (c) The issue of quality innovation is extremely important because in the long run significant export growth can only be achieved through improvement in quality of many of our export products.

Lacina\(^7\) has carried out Doctoral work on Foreign Exchange Rate Risk Management in Czech Republic and the thesis is divided to three parts. First part analysis the increasing volatility of foreign exchange markets since the collapse of Breton-Woods system of fixed exchange rates. Exchange rates movements generate business risks of many types, often complex and sometimes hidden. These risks can be group according to their nature. Author adopting an analysis based on whether the exposure is economic, transactional or translation. The aim of the theoretical part of the thesis is to explain importance of foreign exchange exposure and risk within the set of risks, which firms are facing. Author uses the statistical tools to explain the nature of foreign exchange risk and exposure and geometrical tools to explain the relationship between exposure and risk. The foreign exchange exposure is defined as the amounts of foreign currencies which represents the sensitivity of the future, real domestic-currency (market) value of any physical or financial asset (liabilities) to random variations in the

\(^7\) LACINA, L.: Řízení devizového rizika podniku (Foreign Exchange Rate Risk Management), Faculty of Business and Economics, Department of Finance Mendel University of Agriculture and Forestry Brno, Czech, (2000) Doctoral thesis. Text in Czech, summary in English 178 p. (Downloaded from Internet).
future domestic purchasing powers of these foreign currencies, at some specific future date. Author stresses that the words currency risk and exposure are not the synonyms. Currency risk is to be identified with statistical quantities, which summarise the probability that the actual domestic purchasing power of home or FC on a given future date will differ from its originally anticipated value. Exposure in contrast should be defined in terms of what one has at risk. The proper understanding of both terms is crucial for effective foreign exchange management. Final part of the thesis deals with the problematic of foreign exchange risk management. Step by step is described the process of FX management. Analyse begin with definition of responsibilities for FX management within the firm. Then follows description of the hedging techniques available for reduction and covering the open positions in foreign currencies. The work concludes with the recommendations of optimal foreign exchange risk hedging strategy. From the above it can be observed that it has been a theoretical study and hence there is scope for expanding the same with practical orientation and also in the Indian context.

Sajjid Chinoy has carried out doctoral dissertation “Currency Risk Premia and Unhedged, FC Borrowing in Emerging Markets” at Department of Economics, Stanford University, USA which was awarded EXIM Bank International Economic Research Annual Award 2001 by Export Import Bank of India in January 2002. The study attempts to jointly rationalise two important puzzles in international economics: the existence of a currency risk premium in the interest rates of many emerging markets, and the desire of firms in these environments to expose themselves to currency-risk, by undertaking unhedged, FC liabilities in the context of East Asian crisis. The summary indicates that the portfolio demands of agents in the economy are combined to demonstrate that the equilibrium currency-risk premium is a function of the current account deficit, the relative net-worth of the non-tradable and tradable sectors, the volatility of the exchange rate, the extent to which nominal depreciations translate into real depreciations, the share of consumption devoted to tradables and the co-efficient of relative risk-aversion of agents in the economy. Contrary to conventional wisdom, it is shown that increased exchange rate uncertainties does not necessarily reduce the desire of firms to take on risky, FC debt. In this study, though

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1 Sajjid Chinoy Dr, Department of Economics, Stanford University, USA. (January 2002); “Currency Risk Premia and Unhedged, Foreign Currency Borrowing in Emerging Markets”, Export Import Bank of India, Occasional Paper No. 88
much theoretical work has focussed on the desire of banks in these environments to take on unhedged, FC debt, the literature has largely ignored analysing the desire of firms to undertake unhedged, offshore FC liabilities. In the proposed study, it is envisaged to obtain the feedback of corporate managers and to link up with the theoretical aspects so as to derive meaningful conclusions in the Indian context.

Radhika Samant⁹, while analysing the External Commercial Borrowings, which has emerged as a cheaper financing option due to apparently the interest rate differential in FC compared to Rupee borrowings. Though the FC 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 corporates. It is necessary to 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.

Y.M. Deosthalee¹⁰ while analysing the Monetary and Credit Policy 1997-98 elaborates on two measures aimed at providing flexibility to corporates in foreign exchange dealings and enabling the forex market to gain in depth. Firstly, allowing corporates 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 2 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 formalise their risk management policies and control mechanisms. In a liberalised environment, risk management could make all the difference between success and stagnation.

⁹ Radhika Samant, (July 1997), Foreign Currency Loan-For Better or For Worse?, New Delhi, The Chartered Accountant, Journal of ICAI, P.36
2.1.2 Research articles related to the proposed thesis in India:

**Investor Guide of the Economic Times**

The article carried out a featured article namely “A India survives Thursday’s trigger on Asia”. As the Asian and other markets were hit by a domino effect after the devaluation of Thailand Baht (July 2, 1997). India marginally avoided the catastrophe with a less rapid fall. Two things had become clear to the investing community around the world. One, Indian stock market no longer cherishes the socialist veil. They are one with any domino or surge effect that takes place around the world. Two, India Stock Inc. is well placed to protect itself from any global disasters. For, as the Asian Markets bled profusely, India managed to scrape through. It may be noted that political instability and imminent fall of coalition government and a comment by RBI Official that the Rupee is overvalued by 14.10% in REER terms had triggered the fall of Rupee in 1997 rather than the domino effect. Immediately on eruption of South-East Crisis, RBI decided to adopt ‘Intervention Strategy’ and hit speculators through physical controls by reversing some of the steps taken at the beginning of the year, rather than ‘Use of Reserves’ to arrest the steep fall of Rupee. This has resulted in stabilisation of Rupee towards end of 1997 after recording a fall of 12% during the year.


**The key findings are:**

The objective of risk management is to ensure that the activities of the organisations are not exposed to unacceptable losses. The responsibility of risk management usually lies on the senior management as well as the board. Arthur Andersen has identified six main types of risk management policies. They are foreign exchange, credit, operational, liquidity, commodity and interest rate risk management policies. Foreign exchange risk policy is the most common type of policy that both Japanese and Singaporean organisations have in place. Of the various foreign exchange exposure

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11 Investor Guide (1 September-7 September 1997), India survives Thursday’s trigger on Asia, Mumbai, The Economic Times
that are hedged, booked transactions exposures and anticipated transaction exposures are most commonly hedged by Singapore companies and Japanese companies respectively. The types of common instruments used by both Japanese and Singapore companies to hedge their forex risk are mainly spot/forward and plain vanilla options. Most organisations adopt a hedging horizon of less than 12 months.

2.1.3 External studies related to the subject area:

Minister of Finance, New Zealand issued Guidelines\(^1\) for the Management of Crown and Departmental Foreign Exchange Exposures inter-alia, covering the Foreign-Exchange Policy Objectives.

Guideline 1
The policy document must state the department's foreign-exchange policy objectives.
To minimise transaction exposure by covering all material foreign-exchange exposures as soon as they arise, with approved instruments and counterparties;
to minimise counterparty exposure by establishing the criteria for acceptable transaction and bank account counterparties and limiting the amount of exposure to any single counterparty; and
to ensure that the policies and practices comply with the Public Finance Act 1989 and the Guidelines for the Management of Crown and Departmental Foreign-Exchange Exposure.

Guideline 2
The policy document must describe the types of foreign-exchange exposure faced by the department.

Guideline 3
The policy document must list the delegated authorities and key responsibilities for foreign-exchange exposure management within the department.
Chief Executives are accountable for their department's foreign-exchange exposure management. This includes:
designing and implementing their department's foreign-exchange policy document;

\(^1\) Minister of Finance, New Zealand, 24 November 2003, Guidelines for the Management of Crown and Departmental Foreign Exchange Exposure
identifying and covering their transaction exposure, with approved instruments and counterparties; managing the funding and operation of their foreign-currency bank accounts; monitoring credit and transaction exposure limits; and reporting on all aspects of foreign-exchange exposure as part of their normal financial reporting. And departmental bank accounts and any changes to them thereafter;

Guideline 4
The policy document must state the point or points at which identification and covering of transaction exposure will occur. Where more than one identification point is stated, the policy should define the circumstances under which each is applicable.

Guideline 5
The policy document must state the Transaction Exposure Limit for each individual currency. The Transaction Exposure Limit for an individual currency must not exceed NZ $100,000.

Guideline 6
The policy document must identify the instruments which the department may use to cover its transaction exposure, together with any limitations on their use. Such limitations should include:

i. maximum utilisation of a particular instrument without reference to the Chief Executive;
ii. specific approval from the Chief Executive required to use a particular instrument; and
iii. use of particular instruments to cover specified types of transactions.

Guideline 7
The policy document should state that the department is prohibited under the Public Finance Act 1989 from rolling forward an existing

Guideline 8
The policy document must identify the counterparties with whom the department may undertake foreign-exchange transactions and/or hold foreign-currency bank accounts. The minimum credit rating for a counterparty is A-/A3 (subject to the exceptions
outlined in paragraph 48 of this document). Counterparties that do not meet the criteria may be included only with the prior approval of joint ministers.

Guideline 9
The policy document must state the Counterparty Exposure Limit for each individual counterparty. The Counterparty Exposure Limit for an individual counterparty must not exceed NZ $5 million.

Guideline 10
The policy document must specify how frequently counterparty credit ratings and exposure levels are to be checked. It must state that, where an approved counterparty is subsequently downgraded to a rating that is below the minimum level (A-/ A3), the department will be required to cease trading and/or close their bank account with that counterparty, unless joint ministerial approval has been granted to keep the account open.

Guideline 11
The policy document must comply with the requirements of the banking and investment provisions contained in the Public Finance Act 1989. These include:

Guideline 12
The policy document must identify the types and frequency of foreign-exchange exposure reports to be produced for internal and external use, and to whom they are to be distributed.

Global Treasury Management Survey\textsuperscript{15} conducted by Treasury Strategies Inc. in 2002 covering the following areas viz. Treasury organisation, Technology utilisation and plans, Key projects and issues and International cash management structures.

Major findings of the survey are:

(a) Most companies have centralised treasury structure. Among the MNCs, only 8% respondents operate in decentralised environment. Majority has indicated preference to centralised approach.

(b) While web-based products and capabilities have been a topic of great interest in the treasury environment, the survey indicated that a relatively slow transition to the web enablement of treasury functions.

\textsuperscript{15} Treasury Strategies, Global Treasury management Survey 2002, Chicago, page 2
I Financial Risk Management is a key issue with more than 60% of the respondents. It’s seen that companies are implementing new reporting systems and processes. And also in the process of refining hedge policies and practices for the new world of FAS 133.

The Foreign Exchange Rate Exposure of Nations Based on the research idea of Adler and Dumas, the foreign exchange rate exposure was applied to whole economies in stead of single firms or industries. Results based on data from 27 countries show that national FX rate exposures are significantly related to the current balance variables of corresponding economies.

2.2 RESEARCH DESIGN

2.2.1 Background: Developments in relating to Rupee market

Financial sector reforms started in India with liberalization of economy in 1991. This has led to many opportunities as well as threats to the Indian corporates, which have exposure to FC in the form of imports and exports.

- The Indian Rupee (INR) was under the Fixed Exchange System (FES) linked to the British Pound Sterling (GBP) and through it to other currencies.

- This system of fixed exchange rates could not withstand the pressure emanating from inadequacies of international liquidity arrangement, suspension of convertibility of US Dollar (USD) into gold and increase in the price of oil. As a result of these a rapidly fluctuating and floating exchange rates were born in 1971.

- However, in India, Reserve Bank of India (RBI), the Central Bank, in GBP and Foreign Exchange Dealers’ Association (FEDAI) used to give ‘rate schedule’ to Authorised Dealers (Ads, i.e. Banks and Institutions) based on which the rates to customers were quoted the exchange rates. This system of ‘rate schedule’ was abolished effective from 1 January 1984 paving the way for quoting to customers based on on-going market rates by Ads.

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16 Ibid, page 6
17 Horst Entorf, Jochen Moebert and Katja Sonderof, Darmstadt University of Technology, Department of Economics, Darmstadt, Germany, April 20, 2006, Abstract of the study - The Foreign Exchange Rate Exposure of Nations
18 FEDAI, Management (31 August 1996), Exchange Cover and Risk Foreign Exchange Dealers’ Association of India, Mumbai, P.25
The balance of payment crisis witnessed in the country during the period 1990-91 was marked by record low level of foreign exchange reserves, widening current deficit, Gulf crisis, increasing oil import bill and dwindling/withdrawal of funds by Non-Residents. The foreign exchange reserves were at USD 5,834 Mn (comprising Gold-3,496 Mn, SDRs-102 Mn and FC Assets-2,236 Mn).19

This crisis has prompted the Government of India (GOI) to initiate the structural reforms in 1991 and bring the sagging economy from the brink of collapse.

To begin with Rupee was devalued in June and July 1991, the fragmented subsidies on exports were replaced with EximScrip, which gave exporters freely tradable import entitlements equivalent to 30-40% of their export earnings. The EximScrip was replaced with Liberalised Exchange Rate Management System (LERMS) introduced in 1992 thus dual exchange rate system was born. LERMS was replaced with Unified exchange rate system in August 1993 and RBI adopted direct quotation system then onwards. Under this unified exchange rate system, RBI allowed Rupee to find its level in the market, albeit with smaller intervention, as and when RBI deemed fit to intervene.

The GOI had set up Sodhani Committee in 1994 to study the Foreign exchange market in India and suggest measures to strengthen the system. In sequel to that GOI constituted Tarapore Committee in 1997 to study Capital Account Convertibility (CAC) and suggest road map for introduction of CAC and remove all restrictions on capital movement into and outside the borders of country. The Committee has suggested a period of 3 years starting from 1997-98, 1998-99 and 1999-2000 for this purpose, subject to satisfying various sign posts like achieving fiscal deficit of 3.5% to 5% of GDP, inflation of 3.5% to 4.5%, strong financial system, sufficient foreign exchange reserves to the tune of about 28 billion US dollars, stable currency position and so on. Though the reserves position is comfortable at USD 34 billion, RBI has adopted wait and watch position before lifting all controls.

Meanwhile, RBI has been allowing gradual relaxations under FEMA for strengthening the forex market in India. The forward market for foreign currencies started with introduction of LERMS by RBI and later on left to Ads in the foreign exchange market. On account of restrictions on free movement of capital and with the

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19 Reserve Bank of India Bulletin (May 16, 2001), Table No.44 Foreign Exchange Reserves
administered rates of interest, the forward margins are not truly reflective of interest rate differentials as in the advanced economies, but gradually being corrected. RBI has allowed booking, cancellation and re-booking of forward contracts from time to time in respect of corporate genuine exposures.

- Also, RBI has allowed Ads to write Options to resident customers to cover their genuine exposure subject to certain conditions with effect from 1 January 1994. In case of imports under long term and commercial borrowings the repayment of which extends beyond 5-7 years, the exchange risk is considerably higher at the time of remittances. There are several instruments, which have been acknowledged as 'durable hedging mechanism' that has come into vogue in the international markets viz. currency swaps and interest rate swaps.

2.2.2 Exchange rate movement of INR

With the changing business environment corporates are required to take proactive approach to manage the FC exposure. To site related examples...

- The exchange rate as on March/April 1991 was 1USD=Rs.19.53 (i.e. for Rs. 100 = USD 5.12 as per indirect quotation) and the 6 month forwards were at a premium of 2.73% p.a. against USD and at a discount of 2.76% p.a. against GBP. In those days the GBP was the anchor currency of RBI.

- The Rupee was devalued to around Rs.21.40 per Dollar on June 29, 1991, to Rs.23.25 on July 1, 1991 and to Rs.26 on July 3, 1991 for a total decline of around 22%. EximScrip, which gave exporters freely tradable import entitlements equivalent to 30-40% of their export earnings to boost exports. In February 1992, LERMS was introduced by abolishing the EximScrip and the dual exchange rate system was introduced.

- From March 3, 1992 to February 28, 1993, this dual exchange rate system existed. It consisted of (1) a market-determined exchange rate covering 60% of all forex remittances and (2) the official rate, which was determined by RBI for the balance 40% of export, proceeds (to be sold to RBI at Rs.26 per USD).

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20 Reserve Bank of India Bulletin (May 1991), Table No.14 Reserve Bank of India-Foreign Exchange Rates, P. S470
From March 1, 1993, the unified exchange rate system was introduced for all transactions and also the Direct Method of quotation (for e.g. 1 USD = Rs. X). From March 4, 1992 the Dollar became the intervention currency.

In August 1994, the Rupee was made convertible for all current account transactions. Rupee was gradually allowed to find appropriate level in market.

The Rupee was quoted around Rs.31.37 per USD and the forward premium levels about 1% in 1994. Also, the spot USD/INR rate has gradually depreciated to Rs. 35.91 on March 1, 1997 and Rs. 39.72 in April 1998. This is because, hither to RBI was controlling the spot rates and now it is left to market forces. Market forces include Banks (Authorised Dealers), Financial Institutions, Corporates (Importers and exporters), Government and brokers.

Rupee was quoting at Rs. 46.64 per USD on March 30, 2001 indicating depreciation of about 7% p.a. between 1994 and 2001.

The six-month forward premium levels touched a peak of 24% p.a. in January 1998 and as on March 2001 it was hovering at 8% p.a. Different market participants will have different views of the market movement and take positions accordingly.

When there is high volatility, companies are exposed to more risk if they keep their positions open. Rates could move to their advantage or disadvantage. Supply and demand is constantly changing in the market, and this causes the foreign exchange rate continually to change.

2.2.3 Need for Risk Management

Exchange rates depend on various factors viz. exchange control regulations issued by RBI under erstwhile Foreign Exchange Regulation Act 1973 (FERA) and now Foreign Exchange Management Act 1999(FEMA), inflows and outflows of Foreign Currency (FC) of the country, favourable market conditions, growth in industry, demand for products, domestic savings, rate of inflation, balance of payments position, foreign exchange reserves.

Companies with exports have natural hedge against their FC loan repayments. If the company is a net importer it is better to adopt risk management techniques like

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23 Reserve Bank of India Bulletin (May 30, 1997), Table No.38: Daily Foreign Exchange Spot Rates.
24 Reserve Bank of India Bulletin (May 16, 2001), Table No.47: Daily Foreign Exchange Spot Rates.
forward cover booking, currency swaps, interest rate swaps and options to minimise the risk of volatility in premium and spot levels. The forward premium levels will have substantial impact on profitability of the company.

- The companies have the choice (1) to keep the position open or (2) to hedge cover fully or (3) to hedge partially. Therefore, the need for Risk Management has become imminent for optimisation of income and minimisation of cost. The cost or the premium paid for booking forward cover is like an insurance premium, which protects the company’s liabilities.6

- Under the forward contract, the future obligations becomes crystal clear at the time of contract and hence, the company management can plan and manage cashflows efficiently. In India, forward contracts are more popular as it is tailor made and settlement takes place on value dates.

- The forward differential is a function of spot rate, interest rates, demand and supply, liquidity in the market, imports and exports, debt servicing obligations, tourism, Non-resident deposits, Foreign Direct Investments (FDI) and Foreign Institutional Investors (FIIs) portfolio investments into and out of the country.

- The finance manager has to be vigilant all the times, he is required to track the currency movements and forward premium levels and decide to get locked into at a particular level, called comfort level, in consultation with top management.

- It may also be mentioned that company has to track the currency movement of the countries of import and/or exports vis-à-vis USD and its likely impact on INR. For e.g. steep depreciation of South East Asian currencies had an impact on INR and India’s exports and Imports by having competitive advantage. However, RBI has not allowed INR to depreciate the way South East Asian Currencies by taking stringent measures against speculators. There was reduced scope for speculators to beat down INR because of strong fundamentals of the Indian Economy.

- Hence, there is an urgent need to study on the regulatory mechanism, instruments available for forex risk management in India, study the factors affecting the exchange rates, understand the awareness of corporate executives on depth of

forex market" and to suggest "methods for effective management of FC exposure by Indian Corporates".

2.2.4 OBJECTIVES OF THE STUDY

a) To carry out desk research and study the features of Forex market in India *:
   (i) Developments in forex market between 1991-2006
   (ii) Regulatory mechanism for Forex management
   (iii) Products/ Instruments available in Indian market
   (iv) Trend analysis of exchange rate (USD/INR) movements with respect to
        1) Spot rates
        2) Forward Rates (Premium Levels)
        3) External Debt (Balance of Payments, Foreign Direct Investments/FII's)
        4) Foreign Exchange Reserves;
        5) Trade Balance

b) To find out the Risk Management practices being followed in select advanced economies (e.g. UK, Germany, USA, Australia) by referring to the research studies carried out by earlier Researchers.

c) To carry out explorative research to study
   (i) to estimate the awareness of factors affecting the exchange rates and opportunities available in the market for managing the foreign exchange exposure among Finance Executives of the select companies during the study period,
   (ii) identify the most widely used Risk management tool(s) by these select companies of sample population.

d) To combine above three research findings; summarise practices and techniques; and suggest suitable Risk Management Practice(s) to Indian companies.

2.2.5 RESEARCH PLAN (Sources of Data and Tools for Analysis)

2.2.5.1 Sources of Data:
1. For desk research as at 2(a) above, historical data has been referred. The sources for data and analysis are RBI annual reports, FEMA/FERA Acts, Foreign Exchange

2. For desk research as at 2(b) above, previous studies carried out in UK, USA, Germany, Australia and other countries were consulted. Also, available studies on risk management practices by Multinational corporations (MNCs) have been referred.

3. For explorative research as at 2I, Survey technique was adopted. A detailed questionnaire covering the questions related to objectives has been prepared and sent to select companies (Sample population) and responses were obtained. Further analysis has been carried out to find the answers and test hypothesis.

4. Population and sample selection:
The current thesis would fall under Conclusive Research as it relies on both secondary data, and primary data specifically gathered for the current study.
The purpose of conclusive research is to provide a reliable or representative picture of the population through the use of a valid research instrument. We will also test hypothesis and carry out Causal research to find out the correlation between selected variables in the study and bring out the final findings.

One of the quantitative research technique, viz. Survey method have been used as part of primary research for collection of data. The questionnaire, which is one of the structured research instruments was sent to the representative sample companies of the population and responses obtained. It allows for standardization and uniformity both in the questions asked and in the method of approaching subjects, making it far easier to compare and contrast answers by respondent group. It also ensures higher reliability. Results are provided relatively quickly, based on the sample size and

methodology chosen and is relatively inexpensive. Questionnaire has been designed and questions worded in such a way to get responses properly. Some of the respondents have not given proper responses and gave biased replies to questions resulting in response error or bias. To correct and minimize this error, higher sample of 100 companies selected and finally responses from 50 companies, which are complete, were used for analysis and study.

The above method is used considering the following factors: (i) the availability of time; (ii) administrability in terms of cost, printing, mailing and distribution costs; (iii) the sample population, and (iv) the kind of information we wanted to collect.

2.2.5.2 Database: Information was collected from the sample population. In selecting the companies for survey convenient random sampling technique has been used. Constrained by the resources, 100 companies were selected for collecting the data. Care has been taken to collect information from different size and cluster of companies to reflect diverse nature as listed below:

i. Top 10 companies, under 10 industry categories, which are having (a) Exports and/or Imports; (b) net sales of Rs.100 crore & above; and (c) earning profits in the year 2005/2006 as per the Source database, were selected for survey.

ii. In case of non-availability of top 10 companies with the above criteria, the net sales reduced to Rs. 50 crore, other criteria remaining the same.

The source for selection of population is the "Database of BS1000, India’s Corporate Giants" published by Business Standard in December 2006. It is the research study of top 1000 companies of India by the Business Standard magazine. Quota sampling is used for selection of sample size. The population is first segmented into mutually exclusive sub-groups, just as in stratified sampling. For e.g. Ten industry categories viz. (i) Textiles, (ii) engineering, (iii) pharmaceuticals, (iv) diversified, (v) chemicals, (vi) consumer durables, (vii) automobiles, (viii) cement, (ix) steel and (x) information technology. Then, judgement is used to select the top 10 units/companies from each segment based on assumption that top companies would be engaged in active management of foreign exchange exposure and expected to get proper responses to the
questionnaire. It is this second step, which makes the technique one of non-probability sampling. The advantages of quota sampling are the speed with which information can be collected, the lower cost of doing so and the convenience it represents.

For example, the name of sample companies under a particular category (Textiles Cotton) is given below

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<tbody>
<tr>
<td>1</td>
<td>Vardhman Textiles</td>
<td>1890.56</td>
<td>196.32</td>
<td>367.42</td>
<td>264.16</td>
</tr>
<tr>
<td>2</td>
<td>Arvind Mills</td>
<td>1586.90</td>
<td>127.16</td>
<td>727.43</td>
<td>217.04</td>
</tr>
<tr>
<td>3</td>
<td>Bombay Dyeing</td>
<td>1003.98</td>
<td>61.34</td>
<td>269.67</td>
<td>111.34</td>
</tr>
<tr>
<td>4</td>
<td>Gokaldas exports</td>
<td>861.96</td>
<td>60.88</td>
<td>859.93</td>
<td>443.06</td>
</tr>
<tr>
<td>5</td>
<td>Abhishek Industries</td>
<td>743.64</td>
<td>56.82</td>
<td>418.97</td>
<td>120.12</td>
</tr>
<tr>
<td>6</td>
<td>Nahar Industries</td>
<td>692.74</td>
<td>80.47</td>
<td>42.71</td>
<td>110.02</td>
</tr>
<tr>
<td>7</td>
<td>Welspun India</td>
<td>631.65</td>
<td>41.55</td>
<td>524.20</td>
<td>130.82</td>
</tr>
<tr>
<td>8</td>
<td>Forbes Gokak</td>
<td>579.19</td>
<td>21.60</td>
<td>139.70</td>
<td>66.17</td>
</tr>
<tr>
<td>9</td>
<td>JCT</td>
<td>518.05</td>
<td>10.84</td>
<td>44.20</td>
<td>19.05</td>
</tr>
<tr>
<td>10</td>
<td>Nahar exports</td>
<td>426.56</td>
<td>34.54</td>
<td>240.22</td>
<td>17.44</td>
</tr>
</tbody>
</table>

Source: Business Standard, December 2006, Page 122

2.2.5.3 Tools for Analysis

i. Historical rates have been tabulated and analysed with using statistical tools like Trend Graphs, Correlation, Regression techniques and ANOVA tables.

ii. Testing of following two hypotheses using p-value.
   (a) Growth in Forex reserves lead to strengthening of INR against USD; & (b) There is no dependence between RBI intervention and corporate action for hedging;

iii. For trend analysis of rates, e.g. moving averages, standard deviation etc. Reuters Graphics Metastock Professional package and Microsoft Excel Toolkit were referred.

28 CP Kothari, Research methodology: Methods & Techniques, page 73
29 Business Standard, December 2006, Page 122
2.2.5.4 Time span, scope and contribution of this research

(a) The time span for the research study is between 1991-2006, commensurate with the introduction of financial sector reforms. However, the base year for most of the data would be 1992-93 as the effect of liberalizations had started trickling down from that year. For forward premiums, the dynamic data would be available from Aug 1994 after India adopted Article VIII status under IMF regulations, i.e. since current account convertibility by Government of India was introduced.

(b) Obtained empirical studies on Risk Management practices being followed by MNCs, firms in UK, USA, Germany, Sweden, Chile and Australia have been included.

(c) The population included in the sample has been expanded or contracted depending on the number of companies falling under the criteria, so as to maintain the sample size at 100 companies.

(d) This research study is expected to contribute for understanding the following: (i) the regulatory mechanism, available FX instruments in India; (ii) factors/variables affecting the exchange rates and their inter-relationships, (iii) the awareness of corporate executives regarding the development and depth of forex market in India; (iv) the practices being followed with regard to current study in developed economies and developing countries; and suggest “methods for effective management of Foreign Exchange exposure by Indian Corporates”.

2.2.5.5 Reliability and validity

The questionnaire was constructed in such a way that the professional terms are clearly explained with simple words. The intention was to help the individual or the respondent be able to understand the questions. The questionnaire was tested by sending to five different people in order to ensure that the questions are easily understandable to ensure the validity of the data as part of good design.\(^\text{30}\)

2.2.5.6 Technical format of Research write up

The Research output is organized into 5 chapters. A proper numbering system of chapters like N.x-y where N is the chapter and x-y is sub-section of chapter is followed for easy and quick reference (e.g. 1.1.1 = Chapter 1 and Subsection 1.1). To have continuity of thoughts, footnotes are given at the bottom of pages as and when required. A list of acronyms has been placed at the beginning of the Thesis for the convenience of readers. Select Bibliography has been placed at the end of the Thesis.

2.2.5.7 Chapter layout

The Doctoral Thesis is divided into 5 chapters. The first chapter is Introductory in nature and gives definition of Foreign Exchange Exposure, Risk Management tools and background for the study. Chapter 2 includes, study of literature related to the topic of FX risk management both in India and abroad is covered in this chapter. In addition, the methodology adopted to carry out the Research study is dovetailed namely, background for the study by stating the problem and its importance, listing objectives, raising hypothesis, methodology including scope, data sourcing and tools for analysis. Chapter 3 covers the developments related to foreign exchange market in India; factors affecting the exchange rate movement of INR, the trend of the variables and the USD/INR exchange rate with the help of tables and charts. In Chapter 4, detailed analysis and discussions are carried out covering the practices followed in select FX markets like USA, Germany, UK, Australia, Finland, Chile, Sweden etc. The FX risk management practices by Indian companies and the responses to the questionnaire are analysed. In Chapter 5, Conclusions are summarized, Suggestions and Recommendations are given.

2.3 LIMITATIONS OF RESEARCH

A study of this kind naturally calls for divulging confidential information by companies. Therefore, often hesitated to share and responses expected to be lukewarm. Hence, to manage a sample of 25 companies, it was felt to seek over 100 companies' responses across all industry segments. Cooperation of respondents is a serious problem in a survey based approach. This was so in this study as well. It was difficult to get full co-operation from the respondents because of lack of interest. They could have felt that this study may not be useful to their organization as things are going on
as usual. Some felt that it is difficult to share their practices due to confidentiality. Some of the respondents had difficulty in understanding the questionnaire.

The duration of the Doctorate program has a time limit and research is expected to be completed on time.

Research has become costly and consumed a lot of time. In many cases, author had to pay for downloading articles. Especially, responses from companies have taken months.

2.4 FUTURE DIRECTION FOR RESEARCH
Considering the nuances of current study, there is lot of scope for further research. MNCs can be covered and the list of respondent companies can be broadened to get more depth and also breadth of industries and their practices and to make generalizations of findings. This study is limited to only Indian companies. Similar studies can be conducted in other countries, especially developing countries and compared.

More fundamental factors like inflation, stock market indices movement, REER, GDP growth, fiscal deficit and capital flows etc. can be included in further research, especially post meltdown of financial markets since 2007; and their inter-relationships can be studied vis-à-vis spot USD/INR exchange rate movement and generalisations can be made regarding factors causing fluctuations in exchange rates.

2.5 Summary: The current chapter has given the brief background of review of literature and the study being conducted and the tools and techniques used for research. Reliability and limitations for the study has also been mentioned and future directions for further research given. In the next chapter, the developments and trend of USD/INR rates and the correlation between variables for the period 1991-2006 are covered.