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An Inquiry Into the Forex Risk Management Practices of Indian Firms.

KEYWORDS: Forex Risk of firms. Coping-strategy. Case-Research Method. Hedging Strategies.

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ABSTRACT *With increasing globalization, the foreign exchange exposure of Indian firms has been increasing. This paper explores whether the Indian firms are competent to handle the associated risk. The authors have adopted a survey of experts associated with the forex risk management among the Indian firms and also the case-research method to explore this research question. The survey covered 143 respondents and the case-research method analyzed 64 cases – 25 international firms and 39 Indian firms – as part of the research. The findings indicated that most of the Indian firms have acquired fair amount of proficiency in handling the forex risk though there is a small number of firms who have not initiated forex risk management despite being impacted by it. The paper has also been able to identify the nature of forex risk affecting the firms and has been able to come up with a generic strategy to handle forex risk by firms.*

Preamble

In the era of global connectivity, there is increased movement of people, capital, technology and information across nations. A significant part of this happens through firms; as a result cross border transactions of firms have been increasing significantly. Cross border transactions are affected by exchange-rates and hence exchange-rates have significant impact on the fortunes of the firms. Exchange-rates reflect the relative strength of the economies in terms of their wealth, global trade, quality of governance, global leadership and many other factors. Multinational corporations who have been on the fore-front of cross border transactions have, over a period of time, learned to manage the impacts of exchange-rate movements. Firms from emerging nations who are recent players in the arena of international trade and commerce are relatively new in the game of managing the exchange-rate fluctuations. This paper is an inquiry into the preparedness and proficiency of Indian firms in managing the foreign exchange exposure.

Review of Literature: Evolution of the foreign exchange market

Foreign exchange-rate between two currencies can be defined as the rate at which one currency will be exchanged for another (O'Sullivan & Sheffrin, 2003). A more comprehensive definition will be: The exchange-rate between two currencies, at a given point of time and space, is a reflection of the intrinsic strengths of the economies, their inter se interactions and the environment in which the transactions take place. This definition encompasses a variety of assumptions; salient among them are: (a)The exchange-rate is always between two distinct currencies and hence relative. (b) It is temporal and transient at a given point of time and space; it is never universal nor static. (c) It is a reflection of the intrinsic strengths of the two currencies in transaction; in the absence of transactions the exchange-rate does not exist. (d) The exchange-rate also depends heavily on the external market conditions where the transactions take place. (e) It depends significantly on the perception of each of the economies by the international community; this is perhaps not stated in the definition but it is derived from the situations of international transactions. (f) This definition does not consider trade barriers and restrictions.

What are the basic factors affecting the exchange-rate of a currency vis-à-vis another? Since the exchange-rate is a reflection of the relative economic capabilities it is most likely to be affected by the relative size of the economies, relative factor-endowments and relative economic achievements. Jeffrey Sachs argued that, in addition to these, the economic geography of a nation has significant impact on its economic performance (Sachs, 2005). Sachs attributes the difference in economic achievements of two countries to deficits in productivity and competitiveness spread over a long period of time. Gravity Model of international trade (Tinbergen, 1962) with focus on the size of the economies, Theory of comparative advantage (Ricardo, 1817) and Heckscher-Ohlin Model (Learner, 1955; Ohlin1967) have been able to explain the exchange-rate phenomenon only partially. The stage of economic development that a country is in at a given point of time would have significant impact on its economic health. In the context of international business the relative stages that two countries would impact the relative competitiveness of the two countries (Porter, 1990). Robust political systems, processes and practices would lead to stable economic management and growth of an economy (Sharma, 2007; Khan, 2006). Similarly the existence of institutional infrastructure would contribute to the steady growth and economic management of a country (Abdellatif, 2003). Socio-cultural aspects of a society have significant impact on its ability to transform and grow (Kroeber and Kluckhohn, 1952; White, 1992; Fukuyama, 2002). Statesmanship and leadership exhibited by a country, its ability to articulate soft power among the international community, the size and influence of its diaspora etc would make a country unique among the international community (Nye, 1990, 2004, 2008; Frazer, 2005). All these factors are also expected to influence the exchange-rate of the currency of the country.

After the barter system of exchange of goods, gold and other precious metals became the standard for commercial transaction of goods for a long time. This was reinforced in the Breton Woods Agreement, in 1944 when US Dollar was linked to gold (1 ounz of gold = 35 US Dollar); most

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other currencies were linked either to gold directly or to the US Dollar. This led to the emergence of US Dollar as the international currency and consequently to certain advantages to the USA in the form of Triffin Effect (Triffin, 1960). In 1971, possibly because of the difficulty in maintaining the parity in gold all the time, USA unilaterally decided to abandon the gold-standard and let the US Dollar float freely. This was the era of free floating foreign exchange regimes with all prominent countries letting their currencies find their values in the international market through the free play of demand-supply forces.

The Indian scenario was always far behind. Initially Indian Rupee was linked to the Pound Sterling, later its value came to be determined by basket of currencies governed by Reserve Bank of India through an administered exchange-rate regime. Since independence India experienced steady decline in the value of Rupee all the way to the millennium. Import substitution and export promotion became the anchor points of India's industrial policy. Indian firms learned to live with devaluation of Rupee in all their transactions.

The last quarter of the 20th century ushered in tremendous changes in the international market. Emergence of European Union, German unification, the collapse of the USSR, rise of China, the rise of the Asian Tigers and the South Asian crisis marked significant changes in the pattern of global relationships and trade. Technological revolutions emanating with the advent of internet enabled a faster process of globalization; business transactions became increasingly on-line. Liberalization in the post-1991 era brought in faster growth in the Indian economy. Many Indian firms became global and more global firms were operating in India enhancing the competitive pressure on all firms. The Indian foreign exchange regime also underwent a sea-change with only capital account convertibility remaining to be achieved. In this changed scenario the foreign exchange exposure of all Indian firms went up significantly. Firms needed to learn the tricks of this new domain very fast. The question is, have they been able to do so.

Innumerable studies have been conducted on how the firms were managing forex exposure. The experience of UK multi-nationals has been studied by Belk (Belk, 1990). In another study Batten, Mellor and Wan studied the experience of Australian firms (Batten et al, 1993). Experience of US multi-nationals is studied by Duangpoly as well as by Jorion (Duangpoly et al, 1997; Jorion,1990). In another study Marshal compared the forex management practices of multi-nationals of UK, USA and Asia Pacific (Marshal, 2000). The Moroccan experience is studied by Al Janabi (Al Janabi, 2006) while Al Momani and others studied the Jordanian experience (Al Momani, 2008). Assad studied the experience of Tanzanian firms (Assad, 2011). Indian experience is studied by Maniar (Maniar, 2011) and Sivakumar (Sivakumar et al, 2009). Studies on the Indian firms relate to the extent of hedging practiced by select firms; they do not cover the long-term strategies of firms nor the adequacy of the strategies followed in the short-run.

The Research Questions, Methodology.

The review of literature points to the dynamism that has been emerging in the arena of forex risk management and it also indicates that Indian firms are rather nascent to this field. Given this scenario it is considered imperative to explore the preparedness of Indian firms in coping with the forex exposure. Based on this assessment the research objectives have been identified as under:

Table-1: Statement of Objectives		
Objective-1	To explore the level of professional competence and awareness among the Indian firms and their executives about the techniques of managing currency fluctuations.	Survey of Experts Method
Objective-2	To explore and gain insights about the contextual factors affecting the forex risk management and identify the existence of any pattern in the risk management strategies.	Case-Research Method
Objective-3	To formulate a comprehensive model of risk management incorporating the insights from the above two explorations.	Develop a Conceptual model incorporating the insights obtained from the above two studies

To carry out this research, two methods have been adopted: (i) Survey of Experts Method and (ii) Case-Research Method. Brief description of each of the methods is outlined in the ensuing paragraphs.

The survey of Experts method: to facilitate the survey an instrument of survey (Questionnaire) has been prepared after benchmarking with similar studies conducted elsewhere. This questionnaire had 29 operating questions grouped into 4 sections. The first section addressed the relevance, need and significance of forex risk management. The second and third sections addressed the familiarity of the respondents to the various internal and external hedging techniques of forex risk management respectively. The fourth section addressed the familiarity of the respondents to the techniques engaged at the strategic level of the firm. The target group for the survey was identified as executives of firms engaged in forex risk management, executives of forex advisory services, bank executives engaged in forex services and economic/financial advisors to firms. Each of the questions was structured in the Likert-5-point scale format. The survey ensured that in all 143 effective responses were available for analysis[1].

For each of the questions, null-hypothesis and alternate hypothesis were prepared; then statistical statements were prepared. Each of the null-hypothesis was validated through a t-test. The questions in Section 2, 3 and 4 were further validated through Analysis of variance (ANOVA) to assess whether the responses within a section were identical or different. These sections were also validated through Tukey-HSD-test[2] to assess whether the observed differences were significant or not. Further, observations in sections 2 and 3 were processed through Cluster Analysis using R-software to identify the existence of any pattern within the responses. Observations in Section 4 were processed through Factor Analysis to identify the existence of basic underlying factors within the different strategies listed in the section.

The Case-Research Method: While the survey method with its numerical scoring system tends to be quantitative in nature, case-research method is expected to give vital qualitative insights on the subject of investigation. Case-research method is particularly relevant where (1) a variety of factors and relationships are present, (2) no basic law or prior knowledge exists to determine which factors and relationships are important and (3) where the factors and relationships can be directly observed (Fidel, 1984). Case-research method moves from individual or specific situations to generic situations gradually, in small steps, through

evidences (Becker, 1970). The validation is through observations of the pattern of behavior in large number of cases. The focus in this method is on the patterns of behavior and hence its predominant choice in qualitative research (Gold, 1958; Bogdan & Taylor, 1975).

64 cases have been compiled, predominantly from published sources, where there is a situation of forex risk management. Of these cases, 25 are international cases while the rest are Indian cases. The Indian cases are chosen from sectors like textiles, Pharma, energy, engineering, information technology, gems& jewelry and FMCG. These cases have been analyzed in detail to identify firm-specific and sector-specific factors, if any in managing the situations.

Analysis and Discussion

Overall perspective of the Forex Risk Management: Validation of the null-hypotheses of Section-1 of the Questionnaire has given the following inferences. In the current context, the Indian firms and their executives believe that

a. Foreign exchange risk management is a major concern.
b. They are professionally well-equipped to handle foreign exchange risk management.
c. It is necessary to source expertise in foreign exchange risk management wherever necessary.
d. It is necessary to prepare a policy and operational manual of foreign exchange risk management for the benefit of its personnel.

Familiarity/Proficiency of Internal Hedging Techniques: In the validation process of t-tests each of the null hypotheses has been rejected. Analysis of variance (ANOVA) has shown that the mean-values of the responses received on the various questions are not the same. Further Tukey-HSD test showed that the mean values are significantly different. Based on these the following inferences are arrived at:

a. Indian firms and their executives are familiar with the internal hedging techniques and they have been using them to cope with forex risk management.
b. However their usage of these techniques is not identical. The reasons could be different levels of complexity of the techniques, contextual appropriateness or any other. This study is not adequate to capture the reasons.
c. Cluster analysis was carried out using clValid routine available in the R-Software to classify the responses of the target group into distinct clusters. The result has shown that the responses fall into two broad clusters. However, cluster validation resulted in the value of 0.3029 for Silhouette Width, the Cluster Validation Index. As per clValid routine this value of Silhouette Width indicates that the partition of clusters in the sample is artificial with little or no significance in reality. It may also be mentioned that among the various cluster validation indexes Silhouette Width ranks highest in terms of reliability and accuracy (Arbelaitz et al, 2013). Hence cluster analysis has been unable to establish any meaningful partitions within the target group.

Familiarity/Proficiencyof the External Hedging Techniques: On validation through t-tests, the first 9 null-hypotheses of the total 11 in Section-3, have been rejected; the tests have failed to reject the last two. ANOVA, F-test and subsequently Tukey-HSD tests have established that the mean-values of the first 9 questions are not the same. The resulting inferences are:

a. Indian firms and their executives are familiar with and are regularly using the following 9 techniques:

- Foreign exchange forward contracts against Indian Rupee
- Foreign exchange forward contracts between any two currencies
- Foreign currency borrowing
- Foreign currency hedge contracts
- Foreign currency option contracts
- Financial Future contracts
- Future rate agreements
- Interest rate swaps
- Foreign currency swaps

b. We are unable to conclude about Indian firms and their executives' familiarity/proficiency of the following techniques

- Foreign currency hold accounts
- Interest rate options

c. It is established that the target group's familiarity (and its usage) of the nine techniques listed under external hedging is not identical or similar; there is significant difference in their familiarity and usage as proven by the Tukey-HSD test. The reasons for this difference need to be explored separately. The reasons could be different level of complexity of the techniques, contextual appropriateness, access to the techniques, cost involved in each techniques etc.

d. Cluster analysis has shown that the responses fall into two broad clusters. However, investigations of cluster validation have yielded the value of 0.3056 for Silhouette Width (prominent cluster validation index). As per clValid routine this value indicates that the clustering is artificial with little or no significance to reality. So the cluster analysis is unable to establish any meaningful partition of the target group through this study.

Corporate level Strategies for forex risk management: Based on t-tests, all the null hypotheses have been rejected. ANOVA and F-test indicated that the mean-values are not significantly different. Examining the business logic of the 4 questions included in the Questionnaire indicated that the underlying principle in all the four questions were more or less the same; the separate questions were justified only from the point of seeking responses from different perspectives. When the basic principle behind all the questions is the same, it is only logical that the responses also converge to give similar results.

The four questions pertained to the following strategies respectively:

- Sourcing of inputs from soft currency areas
- Exporting to hard currency areas
- Focus on export of high value items and on import of low value-items.
- Import/procure low value-added items rather than make them

The inferences are listed below.

a. Indian firms and their executives are familiar with the above strategies:

b. Indian firms and their executives are equally comfortable, familiar and proficient in each of the strategies and

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they tend to engage these strategies fairly identically.

Factor analysis was carried out to understand whether the four strategies listed in Section-4 of the Questionnaire implied any common underlying factor or not. (This was the expectation from the business logic). The results indicated that the latter three questions were interlinked through an underlying common property while the first question did not contribute significantly to the commonality. For the four variables, the Total Variances Explained was 53% while the same for the three variables (representing the latter three strategies), was 60 %. The former result is not considered acceptable statistically while the latter is just on the threshold of acceptability. So it is not prudent to conclude there is a single property functioning as an underlying factor among all the strategies listed. When the latter three variables are considered after removing the first variable, there seems to be a property functioning as an underlying factor among the three strategies; however it is not strong enough to be highlighted.

Results from Case-Research:
Sixty-four (64) situational cases relating to forex risk management have been compiled. Of these 25 pertained to leading overseas firms while the rest related to contemporary Indian firms. Of the 39 Indian firms 6 belong to textile sector, 7 to pharma sector, 4 to information technology sector, 9 to engineering sector, 7 to the energy sector, 2 to FMCG sector and 4 to gems and jewellery sector. These cases have been analyzed to understand their business context, critical factors affecting their business, sources of risk exposure, business model and how they have been addressing the forex risk.

Analysis of the cases indicated that 27 of them have had some situations of near-crisis in handling forex fluctuations in the past decade or still earlier. Most of these related to foreign firms operating in the international market. The remaining 37 firms are domestic Indian firms from the various sectors. Most of them have tangible policies and practices to handle forex fluctuations. Closer scrutiny of the cases indicated that three major factors explained the forex context of the case. These factors are:

a. Initial Conditions of the firm: whether the firm is a net-exporter, or a net-importer, or it has significant exports and imports, or it has neither export nor import.

b.External stimulus: Whether the forex trend is appreciation or depreciation of the domestic currency.

c.Strategic Response of the firm: This depended on the Initial conditions, External stimulus, resources of the firm and the collective learning of the firm.

Based on the above factors, the cases were grouped into various clusters and their strategies were mapped. A combination of the Initial conditions of the firm and the external stimuli result into eight possible scenarios. A careful mapping of these scenarios as well as the strategies adopted by the various firms at various times and their effectiveness indicate scope for a generic theory on firm strategies which is outlined in the table below.

Table-2: Classification of Firms and the Forex Strategy Prescription

Strategy Type	Initial condition: (Type of Firm)	External Stimulus: (Trend of Local currency	Impact on Firm	Suggested Firm strategy
Type-1	X: Net Exporter	A: Appreciation	Exports fetch less Foreign currency. Less Profitable operations	Explore restructuring of the firm to outsource production
		D: Depreciation	Exports fetch more Foreign currency. Favorable situation	No action required.
Type-2	M: Net Importer	A: Appreciation	Imports will be cheaper. Favorable to the firm.	No action required.
		D: Depreciation	Imports will require more Local Currency. Hence costly.	The firm will have to explore import substitution.
Type-3	XM: Substantial imports and exports	A: Appreciation	Mixed results	a. Find natural hedges in each currency area
		D: Depreciation		b. Residual exposure in each currency area to be hedged
Type-4	Z: No imports, No exports	A: Appreciation	Operations of the firm in the domestic currency area will lose its competitiveness vis-à-vis imports.	Strategy will be to outsource or re-locate operations.
		D: Depreciation	Operations in the domestic currency area will be cheaper. Scope for arbitrage exists	No action required.

Based on the above logic, the entire set of 64 cases has been grouped into the four (4) major clusters and subgroups within each. This has helped in arriving at the generic strategies for each scenario.

Other results from the case-research can be summarized as below:

- *Result-1:* Most of the Indian firms are familiar and competent to handle forex risk management. Most of them are observed to have dedicated teams/departments to handle forex exposure. Most of them have been active in hedging forex exposure. However, some firms, namely NTPC, NHPC, PGCI, GAIL etc., were not active on forex risk management. These firms had no exports and no imports (they would qualify as Type-4). But they had significant amounts of foreign currency loans of long-term duration and hence were susceptible to forex exposure. They stood to benefit by acquiring proficiency in forex risk management.

- *Result-2:* Most of the firms studied fell into the Type-3 situation (18 out of the 25 overseas firms; 7 out of 7 pharma firms; 9 out of the 9 engineering firms; 2 out of the 2 FMCG firms; 2 out of the 6 textile firms; aggregating to 38 out of the 64 firms (59.38%)). In Type-3 situations firms explored currency-wise natural hedging first and only the residual exposure in each currency was considered for

hedging. This appeared to be the most comprehensive and perhaps universal approach to forex risk management among all mature firms.

- *Result-3:* In the early stages of operation, a firm tends to be in Type 1, 2 or 4 situations. When the firm gets globalised (or spreads its operations to multi-currency areas) the situation will be invariably Type-3. So it is prudent to conclude that Type-3 situation is the one found among all mature firms; while the other types are only transitory phases.

- *Result-4:* Instruments most commonly used by firms to hedge forex exposure – both Indian and foreign – were observed to be forwards, options and swaps. Hedging for long-term exposure is rarely observed.

Conclusion
Based on the results and inferences derived from the survey method as also the case-research method the following conclusions are arrived at:

Conclusions relating to Research Objective-1
The survey and case-research have shown, with statistical significance, that firms in India

- Consider forex risk as a major concern
- Believe that it is necessary to prepare an operational manual on forex risk management practices and guidelines, for the benefit of the operating personnel in the domain of risk management.
- Are familiar with and are well equipped in employing internal hedging, external hedging and strategic measures to cope with forex risk management
- Some of the firms studied in the case-research were found to be less active in forex risk management though their situations indicated that these firms could benefit from active forex risk management.

It was observed that most of the hedging techniques have become available to Indian firms during the last decade only. Still most firms have adapted themselves to be proficient in them. Few firms are yet to adapt to the concept and practice of forex risk management.

Conclusions relating to research Objective-2
- The case research and subsequent analysis have thrown up a set of possible situations and strategic options attached with each of them.
- From among these the most comprehensive situation appears to be the one described as Type-3. This approach is found to be most common among the cases studied and can be described as the most generic and comprehensive model of forex risk management. It has the following steps:
  - o Use the natural hedging available in each currency area and arrive at the net exposure in that currency.
  - o Analyze the situation and take a conscious decision about hedging the net exposure.
  - o Where adequate natural hedge is not available, try to create natural hedges by deliberate strategic initiatives. (Examples: Avon International, General Motors-B)[3].
- The case-research has shown that even when a firm does not have any forex exposure (No exports, no imports, etc), it can still be impacted by currency fluctuations. Avon International, South European firms, Corus Steel etc are examples[4]. All these cases have been adversely impacted by appreciating domestic currency. The firms have been rendered non-competitive in the face of foreign competitors who have the benefit of exporting to a stronger currency area. It is observed that while currency fluctuation is the primary trigger; the solution, most often than not, is beyond hedging. They need to think of business restructuring.
- Hedging as a strategic option is relevant in the short run. There is hardly a hedging instrument that has a horizon of more than 3 years. When the basic cause for the adverse forex exposure is of long-term nature, then firms have to simultaneously explore strategic re-orientation of the business. In the set of firms studied such situations exist with Corus Steel and General Motors, UK. Toyota and Toshiba have already carried out such strategic re-orientations[5].

Conclusions relating to Research Objective-3
The insights gained from the survey and the case-research have helped formulate a comprehensive model of forex risk management covering both short-term and long-term currency fluctuations.

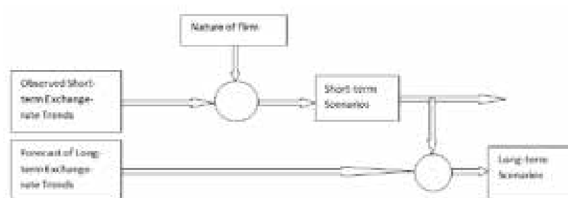

Fig-3. Schematic Diagram of Comprehensive Model for Forex Risk Management
The comprehensive model accepts the input of the short-term currency trends; combines it with the nature of the firm to identify the short-term scenario. The firm would have to take a decision regarding short-term strategy based on this scenario.

Further the firm accepts the input of the long-term currency trends (either by generating in-house or by sourcing from outside) and combines with the short-term scenario already identified. This would give a long-term scenario on which the firm would deliberate and decide appropriate strategy.

The nature of the firm can have four states (X, M, MX, or Z); the short-term currency trends can have two states (A or D). So there can be eight (8) short-term scenarios. The forecast of the long-term currency can have three states (Supporting the short-term trend (Y); Not supporting (N) or Hazy (?)). When the three variables are combined, there can be 24 scenarios. These are listed in the table below along with strategic prescriptions.

Table-4. Comprehensive Model for Forex risk Management: Scenarios & Vulnerability

Domestic currency fluctuation D= Depreciation A= appreciation	Type of Firm X = Net Exporter M= Net Importer MX=Significant Exports & Imports Z = Zero Exim	Nature of Long-term Underlying forces Y= supporting N=Not supporting ? = Hazy/ Unclear	Strategy	
			Short-Term	Long-term

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D	D-X	Y-D-X	Not Needed	Not Needed
		N-D-X	Not needed	Needed
		? –D-X	Not Needed	Unclear
	D-M	Y-D-M	Needed	Needed
		N-D-M	Needed	Not Needed
		? –D-M	Needed	Unclear
	D-MX	Y-D-MX	Depends on the net Exposure in each currency.	Depends on the net Exposure in each currency
		N-D-MX		
		?-D-MX		
	D-Z	Y-D-Z	Not needed	Not needed
		N-D-Z	Not needed	Not needed
		?-D-Z	Not needed	Not needed
A	A-X	Y-A-X	Needed	Needed
		N-A-X	Needed	Not Needed
		? -A-X	Needed	Unclear
	A-M	Y-A-M	Not Needed	Not Needed
		N-A-M	Not Needed	Needed
		? -A-M	Not Needed	Unclear
	A-MX	Y-A-MX	Depends on the net Exposure in each currency.	Depends on the net Exposure in each currency.
		N-A-MX		
		?-A-MX		
	A-Z	Y-A-Z	Needed	Needed
		N-A-Z	Needed	Not needed
		?-A-Z	Needed	Unclear

The scenarios can be summarized in the following manner.

- In 9 scenarios short-term hedging is necessary while in 9 others no short-term hedging is necessary.
- There are 8 scenarios where no long-term strategies are required; there are 5 scenarios where long-term strategies are required.
- There are 3 scenarios where both short-term and long-term strategies are required. These may be the toughest to handle.
- There are 5 scenarios where neither of short-term or long-term strategies is required. These are the safest scenarios on this perspective.
- There are 5 scenarios where the need for long-term strategies is not clear. With further analysis and passage of time the scenario would acquire clarity. Long-term strategies will have to wait till then.

Recommendations and Scope for Further Research

The present research has looked at 25 foreign cases and 39 Indian cases. The 39 Indian cases are leading/prominent firms in a set of industry-sectors.

- There is a definite need to make focused studies with substantially larger sample size in each sector. This will give deeper insights to the sector-specific issues and the dynamics of managing the forex risk in that sector.
- Many Indian firms are on the threshold of becoming multi-national in terms of geographical operations and market presence. The problems of entering a new market are as complex as the problems of sustaining in that market. From this point of view case-studies of entry strategies as well as sustenance strategies of Indian firms in the different markets would throw significant insights that will have learning values to the new aspirants to globalization. Such studies may provide enormous insights about managing in a specific currency area.
- India is getting increasingly interconnected with the global market with the passage of every day. In such a situation it is possible that even domestic firms without any explicit forex exposure would also be affected by international competition; the pressure could get magnified with the forex-rate variation. Examples are Kodak, Daimler Chrysler, General Motors-B and General Motors-UK[6]. It would be relevant to study a cluster of such firms in India and abroad to get insight into the nature of problems faced by the firms and the possible strategies to manage the situations.
- The cases of Avon International and General Motors-B demonstrate how natural hedges can be created and enhanced through clever strategic initiatives, even in difficult situations. It is desirable to identify and study as many cases as possible of this nature and create a check-list of possible survival strategies in similar situations.

End Notes:

1. Sample Size: When mean and standard deviation of the population is known the sample size can be decided by the formula $N = (Z^2\sigma^2/e^2)$ where Z =critical Z-value for the desired level of confidence; σ = standard deviation of the population; and e = % error considered permissible x mean value of the population. When mean and standard deviation of the population are not known one has to rely on the dictum that for larger sample sizes the t-distribution tends towards normal distribution. For sample-sizes larger than 120, the values of t-distribution and z- distribution tend to converge.
2. Tukey-HSD-Test: When ANOVA and F-test indicates that the results/observations are not identical or similar, it is necessary to establish whether there is a significant difference among the results. To establish this Tukey-Kramer-test is used when the sample sizes are dissimilar; when the sample sizes are identical Tukey-HSD-test is employed.
3. How Avon International, an MNC with operations across the world, managed to salvage its operations in South Asia during the South Asian crisis of 1997 is a classic example of international financial management. Avon had a policy of procuring inputs and making the products in the country where it planned to sell its products. This made its operations relatively immune to currency fluctuations. In crisis situations it transferred the surpluses from each region to the corporate head quarters on a weekly basis. During the South Asian crisis, Avon tried to sell more rather than resort to in-

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creasing prices. When price rise was inevitable it increased the prices of economy products at a slower pace than the prices of luxury products. The corporate head quarters tried to help the divisions in the crisis-ridden regions by exporting their products to other regions. In 2001 the top management of General Motors Corp observed that though the firm did not have exposure to Japanese Yen, fluctuation in the value of yen was affecting the competitiveness of General Motors. On careful analysis the top management realized that Japanese car makers had major part of their costs in Yen and when Yen depreciated their profitability increased. This emboldened them to cut prices in the international market and make General Motors less competitive. Such situations could not be gained. After careful analysis over a period of time General Motor Corp created exposures in Yen to offset the potential impacts of Yen fluctuations.

4. South European firms engaged in the export textiles, toys etc – essentially low-technology products – found themselves non-competitive vis-à-vis Chinese and other Asian firms during 2002-2004 when Euro experienced steady strengthening. Since the forex trend was of long-term nature, these firms had to shift their manufacturing bases to outside Euro region to regain competitiveness. Corus Steel, a British steel company, exported substantial quantity to Germany against Euro on 6 months credit. During 1996-2001, British Pound kept on appreciating continuously. Corus Steel found that each Euro that it earned through exports could buy less and less of British goods domestically. This was a long-term trend and could not be wished away through hedging or other short-term measures. The firm needed to initiate long-term, structural measures to tide over the situation.
5. Toyota, the largest Japanese automobile firm, had 50 % of its revenue coming from exports. During the 1980s and 1990s when the Japanese Yen experienced steady appreciation, Toyota found it unprofitable to make automobiles in Japan with costly Yen and earn cheaper $. So the firm shifted many of its production-bases to outside Japan to avail the cost arbitrage. The rising Yen phenomenon of the 1980s affected Toshiba also. Toshiba shifted production-bases of all low-end technology products to outside. It entered into joint ventures with Westinghouse to make colour picture-tubes in the US, with Rhone Poulenc to make photo-copiers in France; It started assembly-plant for VCRs in Tennesse, USA and Germany; it made telecom and medical electronic equipments in California.
6. Eastman Kodak made photographic products in the USA. In the early 1980s when the US$ strengthened, the firm found its competitive position slipping away. Firms like Fuji Photo Film from Japan found it attractive to earn the strong US$ while their input-costs were denominated in cheaper Yen. It took some time for Kodak to understand this dynamics; in the late 1980s it decided to shift its manufacturing base outside the US. Daimler Chrysler, the leading European auto maker suffered significantly in the face of rising Euro during 2003 and 2004. However it managed to sustain its profit-margin by getting into currency trading. In 2004 share-holders and analysts observed that though the firm maintained its profit-margin, it was alarming for a leading auto-maker to have 50 % of its profits coming from currency trading. General Motors, UK was severely impacted by the steady appreciation of Pound Sterling during the period 1996-2001. Its inputs were in costly Pound while all its exports were fetching less Pounds for consumption in the domestic market. Since the forex trend was long-term the firm needed to explore long-term structural measures to overcome the situation.
7. Description of the cases studied as also the sources of information on the 64 cases are not included in this paper only because they would occupy more space than the paper itself. For the same reason, the Instrument of Survey (Questionnaire) is also not annexed with this paper.

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