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Measurement and Management of Transaction Exposure in Indian Companies

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ABSTRACT

The value of a firm's assets, liabilities and operating income vary continually in response to changes in a myriad of economic and financial variables such as exchange rates, interest rates, inflation rates etc. uncertainties related to its operating business such as interruptions in raw materials supplies, labour troubles, success or failure of a new product or technology and so forth obviously have an impact on the firm's performance. In India, specific foreign currency transactions are permitted. Companies operating in India face transaction exposure only when they indulge in export or import transactions. Sometimes they also indulge in the activities of borrowing or lending funds in foreign currency. The present paper is designed to study the measurement and management techniques of transaction exposure used by the selected Indian companies. To achieve this objective, data has been collected from 50 Indian companies through questionnaire. Data has been analysed by using statistical tools such as percentage, mean score and ANOVA. The results show that most of the firms consider transaction exposure as an important risk and they are well aware about the various techniques of measurement of transaction exposure. The financial experts expressed that by using various derivative instruments like forward, future, swap, options and through currency diversifications transaction exposure can be managed very efficiently.

Keywords: *Export, Import, Cash-Flows, Derivatives*

Introduction

Transaction exposure can be defined as the sensitivity of "realized" domestic currency value of the firm's contractual cash flows denominated in foreign currencies to unexpected exchange rate changes. The firm is subject to 'transaction exposure' when it faces contractual cash flows that are fixed in foreign currencies. Suppose that a U.S. firm sold its product to an Indian client on three month credit terms and invoiced ₹10 lakh. When the U.S. firm receives ₹10 lakh after three months, it will have to convert (unless it hedges) the rupees into dollars at the spot exchange rate prevailing on the maturity date, which cannot be known in advance. As a result the dollar receipts become uncertain. It implies that if the firm does nothing about the exposure, it is speculating on the future course of the exchange rate. Changes in exchange rates can influence MNCs' current and future expected cash flows and ultimately, stock prices. The direction and the magnitude of changes in the exchange rate on firm value are a function of the firm's corporate hedging policy and the structure of its foreign currency cash flows (P. G. Apte, 2008). In India, specific foreign currency transactions are permitted. Companies operating in India face transaction exposure only when they indulge in export or import transactions. Sometimes they also indulge in the activities of borrowing or lending funds in foreign currency. MNCs prepare consolidated report of all of its transactions even those related to their subsidiary units in order to compute the expected net positions in each foreign currency for the enterprise as a whole (Alan C. Shapiro, 1983). In this study transaction exposure has been calculated on the basis of overall net exports, foreign currency inflows and foreign currency outflows. Rate of exposure has been calculated as a percentage of exposure to net sales. The companies whose exports are greater than the imports have positive transaction exposure and the companies whose exports are less than the imports have negative transaction exposure. Similarly, the companies having more foreign currency inflows as compared to their foreign currency outflows get benefited by positive exposure and vice versa. For the Indian companies the major source of foreign currency inflows is exports. Many of the MNCs in India are also enjoying foreign currency inflows in the form of commission, interest on lending, dividend on their foreign investments, royalty, fee for their technical know-how, agency commission and other overseas contracts. The major reason for foreign currency outflows is import of raw material, stores and spares and capital goods. There are many other transactions which are resulting in foreign currency outflows such as payment for royalty, research and development,

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trademark fees, legal fees, professional and project consultancy fees, supervision charges, subscription membership fees, overseas contracts, overseas office and branches, software development of branches, dividend to shareholders, international borrowings, interest on foreign currency term loans, foreign travel, issue of foreign currency convertible notes, foreign bank charges, and discount etc.

Success of a business enterprise largely depends on how effectively it manages its foreign exchange exposure. It must regularly enter into hedging strategies. Hedging refers to a strategy that strives to minimize the risk of exchange rate fluctuations, thereby minimizing the uncertainty of future transactions denominated in foreign currency and providing some stability to earnings and cash flow of the firm. Daniel A. Potash (1998) provides four approaches to handle foreign exchange exposure: Creation of reserves, use of derivatives/instruments, guarantee from corporate/bank and denominating everything in one currency. Derivative instruments, forward, future and currency swaps act as an integral arbitrage link between the interest rates of different developed countries. These swaps are used to hedge flexibility to exploit their comparative advantage in their respective borrowing markets. They allow companies to exploit the global capital markets more efficiently. Banks can now hold diversified portfolios of global credit and global credit equivalents with derivative overlays used to manage the various types of foreign exchange exposure (Chand Sooran, 1999).

Literature Review

Bodnar and Gentry (1993) examined exchange rate exposure at industry level for Canada, Japan, and U.S. over 1979-1988. The study found that variance of the exposure coefficients is smaller for U.S. firms than Canada and Japan. They also concluded that small and open economies are more sensitive to exchange rate fluctuations.

Donald E Fischer and Ronald J. Jordan (1994) analysed the relation between risk, investor preferences and investor behaviour. The risk return measures on portfolios are the main determinants of an investor's attitude towards them. Most investors seek more return for additional risk assumed. The conservative investor requires large increase in return for assuming small increases in risk. The more aggressive investor will accept smaller increases in return for large increases in risk. The researchers concluded that the psychology of the stock market is based on how investors form judgments about uncertain future events and how they react to these judgments.

R. Venkataramani (1994) disclosed the uses and dangers of derivatives. The author said that the derivative product can lead us to a dangerous position if its full implications are not clearly understood. Being off-balance sheet in nature, more and more derivative products are traded than the cash market products and they suffer heavily due to their sensitive nature. He brought to the notice of the investors the 'Over the counter product' (OTC) which are traded across the counters of a bank. Over the counter products (e.g. Options and futures) are tailor made for the particular need of a customer and serve as a perfect hedge. He emphasized the use of futures as an instrument of hedge, for it is of low cost.

S. Rajagopal (1996) commented on risk management in relation to banks. He opined that good risk management is good banking. A professional approach to Risk Management will safeguard the interests of the banking institution in the long run. He described risk identification as an art of combining intuition with formal information. And risk measurement is the estimation of the size, probability and timing of a potential loss under various scenarios.

Charles. P. Jones (1996) reviewed how to estimate security return and risk. To estimate returns, the investors must estimate cash flows the securities are likely to provide. Also, investors must be able to quantify and measure risk using variance or standard deviation. Variance or standard deviation is the accepted measure of variability for both realised returns and expected returns. He suggested that the investors should use it as the situation dictates. He revealed that over the past 12 years, returns in stocks, bonds, etc. have been normal.

V. T. Godse (1996) revealed the two separate but simultaneous processes involved in risk management. The first process is determining risk profile and the second relates to the risk management process itself.

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Deciding risk profile is synonymous with drawing a risk picture and involves the various steps like: First, Identifying and prioritizing the inherent risks; second, measuring and scoring inherent risks; third, establishing standards for each risk component; fourth, evaluating and controlling the quality of managerial controls; fifth, developing risk tolerance levels. He opined that such an elaborate risk management process is relevant in the Indian context. The process would facilitate better understanding of risks and their management.

John Capstaff, Andrew Marshall, Julie Hutton (2007) found that the decline in the use of foreign exchange derivatives was greater for firms with substantial sales within the euro zone and less for firms in industries that still had significant imports from outside the euro zone. The reduction in hedging is not in direct proportion to the reduction in foreign exchange exposure.

Sathya Swaroop Debashish (2008) concentrated on recent foreign exchange risk management practices and derivatives product used by large non-banking Indian-based firms. The study aimed at an understanding the risk appetite and FERM (Foreign Exchange Risk Management) practices of Indian corporate enterprises. The main part of the study deals with Indian corporate enterprises' awareness of and attitudes to foreign exchange risk exposure.

Söhnke M. Bartram, Günter Dufey, and Michael R. Frenkel, (2009) analyzed the concept of foreign exchange risk, translation, transaction and economic exposure etc. The researchers said that in the presence of deviations from parity conditions such as purchasing power parity and the international Fisher effect, non-financial corporations are confronted by risks stemming from the impact of unexpected exchange rate changes on the value of the firm. Nevertheless, professional firm-wide risk management does not yet seem to be in place at all non-financial institutions. Consequently, the need for implementing or improving risk management systems appears especially strong for firms outside the financial sector.

John Dai and Suresh Sundaresan (2010) developed a model of hedge fund returns, which reflect the contractual relationships between a hedge fund, its investors and its prime brokers. The results showed that the hedge funds typically have an optimal level of leverage. Optimal leverage was shown to differ across hedge funds reflecting their de-levering costs, Sharpe ratios, correlation of assets, secondary market liquidity of their assets, and the volatility of the assets. By using a minimum level of un- encumbered cash level as a risk limit, the research showed how a hedge fund can optimally allocate its risk capital, across different risk-taking units to maximize alpha in the presence of the short option positions.

Murillo Campello, Chen Lin (2010) looked at the consequences of hedging for firm financing and investment. To do this the researchers used hand-collected data on hedging and loan contracts. The present paper analysed that hedging can lower the odds of negative profit realizations and can reduced the expected costs of financial distress. The results identified two channels (cost of borrowing and investment restrictions) through which hedging affects firm outcomes.

Research Objectives and Methodology

The review of literature indicates that a very less number of studies have been conducted in India on the subject of 'transaction exposure management strategies'. Hence a need was felt to conduct the present study. This study is undertaken primarily to describe the transaction exposure management practices in the Indian corporate sector. An attempt is also made to examine the various measurement techniques of transaction exposure in banking and non-banking units in India. In sync with the above mentioned objectives, the study intends to test the following hypotheses:

- Null Hypothesis: there is no significant effect of level of transaction exposure on the estimation of exposure.
- Alternative Hypothesis: there is significant effect of level of transaction exposure on the estimation of exposure.

The present study is descriptive in nature. To achieve the objectives of this study, we have resorted to sampling technique and the sample size consists 50 Indian companies having ranking in Fortune 500 list, which include 12 banks and 38 non-banking companies. Data has been collected with the help of questionnaire

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facilitating face to face interviews with bank officials and other persons connected with risk management operations. In order to measure importance assigned by the responding firms to the risk management aspects, the responses were obtained on 5-point scale ranging from 1 to 5. Here, 1 means unimportant, 2 means less important, 3 means neutral, 4 means important and 5 means the highest importance given to an item. For the purpose of analysis, mean score was computed. To examine the significance of difference about the importance assigned to various items between banking and non-banking units, regression analysis and ANOVA test have been applied.

Results of Data Analysis

After having discussions with the financial experts of the companies and by studying the annual reports of the companies it was found that majority of the companies have more imports and foreign currency outflows as compared to their export and foreign currency inflows. Table 1.1 shows the level of transaction exposure of non-banking companies worked out on the basis of foreign currency inflows and outflows. The table indicates that only 10 companies i.e. 26.315 percent of the total respondents are having benefit due to positive transaction exposure and rest the entire sample companies are facing negative transaction exposure. Tata Consultancy Services Ltd. has the highest favourable transaction exposure that is

Table 1.1 The Measurement of Transaction Exposure of Non –Banking Companies on the basis of Net Foreign Currency Inflows & Outflows during 2010-11 (₹ Crores)

World Rank	Company	Foreign currency Inflows	Foreign Currency Outflows	Net Exposure	Net Sales	Net Exposure
98	Indian Oil	16967.55	171424.79	-154457.2	331038	-46.658
134	Reliance Industries	198474	263839	-65365	248170	-26.339
272	Bharat Petroleum	12380.37	52221.91	-39841.54	150900.85	-26.402
336	Hindustan Petroleum	5522.8	30293.16	-24770.36	134808.48	-18.374
345	Coal India Limited	0.09	211.23	-211.14	416	-50.755
359	Tata Motors	3358.64	2907.18	451.46	47233.17	0.9558
361	Oil and Natural Gas Corporation	4711.55	37115.41	-32403.86	65822.25	-49.229
370	Tata Steel	2373.97	6415.12	-4041.15	29396.35	-13.747
541	National Thermal Power Corporation	1.12	1596.48	-1595.36	54874	-2.9073
571	Bharti Airtel	1815.6	3787	-1971.4	38015.8	-5.1857
602	Steel Authority of India	980.46	15670.35	-14689.89	42687.05	-34.413
648	Larsen & Toubro	6367.78	12375.79	-6008.01	43841.66	-13.704
699	Bharat Heavy Electricals	1218.79	8388.77	-7169.98	42191.49	-16.994
741	Tata Consultancy Services	38098.86	12498.71	25600.15	29275.41	87.446

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742	Reliance Communications	999	1496	-497	11107	-4.4747
783	Housing Development Finance Corporation	11.71	85.71	-74	12852.93	-0.5757
807	Infosys Technologies	31187	13532	17655	25385	69.549
826	Wipro	18377.1	11327.1	7050	26300	26.806
923	DLF Limited	92.16	230.24	-138.08	2916.08	-4.7351
946	National Mineral Development Corporation	0	90.82	-90.82	11368.94	-0.7988
985	GAIL	4.72	4060.86	-4056.14	32458.64	-12.496
1005	Hindalco Industries	7097.14	16525.48	-9428.34	23626.87	-39.905
1023	ITC	2814.27	1254.38	1559.89	21167.58	7.3692
1093	Power Grid Corporation of India	19.38	1987.62	-1968.24	8388.7	-23.463
1123	Power Finance Corporation	0	166.03	-166.03	10133.41	-1.6384
1131	Jindal Steel and Power	1073.61	3509.69	-2436.08	9554.59	-25.496
1308	Mahindra & Mahindra	1099.9	829.93	269.97	23044.03	1.1715
1385	NHPC	0	101.29	-101.29	4225.25	-2.3973
1425	Grasim Industries	845.51	806.29	39.22	4520.83	0.8675
1466	Oil India	1.56	333.74	-332.18	11596.46	-2.8645
1470	Sun Pharmaceutical	900.56	515.69	384.87	3104.7	12.396
1492	Rural Electrification	0	82.28	-82.28	8108.77	-1.0147
1539	Tata Power	117.76	1241.25	-1123.49	6599.36	-17.024
1571	Hero Moto Corp	444.62	3531.38	-3086.76	19245.03	-16.039
1702	Reliance Infrastructure	116.18	625.03	-508.85	9523.94	-5.3429
1746	HCL Technologies	5056.95	791.19	4265.76	6794.48	62.783
1813	National Aluminium Company	2109.19	423.32	1685.87	5958.98	28.291
1865	Adani Enterprises Limited	50.34	2038.36	-1988.02	2912.96	-68.247

Source: Capita-Line Database

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Transaction exposure of banking companies compiled on the basis of international assets is depicted in table 1.2. International assets of banking units include foreign currency notes and gold, balances with banks outside India, investment done outside India and advances done outside India. The results also revealed that 50 percent of the banking companies have less than 10 percent of their total assets as international assets. ICICI bank, AXIS bank and the Bank of India have more than 20 percent of their total assets as international assets. SBI, Bank of Baroda and Canara bank are having international assets in between 10-20 percent of their total assets.

Table 1.2: Transaction exposure of Banking Companies Computed on the Basis of Size of International Assets during 2010-11 (₹ Crores)

S. No.	Banks	Domestic Assets	International Assets	Total Assets	% age of International Assets to Total Assets
1	**SBI**	1157805	177714.2	1335519.23	13.31
2	**ICICI**	318969.17	87708.91	406678.08	21.57
3	**HDFC**	269202.1	8150.49	277352.59	2.94
4	**PNB**	355818.9	22535.22	378354.12	5.96
5	**AXIS**	192876.82	49869.22	242746.04	20.54
6	**Bank of Baroda**	290286.07	68111.11	358397.18	19.00
7	**Bank of India**	279972.32	71200.23	351172.55	20.27
8	**Canara Bank**	273881.43	62353.44	336234.87	18.54
9	**Union Bank of India**	216960.05	19391.1	236351.15	8.20
10	**Syndicate Bank**	144260.47	12278.31	156538.78	7.84
11	**IDBI**	250080.23	3296.57	253376.8	1.30
12	**UCO**	152895.18	10503.27	163398.45	6.43

Source: Capita Line Data Base

Usually it is observed that company with high level of transaction exposure makes in-depth analysis and applies various statistical tools in making estimation of its transaction exposure. On the basis of this general observation, null hypothesis that *there is no significant effect of level of transaction exposure on estimation of exposure has been framed.* This hypothesis has been analysed with the help of regression analysis. The table 1.3 indicates very low (1.5%) variance in the dependent variable (i.e. estimation of exposure) and independent variable i.e. level of exposure. The same result is shown by ANOVA in table 1.3A, where F value is not significant at 5 percent level. So the null hypothesis is accepted. Some of the companies facing even very low level of transaction exposure make proper estimation of their exposure by applying statistical techniques. They also take help of experts to estimate the transaction exposure of the companies.

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Table 1.3: Model Summary of Regression Analysis

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.121	0.015	-0.013	0.275

Predictors: Level of Exposure

Table 1.3 (A): ANOVA Effect of Level of Transaction Exposure on Estimation of Exposure

	Sum of Squares	Df	Mean Square	F	Sig.
Regression	0.040	1	0.040	0.532	0.471
Residual	2.723	36	0.076		
Total	2.763	37			

Predictors: Level of Exposure
Dependent variable: Estimation of Exposure

There are various hedging techniques available in national and international market which can be applied to mitigate transaction exposure. India has a strong dollar- rupee forward market with various types of contracts being traded for one, two, six-months and one year expiration. Most of the forward transactions are for a maximum maturity of six months (***Anuradha Sivakumar)***. At present, companies are allowed to enter into forward contract to hedge their foreign exchange exposure in respect of only those transactions for which sales and purchase of foreign exchange is permitted. Currently residents are allowed to freely cancel and rebook their booked forward contracts in respect of foreign currency exposures falling due within one year. However, corporates are allowed to roll over the contracts. Use of derivative is allowed only for hedging purpose by banks and corporates and not for speculative purpose. The next question of the survey was aimed to know *which techniques/hedging strategies is used for the management of the transaction exposure.* The survey results as revealed in Table 1.4 demonstrate that forward contracts, currency futures, currency swap and currency options are more preferable hedging techniques as compared to others. More than 85 percent firms were found using derivatives. 96 percent companies hedge their transaction exposure with the help of forward contracts.

Table 1.4: Strategies used by Companies for Transaction Exposure Management

S. No	Techniques	Non-Banking (No. of firms)	Banking (No. of firms)	Total (No. of firms)	(%age) out of total 50 Companies
1	**Forward**	37	11	48	96
2	**Currency Future**	36	12	48	96
3	**Currency Swap**	35	9	44	88
4	**Currency Option**	33	10	43	86
5	**Matching**	22	10	32	64
6	**Multilateral Netting**	22	8	30	60

Conclusion

This paper made an attempt to point out the various facts related to the measurement and management practices about transaction exposure in Indian companies which include both banking and non-banking units. It can be concluded that majority of the Indian firms have more foreign currency outflows as compared to the foreign currency inflows and consequently they are having negative transaction exposure. As compared to non-banking companies, banking companies are more active regarding the measurement and management of their transaction exposure..

Regarding the estimation of the transaction exposure, the study concluded that there is no significant effect of level of transaction exposure on the estimation policy of transaction exposure. Companies are actively using various hedging strategies for managing their transaction exposure. **It is investigated that** forwards and options are preferred as short term hedging instruments while swaps are preferred as long term hedging instrument by major Indian firms of different sectors. Companies can use one or combination of two or more hedging techniques to hedge their transaction exposure. It can be concluded that the companies have to alter their risk management system according to characteristics of the firm, hedging costs, nature of operations, tax considerations and regulatory requirements etc.

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