

FOREIGN EXCHANGE EXPOSURE MANAGEMENT IN RELIANCE INDUSTRIES LIMITED

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ABSTRACT

The economic liberalization of the early nineties, coupled with deregulation of exchange rates in 1993, facilitated the introduction of interest rate, and foreign exchange derivatives in India. Foreign exchange derivatives are used by firms to alleviate foreign exchange exposures. The foreign exchange exposures arising due to the uncertainty about exchange rates may have significant effects on the earnings of the firms. The use of derivatives is still highly regulated in India due to partial convertibility of rupee. Presently, forwards, swaps, futures and options in foreign exchange are available in India.

This paper attempts to study the strategic uses of foreign exchange derivatives by Reliance Industries Limited to manage its foreign exchange exposures. The motivation for this study came from first, the global financial crisis of 2008 which caused huge losses to companies owing to volatility in exchange rates of currencies and second, comparatively low and narrow use of foreign exchange derivatives by Indian corporate firms in India.

The literature on foreign exchange exposure management practices of the firms shows the reduction of foreign exchange exposure with the use of tools for managing the exposures. The paper finds that Reliance Industries Limited seems successful in managing foreign exchange exposure. The precise prediction of the foreign exchange rate plays a very significant role in successfully managing the foreign exchange exposure of a firm. It appears that the firm has been successful on this front, in addition to a suitable mix of derivative instruments in its foreign exposure management strategy.

KEYWORDS: *Foreign Exchange Exposure, Derivatives, Forwards, Futures, Options, Swaps*

JEL Classification: F 30, F 31, G15

INTRODUCTION

Firms having trans-border business face foreign exchange exposures on account of unexpected/ unanticipated changes in exchange rates of currencies in which the firms make transactions. A foreign exchange exposure is defined as a contracted, projected or contingent cash flow whose amount is not certain at the moment and depends on the foreign exchange rates of the currencies in future. Firms normally use hedging, a technique to protect themselves from the foreign exchange exposures on account of the uncertainty of the exchange rates. In hedging, foreign exchange derivatives are used by firms to hedge the foreign currency exposures. Forwards, futures, swaps, and options are common derivatives used worldwide by firms to mitigate the foreign exchange risks. The scope of this paper is limited to the analysis of the management of the foreign exchange exposures faced by the Reliance Industries Limited.

This paper attempts to discuss the various alternatives available to Indian corporates for hedging foreign exchange exposures/risks. This paper aims to provide a perspective on managing the risk that firms face due to fluctuating exchange rates. It investigates the prudence in using the foreign exchange derivatives to mitigate the foreign exchange exposures by Reliance Industries Limited.

The study of exposure management practices of Indian firms is both interesting and challenging on three accounts. Firstly, the exposure management practices of firms are still evolving and are in the early stage of financial development. Secondly, the management of exchange rate exposure is many times influenced by expectations and perceptions about the current and future course of events i.e. it is a dynamic process. Lastly, very few empirical studies have been attempted on the foreign exchange exposure management practices of Indian companies.

RBI in a circular issued in October 2001, said that banks have to scrutinize and review unhedged forex exposures of clients that have large foreign exchange exposures. In February 2012, another circular with tougher wording was issued by the RBI in which it said that banks should “rigorously evaluate” the risk emerging out of the unhedged forex exposure and price that risk in while extending credit facilities to these companies.¹ In January 2014, RBI put rules in place asking banks to make provision against unhedged foreign exchange exposures of their clients.

The study has been divided into five parts. The first part introduces the theme of the Paper. Part two provides a review of the literature on the use of foreign exchange derivatives by corporates. The third section outlines the research methodology adopted to accomplish the objective of the study. Section four discusses the use of forex derivatives by Reliance Industries Limited and the company’s policy to mitigate foreign exchange risks. The main findings of the study are summarised in section five.

REVIEW OF LITERATURE

Exchange Rate Exposures

There are different sources/ types of foreign exchange rate exposures. The main types of exchange rate exposures are explained below:

- *Transaction Exposure* is defined as a measure of change in the value of outstanding financial obligations which are made prior to a change in exchange rates and are to be settled in the future. Transaction exposure is caused by the possibility that the future cash flow relating to a financial obligation may change as a result of exchange rate changes.
- *Economic Exposure* represents to the possibility of the change in the present value of the firm’s expected future cash flows due to an unexpected change in exchange rates. It is also called operating exposure. It measures the change in the present value of the firm, which results from any change in future operating cash flows caused by unexpected changes in exchange rates. Operating exposure measures the impact of unanticipated exchange rate changes on the firm’s revenues, operating costs and operating net cash flows over a medium time horizon. Economic exposure has sustained implications for the bottom line of the firm.

- *Translation exposure* is a short-term exposure. Translation exposure relates to foreign assets that are exposed to due to exchange rate uncertainty, while domestic assets are not exposed to this exchange rate uncertainty. Translation exposure arises on the consolidation of assets, liabilities, and profits denominated in foreign currency in the process of preparing consolidated accounts of the firm in home currency.

Foreign Exchange Exposure Hedging Techniques

Firms can use various alternative foreign exchange derivatives to hedge their foreign exchange exposures. In addition to foreign exchange derivatives, firms can also employ operative techniques to mitigate foreign exchange exposures. We can put the foreign exchange hedging techniques used by firms in two different categories as mentioned below:

- *Derivative techniques: Financial contracts*
- Forward market hedge
- Futures
- Option market hedge
- Swap market hedge
- Money market hedge
- *Operational techniques*
- Choice of the invoice currency
- Lead/lag method
- Matching
- Exposure netting

Chart 1 shows different techniques on the basis of their availability, which are generally used by firms to their manage foreign exchange exposures.

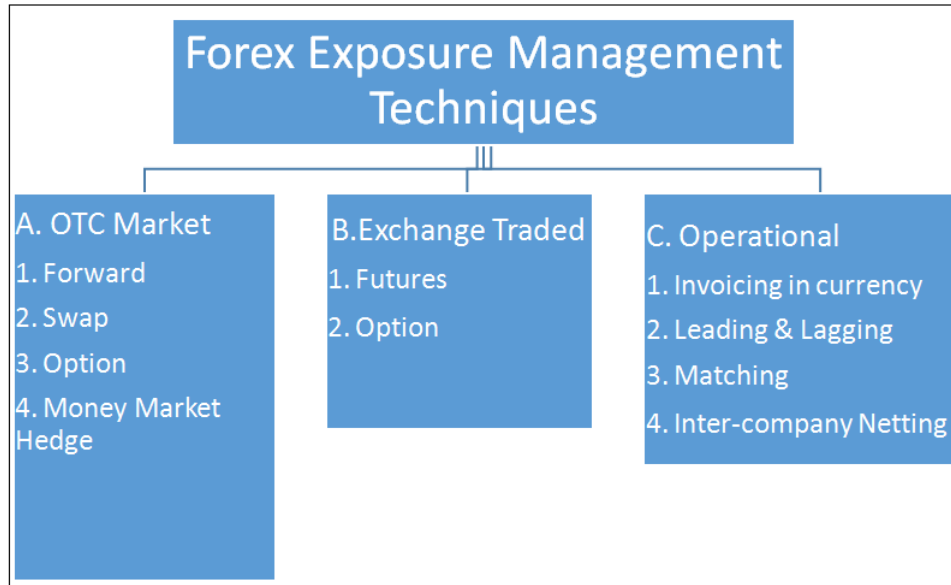


Figure 1

These techniques have been discussed below

Forward

Currency forward contract is most popular and direct method of hedging foreign exchange exposure. A forward is an agreement between two parties, a buyer, and a seller, to buy or sell a currency at a specified rate on a particular date in future. The main advantage of a forward is that it can be tailored to the specific needs of the firm and an exact hedge can be obtained.

Futures

A futures contract is like to the forward contract but is more liquid as it is traded in an organized exchange. However, future is a standardized contract unlike a forward which is a tailor-made OTC contract. A futures contract is a subject daily settlement procedure to guarantee each party that claims against the other party will be paid.

Option

A currency option provides the holder the right, but not the obligation, to buy or sell foreign currency at an agreed price, within a specified period of time. A call option gives the option buyer the right, without obligation, to purchase agreed on the currency by paying another agreed currency at the agreed price on or before the agreed date. A put option gives the option buyer the right, without obligation, to sell the agreed currency for another agreed currency at the agreed price on or before the agreed date.

Swap

The swap contract is an agreement to exchange one currency for another currency at a predetermined exchange rate, which is the swap rate, on the sequence of future dates. As such, a swap contract is like a portfolio of forwarding contracts with different maturities. Swaps are very flexible in terms of amount and maturity; the maturity ranging from few months to 20 years.

Money Market Hedge

A foreign exposure can be hedged by lending and borrowing in the domestic and foreign money markets. Firms may borrow (lend) in foreign currency to hedge its foreign currency receivables (payables). For example, an Indian firm has to receive 1 million dollars from a U.S. importer after three months. The Indian firm will borrow USD from the market today. Then it will sell the USD in the market for rupees. After three months, it will receive USD from the importer and will make USD payments to the lender. Thus, the exchange rate risk is alleviated.

Choice of the Invoice Currency

This is an operational technique. Firms may, sometimes, invoice their foreign sales or purchases in domestic currency so that the other party absorbs exchange rate risk.

Lead/Lag Method

This is another operational technique to hedge forex risk. 'Lead' means to pay or receive early, whereas 'lag' means to pay or receive late. The firm would like to lead soft currency receivables and lag hard currency receivables to void the loss from depreciation of the soft currency and benefit from the appreciation of the hard currency. Similarly, the firm will attempt to lead the hard currency payables and lag soft currency payables.

Matching

In matching, cash flows in one of the pairing currencies can be offset against cash flows in the others. For example, an Indian firm has its receivable in one currency say EUR and a payable not in the same currency but closely related currency say GBP. The movement in two currencies are closely related so that a loss (gain) on payable due to an appreciation (depreciation) of GBP vis-à-vis INR will be closely matched by the gain (loss) on the receivable due to appreciation (depreciation) of the EUR.

Exposure Netting

A firm having different receivables and payables in diverse currencies can net out its exposure in each currency by matching receivables with payables. Netting can be done between inflows and outflows of different currencies arising from cross-border transactions of different entities of the group.

OTC instruments in currency forward, option and swaps are the most popular. Importers, exporters, and banks use the rupee forward market to hedge their foreign currency exposure. The typical forward contracts are for one month, three months, or six months, with three months being the most common. Options are preferably used in case exchange is quite volatile. Swaps are used to mitigate foreign exchange risk relating to long-term foreign liabilities i.e. debt.

Studies on Foreign Exchange Exposure Management

The studies related to foreign exchange exposure of firms can be put into three categories. First, the studies based on the efficacy of foreign exchange derivatives in managing foreign exchange risk of firms; second, the studies related to the practices of firms in managing foreign exchange exposures, and third, the studies related to on the choice of hedging instruments in managing foreign exchange risk. Selected studies on the management of foreign exchange exposure are shown below in Table 1.

Studies on Effectiveness of Foreign Derivatives in Managing Forex Exposure

There are evidences showing the reduction of exposure with the use of tools for managing the exposures. Fok et al. (1997) study find that although the basic purpose of hedging is to reduce returns volatility, it may also increase the value of the firm. According to them, hedging reduces the probability of financial distress, the costs of debts and the cost of equity. The large firms showed a stronger tendency to hedge.

In contrast, Copeland and Joshi (1996) find that foreign exchange risk management programs may cause more damage than good. They study two hundred large companies and conclude that there is enough evidence to cast serious doubt about the economic benefits of foreign exchange hedging programs. According to them, owing to scares management time and the substantial amount of capital devoted to hedging, the value is diminished instead of getting increased.

Table 1: Selected Studies on Management of Foreign Exchange Exposure

S. No.	Study	S. No.	Study
1	Marshall (2000)	8	Hentschel and Kothari (2001)
2	Sivakumar and Sarkar (2008)	9	Chowdhry and Howe (1999)
3	MadhuVij (2008)	10	Copeland and Joshi (1996)
4	Collier and Davis (1985)	11	Fok et al. (1997)
5	Batten, Metlor and Wan (1993)	12	He and Ng (1998)
6	Jesswein et al. (1995)	13	Bodnar and Gebhardt (1998)
7	Howton and Perfect (1998)	14	Nydahl (1999)

Studies on Practices of Risk Management

Numerous empirical studies in the last two decades have attempted to provide insights into the practices of risk management of firms. Collier and Davis (1985) carried out a study about the organizations and practices of currency risk management of U.K. multinational firms. The study finds that there is a degree of centralized control of group currency risk management. Firms used to have formal foreign exchange management policies. According to the findings, firms preferred the risk-averse policies by applying automatic closeout. The transaction risk was considered important and there was the active management of currency transaction risk.

Batten, Metlor, and Wan (1993) studied foreign exchange risk management practices and usage of derivative products by large Australia based firms. In total, 72 firms were covered in the study. Transaction exposure was considered the most relevant exposure. According to the study, 70 percent firms traded their foreign exchange exposures, acting as foreign exchange risk bearer, in an attempt to optimize firm returns.

The pattern of use of forex derivatives by the U.S. firms was studied by Howton and Perfect (1998). The study indicated that 60% of firms used some type of derivative contracts. However, only 36% of randomly selected firms used derivatives. In both cases, more than 90% of the interest rate contracts were swaps. The share of futures and forwards was over 80% of currency derivative contracts.

Hentschel and Kothari (2001) studied the firms using derivatives to manage foreign exchange using data from financial statements of 425 large U.S. corporations. The comparison of risk exposure was made for derivative user firms and non-user firms. According to the study, there were economically small differences in equity return volatility between derivative users and non-users. The study finds that currency hedging has little effect on the currency exposure of firm's equity, through the use of derivatives ranged from 0.6% to 64% of the firm's assets.

Vij (2009) carried out a survey of 98 Indian companies in 2008. Highest, 48 percent companies used short-dated forward exchange contracts to hedging foreign currency risks. Only 1 percent of the companies used the matching system to hedge the currency risk.

He and Ng (1998) conducted a survey of foreign exchange exposure of 171 Japanese firms. According to the study, 25% of the firms experienced significant foreign exchange exposure. The foreign exchange exposure of firms was dependent on firms' export ratio. They also studied the relationship between foreign exchange exposure and the variables reflecting the usage of derivatives. The firms making a prediction to hedge had, on an average, lower foreign exchange exposure.

Bodnar and Gebhardt (1998) studied the comparative usage of derivatives between the U.S. and German non-financial firms. The study finds that German firms are more likely to use derivatives than US firms, with 78% of German firms using derivatives compared to 57% of US firms.

Nydahl (1999) studies the effect of exchange rate fluctuation on a firm's value, the so-called exchange rate exposure, for a sample of 47 Swedish firms. The values of Swedish firms, as reflected in the stock price, seem quite sensitive to movements in the exchange rate. Studying the cross-sectional differences in exposure, the estimated exposure is positively and significantly related to the fractional of total sales made abroad and negatively related to the use of currency derivatives.

Studies on the Choice of Hedging Instruments

The literature on the choice of hedging instruments is very little. Among the available studies, Marshall (2000) conducts a survey and points out that currency swaps are better for hedging against translation risk, while forwards are better for hedging against transaction risk. This study also provides circumstantial indication that pricing policy is the most popular means of hedging economic exposures. These results however, can differ for different currencies depending on the sensitivity of that currency to various market factors.

Siva Kumar et al. (2008) point out that forwards and options are preferred as short-term hedging instruments, while swaps are preferred as long-term hedging instruments. They used data for 2006-2007 for eight firms, namely- Reliance Industries Ltd., Maruti Udyog, Mahindra and Mahindra, Arvind Mills, Infosys, TCS, Ranbaxy and Dr. Reddy's labs.

Chowdhry and Howe (1999) examine under what conditions will a multinational corporation alter its operations to manage its risk exposure? The study shows that multinational firms will engage in operational hedging only when both exchange rate uncertainty and demand uncertainty are present. Operational hedging is less important for managing short-term exposures, since demand uncertainty is lower in the short term. They suggested that long-term strategy adjustments (operational hedge) are the most effective way of managing long-run operating exposure.

Jesswein et al. (1995) study how extensive is the various major innovative foreign exchange products used by U.S. corporations, and categorize these products into three generations. They find that the popularity of the simpler, first-generation product has not been overtaken by the sophisticated new entrants and that the adoption of innovative foreign exchange risk management products is not as common as expected. The findings show that the use of third generation derivatives (Range, Compound options, Synthetic products) was generally less than that of the second generation derivatives (Futures, Options, Swaps, and Warranties), which was, in turn, less than the use of the first generation derivatives (Forwards).

From the review of the literature as given above, three important conclusions can be drawn. First, a majority of studies indicates that use of foreign exchange derivatives is helpful in mitigating forex risk to varying degree of effectiveness. Second, the practices of using foreign exchange derivatives by corporates in managing foreign exchange exposures are increasing day by day. Third, the composition of foreign exchange derivatives in the hedging strategy of corporates is changing over the time, but at the slower pace. In addition to operational techniques, external hedging techniques are being used on larger scale.

DATA AND RESEARCH METHODOLOGY

First of all, we should know the type and quantum of exposure. Then, we have to find which hedging techniques are being used by the firms. In last, are these techniques/strategies appropriate to the given exposure and circumstances?

Data Sources

The study is based on annual reports, data collected from the treasury, interaction with the Treasurer of Reliance Industries Limited and other relevant study material related to the companies. The study evaluates the foreign exchange exposures of the company and assesses the appropriateness of the hedging strategies employed by the company.

Measure of Foreign Exchange Exposure

The value of a firm is simply given by multiplying a number of shares with return on shares. Thus, the foreign exchange exposure of a firm can be measured by the responsiveness of return on its stocks to change in foreign exchange rate. A standard two-factor model has been employed to estimate the exchange rate sensitivity coefficient of the firm. This model is described below:

$$R_{it} = a + \beta_1 e_{it} + \beta_2 R_{mt} + u_{it}$$

Where, R_{it} is the return on company i 's stock at time t , e_{it} is the change in foreign exchange rate, and R_{mt} is the stock market return. Coefficients β_1 and β_2 provide the measure of exchange rate exposure and systematic risk of company i . Whereas, u_{it} is the error term.

The return of company i for period t has been computed as given below:

$$R_{it} = \frac{P_t - P_{t-1}}{P_{t-1}}$$

Where, P_t is a price of the stock of company i in period t and P_{t-1} is the previous period price the stock. Similarly, return on NIFTY 500 and exchange rate (U.S. \$ per Rupee) have been calculated.

A positive β_1 indicates exposure to an appreciation of foreign currency (U.S. Dollar). Foreign exchange exposure has been assessed for 2012-2017, taking the end of the month figures into consideration.

Sensitivity Analysis

In addition to the above assessment, a sensitivity analysis of the company's profits/revenues to changes in foreign exchange rate has also been carried out. The sensitivity analysis shows the effect of 1% or 10% depreciation/appreciation in the value of foreign currency on the profit of the company. The results of sensitivity analysis can be used to verify the nature of forex exposure as measured by the above two-factor model.

Foreign Exchange Derivative Instruments

In the next step, the strategic uses of foreign exchange derivatives by the companies to manage foreign exchange exposures have been studied. The different derivative strategies- a combination of like - forwards, swaps, options, futures, invoice pricing, matching etc. used by the companies to meet these foreign exchange exposures have been analyzed.

Suitability of Foreign Exchange Derivative Instruments

The suitability of instruments has been judged by comparing the instrument used by the company with the instrument that should have been used in these circumstances according to theory, and the practices adopted by firms.

Foreign Exchange Exposure Management Policy

The policies adopted to manage the foreign exchange exposures by the company has been analyzed. It also includes an internal control mechanism used by the company. Which accounting standards are used by the companies?

Comparative Analysis

In the last, comparison of instruments used by the company with the instruments generally used by global firms as provided by a review of the literature has been carried out.

Foreign Exchange Exposure in RIL and its Management

Reliance Industries Limited is a worth mentioning global player in the integrated energy value chain and has a mounting presence in the retail and digital services in India. RIL operations span from the exploration and production of oil and gas to the manufacture of petroleum products, polyester products, polyester intermediaries, plastics, polymer intermediaries, chemical, synthetic textiles, fabrics, retail, and telecommunications. RIL has world's largest refinery in India.

The company exports petroleum to the West Asia, the U.S., South East Asia and Australia. RIL exports Gasoil to Europe, Africa, and South East Asia. The company also placed premium petroleum grades (Alkylate, PBOB) in Latin America and the American market.

Reliance Industries limited imports of crude oil and condensate from Latin America, Middle East, Africa, Russia, Kazakhstan and the U.S. RIL has become the biggest importer of Ethane from the U.S.A. in 2017.²

RIL has more than 146 subsidiary firms and 10 associate companies. The company has earnings of approximately 55% in foreign exchange. Earnings in all businesses are linked to USD. The key input, crude oil, is purchased in USD. RIL has three joint ventures in the USA. Reliance has about 9% of share in India' total exports.

Foreign Exchange Exposure of the Company

A measure of foreign exchange exposure of Reliance Industries Limited using two-factor model is given below in Table 2. The positive coefficient of exchange rate shows that the company has the net exposure to an appreciation of the U.S. Dollar (depreciation of the rupee), due to its imports of feedstock purchased in USD and payments on foreign debt obligations.

Table 2: RIL: Foreign Exchange Exposure

	Constant	Exchange Rate	Nifty	R ²	F- Statistics
Coefficient	0.0035	0.2741	0.6836	0.30	12.06
p-value	0.647	0.227	0.001		0.000

The sensitivity analysis shows that 1% depreciation of Rupee (or appreciation USD) would have resulted in the loss of Rupees 329 crores in 2017. Thus, it is beneficial to RIL if Indian Rupee appreciates against the foreign currencies. This supports the results shown by the two-factor model above in Table 2.

Table 3: RIL: Sensitivity Analysis: Impact on Profit or Loss (in Rs crores)

Particulars	As on March 31, 2016			As on March 31, 2017		
	USD	EUR	JPY	USD	EUR	JPY
1% depreciation in INR	(302)	(26)	(4)	(309)	(14)	(6)
1% appreciation in INR	302	26	4	309	14	6

Source: Annual Report, various issues.

Foreign Exchange Risk Management Techniques

Table 4 reveals foreign currency exposures in USD, EUR and JPY on financial instruments at the end of the reporting period. The exposure to foreign currency for all other currencies is negligible.

Table 4: RIL: Foreign Currency Exposures (In Rs. crore)

Particulars	As at March 31, 2015			As at March 31, 2016			As at March 31, 2017		
	USD	EUR	JPY	USD	EUR	JPY	USD	EUR	JPY
Loans	88521	3900	2411	92,914	6873	2110	92,922	8,498	1,673
Trade & other payables	37375	2093	513	44908	5389	674	59,017	1545	70
Trade & other receivables	(5596)	(2823)	(166)	(2321)	(2230)	(196)	(6281)	(55)	565
Derivatives									
Forwards & futures	30455	(3352)	(2370)	(23684)	(10140)	(2591)	(47854)	(9136)	(1702)
Currency swaps	1356			1438			1015		
Options	1950			2366			1076		
Net exposure	154061	(192)	388	115421	(108)	(3)	99,895	852	606

Source: Annual Report, various issues.

The table 4 shows that the exposures are predominantly related to loans, trade, and other payables. The exposures of the company are mainly in the U.S. Dollar. The major part of exposure is covered by the forward's contracts followed by options and swaps. The pricing of invoice, not mentioned

the table, is used to mitigate the exposure on exports of the company.

The exposure of company derivatives to interest rate change at the end of the reporting period are provided in Table 5. Since the company is a prolific borrower to make the investment and fulfill its other financing need, it has exposures to interest rates. A major portion of interest rate exposure was accounted by foreign currency interest rate swaps. Next in the lead have been Rupee interest rate swaps. This shows that the company also used money market hedge to manage in exposures.

Table 5: RIL: Interest Rate Exposure (Rscore)

Derivatives	As at 31 st March 2015	As at 31 st March 2016	As at 31 st March 2017
Foreign currency interest rate swaps	45532	39968	25987
Rupees interest rate swaps	23640	16835	9995
Currency swaps	1356	1438	1015
Total	70528	58241	36997

Source: Annual Report, various issues.

Table 6 depicts foreign currency exposures that are not hedged by derivative instruments as on March 31. The unhedged exposures are naturally hedged by future foreign currency earnings and earnings linked to foreign currency as claimed by the company.

Table 6: RIL: Unhedged Foreign Currency Exposures (in Rscores)

Year	2010	2011	2012	2013	2014	2015	2016	2017
Amount	50442	65893	82198	71627	64918	82812	91255	99895

Source: Annual Report, various issues.

Table 7 shows the maturity profile of derivative financial liabilities relating to forwards, options and swaps used by Reliance Industries Limited to manage its exposures during 2016-17. It can be seen that forwards and options are usually used for short term i.e. less than one year. On the contrary, swaps, which are used to meet the exposure on liability, predominantly have the maturity between one and five years i.e. longer than that of forwards and options.

Table 7: RIL: Maturity Profile of Derivative Financial Liabilities as on March 31 (in Rs. crores)

Year	Below 3 Months	3 - 6 Months	6 - 12 Months	1-3 Years	3-5 Years	Above 5 Years	Total
Forwards							
2016	40	3	370	141	-	-	554
2017	1115	380	372	-	-	-	1867
Options							
2016	-	-	-	-	-	-	-
2017	33	64	62	-	-	-	159
Currency Swaps							
2016	-	-	102	90	224	-	416
2017	-	-	42	42	200	-	284
Interest Rate Swaps							
2016	5	13	32	419	285	-	754
2017	-	1	175	51	49	-	276

Source: Annual Report, various issues.

Risk Management Policy

Exchange rate fluctuations impact the profit of the RIL as it buys the crude and sells oil in U.S. dollars. A change in rates of interest also affects company's profit as one-fourth of its consolidated borrowings are pegged to floating rates. The company had consolidated borrowings nearly Rupee two lacs crores in 2016-17. At Rupee 99,895 crores, nearly half of the group's debt was denominated in U.S. dollar at the end of March 2017. RIL has a natural hedge against the exposure as future earnings are linked to U.S. dollars. The company has a very little exposure to the Euro and the Japanese Yen.

The company risk management framework is intended to be a simple, consistent and clear. It consist well- defined structure for managing and reporting risks from the operations to the Board. The framework and related processes seek to avoid incidents and maximize business outcomes.

The company has implemented three lines of defence model to allow continuous and real-time assurance on key risk exposures and the ongoing effectiveness of controls.

First Line of Defence: In the first line of defence, business and functional leaders continuously demonstrate for themselves that risk management activities they have in place are effective. In aggregation with the risk management activities themselves, this monitoring activity delivers the first line of defence in the management of risk.

Second Line of Defence: This line of defence includes the experts in areas. This network of functional experts provides functional assurance to the businesses by:

- Providing a view, independent of the line, of risks within their area of functional expertise.
- Setting standards for the management of risks and deliver guidance on mitigations to relevant Businesses in their area of expertise.
- Observing or verifying the efficiency of controls and other risk management activities completed by the business.

Third Line of Defence: Group Audit is the third line of defence. The company has recognized an independent Group Audit function, reporting to the Chairman of the Board and the Audit Committee.

The information relating to the companies' policy to manage the forex exposure and other relevant parameters is given in table 8. The RIL uses centralized approach and treasury is assigned the task of forex exposure management. The company uses OTC and Exchange traded forex derivatives in addition to operational techniques of matching, pricing of the invoice and inter-company netting.

Table 8: RIL: Foreign Exchange Risk Management

Particular	RIL
Foreign exchange risk management	Centralised
Responsible department	Treasury
Exposures covered	Transaction Economic Translation
Accounting standard	INDAS
Derivatives markets	OTC Exchange traded
Currencies hedged	USD, EUR, JPY
Forecasting of relevant currencies	Yes
Hedging techniques used	1. Matching 2. Forwards 3. Swaps 4. Options 5. Futures 6. Intercompany matching 7. Choice of invoicing currency
Time horizon for hedging	Less than 5 years
Review of hedging policy	Continuous
Internal control mechanism	1. Regular management report on positions 2. Limits & guidelines framed by top management 3. Internal audit & control 4. Different levels of authorisation
Risk evaluation techniques	1. Value at risk 2. Stress or scenario test 3. Price value of a basis point
Use of third generation derivatives	No
Note of policies of competitors	No
Change in hedging strategy in response to exchange rate fluctuations	Yes
Help of external sources/experts	Yes
Different strategies to manage forex risks arising out from cash inflows and outflows	Yes
Company's exposure to	Appreciation of foreign currency

Source: Based on information provided by the company.

The RIL continuously reviews its hedging policy. Internal control policy includes a regular management report on positions, limits & guidelines framed by top management and internal audit & control, and different levels of authorization.

The company estimates the risk associated with foreign exchange fluctuations. Simple foreign exchange derivatives are used by the company in managing foreign exchange exposure. The third generation derivatives are not used by the company.

The company does forecast the exchange rate of relevant currencies in pursuit to devise its strategy. It also takes consultancy services of external experts. The company makes changes in its hedging strategy in response to exchange rate fluctuations. The company uses different strategies to manage forex risks arising out of cash inflows and outflows. The foreign exchange market is well regulated and Reliance ensures compliance with all the regulations.³

CONCLUSIONS

The main findings of the study, grouped on the basis of parameters set in the objectives of the study, have been discussed below:

Effectiveness of Forex Derivatives in Managing Foreign Exchange Exposure

There is enormous research on the effectiveness of foreign exchange derivatives in managing foreign exchange risks. There are evidences in the literature showing the reduction of foreign exchange exposures of firms with the use of tools for managing the exposures.

Understanding and Approach

Forex exposures are managed by the treasury departments in Reliance Industries Limited. The company uses centralized approach to manage the foreign exchange exposures. The concerned department has a clear understanding of the foreign exchange exposures i.e. translation, transaction and economic exposures. The company changes its strategy of foreign exchange risk management in response to the fluctuations in exchange rates.

Evaluation and Forecasting

RIL assesses the foreign exchange exposures. It uses the Value at risk, Stress or scenario test and Price value of a basis point method to evaluate the foreign exchange risks. Reliance Industries Limited does forecast the exchange rate of the relevant currency; the U.S. dollar, for exposure management purpose. It also takes consultancy services of external experts. The company uses different strategies to manage forex risks arising out of cash inflows and outflows. RIL has a net exposure to the appreciation of USD. The sensitivity analysis shows that exchange rate fluctuations do impact the profits of the company.

Derivative Techniques Used

Reliance Industries Limited has about 50 percent earnings from foreign sources in U.S. dollars. The company uses foreign currency loans to fund its investments to a good extent. Between 2012 and 2015, RIL raised US\$ 11.5 billion (in foreign currency bonds) making RIL one of the most prolific borrowers in Asia.⁴The earnings in all businesses are linked to USD. The key input, crude oil is purchased in USD. All export revenues are in foreign currency and local prices are based on import parity prices as well. Thus, any appreciation of rupee against foreign currencies appears to help the company in increasing the income. The company uses foreign exchange forwards and futures to a large extent to hedge its currency exposure, followed by use of options. The company uses swaps to mitigate the long-term foreign exchange exposure. Reliance Industries Limited uses derivatives having tenure up to five years to manage its foreign exchange exposure.

The company carries out transactions in both markets i.e. OTC and Exchange-traded derivatives markets to hedge its foreign exchange exposures.

Suitability of Techniques

The strategy of the company appears appropriate in the given situations- nature, type and duration of foreign currency revenues and expenses- to manage forex exposures.

Reliance Industries Limited uses futures, forwards, options and swaps to manage its foreign exchange exposures. Since the company has foreign currency liabilities, use of swaps is appropriate in such cases. However, it uses forwards and futures on a larger scale to mitigate foreign exchange risk on the net foreign currency payables relating to import of crude oil feedstock and foreign debt. The company also uses options on a small scale to hedge foreign currency risk. The company has consistently earned a profit on foreign exchange derivative instruments in the last few years.

It is worth mentioning here that the precise prediction of foreign exchange rate plays a very significant role in successfully managing the foreign exchange exposure of a firm. It appears that the firm has been successful on this front, in addition to the suitable mix of derivative instruments in its foreign exposure management strategy.

Internal Control and Policy to Manage Exposures

Reliance Industries Limited continuously reviews its hedging policy. Internal control policy includes a regular management report on positions, limits & guidelines framed by top management and internal audit & control, and different levels of authorization.

Global Comparison

The Reliance Industries Limited does not use third-generation foreign exchange derivatives in managing forex exposures. This indicates that the Indian forex derivatives market is still evolving and is not as developed as forex derivatives market in developed countries.

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