

The study of the Foreign Exchange Exposure on the Share Prices of Nifty-50 Companies

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ABSTRACT

The firms which are involved in foreign trade are exposed to exchange rate exposure. Exchange rate exposure is due to currency fluctuation. Currency fluctuation is the outcome of the floating exchange rate system. The exchange rate of one currency against the other is influenced by numerous factors such as demand and supply of two currencies, inflation, their economic performance, interest rates etc. This study aims to examine the foreign exchange exposure on the share prices of nifty 50 companies excluding the financial service companies. In this study, two factors are considered i.e. Nifty returns and exchange rate. For this study, Nifty 50 companies are considered and among the 50 companies, 10 companies have been excluded as they are financial service companies and the monthly data of 40 companies for the period of 5 years is being studied using two factor models. The result of this study shows that two firms are significantly exposed to foreign exchange risk and the companies have hedged their risk using derivatives.

Keywords: currency fluctuation, derivatives, foreign exchange exposure, nifty 50, risk

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INTRODUCTION

Globalization and Liberalization in India have brought several changes to the economy. This has helped the companies to widen their scope of business internationally. For the traders this has been a great opportunity to expand their business but at the same time they will have to undergo various risks. The greatest risk which the traders are facing now is foreign exchange exposure. Foreign exchange exposure is the risk associated with the firms when they are engaged in the international trade. When the firms are bound to carry out their business internationally, they will have to deal with different currencies as their suppliers and customers are from different countries. So, any fluctuations in the domestic currency or an increase in the exchange rate of foreign currency will have a greater impact on the firms. The exchange rate plays a vital role for the firms who export goods

and import raw materials. The depreciation in the domestic currency will help exports as the cash inflow will be more and exporting the goods will be advantageous. However, the firms which are importing the raw material will have to face the difficulty of higher cost of import. On the other hand, an appreciation in the domestic currency will make exports more expensive by reducing the competitiveness of the exporting firm and imports will become cheaper. The changes in demand and supply of various currencies are the reasons for the fluctuation and it leads to currency risk. The companies which carry out their business globally are exposed to currency risk and that may create unpredictable profits or losses. Exchange rate exposure is of three types i.e. transaction exposure, translation exposure and economic or operating exposure. Transaction exposure occurs mainly due to the foreign currency debtors of sale or

payment for goods and services. Translation exposure is also called as accounting exposure. This exposure is due to the translation of books of accounts into the home currency. The impact of economic exposure is much higher when compared to the other two exposures. This exposure will directly impact the value of the firm, which means the value of the firm is influenced by foreign exchange. So, the companies which are doing business internationally face any of these above mentioned exposure. So, to reduce this risk companies hedge it using derivatives. Risk cannot be avoided completely but it can be minimized. Hedging is a strategy that helps to minimize the exchange rate fluctuations and thereby minimising the uncertainty of future transactions denominated in foreign currency by providing the stability to the earnings and the cash flow. Based on the nature of the business, companies use different kinds of derivative instruments such as forwards, futures, options, swaps etc. So the success of any business depends on how effectively it manages its foreign exchange exposure.

Factors Affecting Foreign Exchange Rates

Foreign exchange rate is one of the means through which the country's economic health can be determined. The exchange rate can be defined as the rate at which one country's currency can be exchanged with that of other country's currency. It will fluctuate daily with the changing market forces of demand and supply. The following are the factors that influence the fluctuations in the exchange rate.

Inflation rate: Any changes in the inflation rate will result in the changes in the exchange rate. If the country has lower inflation rate then we say that its currency has appreciated and if the country has

higher inflation, the currency has depreciated.

Interest rates: Any changes in the interest rate will affect the currency value and dollar exchange rate. An increase in interest rate results in currency appreciation. This will provide high rates to the lenders and attracts more foreign capital, which ultimately causes a rise in exchange rate.

Balance of Payment: Balance of payment will fluctuate the exchange rate of its domestic currency. A deficit in current account because of spending more currency on its import than its earnings through exports will result in depreciation.

Government Debt: A country with government debt is less likely to attract foreign investors and this will lead to inflation. As a result, they will have to face the problem of decrease in its exchange rate.

Political stability and Performance: A country's political performance can have an impact on its currency strength. A country with less political chaos will attract the foreign investor which will result in higher investment and thereby the value of the domestic currency will appreciate.

Speculation: If the country currency value is expected to rise in near future, then the investors will demand more of that currency because they want to make profit. Due to such investors the value of currency raises, and also the exchange rate raises.

Types of Exposure

Companies which do their business internationally face three kinds of exposure viz. Transaction, Translation and Economic exposure. Normally, foreign exchange exposure exists for those firms

where the value of future cash flow depends on the value of foreign currency.

Transaction exposure is the exposure due to an actual transaction which takes place in the firms involving foreign currency. For instance, if the firm has purchased the goods from a foreign country and the payables are made in terms of foreign currency, which is to be paid after three months. If the currency value increases then the firm ends up paying much higher on the due date. The ultimate result is higher purchase price which will impact the firm and erode its profits.

Translation exposure is also known as accounting exposure. It arises from the need of the global firm to consolidate its financial statements. Consolidation involves translating the subsidiaries financial statements from the local currency (i.e. in the foreign markets where the firm is located) to the home currency of the firm (i.e. the parent company). Therefore, the consolidation can result either in translation gain or translation loss. For instance, if the property is in Germany and its worth € 1 million and current dollar to euro exchange rate is 1:1, then it can be reported as \$1 million asset. If the exchange rate changes and dollar to euro ratio becomes 1:2, then the assets would be reported as \$5lakh. This would appear as \$5lakh loss on the financial statement. Though the property possessed is same, they have to face this risk. Hence for financial reporting the parent company will record its assets and liabilities in home currency.

Economic exposure occurs due to the presence of the firm in the foreign market. It impacts the firms through their contracts and transactions which are yet to occur, but will occur in the future because of the firm's location. These are future transaction exposures which are unknown

today. This exposure can have a great impact on the competitive position and market value of the global firm. For instance, if a firm imports goods from Japan to sell it in the United States and if the JPY gains against USD, it would make imports more expensive and would have an impact on the firm's operation.

Most of the MNC's prefer to hedge their foreign exchange exposure through forwards, futures, swaps or any other derivative which suits their nature of business. Hedging can be done by taking long or short position. A firm with long position (it expects to receive the foreign currency in future) will offset by taking a short position (payment in the future) in the same currency.

REVIEW OF LITERATURE

The firms which are involved in international trade are exposed to exchange rate risk. There are quite a few scholarly articles which will help us to understand the relationship between exchange rate and share price.

The author conducted a study on influence of exchange rate on BSE Sensex and NSE Nifty. This study mainly analyses the dynamic relationship between the stock market and the exchange rate. It also explores the long run and short run causal relationship between the stock market and exchange rate in India for the period 2005 to 2014. It states that predicting currency movement is one of the difficult tasks as it has many variables affecting its market movement [1].

Author undertook a research on an impact of currency fluctuation on Indian stock market. Their research paper deals about the factor influencing and impact of currency fluctuation on global economy and Indian stock market. This study also identified exchange rate sensitive sectors

and stock in Indian market and tried to understand the correlation between stock price and exchange rate [2].

Author conducted a research on a study of exchange rates movement and stock market volatility. This paper shows the relationship between Nifty returns and Indian rupee – US dollar exchange rates. This paper tells that many factors can have an impact on the daily stock prices. It also says that exchange rate changes directly influence the international competitiveness of the firm. On the whole foreign exchange volatility influences the value of the firm as the future cash flows of the firm change with the fluctuation in the foreign exchange rates [3].

Author tried to analyse the market integration based on the stock market and the exchange market. For the analytical motive the indices akin to Bombay stock exchange Sensex, Bombay stock exchange national and Nifty were adopted as the representative of Capital market. The empirical outcome about the rate integration between stock prices and exchange rates lead to the conclusion that there exists some measure of price integration between these markets is India [4].

In Author study he addressed the query of whether or not stock markets face exchange rate risk. For the evaluation important source of data was the Centre for Monitoring Indian Economy (CMIE) corporate database which offered data on individual stock prices as well as on the sensitivity Index (SENSEX). The paper reveals the presence of exchange rate risk as a systematic risk factor over and above market risk for a number of Indian companies. The determinant of a company's exchange rate exposure appears to be the importance of exports in its total

turnover. Import intensity of its operation also indicates some effect however it's not statistically significant [5].

OBJECTIVE OF THE STUDY

The main intention of this research is to study the foreign exchange exposure on the share prices of Nifty 50 companies excluding the financial service companies. These financial service companies deal mainly with foreign currencies and this sector is already exposed to exchange rate exposure and they have been using different types of derivatives to hedge their risk.

SCOPE & SIGNIFICANCE OF THE STUDY

This study is restricted to Nifty 50 companies and has been conducted for the period of 5 years and it excludes financial services companies. This study mainly focuses on significance of currency exposure towards Nifty 50 companies.

LIMITATION OF THE STUDY

The research is limited for the period of 05 years.

METHODOLOGY

This study is based on the secondary data. Here the monthly data pertaining to the closing price of 40 companies, Nifty 50 and currency exchange rate have been collected for the period of 5 years (1/4/2012 to 31/3/2017). The data analysis is done using two factor models. The companies chosen for this study have their subsidiaries in different countries and the transaction will be made using different currencies. Hence for this study, NEER value has been used. This study focuses on assessing the level of exchange rate exposure of Nifty 50 companies. To measure the exchange rate exposure and its impact on Nifty 50 companies, and to understand the sensitivity of share price fluctuation due to currency instability we are using two factor models. In this we are

analysing 40 Companies that are the part of Nifty 50 Index, we are also measuring the individual firms share price against Benchmark Nifty 50 Index. A two factor model could represent in regression model as described below:

$$\text{Log (Nifty Return)} = \alpha + \beta_1 (\text{NEER Value}) + \text{Residual}$$

$$\text{Log (Company Return)} = \alpha + \beta_1 (\text{Residual}) + \beta_2 (\text{NEER Value})$$

Nifty 50

The Nifty 50 is the leader record of the National Stock Exchange of India Ltd. (NSE). This list tracks the conduct of the arrangement of the blue chip organizations, which are the biggest and very fluid organizations in nature. Among the 1600 organizations recorded on NSE, it incorporates 50 organizations and catches roughly 65% of its buoy balanced market capitalization and it really mirrors the Indian securities exchange.

This Index has been exchanging since April 1996 and it is appropriate for benchmarking file subsidizes and in addition file based subordinates. This file covers all the significant areas of the economy. This benchmark list, Nifty 50 is possessed and overseen by India Index Services and Products Ltd. (IISL). It is India's initially specific organization concentrating on an Index as a centre item.

Neer

The ostensible powerful swapping scale is an unadjusted weighted normal rate at which one nation's money trades for a wicker bin of numerous outside monetary standards. The compelling conversion scale is a list which tells about the quality of money in respect to a wicker bin of different monetary standards. The NEER goes about as a pointer of a nation's worldwide intensity regarding the outside trade advertises. It is ostensible on the

grounds that it just measures the numerical trade esteem and does exclude different angles, for example, obtaining energy of that cash. In the coasting rate administration, an expansion in the estimation of local money against some other cash is called thankfulness and any lessening in the estimation of local money against some other cash is called deterioration.

REER incorporates the purchasing power and competitiveness aspects, hence makes this measure a meaningful one. The real exchange rate is nothing but nominal exchange rate multiplied by the price indices of the two countries.

SAMPLE

For this study, I have chosen Nifty 50 as the benchmark index. Among the 50 companies I have selected forty companies which belong to different sectors and have excluded ten companies which belong to financial services sector. The main reason for not choosing these financial service sector companies is they have been dealing with different currencies and they will have to hedge their currency exposure. Similarly, in case of other forty companies, there is exposure but they have the option either they can hedge their risk or not. Currency risk cannot be eliminated completely but through hedging they can minimize their risk.

The forty companies belong to different industries like IT, Automobile, Pharma, Energy, Construction, Metals, Cement, Services, Consumer Goods, Telecom, Media and entertainment. There are 1600 companies listed in NSE and Nifty 50 has only 50 companies. There is a criteria followed to choose these 50 companies. Firstly, for inclusion in this index, the company must have been domiciled in India and the security should have been traded at an average impact cost of 0.05% or less during the last six months. Also the

companies which are eligible for the inclusion in Nifty 50 must have at least twice the float adjusted market capitalization. All common shares listed on the NSE are eligible for the inclusion in the Nifty 50 Index but the convertible stocks, bonds, Warrants, rights and preferred stock that provide a guaranteed fixed return are not eligible. The companies which come out with an IPO are even eligible for inclusion in the Index if it fulfills the normal eligibility criteria for a three month period instead of six month period, which is applicable for other companies. This Index is reviewed semi annually and before making any changes to the index constituents a four week notice is given to the market. The stocks have also been added or deleted as per the criteria. The companies which are eligible and are chosen for this study are ACC Ltd., Adani Ports and special Economic Zone Ltd., Ambuja Cements Ltd., Asian Paints Ltd., Aurobindo Pharma Ltd., Bajaj Auto Ltd., Bharat Petroleum Corporation Ltd., Bharati Airtel Ltd., Bharati Infratel Ltd., Bosch Ltd., Cipla Ltd., Coal India Ltd., Dr. Reddy's Laboratory Ltd., Eicher Motors Ltd., GAIL (India) Ltd., Graism Industries Ltd., HCL Technologies Ltd., Hero MotoCorp Ltd., Hindalco Industries Ltd., Hindustan Unilever Ltd., ITC Ltd., Indian Oil Corporation Ltd., Infosys Ltd., Larsen and Toubro Ltd., Lupin Ltd., Mahindra & Mahindra Ltd., Maruti Suzuki India Ltd., NTPC Ltd., Oil and Natural Gas Corporation Ltd., Power Grid Corporation of India Ltd., Reliance Industries Ltd., Sun Pharmaceuticals Ltd.,

Tata Consultancy Services Ltd., Tata Motors Ltd., Tata Power Company Ltd., Tata Steel Ltd., Tech Mahindra Ltd., UltraTech Cement Ltd., Wipro Ltd., Zee Entertainment Enterprises Ltd. But I have excluded financial service sector companies such as Axis Bank Ltd., Bank of Baroda, HDFC Bank Ltd., Housing Development Finance Corporation Ltd., ICICI, Indiabulls Housing Finance Ltd., IndusInd Bank Ltd., Kotak Mahindra Bank Ltd., State Bank of India, Tata Motors Ltd. DVR and Yes Bank Ltd.

ANALYSIS AND INTERPRETATION

For this study, 40 companies of Nifty 50 are taken excluding the financial services sector. There are two independent variables in the study one is Nifty 50 Index, here the monthly data of 40 companies have been collected from 1st April 2012 to 31st March 2017. In the same manner we have also congregated monthly currency value from Nominal Effective Exchange Rate (NEER).

In table 1 firstly, calculated log values for individual securities share price, Nifty 50 index log value and NEER log value. Then calculated residual values using Nifty 50 as dependent variable and NEER as an independent variable by running regression then attained with Adjusted Nifty values. For getting data for relevant analysis we used share price of individual security as a dependent variable and NEER as well as Adjusted Nifty as independent variables for the study.

Table 1. Exchange rate exposure using two factor model.

tim	Exchange rate NEER	Standard error	p-value	Adjusted nifty	Standard Error	p-value	Constant	N
ACC Ltd.	0.2290	(0.4737)	0.6306	1.3941	(0.1641)	0.0000	-0.0028	59
Adani Ports and Special Economic Zone Ltd.	0.9982	(0.7337)	0.1791	1.1230	(0.2543)	0.0000	-0.0174	59
Ambuja Cements Ltd.	0.1963	(0.4626)	0.6730	1.2612	(0.1603)	0.0000	-0.0078	59
Asian Paints Ltd.	-2.0713	(2.7377)	0.4524	1.6477	(0.9488)	0.08796	0.0219	59
Aurobindo Pharma Ltd.	1.3075	(1.2753)	0.3096	0.9798	(0.4419)	0.0307	-0.0289	59
Bajaj Auto Ltd.	0.5772	(0.5167)	0.2687	1.0138	(0.1790)	0.0000	-0.0097	59

Bharat Petroleum Corporation Ltd.	1.1263	(1.3183)	0.3965	1.2532	(0.4569)	0.00816	-0.0004	59
Bharti Airtel Ltd.	-0.8955	(0.6912)	0.2004	0.9465	(0.2395)	0.000221	-0.0012	59
Bharti Infratel Ltd.	-0.8689	(0.7696)	0.2645	0.7622	(0.2671)	0.006366	-0.0099	51
Bosch Ltd.	-0.8930	(0.6000)	0.1423	1.3056	(0.2079)	0.0000	-0.0155	59
Cipla Ltd.	-1.3098	(0.6021)	0.0338	0.5470	(0.2086)	0.011253	-0.0097	59
Coal India Ltd.	0.0794	(0.6087)	0.8966	0.9834	(0.2109)	0.0000	0.0030	59
Dr. Reddy's Laboratories Ltd.	1.2143	(0.6705)	0.0754	0.1098	(0.2323)	0.638213	-0.0078	59
Eicher Motors Ltd.	0.2328	(0.7673)	0.7626	0.7237	(0.2659)	0.00864	-0.0411	59
GAIL (India) Ltd.	0.1266	(0.6161)	0.8378	1.0566	(0.2135)	0.0000	-0.0072	59
Grasim Industries Ltd.	-0.7371	(0.4307)	0.0925	1.3767	(0.1492)	0.0000	-0.0114	59
HCL Technologies Ltd.	-0.8008	(0.6461)	0.2203	0.0482	(0.2239)	0.830302	-0.0202	59
Hero MotoCorp Ltd.	0.4557	(0.5841)	0.4385	1.0336	(0.2024)	0.0000	-0.0065	59
Hindalco Industries Ltd.	0.7009	(0.9641)	0.4702	1.4254	(0.3341)	0.0000	-0.0087	59
Hindustan Unilever Ltd.	-0.9362	(0.4939)	0.0632	0.5926	(0.1712)	0.001035	-0.0124	59
I T C Ltd.	0.6231	(0.3878)	0.1137	0.6812	(0.1344)	0.0000	-0.0097	59
Indian Oil Corporation Ltd.	-0.3101	(0.7394)	0.6765	0.8436	(0.2562)	0.001726	-0.0178	59
Infosys Ltd.	0.4720	(0.7272)	0.5189	0.2674	(0.2520)	0.293195	-0.0090	59
Larsen & Toubro Ltd.	0.0326	(0.5014)	0.9483	1.7056	(0.1737)	0.0000	-0.0111	59
Lupin Ltd.	-0.6475	(0.6999)	0.3588	0.0127	(0.2425)	0.958106	-0.0157	59
Mahindra & Mahindra Ltd.	-0.0781	(0.5471)	0.8869	0.8693	(0.1896)	0.0000	-0.0100	59
Maruti Suzuki India Ltd.	0.9601	(0.5792)	0.1029	1.7559	(0.2007)	0.0000	-0.0259	59
NTPC Ltd.	0.1487	(0.6412)	0.8174	0.8334	(0.2222)	0.000421	-0.0019	59
Oil & Natural Gas Corporation Ltd.	1.0265	(0.5831)	0.0837	1.1619	(0.2020)	0.0000	-0.0013	59
Power Grid Corporation of India Ltd.	-0.2861	(0.4379)	0.5161	0.8752	(0.1517)	0.0000	-0.0094	59
Reliance Industries Ltd.	0.7625	(0.5100)	0.1405	0.8529	(0.1767)	0.0000	-0.0103	59
Sun Pharmaceutical Industries Ltd.	0.1046	(0.6974)	0.8812	0.2642	(0.2417)	0.278965	-0.0140	59
Tata Consultancy Services Ltd.	0.4348	(0.5821)	0.4581	0.1134	(0.2017)	0.576263	-0.0119	59
Tata Motors Ltd.	0.3032	(0.7782)	0.6983	1.6262	(0.2697)	0.0000	-0.0070	59
Tata Power Co. Ltd.	0.4197	(0.5981)	0.4857	1.4311	(0.2073)	0.0000	0.0016	59
Tata Steel Ltd.	1.8300	(0.9269)	0.0532	1.1879	(0.3212)	0.000497	-0.0023	59
Tech Mahindra Ltd.	0.2119	(0.7261)	0.7714	0.6457	(0.2516)	0.012995	-0.0167	59
UltraTech Cement Ltd.	-0.6101	(0.5534)	0.2749	1.3161	(0.1918)	0.0000	-0.0168	59
Wipro Ltd.	0.0151	(0.6504)	0.9814	0.2250	(0.2254)	0.322452	-0.0063	59
Zee Entertainment Enterprises Ltd.	0.5339	(0.5414)	0.3283	0.9026	(0.1876)	0.0000	-0.0249	59

In this study, 40 companies' monthly data has been collected for the period of 5 years. Here monthly data pertaining to the share prices, NEER Value and Nifty 50 is collected. Monthly changes are calculated by using the formula and as the data gathered is absolute we will be using Ln formula to convert all the numbers into a similar value. Firstly, the regression is run

to eliminate the influence of exchange rate on market. After the first regression we will be getting the residual value. This residual value is the adjusted nifty. In the second regression we will be finding the influence of exchange rate and adjusted nifty on the 40 companies, where NEER value and Adjusted Nifty are independent

variable and company's share price is the dependent variable.

Beta is a systematic market risk. When NEER Value increases by 1 %, the company's share prices will increase or decrease. Negative beta is depicted by a negative coefficient and positive beta is depicted by a positive coefficient. If the beta depicts negative coefficient then it tells that when the NEER value increases by 1% the company's share prices will negatively move. When the Adjusted Nifty increases by 1% the company's share prices will move positively or negatively

Alpha is referred to as excess return or abnormal rate of return. When the market is constant, the company's return will increase or decrease to certain %. In this study, two factor model is used and hence we see the probability value. If the probability value is less than 0.05 then we can come to a conclusion that the stock prices are more reactive towards the movement in the exchange rate. Similarly, if the probability value is lower than 0.05 then the stock prices are more reactive towards the market fluctuations

From the above table it is understood that the companies like Asian Paints Ltd., Bharti Airtel Ltd., Bharti Infratel Ltd., Bosch Ltd., Cipla Ltd., Grasim Industries Ltd., HCL Technologies Ltd., Hindustan Unilever Ltd., Indian Oil Corporation Ltd., Lupin Ltd., Mahindra & Mahindra Ltd., Power Grid Corporation of India Ltd., and UltraTech Cement Ltd. are having negative coefficient i.e., with 1% change in the NEER Value, the stock prices will move negatively. For all the other companies the beta is positive i.e., with 1% change in the NEER Value, the stock price will move upward.

The adjusted Nifty here is positive for all the 40 companies. So we can say that with 1 % increase in the Adjusted Nifty, the

stock prices will move positively. As this study mainly aims to find out the exchange rate exposure using two factor model, the emphasis is give to the probability value of NEER value and Adjusted Nifty. After conducting this study it shows that only 2 companies have currency exposure i.e. Cipla Ltd. and Tata Steel Ltd. Among all the companies only these two companies probability value is less than 0.05 which means that the stock prices are more reactive to the exchange rate movement. In case of adjusted nifty (market exposure) there is exposure to all of the companies except Asian Paints, Eicher Motors Ltd., HCL Technologies Ltd., Infosys Ltd., Lupin Ltd., Sun Pharmaceuticals Industries Ltd., Tata Consultancy Services Ltd. and Wipro Ltd.

CONCLUSION

This study examined the exchange rate exposure of Nifty 50 companies excluding financial service companies. Here the monthly data for 5 years is analysed. The findings from the study are that only Cipla Ltd. and Tata Steel Ltd. are significantly exposed to exchange rate risk out of 40 companies. Among the 40 companies, only 32 companies are exposed to market fluctuations. The NEER Value from 2012 to 2017 has shown a downward trend which is an important factor that led to exchange rate movement. The probability value of Cipla Ltd. and Tata Steel Ltd is less than 0.05. As these two firms face the exposure they hedge their exposure to minimize their risk.

Cipla Ltd. hedges its risk using forward contracts. In this company all material foreign exchange transactions are fully covered and there is no materially uncovered exchange rate risk related to the company's exports and imports. Cipla Ltd. has its operation in South East Asia, Middle East, Latin America, Africa, Australia, New Zealand and Russia. Tata Steel Ltd. operates in 26 countries

namely Australia, China, India, The Netherlands, Singapore, Thailand, United Kingdom etc. This company follows hedging policies to protect trading and manufacturing margins against rapid and significant foreign exchange movement. In case of pharma, majority of their revenues are earned through exports. Therefore, any changes in the currency will lead to an erosion of the firm's profitability and also there is no possibility of natural hedge. As the international trade is growing and all the firms have to deal with different currencies and currency risk is increasing. So, the firms' cannot avoid this risk but through hedging they can reduce the risk. So, the firms have to take a wise decision in choosing the derivative instruments to hedge their risks.

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