
A STUDY ON FOREX RISK MANAGEMENT

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ABSTRACT

Foreign exchange risk management (FERM) involves using both internal and external techniques such as forwards, futures, options, and swaps that are called as currency derivatives. The firms with greater growth opportunities and tighter financial constraints are more inclined to use currency derivatives. The Forex market provides various derivative instruments to hedge against currency exposures such as currency forwards, options, futures, and swaps. The current article aims at studying various FERM techniques used in the Indian stock market industry and its impact on exchange gain/losses. For this purpose, foreign exchange cash flows arising out of imports and exports and exchange gain/losses of the companies from oct 2022 to dec 2022. It is observed from the study that only two currencies—USD and EUR—hold command in the forex market and other currencies are being used minimally. It is also noted that there are several currency derivatives available to the business firms such as forwards, futures, options, and swaps for hedging currency exposure. However, among all these techniques, forward contract is considered to be an effective hedging tool and easier to understand.

1.INTRODUCTION

During the early 2000s, India embarked on a series of structural reforms in the foreign exchange market. The exchange rate regime, that was earlier pegged, was partially floated in March 2002 and fully floated in March 2003. The unification of the exchange rate was instrumental in developing a market-determined exchange rate of the rupee and was an important step in the progress towards total current account convertibility, which was achieved in August 2004.

Although liberalization helped the Indian forex market in various ways, it led to extensive fluctuations of exchange rate. This issue has attracted a great deal of concern from policymakers and investors. While some flexibility in foreign exchange markets and

exchange rate determination is desirable, excessive volatility can have an adverse impact on price discovery, export performance, sustainability of current account balance, and balance sheets. In the context of upgrading Indian foreign exchange market to international standards, a well- developed foreign exchange derivative market (both OTC as well as Exchange-traded) is imperative.

With a view to enable entities to manage volatility in the currency market, RBI on April 22, 2007 issued comprehensive guidelines on the usage of foreign currency forwards, swaps and options in the OTC market. At the same time, RBI also set up an Internal Working Group to explore the advantages of introducing currency Options.

The Report of the Internal Working Group of RBI submitted in April 2008, recommended the introduction of Exchange Traded Currency Options. Subsequently, RBI and SEBI jointly constituted a Standing Technical Committee to analyze the Currency Forward and Future market around the world and lay down the guidelines to introduce Exchange Traded Currency Options in the Indian market. The Committee submitted its report on May 29, 2008. Further RBI and SEBI also issued circulars in this regard on August 06, 2008.

Currently, India is a USD 34 billion OTC market, where all the major currencies like USD, EURO, YEN, Pound, Swiss Franc etc. are traded. With the help of electronic trading and efficient risk management systems, Exchange Traded Currency Options will bring in more transparency and efficiency in price discovery, eliminate counterparty credit risk, provide access to all types of market participants, offer standardized products and provide transparent trading platform. Banks are also allowed to become members of this segment on the Exchange, thereby providing them with a new opportunity.

NEED FOR THE STUDY

The main research gap of this project is to fulfill the understanding of the foreign exchange market clearly by calculating the risk and return involved in the currency future market.

Many of the investors misunderstood the currency future contract where it has much risk factor then the normal trading of currency and there is less awareness of the risk and return analysis can be done the individual investor only, so, that why I want to pretend in this project by calculating risk and return factors involved in the currency futures in a simple way of understanding so that, every investor can have knowledge to hedge the risk factor by there own with their understanding and invest in foreign exchange market through future contract.

SCOPE OF THE STUDY

The selected scrips (or) contracts are only few +. The calculated result may not be accurate because the data which is analysed is historical so the selected data for the analysis may showcase the high trend (or) down trend by which we cannot predict total foreign exchange market. The data selected for analysis is between 3 to 9 months.

OBJECTIVES OF THE STUDY

- To understand the foreign exchange market □ To know the correlation between the selected currencies.
- To know the trading mechanism of the currency futures.
- To understand the Hedging strategy with currency futures.
- To analyse the risk and return involved in currency futures.

RESEARCH METHODOLOGY

- **Data Collection:**

- The data collected was mainly secondary in nature and the sources were website and text books. Some primary data was also collected by interacting with guide and other personalities.
- The source of data can be collected from primary data & Secondary data. Primary data is that data which is collected personally through survey with questionnaire and by the observation method, but in this research, every thing is done with the historical values which has already there is web site of NSE. So, my data collection is from Secondary data. **Secondary data:** Data is collected from following ways.
- Websites. Text books. Journals. News papersetc.,

FORMULAS

Return on Investment = (closing price - opening price/opening price)*100

Standard deviation (σ) = $\sqrt{\sum D^2/(n-1)}$ Correlation coefficient = $\sum df*ds/(\sigma_1*\sigma_2)$

Hedge ratio = correlation coefficient*(σ_2/σ_1)

Where,

n = Number of days. σ_1 = Standard deviation of spot price.

σ_2 = Standard deviation of settle price.

LIMITATIONS OF THE STUDY

- The currency selected very few when compared to total currencies.
- The major limitation of this project is time factor.
- The data collected is completely historical i.e., secondary data. So, the calculated result may not be accurate and influencing factor of commodity market.
- The selected scrips are only limited for 3 months to 9 months.

2.REVIEW OF LITERATURE

INTRODUCTION TO FINANCIAL DERIVATIVES

“By far the most significant event in finance during the past decade has been the extraordinary development and expansion of financial derivatives...These instruments enhances the ability to differentiate risk and allocate it to those investors most able and willing to take it- a process that has undoubtedly improved national productivity growth and standards of livings.”

Alan Greenspan, Former Chairman. - US Federal Reserve Bank

The past decades has witnessed the multiple growths in the volume of international trade and business due to the wave of globalization and liberalization all over the world. As a result, the demand for the international money and financial instruments increased significantly at the global level. In this respect, changes in the interest rates, exchange rate and stock market prices at the different financial market have increased the financial risks to the corporate world. It is therefore, to manage such risks; the new financial instruments have been developed in the financial markets, which are also popularly known as financial derivatives.

DEFINITION OF FINANCIAL DERIVATIVES

- A word formed by derivation. It means, this word has been arisen by derivation. □ Something derived; it means that some things have to be derived or arisen out of the underlying variables. A financial derivative is an indeed derived from the financial market. □ Derivatives are financial contracts whose value/price is independent on the behavior of the price of one or more basic underlying assets. These contracts are legally binding agreements, made on the trading screen of stock exchanges, to buy or sell an asset in future. These assets can be a share, index, interest rate, bond, rupee dollar exchange rate, sugar, crude oil, soybeans, cotton, coffee and what you have.
- A very simple example of derivatives is curd, which is derivative of milk. The price of curd depends upon the price of milk which in turn depends upon the demand and supply of milk.

The Underlying Securities for Derivatives are :

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- Commodities: Castor seed, Grain, Pepper, Potatoes, etc.
 - Precious Metal : Gold, Silver
 - Short Term Debt Securities : Treasury Bills
 - Interest Rates
 - Common shares/stock
 - Stock Index Value : NSE Nifty
 - Currency : Exchange Rate

3.1 INDUSTRY PROFILE

FINANCIAL MARKETS

Finance is the pre-requisite for modern business and financial institutions play a vital role in the economic system. It is through financial markets and institutions that the financial system of an economy works. Financial markets refer to the institutional arrangements for dealing in financial assets and credit instruments of different types such as currency, cheques, bank deposits, bills, bonds, equities, etc.

Financial market is a broad term describing any marketplace where buyers and sellers participate in the trade of assets such as equities, bonds, currencies and derivatives. They are typically defined by having transparent pricing, basic regulations on trading, costs and fees and market forces determining the prices of securities that trade.

Generally, there is no specific place or location to indicate a financial market. Wherever a financial transaction takes place, it is deemed to have taken place in the financial market. Hence financial markets are pervasive in nature since financial transactions are themselves very pervasive throughout the economic system. For instance, issue of equity shares, granting of loan by term lending institutions, deposit of money into a bank, purchase of debentures, sale of shares and so on.

In a nutshell, financial markets are the credit markets catering to the various needs of the individuals, firms and institutions by facilitating buying and selling of financial assets, claims and services.

CLASSIFICATION OF FINANCIAL MARKETS

Capital Market

The capital market is a market for financial assets which have a long or indefinite maturity. Generally, it deals with long term securities which have a period of above one year. In the widest sense, it consists of a series of channels through which the savings of the community are made available for industrial and commercial enterprises and public authorities. As a whole, capital market facilitates rising of capital.

3.2 COMPANY PROFILE

SBI Securities is one of the leading stock broking companies in India and a subsidiary of SBI Bank Limited - a renowned private-sector bank.

As a stock broking company, SBI Securities brings to you more than 25 years of experience in serving a diverse customer base of retail and institutional investors.

Stability: We are a subsidiary of SBI Bank and one of the oldest and largest stock broking firms in the industry. We have been the first and only NBFC to receive the license to be converted into a bank.

Innovators in the Industry: We have been the first in providing many products and services which have now become industry standards.

First to provide Margin Financing to the customers.

First to enable investing in IPOs and Mutual Funds on the phone.

Providing SMS alerts before execution of depository transactions.

Launching of Mobile application to track portfolio.

Auto Invest - A systematic investing plan in Equities and Mutual fund.

Innovation - Broking app which allows you to access markets across platforms, mobiles and tablets allowing registered and guest users to view live prices, track portfolio and trade.

Value: Whether you are a customer with a small or large wallet size, you can expect us to bring value to you, in every form.

- Quality Research
- Quick trade execution
- Low brokerage
- Accounts that suit your investment profile
- Risk Profiler

Superior Customer Service

Service: We believe in the highest standards of service and that's precisely what we offer.

Robust Technology: We have developed our own proprietary trading platform which is robust, and among the best in the industry. We have more than 150 technology professionals constantly working on upgrading and speeding up all our systems.

Centralized Risk Management System: Unlike many other players we have a centralized risk management system. This allows us to offer the same levels of service to customers across all locations.

Customer Service is available in 10 different languages: English, Hindi, Marathi, Gujarati, Tamil, Malayalam, Kannada, Telugu, Punjabi and Bengali.

Exceptional Research: We have our own in-house research team. The in-house research team is one of the best in the industry and they have years of experience in the financial markets. They

scan through the plethora of stocks and find the scrips that have a high potential of providing you good returns.

Our investors get Technical, Fundamental, Derivatives, Macro-economic and mutual fund research.

Large Presence: We are present in 367 cities with 1,157 branches, franchisees and satellite offices all over the country. Our employee strength extends beyond 3,000.

SBI Securities was founded in 1994 as a subsidiary of SBI Bank and is proud to be the nation's best broker* today.

4.DATA ANALYSIS AND INTERPRETATION

USD/INR

Calculation of standard deviation for daily settlement price for the period of 3 months

Trade Date	Underlings	Daily Settlement Price	Return	Average	D	d2
3-Oct-22	USDINR 271222	66.1475	-0.786122224	-1.7463828	0.960261	0.920100949
4-Oct-22	USDINR 271222	65.6275	0.17523142	-1.7463828	1.921614	3.69260121
5-Oct-22	USDINR 271222	65.7425	0.384074229	-1.7463828	2.130457	4.538847152
6-Oct-22	USDINR 271222	65.995	-0.007576332	-1.7463828	1.738806	3.023447935
9-Oct-22	USDINR 271222	65.99	-0.174268829	-1.7463828	1.572114	2.471542339
10-Oct-22	USDINR 271222	65.875	-0.227343454	-1.7463828	1.549039	2.399522897
11-Oct-22	USDINR 271222	65.745	-0.117879687	-1.7463828	1.628503	2.65202239
12-Oct-22	USDINR 271222	65.6675	-0.300757605	-1.7463828	1.445625	2.089832026
13-Oct-22	USDINR 271222	65.47	-0.316939056	-1.7463828	1.429444	2.043309417
16-Oct-22	USDINR 271222	65.2625	0.356253591	-1.7463828	2.102636	4.421079794

17-Oct-22	USDINR 271222	65.495	0.118329643	-1.7463828	1.864712	3.477152497
18-Oct-22	USDINR 271222	65.5725	-0.091501773	-1.7463828	1.654881	2.738631214
22-Oct-22	USDINR 271222	65.5125	-0.020080328	-1.7463828	1.727302	2.983573829
23-Oct-22	USDINR 271222	65.5	0.08778626	-1.7463828	1.834169	3.364176139
24-Oct-22	USDINR 271222	65.5575	-0.244060558	-1.7463828	1.502322	2.25697212
25-Oct-22	USDINR 271222	65.3975	-0.160556596	-1.7463828	1.585826	2.514844749
26-Oct-22	USDINR 271222	65.2925	0.317800666	-1.7463828	2.064183	4.260853382
27-Oct-22	USDINR 271222	65.5	-0.309160305	-1.7463828	1.437202	2.065608499
30-Oct-22	USDINR 271222	65.2975	-0.126344806	-1.7463828	1.620038	2.624523101
31-Oct-22	USDINR 271222	65.215	-0.245342329	-1.7463828	1.50104	2.253122495
1-Nov-22	USDINR 271222	65.055	-0.023057413	-1.7463828	1.723325	2.96985039

2-Nov-22	USDINR 271222	65.04	-0.130688807	-1.7463828	1.615694	2.610467079
3-Nov-22	USDINR 271222	64.955	0.202440921	-1.7463828	1.938824	3.75903742
6-Nov-22	USDINR 271222	65.08	0.522433927	-1.7463828	2.268817	5.147529343
7-Nov-22	USDINR 271222	65.42	-0.11464384	-1.7463828	1.631739	2.662572234
8-Nov-22	USDINR 271222	65.345	-0.053561864	-1.7463828	1.692821	2.865642722
9-Nov-22	USDINR 271222	65.31	0.321543408	-1.7463828	2.067926	4.276318803
10-Nov-22	USDINR 271222	65.52	0.400641026	-1.7463828	2.147024	4.609711308
13-Nov-22	USDINR 271222	65.7825	-0.038004028	-1.7463828	1.708379	2.918558027
14-Nov-22	USDINR 271222	65.7575	-0.307949664	-1.7463828	1.438433	2.069089888

15-Nov-22	USDINR 271222	65.555	0.076271833	-1.7463828	1.822655	3.320269911
16-Nov-22	USDINR 271222	65.605	-0.403932627	-1.7463828	1.34245	1.802172467
17-Nov-22	USDINR 271222	65.34	0.045913682	-1.7463828	1.792296	3.21232668
22-Nov-22	USDINR 271222	65.37	-0.309775126	-1.7463828	1.436608	2.063841608
21-Nov-22	USDINR 271222	65.1675	0.02018134	-1.7463828	1.765564	3.117216734
22-Nov-22	USDINR 271222	65.18	-0.533139	-1.7463828	1.213244	1.472260522
23-Nov-22	USDINR 271222	64.8325	0.123394902	-1.7463828	1.869778	3.496068656
24-Nov-22	USDINR 271222	64.9125	-0.288850376	-1.7463828	1.457532	2.124400768
27-Nov-22	USDINR 271222	64.725	-0.169949788	-1.7463828	1.576433	2.485141043
28-Nov-22	USDINR 271222	64.615	-0.154762826	-1.7463828	1.59162	2.533254142
29-Nov-22	USDINR 271222	64.515	0.225378594	-1.7463828	1.951761	3.80937254
30-Nov-22	USDINR 271222	64.6475	-0.146950771	-1.7463828	1.599432	2.558182814
4-Dec-22	USDINR 271222	64.5525	0	-1.7463828	1.746383	3.049852884
5-Dec-22	USDINR 271222	64.5525	0.154912668	-1.7463828	1.901295	3.614924457
6-Dec-22	USDINR 271222	64.6525	0.058002397	-1.7463828	1.804385	3.255805941
7-Dec-22	USDINR 271222	64.69	-0.181635492	-1.7463828	1.564747	2.448434137
	271222					
8-Dec-22	USDINR 271222	64.5725	-0.166479539	-1.7463828	1.579903	2.496094316
11-Dec-22	USDINR 271222	64.465	0.069805321	-1.7463828	1.816188	3.29853929
12-Dec-22	USDINR 271222	64.51	0.038753682	-1.7463828	1.785136	3.186712258
13-Dec-22	USDINR 271222	64.535	-0.182271744	-1.7463828	1.564311	2.44706908

14-Dec-22	USDINR 271222	64.4175	-0.43078356	-1.7463828	1.315599	1.730801359
15-Dec-22	USDINR 271222	64.14	0.202170253	-1.7463828	1.968553	3.875201121
18-Dec-22	USDINR 271222	64.2825	-0.291681251	-1.7463828	1.454702	2.116156597
22-Dec-22	USDINR 271222	64.095	0.074108745	-1.7463828	1.822492	3.314189465
22-Dec-22	USDINR 271222	64.1425	-0.116927154	-1.7463828	1.629456	2.655125701
21-Dec-22	USDINR 271222	64.0675	-0.022510672	-1.7463828	1.726872	2.982287345
22-Dec-22	USDINR 271222	64.055	0.050737647	-1.7463828	1.79712	3.229642002
26-Dec-22	USDINR 271222	64.0875	0.109537741	-1.7463828	1.855921	3.444441056
27-Dec-22	USDINR 271222	64.1577	-100	-1.7463828	-98.2536	9653.773293
		Average =	-1.7463828			9823.596922
	standard deviation=	13.01431 37				

- The above table shows the Calculation of Standard Deviation of cash future contract for period of 3 months.
- The standard deviation is 13.0143137

5.1 FINDINGS

1.USD/INR

- USD/INR has future contract for 3 months has standard deviation of 13.0143137 □ USD/INR spot price has standard deviation of 12.5682.
- Correlation coefficient between future contract and spot price is 0.950727608

2.EUR/INR

- EUR/INR has future contract for 3 months has standard deviation of 13.02261
- EUR /INR spot price has standard deviation of 12.60593
- Correlation coefficient between future contract and spot price of 0.9349391

3.JPY/INR

- JPY/INR has future contract for 3 months has standard deviation of 13.0158
- JPY/INR spot price has standard deviation of 11.54975
- Correlation coefficient between future contract and spot price is 0.874467.

4.GBP/INR

- GBP/INR has future contract for 3 months has standard deviation of 13.02007
- GBP/INR spot price has standard deviation of 12.60694
- Correlation coefficient between future contract and spot price is 0.940356.

5.2 SUGGESTIONS

1. As the hedge ratio of USD is 0.9822374, the investor can invest in one lot against INR.
2. As the hedge ratio for EUR is 0.970960352, the investor can invest in one lot against INR.
3. As the hedge ratio for JPY is 0.9854658, the investor can invest in one lot against INR.
4. As the hedge ratio for GBP is 0.910518, the investor can invest in one lot against INR.

5.3 CONCLUSION

By far the most significant event in finance during the past decade has been the extraordinary development and expansion of financial derivatives. These instruments enhances the ability to differentiate risk and allocate it to those investors most able and willing to take it- a process that has undoubtedly improved national productivity growth and standards of livings.

The currency future gives the safe and standardized contract to its investors and individuals who are aware about the forex market or predict the movement of exchange rate so they will get the right platform for the trading in currency future. Because of exchange traded future contract and its standardized nature gives counter party risk minimized. Initially only NSE had the permission but now BSE and MCX has also started currency future. It is shows that how currency future covers ground in the compare of other available derivatives instruments. Not only big businessmen and exporter and importers use this but individual who are interested and having knowledge about forex market they can also invest in currency future.

In conclusion, considering the nascent stage of development of exchange-traded currency market in the country, the cautious approach of the regulators is understandable. One hopes to see further developments in the market"s regulatory framework over time. There is

no doubt that this is a market which will eventually establish its own forte and will be an area of activity to watch and gain from for all market participants in the near future. Financial market helps the investors to invest in a proper manner. Analysis can be done with the help of mentioned formulas. In the analysis, if the head ratio represents the positive value between -1 & +1 then the investor can invest in that particular financial product. The awareness among people about the financial products helps our country to improve the level of financial inclusion. According to the above research the investors can invest in forex by the help of analysis done on the basis of historical data. Hedging will helps the investor to minimize the risk in their investment. The derivative products came into the existence to satisfy both the parties involved in the contracts in minimizing the loss. All parties involved in the derivative contracts will get benefit at the end of the contract. The benefit can be utilized by the parties involved in contract due to decisions taken before they enter into the contracts.

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