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THE INDIAN JOURNAL OF COMMERCE

Contents

Currency Futures Traded on the NSE

DHAREN KUMAR PANDEY

The main theme of this paper is to assess the speed in which the growth of currency futures in India has accelerated. It also aims at examining the volatility of the currency futures. In order to study the growth of the currency futures, the number of contracts traded and open interest at NSE has been inclusively compared. Attempt has been made to check whether the daily returns of the NSE on currency futures are normally distributed. For this purpose the changes in the daily value of Rupee as compared to Dollar, Yen, Euro and Pound have been calculated for the period and the data have been used for the ANOVA Test to test the hypothesis that the returns are normally distributed. The currency futures have received a good response from the investors as well as the hedgers. Initially, currency futures were started for USD-INR contracts but trading in Euro-INR, Yen-INR and Pound-INR contracts have been introduced in January 2010. The risk involved is comparatively low in this case and currency futures has proved to be a good tool for hedging the risk involved in the currency of a country (currency risk).

Introduction

In order to facilitate direct hedging of currency risk in other currency pairs as well, it has been decided, as announced in the Second Quarter Review of Monetary Policy 2009-10 (Para 117), to permit the recognized stock exchanges to offer currency futures contracts in the currency pairs of Euro-INR, Japanese Yen (JPY)-INR and Pound Sterling (GBP)-INR, in addition to the USD-INR contracts, with immediate effect.

Pricing and Settlement of Currency Futures

According to the interest rate parity theory, the currency margin is dependent mainly on the prevailing interest rate (for investment for the given time period) in the two currencies. Therefore, the currency futures prices are determined with the help of the spot rates and interest rates prevailing at that time. The following formula is used to set the price for a contract for a given currency pair:

$$F = S\ (1 + R_g \times T) \div (1 + R_B \times T)$$

where,

F = the price for the currency futures contract;

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S = the spot rate for the currency pair;

R_Q = the interest rate of the quote currency;

R_B = the interest rate of the base currency;

T = the time to maturity (in days).

After the expiry of the currency futures contracts, the currency futures are settled in cash in the underlying currency. This is due to the reason that the currency futures are based upon the exchange rate of both the currencies. The delivery is made in cash in the underlying currency.

Research Methodology

Currency futures have significantly gained importance all over the world. The futures market holds a great importance in the economy and, therefore, it becomes imperative that we analyse this important market and seek answers to a few basic questions. The main theme of the study is to assess the progress of the currency futures in India with a compact view over the volatility of the currency futures. In order to study the growth of the currency futures, the number of contracts traded and open interest for the available four currency futures contracts at the NSE have been inclusively compared. The correlation between the open interest and the contracts traded is used to conclude the growth of the currency futures. If both these values are increasing and correlated positively, then it means that the growth has been satisfactory. But if there is a negative correlation between the two values, the growth is not considered to be satisfactory. Attempt has been made to check whether the daily returns of the NSE on currency futures are normally distributed. ANOVA has been used to test the variance among the returns from various currencies.

H_0: The returns of the currency futures are normally distributed.

H_1: The returns of the currency futures are not normally distributed.

Analysis

Open Interest and Volume of Contracts Traded

Open interest is the total number of outstanding contracts that are held by the market partricipants at the end of the day. It is also considered as the number of futures contracts that have not yet been exercised, expired or fulfilled by delivery. It is often used to confirm the trends and trends reversals for futures markets. It measures the flow of money into the futures market. A sellor and a buyer forms one contract and hence in order to determine the total open interest in the market we need to know either the total of buyers or the sellers and not the sum of both. The open interest position that is reported each day represents the increase or decrease in the number of contracts for that day. An increasing open interest means that the new money is flowing in the marketplace and the present trend will continue. If the open interest is declining it implies that the market is liquidating and the prevailing price trend is coming to an end. The leveling off of open interest

following a sustained price advance is often an early warning of the end to an uptrending or bull market.

The interpretations which can made on the basis of the open interest may be shown with the help of the Table 1.

Table 1: Open interest

Price	Open Interest	Interpretation
Rising	Rising	Market is Strong
Rising	Falling	Market is weakening
Falling	Rising	Market is Weak
Falling	Falling	Market is Strengthening

The number of contracts traded on a stock exchange shows the total volume of contracts traded. An increase in the number of contracts traded on an stock exchange expresses the growth of trade in that particular stock exchange for a particular currency future.

Figure 1 shows the open interest and contracts traded for the EURO-INR currency futures. We can easily see that both, the open interest and the volume of contracts traded, have been declining in this case. This is not a good indication towards the growth of currency futures. The correlation calculated between the open interest and the contracts traded gave a negative value of -0.32 which represents that although not so strong but a negative correlation between them indicates that the growth for EURO-INR currency futures is not satisfactory. Further study of other currency futures reveal that all have performed well but only the performance of the EURO-INR currency futures have been dissatisfactory.

Figure 1: Volume and open interest for EURO-INR currency futures since February 2010

Figure 2 shows the open interest and volumes contracted for the GBP-INR currency futures and depicts that the currency futures have been growing at a steady rate. Both, the open interest and the volumes contacted, have been growing and thus indicating towards positivity. The correlation coefficient +0.33 also supports that there has been a positive relation between the open interest and contracted volumes which again concludes that the GBP-INR currency futures have been performing well.
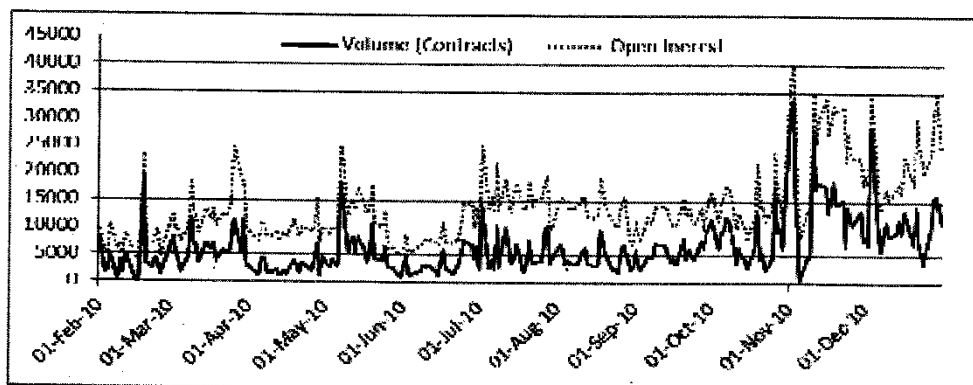
Figure 2: Volume and open interest for GBP-INR currency futures since
February 2010

Figure 3 shows the open interest and volumes of contracts traded for the JPY-INR currency futures and depict that the currency futures have been growing but not steadily. There has been major downfalls during May 2010 when it got lowered and then again started rising up. But the correlation between the open interest and the contracted volumes is +0.57 thus concluding that a significant growth has taken place in the JPY-INR contracts during the period.
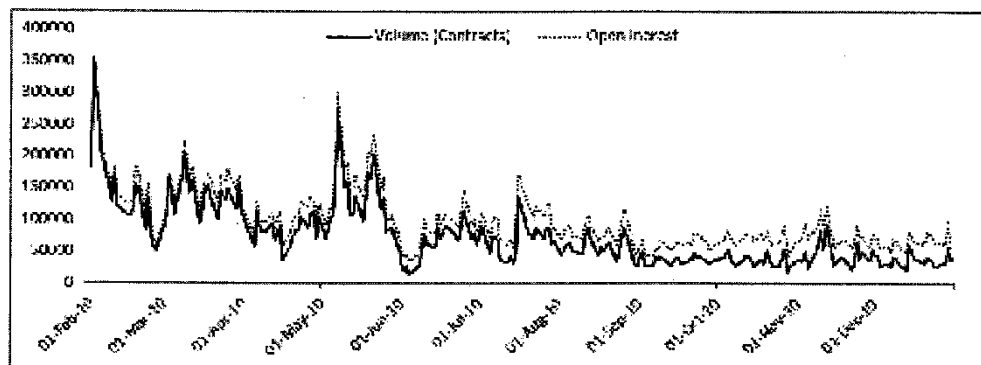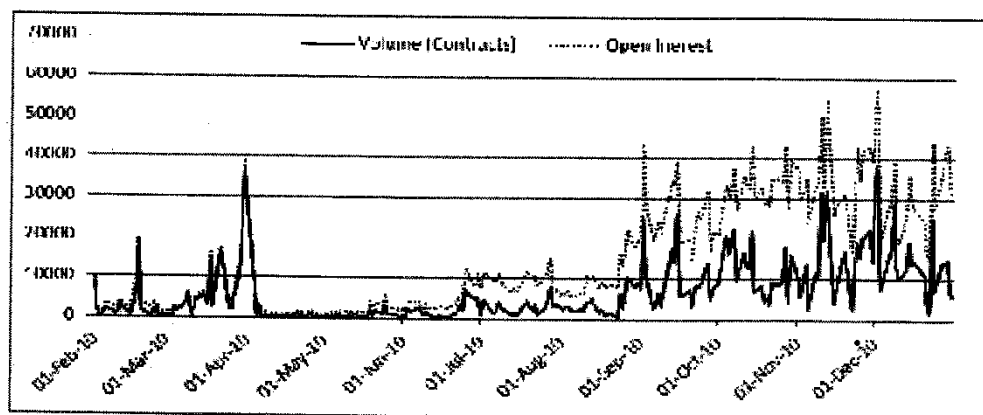

Figure 3: Volume and open interest for JPY-INR currency futures since
February 2010

Figure 4 shows the open interest and contracted volumes of the USD-INR currency futures for the period August 2008 to December 2010. A good growth is noticed for the USD-INR currency futures. The correlation coefficient of +0.87 in fact shows that the growth of both, the open interest and the contracted volumes has been high. The one-and-a half year period experienced a good demand for the USD-INR currency futures.
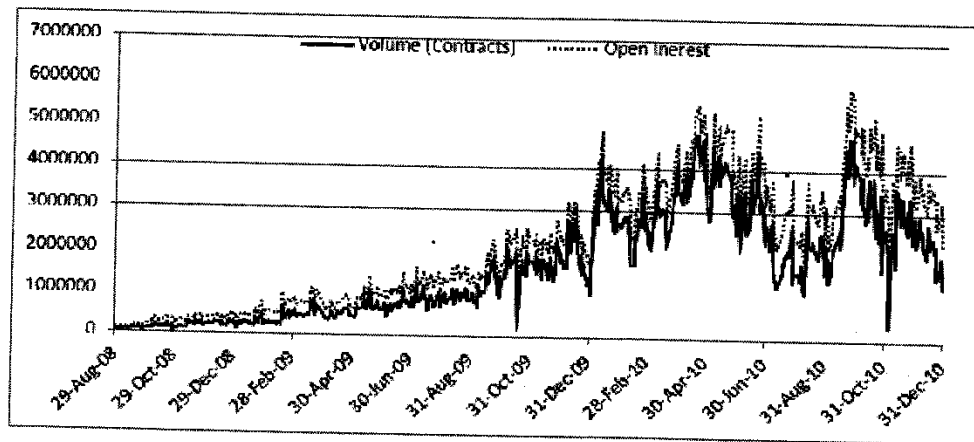
Figure 4: Volume and open interest for USD-INR currency futures since August 2008

Daily fluctuations in the Value of Rupee

The positive mean for Yen reveals that it has been more profitable for the investors. The negative mean in rest of the currencies tells that there has been an overall negative return for the whole period. However, US dollar has been performing well among these three currencies with negative average return. When it comes for volatility, the value of Rupee has been much volatile in case of Yen, then in case of Euro, Pound and US dollar respectively. Less volatility and a good average return has been seen for the US Dollar currency (Table 2).

Table 2: Descriptive statistics

|	USD	GBP	EURO	JPY
Mean	-0.01371	-0.02678	-0.03039	0.035231
Median	0	-0.03074	-0.04827	0.091743
Standard Deviation	0.51999	0.661351	0.666456	0.909785
Sample Variance	0.270389	0.437386	0.444164	0.827709
Kurtosis	1.443739	2.197999	2.574248	1.179202
Skewness	0.058632	-0.08153	0.650772	-0.00375
Minimum	-2.16523	-2.74025	-1.81694	-3.14931
Maximum	1.630435	2.575663	2.889246	2.998411
No of Observations	223	223	223	223

The analysis of variance among the changes in value of Rupee for all the four currency reveals that the returns have been following a normal distribution and that there is no significant difference between the returns from these currencies. The results of the ANOVA are shown in Table 3.

Table 3: ANOVA results

Source of Variation	SS	df	MS	F	P-value	F crit.
Between Groups	0.614	3	0.205	0.413	0.743	2.615
Within Groups	439.482	888	0.495			
Total	440.095	891				

Conclusion

The Indian currency futures market has experienced an impressive growth since its introduction. The upward trend of the volumes and open interest for currency futures in NSE explains the whole story in detail. The growth of USD-INR currency futures since August 2008 led to the introduction of three other currency futures in January 2010. The GBP-INR, JPY-INR and the USD-INR currency futures have recorded a growth and thus confirmed that the introduction of currency futures have been a good step taken by the Government. But the EURO-INR currency futures have not motivated. It has been seen that the value of Rupee for Euro has been more volatile and also the return was negative and the least. Thus, the volatility in the value might have been the reason behind this dissatisfactory growth. The US Dollar has been least volatile and the return from it was also good. The correlation between the open interest and the contracts traded has been the maximum in this case. It is +0.87 thus signifying the growth of the USD-INR currency futures. The overall currency futures performance has been encouraging and thus a good future is expected for the currency futures. The correlation test also explained that the relationship between the open interest and traded volumes is very much significant and that the change in the value of currency is normally distributed thus illustrating that the risk is minimum in the currency futures contracts. The risk involved is comparatively low in this case and currency futures has proved to be a good tool for hedging the risk involved in the currency of a country (currency risk). It is hoped that the currency futures market will develop faster and it will be a good choice for all the market participants in the near future and it will find its way in the Indian economy.

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Corrigendum

The author has joined Sikkim University and the correct address of the author is as follow:	The name of the first author was not provided by the author. The author has requested to incorporate the name of first author which is as follow:
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