Exchange Rate Volatility and Risk Management – Indian Scenario

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Abstract:

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In the current fiscal, on month-to-month basis the rupee depreciated by 12.4 per cent from ` 44.97 per US dollar in March 2011 to ` 51.34 per US dollar in January 2012. On point-to-point basis, it depreciated by 16.2 per cent from ` 44.65 per US dollar on 31 March 2011 to ` 53.26 per US dollar on 30 December 2011. The rupee reached a peak of ` 43.94 on 27 July 2011 and a low of ` 54.23 per US dollar on 15 December 2011, indicating a depreciation of 19.0 per cent\(^1\). This recent volatility in currency market is an issue that concerns government policy makers, market analyst, corporate managers and economists. Volatility in the exchange rates refers to the dispersion of returns. In the financial world, volatility is an important contributor to risks. The exchange rates could display higher volatility because of several factors such as deviation from

\(^1\) Economic Survey 2011-12
fundamentals, excessive speculative activities, macroeconomic shocks, or other global and domestic news. Excessive fluctuations in exchange rates could spillover to other segments of financial markets, can blur the monetary policy signals and lead to financial stability problems. Excessive exchange rate fluctuations also have a detrimental impact on foreign trade and at times even on genuine investments. Investments could then be potentially guided by a view or a bet on exchange rate movements rather than by underlying returns, especially if the umbilical cord between the cash-futures arbitrage is snapped.

Against this background, the researcher has proposed two main hypotheses, which are as follows;

1) In view of the fact that the rupee with major currencies has started exhibiting volatility, the need for effective risk management tools is felt more today.
2) The effectiveness of the risk management tools depends upon orderly development of derivative market and the systematic analysis of the exchange rate movements by the corporates.

The first half of the research paper proves the first hypothesis. The study presents the increasing volatility of the Rupee exchange rate against major currencies with the help of statistical data and presents the overall picture of the change in the exchange rate trends mainly after liberalization.
The ever rising volatility of Indian rupee has been proved by taking the exchange rates of the Indian rupee against the US dollar and other major currencies since last two decades and then calculating coefficient of variance and standard deviation and plotting graphs against that data to measure the currency movements and looks into the reasons behind that volatility.

The second half of the work focuses on the second hypothesis. It also brings forth the mishaps of huge currency derivatives losses faced by Indian corporates due to the sudden steep rupee appreciation in the past, to reveal insights as regards the scope and feasibility of the foreign exchange derivatives market in India.

**Full Paper: Title: Exchange Rate Volatility and Risk Management – Indian Scenario**

Volatility in the exchange rates refers to the dispersion of returns. In the financial world, volatility is an important contributor to risks. The exchange rates could display higher volatility because of several factors such as deviation from fundamentals, excessive speculative activities, macroeconomic shocks, or other global and domestic news. Excessive fluctuations in exchange rates could spill over to other segments of financial markets, can blur the monetary policy signals and lead to financial stability problems. Excessive exchange rate fluctuations also have a detrimental impact on foreign trade and at times even on genuine investments. Investments could then be potentially guided by a view or a bet on exchange rate movements rather than by underlying returns, especially if the umbilical cord between the cash-futures arbitrage is snapped.
“The foreign exchange market is a market where financial paper with a relatively short maturity is traded, and those financial papers are denominated in different currency”. (Riehl, Rodriguez, 1977)

Exchange rate risk arises due to unexpected changes in the prices of two currencies. These price changes could be favorable or they could be non-favorable. Non-favorable changes in the currency prices could lead to huge losses, if they are not managed at the right time and through the proper hedging techniques. Expectations about the price level, inflation, tariffs and quotas, productivity, import demand, export demand and the money supply play an important role in determining the exchange rate. When expectations about any of these variables change, there is an immediate effect on the expected returns and thereby on the exchange rate.

No country is self-sufficient and cannot produce all goods and services due to scarcity of resources, skills, technology, etc. All nations can simultaneously gain from exploiting their comparative advantage, as well as, from the larger scale of production and broader choice of products that is made possible by international trade. And this very basic fact led to rise in the cross-border trade and exploration to the various types of risks in the international market. Under these circumstances avoiding the exchange rate risk is not possible at all; rather learning to manage this risk is the better option for companies, who are into international business. While understanding the use of currency derivative tools in managing the exchange rate risk, the volatility of the exchange rate should be viewed as a source of risk.

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Professor Peter Bofinger of the Wurzburg University argues that the, 'volatile exchange rates are the main cause of the instability in the international economy' (Bofinger, 2003). Exchange rate risk has risen far more than the amount of foreign trade and due to ever rising overseas investments; exchange rates have become increasingly volatile. Unexpected changes in exchange rates can have important impacts on sales, prices and profits of both exporters and importers. And this situation has created a need for the risk management techniques.

**Indian Scenario: the two way movements of the rupee against major currencies after liberalization.**

It was Keynes who once remarked that knowing nothing about the past makes a man as primitive as knowing nothing about the future. In other words, one cannot live in the present alone. Although in the financial markets, future need not have a link to the past, nevertheless, it is important to know a bit of the past to make informed predictions about the future (V. Kamesam, 2001). The purpose of this section, therefore, is to take a bird’s eye-view of the past, reflect on the present scenario of the Indian foreign exchange market.

The Foreign exchange market in India till late 1990’s remained highly regulated, i.e., restrictions on external transactions, barriers to entry, low liquidity and high transaction cost, etc. The exchange rate was managed mainly for facilitating India’s imports (RBI Report, 2007). These strict controls on the foreign exchange transactions through FERA has created parallel and the most efficient, but unofficial foreign exchange market in the
world, called, ‘Hawala market’. But this regulatory atmosphere could not be sustained for long, as India’s trade activities were increasing at a faster rate.

In 1991-92 the Indian economy experienced a paradigm shift with the external sector being the centre stage of reforms. The rupee was made convertible on current account, partially in 1992 and fully in 1993 under the Liberalized Exchange Rate Management System\(^3\). This was the beginning in the direction of freeing external transactions from the administrative controls. Freedom to cancel and rebook forward contracts has been partially withdrawn, even transactions like third currency forwards and forward-forward swaps were allowed to do. The RBI also relaxed number of restriction on the ADs holding of open positions, balances held in the Nostro account and their dealings with customers.\(^4\)

It is conducive for healthy market development to have much larger number of players active in the market with enhanced volumes of business. The presence of increased number of players and larger volumes can certainly cause greater depth to the foreign exchange market further leading to its more efficient functioning. The foreign exchange market in India consists of three segments, first consists of the RBI and the Authorised Dealers (ADs), i.e. commercial banks, and second is the inter-bank market in which the ADs deal with each other and the third segment is of transactions between ADs and the corporate customers. The market was primarily for exchange of dollars against rupees, other currencies were not actively traded against the rupee in the local market. This was the scene till the year 2006, but since last two year, the trend of Rupee appreciation

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against Dollar has made traders and corporates to trade in other foreign currencies to mitigate their losses in the rupee/dollar exchange. Those currencies are Euro, Pound Sterling, Japanese Yen, Swiss franc, etc. The most important center is Mumbai and other active centers are Delhi, Chennai, Cochin and Bangalore. Nearly 30% of the merchant business comes from the State Bank of India and the foreign banks account for a very large chunk of inter-bank business.

<table>
<thead>
<tr>
<th>Table 1.1- Indicators of Indian Foreign Exchange Market Activity (US $ bn)</th>
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<tbody>
<tr>
<td><strong>Indicators of Indian Foreign Exchange Market Activity ( US $ bn)</strong></td>
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<tr>
<td></td>
</tr>
<tr>
<td>Total Annual Turnover</td>
</tr>
<tr>
<td>Avg. Daily Turnover</td>
</tr>
<tr>
<td>Avg. Daily Merchant Turnover</td>
</tr>
<tr>
<td>Avg. Daily Inter-bank Turnover</td>
</tr>
<tr>
<td>Inter-bank to Merchant Turnover</td>
</tr>
<tr>
<td>Spot/ Total Turnover (%)</td>
</tr>
<tr>
<td>Forward/ Total Turnover (%)</td>
</tr>
<tr>
<td>Swap/ Total Turnover (%)</td>
</tr>
</tbody>
</table>

Source: www.rbi.org.in
The above graph is drawn with the help of foreign exchange reserves data available on the RBI web site- www.rbi.org.in

The above graph shows that India’s reserve position has been comfortable since the introduction of the LERMS and the partial convertibility in India. Introduction of LERMS and partial convertibility remained responsible for some of the following things to happen:

- Opening up of the Indian economy for the capital inflows and out flows. India was an emerging market for many goods and services and opening up of the Indian economy gave them an entry into this emerging market.

- Foreign investors gained confidence over the Indian markets: India emerged as an investment hub. Opening up of the economy made the Indian financial
system to adopt the international ways of dealing, networking systems, improved infrastructural facilities. This very change gained the confidence of the foreign investors and Indian market emerged as an investment hub.

- The above factors resulted into the large capital inflows and thereby increase in the foreign exchange reserves of India.

The development to higher level of foreign exchange reserves brought in mainly the non-debt creating capital flows, which has ensured sustainability of the external debt. These achievements not only led India to be classified as a “less indebted country” by the World Bank but also enhanced the credibility of the Indian economy in the international market.

In terms of reserve adequacy indicators, India is among the leading reserve holding countries in the world, which has encouraged the authorities to utilise reserves to repay high cost debt. The high level of foreign exchange reserves has not only provided strength to the Indian economy by promoting sustainability to the external debt and credibility to the capital account liberalisation process, but also provided enormous support against unforeseen external shocks. (RBI- VIII Assessment of Reforms, 2007)

This was a broad view on the exchange rate risk, but if in reality we try to track the exchange rate movements, we get to know that how important it is to manage the exchange rate risk. Further taking the micro-view on the same, we trace the history of Indian Rupee (INR) movements, and we find that the INR has depreciated in nominal term against all the major currencies namely, the US $, Pound sterling, French franc and Japanese Yen during most part of the period 1995-2000. And this one way movement of the INR in relation to other currencies had never created a atmosphere of
foreign exchange exposure and risk management and thereby use of derivative products. But the approach towards globalization, opening up of the economy, and increase in trade activities helped the INR to enter into international market and also forced dealers in the Indian foreign exchange market to adopt the international ways of dealing. Thereafter the Indian rupee has started exhibiting two way movements (periodical appreciation and depreciation) against these major currencies.\(^5\)

**Figure 1.2 Changes in the Rupee Exchange rates against the major currencies**

Source: www.rbi.org.in

As known, the major sources of supply of foreign exchange in the Indian foreign exchange market are recipients on account of exports, invisibles in the current account and inflows in the capital account such as FDI, portfolio investments, external

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\(^5\) The researcher traced the rupee exchange rate movements with the help of data available on the RBI web site, www.rbi.org.in Trends in the rupee against major currencies exchange rates also plotted in the graphical form with the help of same data.
commercial borrowings (ECB) and NRI deposits. On the other hand, the demand for foreign exchange comes from imports and invisible payments in the current account, amortization of ECB (including short term trade credits) and external aid, redemption of NRI deposits and outflows on account of direct and portfolio investment. During the last 7-8 years, sources of supply and demand have changed significantly, with large transactions coming from the capital account, unlike in the 1980s and 1990s when the current account transactions dominated the Indian foreign exchange market. The behaviour as well the incentive structure of the participants who use the market for the current account transactions differ significantly from those who use the foreign exchange market for the capital account transactions. Besides, the changes in these traditional determinants have also led to the volatility in the currency market. And this could be one of the reasons that despite of the large capital inflows, the rupee has started exhibiting two way movements (RBI Report, 2007).

**Changing volatile Nature of the Indian Rupee:**

Volatility measures the extent by which exchange rates move over a period of time. It is annualized standard deviation of the current market price. The standard deviation of the past volatility is done on the assumption that the immediate future will replicate the past. Probability theory is then applied to estimate the future prices.

To track the two way movement of the Indian rupee, we have taken the monthly averages of the Indian rupee against the major currencies since the year 1980 till 2010. On the basis of this 25 years data, standard deviation and the coefficient of variance is
calculated for each year and each currency and presented through the graphical techniques. So it becomes easy to read out the wide fluctuations in the currency prices.

**Table 1.2 Volatility (%) in April 2008**

<table>
<thead>
<tr>
<th>Currency</th>
<th>= INR</th>
<th>1-month</th>
<th>3-months</th>
<th>1-year</th>
<th>3-years</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. British pound</td>
<td>78.6619</td>
<td>10.75</td>
<td>8.99</td>
<td>7.26</td>
<td>6.82</td>
</tr>
<tr>
<td>2. US dollar</td>
<td>39.9505</td>
<td>6.52</td>
<td>5.52</td>
<td>5.31</td>
<td>4.36</td>
</tr>
<tr>
<td>3. Japanese yen</td>
<td>0.389867</td>
<td>20.30</td>
<td>14.87</td>
<td>11.95</td>
<td>8.91</td>
</tr>
<tr>
<td>4. Euro</td>
<td>62.7497</td>
<td>12.50</td>
<td>9.60</td>
<td>7.71</td>
<td>7.02</td>
</tr>
</tbody>
</table>

Source: www.ratesfx.com

**Table 1.3 Volatility (%) in April 2012**

<table>
<thead>
<tr>
<th>Currency</th>
<th>= INR</th>
<th>1-month</th>
<th>3-months</th>
<th>1-year</th>
<th>3-years</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. British pound</td>
<td>83.3593</td>
<td>7.34</td>
<td>6.84</td>
<td>7.72</td>
<td>8.70</td>
</tr>
<tr>
<td>2. US dollar</td>
<td>52.09</td>
<td>7.88</td>
<td>7.19</td>
<td>7.63</td>
<td>7.37</td>
</tr>
<tr>
<td>3. Japanese yen</td>
<td>0.6386</td>
<td>11.76</td>
<td>10.86</td>
<td>10.79</td>
<td>11.97</td>
</tr>
<tr>
<td>4. Euro</td>
<td>68.2516</td>
<td>6.65</td>
<td>7.25</td>
<td>8.91</td>
<td>8.77</td>
</tr>
</tbody>
</table>

Source: www.ratesfx.com
These wide fluctuations in the exchange rates could hit the business very badly, if
turned unfavorable and vice-versa of course. This volatile nature of the foreign
exchange market is on rise due to increase in capital flows, the rising cross-border
trade, and integration of the international financial market. It was observed that
particularly after globalization the market has become extremely volatile thereby
affecting the revenue and expenditure of the corporates. Even bankers have to ensure
that they may not incur any losses in the foreign exchange dealings.

Foreign exchange dealings has got certain peculiar features which makes the
transactions all the more risky.-

- Foreign exchange dealings involve two currencies and therefore rates are
  influenced by domestic as well as international issues.
- The foreign exchange dealings are transnational and therefore, the prices of the
  foreign currencies are subject to the controls/ restrictions of the government of
  the foreign country, as also on their monetary and fiscal policy, which are more
  often dictated by their domestic economy.
- The foreign exchange market is a 24 hour market and different time zones in
  different centers offer threat of risk of adverse movements of the rates on
  account of unexpected developments.
- The foreign exchange dealings are to be undertaken at a very fast speed and
  there is no time for second thought. This fast decision making process itself
  opens the foreign exchange deals to risk.
Case Study:

“Derivatives have been linked to aspirin: taken as prescribed for a headache, they will make the pain go away. If you take the whole bottle at once you may kill yourself”

-Francesca Taylor

The research paper brings forth the mishaps of huge currency derivatives losses faced by the Indian corporates due to the sudden steep rupee appreciation in the past, to reveal insights as regards the scope for financial inclusion in the Indian currency market.

News coverage in mid 2007 was something like this- “The huge marked-to-market losses on derivatives that came to light raise troubling issues about the direction of financial liberalization and inadequate regulation. The banks are estimated to have a total exposure of a mind-boggling Rs 1, 27, 86,000 crore or $ 3.16 trillion. If even only 1 per cent of the trade has a problem the marked-to-market losses will be a huge $ 3.16 billion. The genesis of the problem can be traced to two incidents – the sharp appreciation of the rupee in late 2006 and the first half of 2007 and the RBI’s decision in its Annual Policy Statement for 2007-2008 to expand hedging facilities in the foreign exchange market (including allowing small and medium enterprises to hedge even without underlying exposures or a record in exports/imports). The corporates and banks then recklessly entered into contracts, which have landed them in trouble following the
steep depreciation of the dollar against the yen and the Swiss franc” (Money Market Review, 2008).

A look at the entire period since 1993 when India moved towards the market determined exchange rates reveals that the Indian rupee has generally depreciated against the dollar during the last 14 years, except during the period 2003 to 2005 when rupee appreciated on account of general dollar weakness against major currencies. For the period as a whole, 1993-94 to 2006-07, the Indian rupee depreciated against dollar by about 30.9 percent on an annual average basis.

Against this background the strengthening of the rupee was a kind of departure from the past trends. The trend of steady month-on-month appreciation began in September 2006 and continued till 2007. (Figure 1.1) (See, the RBI report, 2007) The main reason for the rupee appreciation since late 2006 has been a flood of foreign-exchange inflows, especially US dollars. The surge of capital and other inflows into India has taken a variety of forms, ranging from FDIs to remittances sent home by NRIs
Although the Indian rupee-US dollar exchange rate has a significant impact on the Indian economy and business sector, the rupee had also appreciated against other currencies as well. In January-July 2007, the rupee's value in terms of Pounds, Euros and Yen rose by 8%, 6.9% and 11.2%, respectively. It was showing that the country's attractiveness to foreign investors is increasing and signals optimism about the future of Indian economy in general.

In such an environment when faced with a rapid currency appreciation and consequent losses on trade receivables by exporters, the time seemed right for the International banks to introduce foreign exchange derivatives - both vanilla and exotic products into the Indian market. Several Indian companies - large, big, medium and small took the bite. Initially they enjoyed the fruits of higher other income through these off balance sheet items. But when the basic assumptions on which these trades were done, failed,
the profit making derivative contracts suddenly showed the Indian corporates huge losses in the same deals.

Corporates who were used to secure one way currency movements till 2006, the incidence of this steep rupee appreciation added volatility to contend with. It was observed that during this time, banks made unconsolidated offers to their clients and corporates eagerly bought the products with insufficient understanding, later incurred huge losses in those deals. Both, companies, who bought these virtually appearing fancy products and banks, who sold them, were trying to pass the blame on to each other. Not only that; they wanted the other party to bear the losses as well.

Neither banks nor corporates can be held alone responsible for these derivative losses. In case of the corporates, it is not the job of the government or the regulatory authority to help companies avoid mistakes. If they do not have the discipline to mark-to-market their positions daily to assess their losses, they are bound to hit by the unfavorable market circumstances. In case of the above mentioned mishap, it was mainly SMEs who were bearing these huge losses due to the unexpected currency movements. These SMEs, mostly, they lack the proper expertise in the risk management and use of derivative tool areas. And limited liquidity problem washes out their net profit if the market suddenly turns against them.

While in case of banks, many banks have twisted Reserve Bank of India regulations to sell leveraged products to corporate clients. Most of the foreign banks have sold the exotic derivative products to Indian corporate mainly to SMEs, which were actually not appropriate to our market conditions. This has resulted in a situation where corporates
have taken currency bets, but adverse movements in the dollar and other currencies exposed them to an amount which may be twice or thrice their export income.

This whole story ends up in Indian corporates facing huge derivative losses. Though this sudden rupee appreciation has carried away the corporates (exporters) profit as well, such mishaps are bound to happen in the market, when it is in developing state. These incidences give insight for further development to market players and policy makers. For example, the Institute of Chartered Accountants of India (ICAI) has also recognized the market weakness, and has made it mandatory for all companies to make derivatives-related disclosures in all annual reports for periods ending on or after April 1, 2006.

**Conclusions:**

The first part of this paper deals with the first hypothesis of this research work, i.e. “In view of the fact that the rupee with major currencies has started exhibiting volatility, the need for effective risk management tools is felt more today”.

Volatility of the Indian foreign exchange market is on rise due to increase in the cross-border trade, huge capital flow in and out and integration of the international financial market. It is observed that particularly after liberalization of the Indian economy the market has become volatile and thereby affecting the revenue and expenditure of the corporates. The rupee with major currencies has started exhibiting volatility; the need for effective risk management tools is felt more today.

The second part of the paper, which is in the form of case study, deals with the huge derivative losses made by the Indian corporates due to sudden rupee appreciation
against US $ in late 2006 and 2007 and its impact on India’s foreign exchange market, and how it affected proceeds of Indian exporters. This sudden appreciation of the rupee against US dollar disturbed the partial equilibrium, which led them to enter into the complicated derivative contracts to minimize their losses, and how they finally ended up in huge losses.

It has been proved that as the rupee with major currencies started exhibiting the volatility particularly after post liberalization, there is a tremendous scope for the use of derivative tools in the foreign exchange market. The researcher recommends that the wide choice for the hedging techniques in the market and analytical basis for the use of hedging tool will definitely improve the market efficiency. The recent introduction of ‘currency futures’ in Indian foreign exchange market is a step towards the market diversification as regards the use of hedging tools.

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