A Study on Notional Hedging Effectiveness of Currency Forwards, Currency Futures and Currency Options

A SYNOPSIS

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SYNOPSIS

1. Introduction

Business entities involved in overseas trade are exposed to fluctuations in foreign currency exchange rates. If the domestic currency strengthens, then an importer gains and the exporter is at a disadvantage (with regard to the expected future transaction designated in the foreign currency). However, if the foreign currency strengthens, then the importer stands to lose while the exporter may gain. To reduce uncertainty in cash flows, businesses may go for hedging their foreign currency exposures. Derivatives like Currency Futures, Currency Forwards and Currency Options are available to hedge currency exposures arising out of import or export transactions. A brief explanation of the products would be in order.

Currency Forward Contract – It is an agreement to buy or sell a stated amount of foreign currency at a future date. The price (exchange rate) of the foreign currency is fixed at the time of entering into the contract. The rate fixed is referred to as the Forward Rate. Banks in India offer Forward Contracts to importers and exporters.

Currency Futures - Futures are similar to Forwards. However, the major difference is that they are standardized contracts, in terms of quantity, quality and so on and traded on recognized exchanges and hence transparency and price discovery may be better. The differences are highlighted in Exhibit 1.

Currency Options: These are agreements which give the buyer of the option, the right to either buy (Call Option) the foreign currency or sell (Put Option) the foreign currency.

Call Option on a foreign currency – The holder of a Call Option has the right to buy (but no obligation), a stated amount of foreign currency on or before a specified date in future (exercise date/ strike date) for a stated price/exchange rate (Strike Price / Exercise Price). For this privilege, the Call Option buyer has to pay an upfront amount termed the Premium, to the Call Writer (seller).

Put option on Foreign Currency - The holder of a Put option gets the right to sell the foreign currency at the Strike price by /on the expiration date. For this the Put holder pays the price called Premium to the Put Writer (seller).

A comparison of Currency Forwards, Currency Futures and Currency Options is tabulated in Exhibit 1:

Exhibit 1 : Salient features of Currency Forwards, Currency Futures, and Currency Options

Currency Forwards	Currency Futures	Currency Options
Over-the-counter (OTC) products offered by banks in India	Exchange-traded product, available on National Stock Exchange(NSE), United Stock Exchange (USE) and Bombay Stock Exchange (BSE)	Exchange-traded product available on NSE and BSE.
Contract can be customized for quantity and date of maturity/expiry.	Contract is standardized for quantity (Lot Size) and date of maturity. Exchange on which the contract trades specifies the lot size and expiry date among other things.	Contract is standardized for quantity (Lot Size) and date of maturity. Exchange on which the contract trades specifies the Lot size and expiry date among other things
Importers would buy Forwards while exporters would be sellers in Forwards.	In order to hedge foreign currency risk importers would be 'Long' in Currency Futures; Exporters will go 'Short' in Currency Futures for hedging foreign currency risk.	Importers would buy a CALL Option for hedging and exporters will buy a PUT option for hedging.

Effective buying price of foreign currency will be the contracted price (adjusted for attendant charges). If the foreign currency strengthens then the importer is protected. However, if the exchange rate moves downwards the importer is obligated to buy at the contracted price. For exporter, the effective selling price is the contracted price (adjusted for attendant charges) and if the domestic currency strengthens then the exporter is protected. However if the foreign currency strengthens, the exporter would not be able to realize the benefit.	The effective buying and selling price is similar to Forwards. However in India Futures are 'CASH' settled and therefore on the futures, the hedge employed will be unwound and settled in cash and the currency requirement will be met from the Spot market. Offsetting /Square off of the hedge before the intended date is easier.	Call option will be exercised by the importer, only if the domestic currency has weakened more than the strike price. If the domestic currency gets stronger and foreign currency is available below the Strike price, the importer may not exercise the Call and take advantage of lower exchange rate available in the Spot market. Similarly a Put Option will be exercised by the exporter only if the foreign currency has weakened more than the Strike.
The major costs involved in a Forward transaction will be bank's commission/charges. It is also important to see if there is a difference in the Forward rate offered as compared to the Futures quote.	The costs involved in the Futures would be brokerage and interest cost on Margin to be posted	The major cost of Options would be the Premium paid and brokerage applicable to Options transactions

2. Currency Derivatives in India

In India, business entities have traditionally relied upon Currency Forwards offered by the commercial banks. These Forwards are subject to the provisions of the Foreign Exchange Management Act (FEMA), 1999. FEMA requires that an entity entering into a Forward contract should have an underlying foreign currency exposure. There is some relaxation for SMEs in terms of not having to go through rigorous documentation before entering into a Forward. With the advent of liberalization and cross border flows becoming prominent, it was felt that there should be a wider array of hedging choices available to Indian exporters and importers. The Reserve Bank of India (RBI) constituted an internal working group, in 2007, to study the introduction of Currency Futures and Currency Options which are exchange-traded products unlike Forwards which are OTC products. It was felt that this enhanced choice of hedging instruments would supplement the existing currency derivatives market, increase the depth of the foreign currency market in India and help in better price discovery of foreign exchange rates. It was expected that these exchange-traded products would benefit smaller players like SMEs in providing a cost effective means of hedging. The L.C. Gupta committee constituted by RBI, which dealt with recommendations for Financial Derivatives at large, had also opined that introduction of exchange-traded derivatives is aimed at providing effective and cost efficient hedging mechanisms for risk. The exchange-traded currency derivatives have since been introduced in India and their salient features have been captured in the subsequent section. Currency Swaps are also a form of currency derivatives; however, as they are oriented towards economizing borrowing costs, they are not a part of this research endeavour.

3. Objectives

Post liberalization in the nineties, the flow of foreign capital into India increased significantly. This was due to increased international trade. This expansion in trade was welcomed by industry, but, concurrently, certain challenges also arose. One of the challenges has been to manage the risk of foreign exchange rate fluctuations for those entities that have a foreign currency payable or receivable. Traditionally, Indian businesses relied upon an OTC product, i.e., Currency Forwards, for hedging transaction exposure. A need was felt to expand the choice of hedging products and therefore exchange-traded currency derivatives were introduced. Initially, NSE

started with Currency Futures on US Dollars to Indian Rupees (USD-INR) pair in 2008. Therefore, these can be said to be of a relatively recent origin for India. The exchange-traded derivatives were aimed at providing a transparent and cost effective hedging alternative especially for the small and medium sized players. The aim of this research is to see if the objective of providing a cost effective alternative, in the form of exchange-traded currency derivatives, has been achieved. The review of extant research/ literature does not yield specific studies carried out to evaluate the cost of Currency Forwards versus Currency Futures and Options in India. Thereby, it identifies a research gap. A comparison of OTC and exchange-traded products may provide pointers to business entities regarding the use of exchange-traded derivatives for hedging foreign currency risk. It is pertinent to note that much of hedging is apparently still done through Forwards (OTC contract) in the currency market. The turnover in the Futures and Options segment has increased over the years, but is still only a small percentage of currency derivatives market turnover. An illustration is offered below from international trading, in the absence of relevant information from India.

The Triennial Central Bank Survey of foreign exchange and OTC derivatives markets in 2016 done by Bank for International Settlements (BIS) provides the data on average daily turnover in the foreign exchange market. The April 2016 data are presented in Table1.

Table 1
OTC Foreign Exchange Turnover, Net-Net Basis[1] Daily Averages in April, In Billions of US Dollars

Instrument	2001	2004	2007	2010	2013	2016
Foreign exchange instruments	1,239	1,934	3,324	3,973	5,357	5,067
Spot transactions	386	631	1,005	1,489	2,047	1,652
Outright forwards	130	209	362	475	679	700
Foreign exchange swaps	656	954	1,714	1,759	2,240	2,378
Currency swaps	7	21	31	43	54	82
Options and other products[2]	60	119	212	207	337	254
Memo:						
Turnover at April 2016 exchange rates[3]	1,381	1,884	3,123	3,667	4,917	5,067
Exchange-traded	12	25	77	145	145	115

derivatives[4]

1 Adjusted for local and cross-border inter-dealer double-counting (i.e. "net-net" basis). 2 The category "other FX products" covers highly leveraged transactions and/or trades whose notional amount is variable and where decomposition into individual plain vanilla components was impractical or impossible. 3 Non-US dollar legs of foreign currency transactions were converted into original currency amounts at average exchange rates for April of each survey year and then reconverted into US dollar amounts at average April 2016 exchange rates. 4 Sources: Euromoney Trade data; Futures Industry Association; The Options Clearing Corporation; BIS derivatives statistics. Foreign exchange futures and options traded worldwide.
(Source: www.bis.org)

Table 1 highlight's that the exchange-traded derivatives account for a small percentage (2.2%) of the total foreign exchange turnover. Turnover in Forwards are almost six times that of exchange traded derivatives. However the turnover of exchange traded derivatives is rising and has grown at 16.26% (CAGR) from 2001 through 2016.

4. Methodology

The study is based on primary as well as secondary data. The primary data on Forward rates have been collected from an importer, an exporter and a private bank. The secondary data on Futures and Options on currencies were collected from NSE's website (www.nseindia.com). The data on spot rates were collected from www.xe.com . Literature on currency derivatives was also reviewed to assess the extent of work done on the topic and consequently, the research gap was identified. The data are being analyzed and with appropriate statistical techniques that include a paired t-test.

5. Scheme of the study

The study will be presented in the following chapters**:**

1. Introduction
2. Review of Literature
3. Research Methodology
4. Data Analysis
5. Findings, Conclusions, and Recommendations.

6. Limitations of the study and Directions for Future Research

The first chapter will introduce the research topic. The second chapter will review the extant work done in the area of currency derivatives. It will review studies that have been conducted to compare the hedging effectiveness of Currency Forwards with Currency Futures and Options (both exchange-traded) in order to establish the research gap. As a corollary, the research objectives will be spelt out.

The third chapter will dwell on the methodology adopted for the research. It will cover details on the exchange rates actually realized under the Forward hedge, or calculated for the notional Futures hedge and Option hedge. The method adopted for estimating the cost of financing the margin for exchange-traded currency derivatives viz., Futures and Options, will be dealt with in this chapter. It will also state and justify the assumptions made for arriving at the exchange rates under notional Futures and Option hedges. Due care will be taken so that the assumptions reflect real-world conditions as closely as possible. The chapter culminates with a definition of the hypotheses to be tested.

The fourth chapter will deal with analysis of the data. The differences in the means of the exchange rates arrived at by structuring a notional Futures hedge and an Options hedge with the actual under a Forward hedge, will be used to gauge the effectiveness of foreign currency hedging with exchange-traded products. The hypotheses would be tested using paired t-test. One-tailed test will be used as the hypotheses are directional.

The fifth chapter, based on the analysis of the data, will record the findings and conclusions. Finally, the sixth chapter will cover the recommendations emerging from the study and directions for future research.

REFERENCES

Copeland, T.& Yash Joshi (1996), "Why derivatives don't reduce FX risk", *Mckinsey Quarterly 1996 Number 1, 1996, pg. 66-79*

Geczy, C., Minton, B., Schrand, C. (1997), "Why Firms use Currency Derivatives", *Journal of Finance* 54(4): 1323 -1354

Sharma, S. (2011), "An empirical analysis of the relationship between currency futures and exchange rates volatility in India", *RBI Working Paper Series – WPS (DEPR) : 1/2011*

Ephraim, Clark, Salma,M. (2010), "Foreign Currency Derivatives Use, Firm Value and Effect of Exposure Profile: Evidence from France", *International Journal of Business, 15(2), 2010*

LeGraw, C. (Apr 2015), "The Case for Not Currency Hedging Foreign Equity Investments: A U.S. Investor's Perspective", *GMO White Paper*

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