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FOREIGN EXCHANGE DERIVATIVES TRADING SCENARIO: A NEW PARADIGM IN THE ERA OF CURRENCY

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ABSTRACT

In India, the economic liberalization in the early nineties provided the economic rationale for the introduction of FX derivatives. Business houses started actively approaching foreign markets not only with their products but also as a source of capital and direct investment opportunities. With limited convertibility on the trade account being introduced in 1993, the environment became even more conducive for the introduction of these hedge products. Hence, the development in the Indian forex derivatives market should be seen along with the steps taken to gradually reform the Indian financial markets. As these steps were largely instrumental in the integration of the Indian financial markets with the global markets. The present study encompasses with evaluation and essential development of foreign exchange derivatives, FX derivative products, its trading scenario.

KEYWORDS

Foreign Currency Swaps, Foreign Exchange, Rupee forwards, Rupee currency options, Trading of FE Derivatives.

INTRODUCTION

Instruments traded in the financial markets are getting more and more complex. This leads to more complex derivative structures that are harder to analyze and risk managed. These instruments cannot be traded or managed without the relevant systems and numerical techniques. The global economy is becoming more and more interlinked with trading between countries skyrocketing. Due to the world trade, foreign exchange forwards, futures, options and exotics are becoming increasingly common place in today's capital markets.

Globally, operations in the foreign exchange market started in a major way after the breakdown of the Bretton Woods system in 1971, which also marked the beginning of floating exchange rate regimes in several countries. Over the years, the foreign exchange market has emerged as the largest market in the world. The decade of the 1990s witnessed a perceptible policy shift in many emerging markets towards reorientation of their financial markets in terms of new products and instruments, development of institutional and market infrastructure and realignment of regulatory structure consistent with the liberalized operational framework. The changing contours were mirrored in a rapid expansion of foreign exchange market in terms of participants, transaction volumes, decline in transaction costs and more efficient mechanisms of risk transfer.

The gradual liberalization of Indian economy has resulted in substantial inflow of foreign capital into India. Simultaneously dismantling of trade barriers has also facilitated the integration of domestic economy with world economy. With the globalization of trade and relatively free movement of financial assets, risk management through derivatives products has become a necessity in India also, like in other developed and developing countries. As Indian businesses become more global in their approach, evolution of a broad based, active and liquid forex derivatives markets is required to provide them with a spectrum of hedging products for effectively managing their foreign exchange exposures.

The global market for derivatives has grown substantially in the recent past. This tremendous growth in global derivative markets can be attributed to a number of factors. They reallocate risk among financial market participants, help to make financial markets more complete, and provide valuable information to investors about economic fundamentals. Derivatives also provide an important function of efficient price discovery and make unbundling of risk easier.

The picture of derivatives markets in EMEs that one gets from the existing literature is highly fragmented. Most evidence is limited to individual countries, types of derivatives or specific episodes of market development. One reason for this fragmentation is the lack of a unified database; another is the lack of familiarity with existing data sources. This article represents a first attempt to review derivatives markets in emerging market economies (EMEs) on a comprehensive basis.

THE ESSENCE OF DEVELOPING FOREIGN EXCHANGE DERIVATIVES

Forex derivatives surfaced as a contentious issue for Indian corporates and banks two years ago and have grown more menacing with each passing day. In certain extreme cases, the companies involved have even had to shut down, leading to a highly chaotic environment. Section 45 U(a) of the Reserve Bank of India Act defines "derivative" as "an instrument to be settled at a future date, whose value is derived from change in interest rate, foreign exchange rate, credit rating or credit index, price of securities (also called "underlying"), or a combination of more than one of them and includes interest rate swaps, forward rate agreements, foreign currency swaps, foreign currency-rupee swaps, foreign currency options, foreign currency-rupee options or such other instruments as may be specified by the bank from time to time." A foreign exchange derivatives contract means a financial transaction or an arrangement in whatever form and by whatever name called, whose value is derived from price movement in one or more underlying assets, and includes a transaction which involves at least one foreign currency other than the currency of Nepal or Bhutan. It is pertinent to note here the relationship between the forex and forex derivatives in order to understand the implications of the two.

The genesis of the problem, to my understanding, stems from the steep movement of the dollar vis-a-vis the rupee in a short time span it fell to as low as Rs 39 per dollar and shot up to Rs 52 in less than a year's time. During 2007, companies entered into derivative structures to reduce their interest costs and to protect their top lines by safeguarding export receipts. Many companies had gone for dollar loans also, as all export-oriented firms have foreign exchange exposure. The appreciation of the rupee eroded the revenues and profits of exporters as they made fewer rupees for every dollar earned abroad. On the other hand, they had to service the dollar loans, on which they incurred a higher interest outflow.

To offset the losses due to the rupee appreciation, corporates entered into derivatives trade. One popular option was a currency swap in the Japanese yen or the Swiss franc, with embedded option protection. The deal was structured in such a way that the option protection knocked out (disappeared) if the dollar depreciated beyond a point against the franc/yen. The choice of Japanese yen or the Swiss franc was natural since these were considered the most stable currencies against the dollar. In the last 25 years, for instance, the Swiss franc has never moved below 1.11 to the dollar and hence corporates hedged the swap by buying options where the knock-out will get activated if the Swiss franc moved below 1.10 to a dollar. Corporates made money on these positions last fiscal, boosting their other income and profits. The problem began when the dollar began to depreciate against all currencies, including the yen and the franc.

The US dollar depreciated nearly 35% when compared to the euro, Japanese yen and Canadian dollar. While it depreciated more than 40% against the Australian and New Zealand Dollar in these 7-8 years. Even against the South African rand and Swiss franc, it fell 40%. Further, in-depth analysis of dollar when compared with other global currencies on a longer time span of over 7-8 years shows how the US dollar has depreciated up to 42% as compared with other currencies, whereas in India it has depreciated only around 5%. It is here that the clue lies as to how the participants in the derivatives trade got trapped, based on the historical movement of the dollar over a seven-year time period.

The Indian forex derivatives market is still in its infancy, though the growth potential is huge. The development of a vibrant forex derivatives market in the country would critically depend on the growth in the underlying spot/ forward markets, growth in the rupee derivative markets along with the evolution of a supporting regulatory structure. Factors such as market liquidity, investor behavior, regulatory structure and tax laws will have a heavy bearing on the behavior of market variables. Increasing convertibility on the capital account would accelerate the process of integration of Indian financial markets with international markets.

Introduction of derivative products tailored to specific corporate requirements would enable corporates to completely focus on their core businesses and de-risk the currency and interest rate risks while allowing them to gain despite any upheaval in the financial markets. Increasing convertibility on the rupee and regulatory impetus for new products should see a host of innovative products and structures, tailored to business needs. The possibilities are many and include INR options, currency futures, exotic options, rupee forward rate agreements, both rupee and cross currency swap options, as well as structures composed of the above to address business needs as well as create real options. In order to develop this critical market, it is important to see how effectively we can address the present issue plaguing the Indian corporate and banking sector. If we can address these issues, these forex derivative instruments can truly achieve their intended purpose acting as insurance for hedging purposes by the Indian corporate world.

EVOLUTION OF INDIAN FOREIGN EXCHANGE MARKET

EARLY STAGES: 1947-1977

The evolution of India's foreign exchange market may be viewed in line with the shifts in India's exchange rate policies over the last few decades from a par value system to a basket-peg and further to a managed float exchange rate system. During the period from 1947 to 1971, India followed the par value system of exchange rate. Initially the rupee's external par value was fixed at 4.15 grains of fine gold. The Reserve Bank maintained the par value of the rupee within the permitted margin of ± 1 per cent using pound sterling as the intervention currency. Since the sterling-dollar exchange rate was kept stable by the US monetary authority, the exchange rates of rupee in terms of gold as well as the dollar and other currencies were indirectly kept stable. The devaluation of rupee in September 1949 and June 1966 in terms of gold resulted in the reduction of the par value of rupee in terms of gold to 2.88 and 1.83 grains of fine gold, respectively. The exchange rate of the rupee remained unchanged between 1966 and 1971.

With the breakdown of the Bretton Woods System in 1971 and the floatation of major currencies, the conduct of exchange rate policy posed a serious challenge to all central banks world wide as currency fluctuations opened up tremendous opportunities for market players to trade in currencies in a borderless market. In December 1971, the rupee was linked with pound sterling. Since sterling was fixed in terms of US dollar under the Smithsonian Agreement of 1971, the rupee also remained stable against dollar. In order to overcome the weaknesses associated with a single currency peg and to ensure stability of the exchange rate, the rupee, with effect from September 1975, was pegged to a basket of currencies. The currency selection and weights assigned were left to the discretion of the Reserve Bank. The currencies included in the basket as well as their relative weights were kept confidential in order to discourage speculation. It was around this time that banks in India became interested in trading in foreign exchange.

FORMATIVE PERIOD: 1978-1992

The impetus to trading in the foreign exchange market in India came in 1978 when banks in India were allowed by the Reserve Bank to undertake intra-day trading in foreign exchange and were required to comply with the stipulation of maintaining 'square' or 'near square' position only at the close of business hours each day. The extent of position which could be left uncovered overnight (the open position) as well as the limits up to which dealers could trade during the day was to be decided by the management of banks. The exchange rate of the rupee during this period was officially determined by the Reserve Bank in terms of a weighted basket of currencies of India's major trading partners and the exchange rate regime was characterised by daily announcement by the Reserve Bank of its buying and selling rates to the Authorized Dealers (ADs) for undertaking merchant transactions. The spread between the buying and the selling rates was 0.5 per cent and the market began to trade actively within this range. ADs were also permitted to trade in cross currencies (one convertible foreign currency *versus* another). However, no 'position' in this regard could originate in overseas markets.

By the late 1980s and the early 1990s, it was recognised that both macroeconomic policy and structural factors had contributed to balance of payments difficulties. Devaluations by India's competitors had aggravated the situation. Although exports had recorded a higher growth during the second half of the 1980s (from about 4.3 per cent of GDP in 1987-88 to about 5.8 per cent of GDP in 1990-91), trade imbalances persisted at around 3 per cent of GDP. This combined with a precipitous fall in invisible receipts in the form of private remittances, travel and tourism earnings in the year 1990-91 led to further widening of current account deficit. The weaknesses in the external sector were accentuated by the Gulf crisis of 1990-91. As a result, the current account deficit widened to 3.2 per cent of GDP in 1990-91 and the capital flows also dried up necessitating the adoption of exceptional corrective steps. It was against this backdrop that India embarked on stabilisation and structural reforms in the early 1990s.

POST-REFORM PERIOD: 1992 ONWARDS

This phase was marked by wide ranging reform measures aimed at widening and deepening the foreign exchange market and liberalization of exchange control regimes. A credible macroeconomic, structural and stabilisation programme encompassing trade, industry, foreign investment, exchange rate, public finance and the financial sector was put in place creating an environment conducive for the expansion of trade and investment. It was recognised that trade policies, exchange rate policies and industrial policies should form part of an integrated policy framework to improve the overall productivity, competitiveness and efficiency of the economic system, in general, and the external sector, in particular.

In addition, several initiatives aimed at dismantling controls and providing an enabling environment to all entities engaged in foreign exchange transactions have been undertaken since the mid-1990s. The focus has been on developing the institutional framework and increasing the instruments for effective functioning, enhancing transparency and liberalizing the conduct of foreign exchange business so as to move away from micro management of foreign exchange transactions to macro management of foreign exchange flows. An Internal Technical Group on the Foreign Exchange Markets (2005) set up by the Reserve Bank made various recommendations for further liberalization of the extant regulations. Some of the recommendations such as freedom to cancel and rebook forward contracts of any tenor, delegation of powers to ADs for grant of permission to corporates to hedge their exposure to commodity price risk in the international commodity exchanges/markets and extension of the trading hours of the inter-bank foreign exchange market have since been implemented.

Along with these specific measures aimed at developing the foreign exchange market, measures towards liberalizing the capital account were also implemented during the last decade, guided to a large extent since 1997 by the Report of the Committee on Capital Account Convertibility. Various reform measures since the early 1990s have had a profound effect on the market structure, depth, liquidity and efficiency of the Indian foreign exchange market.

FOREIGN EXCHANGE DERIVATIVE PRODUCTS

Derivatives play a crucial role in developing the foreign exchange market as they enable market players to hedge against underlying exposures and shape the overall risk profile of participants in the market. Banks in India have been increasingly using derivatives for managing risks and have also been offering these products to corporates. In India, various informal forms of derivatives contracts have existed for a long time though the formal introduction of a variety of instruments in the foreign exchange derivatives market started only in the post-reform period, especially since the mid-1990s. Cross- currency derivatives with the rupee as one leg were introduced with some restrictions in April 1997. Rupee-foreign exchange options were allowed in July 2003. The foreign exchange derivative products that are now available in Indian financial markets can be grouped into three broad segments, *viz.*, forwards, options (foreign currency rupee options and cross currency options) and currency swaps (foreign currency rupee swaps and cross currency swaps)

1. FOREIGN EXCHANGE FORWARDS

Authorized Dealers (ADs) are permitted to issue forward contracts to persons resident in India with crystallized foreign currency/foreign interest rate exposure and based on past performance/actual import-export turnover, as permitted by the Reserve Bank and to persons resident outside India with genuine currency exposure to the rupee, as permitted by the Reserve Bank. The residents in India generally hedge crystallized foreign currency/foreign interest rate exposure or transform exposure from one currency to another permitted currency. Residents outside India enter into such contracts to hedge or transform permitted foreign currency exposure to the rupee, as permitted by the Reserve Bank.

2. OPTIONS

A. Foreign currency rupee options

ADs approved by the Reserve Bank and ADs (Category-I) who are not market makers are allowed to sell foreign currency rupee options to their customers on a back-to-back basis, provided they have a capital to riskweighted assets ratio (CRAR) of 9 per cent or above. These options are used by customers who have genuine foreign currency exposures, as permitted by the Reserve Bank and by ADs for the purpose of hedging trading books and balance sheet exposures.

Corporates in India can use instruments such as forwards, swaps and options for hedging cross-currency exposures. However, for hedging the USD-INR risk, corporates are restricted to the use of forwards and USDINR swaps. Introduction of USD-INR options would enable Indian forex market participants manage their exposures better by hedging the dollar-rupee risk. The advantages of currency options in dollar rupee would be as follows:

- i. Hedge for currency exposures to protect the downside while retaining the upside, by paying a premium upfront. This would be a big advantage for importers, exporters (of both goods and services) as well as businesses with exposures to international prices. Currency options would enable Indian industry and businesses to compete better in the international markets by hedging currency risk.
- ii. Non-linear payoff of the product enables its use as hedge for various special cases and possible exposures. e.g. If an Indian company is bidding for an international assignment where the bid quote would be in dollars but the costs would be in rupees, then the company runs a risk till the contract is awarded. Using forwards or currency swaps would create the reverse positions if the company is not allotted the contract, but the use of an option contract in this case would freeze the liability only to the option premium paid upfront.
- iii. The nature of the instrument again makes its use possible as a hedge against uncertainty of the cash flows. Option structures can be used to hedge the volatility along with the non-linear nature of payoffs.
- iv. Attract further forex investments due to the availability of another mechanism for hedging forex risk. Hence, introduction of USD-INR options would complete the spectrum of derivative products available to hedge INR currency risk.

B. Cross-currency options

The Reserve Bank of India has permitted authorized dealers to offer cross currency options to the corporate clients and other interbank counter parties to hedge their foreign currency exposures. Before the introduction of these options the corporates were permitted to hedge their foreign currency exposures only through forwards and swaps route. Forwards and swaps do remove the uncertainty by hedging the exposure but they also result in the elimination of potential extraordinary gains from the currency position. Currency options provide a way of availing of the upside from any currency exposure while being protected from the downside for the payment of an upfront premium. These contracts were allowed with the following conditions:

- These currency options can be used as a hedge for foreign currency loans provided that the option does not involve rupee and the face value does not exceed the outstanding amount of the loan, and the maturity of the contract does not exceed the un-expired maturity of the underlying loan.
- Such contracts are allowed to be freely re-booked and cancelled. Any premia payable on account of such transactions does not require RBI approval.
- Cost reduction strategies like range forwards can be used as long as there is no net inflow of premia to the customer.
- Banks can also purchase call or put options to hedge their cross currency proprietary trading positions. But banks are also required to fulfill the condition that no 'stand alone' transactions are initiated.
- If a hedge becomes naked in part or full owing to shrinking of the portfolio, it may be allowed to continue till the original maturity and should be marked to market at regular intervals.

There is still restricted activity in this market but we may witness increasing activity in cross currency options as the corporates start understanding this product better.

3. CURRENCY SWAPS:

A. Foreign Currency Rupee Swap

A person resident in India who has a long-term foreign currency or rupee liability is permitted to enter into such a swap transaction with ADs (Category-I) to hedge or transform exposure in foreign currency/foreign interest rate to rupee/rupee interest rate.

B. Cross-Currency Swaps

Entities with borrowings in foreign currency under external commercial borrowing (ECB) are permitted to use cross currency swaps for transformation of and/or hedging foreign currency and interest rate risks. Use of this product in a structured product not conforming to the specific purposes is not permitted.

Available data indicate that the most widely used derivative instruments are the forwards and foreign exchange swaps (rupee-dollar). Options have also been in use in the market for the last four years. However, their volumes are not significant and bid offer spreads are quite wide, indicating that the market is relatively illiquid. Another major factor hindering the development of the options market is that corporates are not permitted to write/sell options. If corporates with underlying exposures are permitted to write/sell covered options, this would lead to increase in market volume and liquidity. Further, very few banks are market makers in this product and many deals are done on a back to back basis. For the product to reach the farther segment of corporates such as small and medium enterprises (SME) sector, it is imperative that public sector banks develop the necessary infrastructure and expertise to transact in options. In view of the growing complexity, diversity and volume of derivatives used by banks, an Internal Group was constituted by the Reserve Bank to review the existing guidelines on derivatives and formulate comprehensive guidelines on derivatives for banks.

With regard to forward contracts and swaps, which are relatively more popular instruments in the Indian derivatives market, cancellation and rebooking of forward contracts and swaps in India have been regulated. Gradually, however, the Reserve Bank has been taking measures towards eliminating such regulations. The objective has been to ensure that excessive cancellation and rebooking do not add to the volatility of the rupee. At present, exposures arising on account of swaps, enabling a corporate to move from rupee to foreign currency liability (derived exposures), are not permitted to be hedged. While the market participants have preferred such a hedging facility, it is generally believed that equating derived exposure in foreign currency with actual borrowing in foreign currency would tantamount to violation of the basic premise for accessing the forward foreign exchange market in India, i.e., having an underlying foreign exchange exposure.

TRADING OF FOREIGN EXCHANGE DERIVATIVES

Turnover of derivatives has grown more rapidly in emerging markets than in developed countries. Foreign exchange derivatives are the most commonly traded of all risk categories, with increasingly frequent turnover in emerging market currencies and a growing share of cross-border transactions. As the global reach of the financial centres in emerging Asia has expanded, the offshore trading of many emerging market currency derivatives has risen as well. Growth in derivatives turnover is positively related to trade, financial activity and per capita income.

A. THE SIZE AND STRUCTURE OF DERIVATIVES MARKETS IN EMES

Derivatives markets in EMEs remain small compared to those in advanced economies. Average daily turnover of derivatives in 33 Emerging Markets Economies (EMEs) for which data are available was \$1.2 trillion in April 2010 (6.2% of those economies' GDP), compared to \$13.8 trillion (36% of GDP) in advanced economies. Though small, derivatives markets in EMEs have expanded rapidly: average daily turnover has increased by 300% since 2001, and by 25% over the past three years, despite the crisis in 2008–09. This was higher than the growth of turnover in advanced economies (250% since 2001, and 22% since 2007).

OTC derivatives are relatively more important in emerging markets than in advanced economies. In EMEs, derivatives are traded in almost equal proportions over the counter and on exchanges. By comparison, in advanced economies almost two thirds of derivatives are traded on exchanges and 38% over the counter. Furthermore, the relative size of the exchange-traded derivatives market is distorted by two special cases with well developed derivatives exchanges, Brazil and Korea, which together account for nearly 90% of all emerging market turnover of exchange-traded derivatives.

Derivatives in EMEs are used mainly to hedge or speculate on exchange rate and, to a lesser extent, equity market risk. FX derivatives account for 50% of total turnover in emerging markets, equity-linked derivatives for 30% and interest rate derivatives for the rest. By contrast, derivatives in advanced economies are used by and large to trade interest rate risk (77% of total turnover), with FX derivatives and in particular equity-linked derivatives being less important. These differences reflect above all the depth and liquidity of bond and money markets in developed countries, and the relatively limited concern with exchange rate risk in advanced compared to emerging market economies.

B. OTC DERIVATIVES MARKETS

Over-the-counter derivatives represent the most developed segment of the derivatives market in EMEs. The average daily turnover of OTC derivatives in April 2010 was \$625 billion, or roughly 3% of EMEs' (annual) GDP. The OTC market in EMEs is dominated by FX derivatives, which account for nearly 90% of total turnover, versus 50% in advanced economies. Despite these differences, trading of OTC derivatives in EMEs has converged towards advanced economy patterns in terms of instruments, counterparties and currencies being traded.

C. OTC FOREIGN EXCHANGE DERIVATIVES

The turnover of OTC foreign exchange derivatives in EMEs – \$535 billion per day in April 2010 (Table 1) – increased 24% between 2007 and 2010. This represents a slowdown compared to the previous three-year period, when turnover almost doubled, but was much faster than the growth in advanced economies (just 5.6%). No doubt the recent financial crisis has taken some of the shine off the use of OTC foreign currency derivatives in advanced economies, particularly FX swap markets, where growth over the entire three-year period was only 0.3%. At the same time, the financial crisis had a relatively small impact on FX derivatives markets in emerging market economies. In terms of FX instruments, the OTC markets in EMEs have already converged to the advanced economies' pattern. In both groups of countries, FX swaps comprise the lion's share of turnover (over 70%), followed by outright forwards (19%), options and currency swaps (Table 2). The relative size of FX spot and derivatives markets has also converged. The ratio of FX derivatives to spot transactions increased in EMEs to 1.9 in 2010 (Table 2), continuing the steady rise evident since 1998. Meanwhile, the ratio of derivatives to spot transactions in advanced economies declined to 1.6 in 2010.

Turning to the question of who is trading derivatives in emerging markets, we see that trades with other financial institutions such as pension funds and hedge funds – increased the most, to 30% of total turnover in 2010 (Table 2). At the same time, the shares of trade with other reporting dealers (usually commercial and investment banks) and non-financial customers declined to 58% and 12%, respectively. The shift towards trading with financial customers represents the resumption of a trend that started in 1998, when the share of this counterparty type was as low as 15%. The trend is present across all foreign exchange instruments, especially the three largest categories. Increased dealing with other financial institutions (to nearly 50% of total turnover) can also be seen in developed countries.

TABLE 1: GEOGRAPHICAL DISTRIBUTION OF OTC FOREIGN EXCHANGE DERIVATIVES TURNOVER¹ (Daily averages in April)

	In billions of US dollars			Percentage share ²
	2004	2007	2010	2010
Total emerging market economies	222	430	535	100
<i>Total advanced economies</i>	1,546	2,546	2,689	503
Asia	184	354	442	83
Hong Kong SAR	70	143	194	36
Singapore	91	153	175	33
China	...	1	11	2
India	3	24	14	3
Korea	10	18	25	5
Other	9	16	22	4
Latin America	7	14	21	4
Brazil	1	1	5	1
Mexico	5	11	12	2
Other	1	3	4	1
Central and eastern Europe	19	43	50	9
Poland	5	7	6	1
Russia	6	16	19	4
Turkey	2	3	11	2
Other	6	17	13	2
Other emerging market economies	12	19	22	4
South Africa	8	12	2	2
Other	4	8		

¹ Outright forwards, FX swaps, currency swaps, currency options and other FX products. 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. Adjusted for local inter-dealer double-counting (i.e. "net gross" basis). ² As a percentage of total emerging market economies.

Source: Triennial Central Bank Survey.

TABLE 2: FOREIGN EXCHANGE DERIVATIVES TURNOVER BY INSTRUMENT, COUNTERPARTY & LOCATION (Daily averages in April, in billions of US dollars and percentages)

	Emerging market economies				Advanced economies	
	2004	2007	2010	% Share	2010	% share
OTCFXderivatives²	159	299	380	100	2,110	100
Outrightforwards ³	21	47	73	19	402	19
FXswaps ³	125	231	277	73	1,488	71
Currency swaps	3	4	7	2	36	2
Currencyoptionsandothers ⁴	10	18	24	6	184	9
With reporting dealers	91	184	221	58	809	38
With other financial institutions	44	70	115	30	1,029	49
With non-financial customers	20	45	44	12	271	13
Local	61	108	127	33	700	33
Cross-border	94	191	254	67	1,410	67
<i>Memo: Spot transactions³</i>	<i>119</i>	<i>188</i>	<i>203</i>	<i>100</i>	<i>1,287</i>	<i>100</i>
Local	52	84	84	42	484	38
Cross-border	67	104	119	58	803	62
<i>Derivatives/spot ratio⁵</i>		<i>1.3</i>	<i>1.6</i>	<i>1.9</i>	<i>1.6</i>	<i>-</i>

¹ Adjusted for local and cross-border inter-dealer double-counting (ie "net-net" basis). ² Due to incomplete reporting, components do not always add up to totals. ³ Previously classified as part of the so-called traditional FX market. ⁴ The category "other FX products" covers highly leveraged transactions and/or trades whose notional amount is variable and where a decomposition into individual plain vanilla components was impractical or impossible. ⁵ Ratio of foreign exchange derivatives to spot transactions.

Source: Triennial Central Bank Survey.

D. CURRENCY COMPOSITION OF OTC DERIVATIVES IN EMERGING MARKETS:

According to the 2010 Triennial, the US dollar remains the pre-eminent global currency in OTC derivatives markets of EMEs. In the FX derivatives markets, the dollar was one of the currencies in more than 95% of transactions in 2010 (Table 3). This fraction was virtually unchanged from the 2007 survey, thus confirming the dollar's ongoing status as the leading currency for international financial transactions, paralleling its continued leading role in critical areas of international trade and finance (Goldberg (2010)). Even for the currencies of central and eastern European countries, which have strong economic linkages with the euro area, the dollar is the cross-currency for FX derivatives transactions more frequently than the euro. It is also striking that the dominance of the US dollar is much greater in emerging market venues than elsewhere – worldwide, 85% of the transactions are dollar-denominated.

TABLE 3: OTC FOREIGN EXCHANGE DERIVATIVES TURNOVER BY CURRENCY (Daily averages in April, percentage shares)

	2004	2007	2010
US dollar	95.5	95.2	94.7
Euro	19.3	15.1	15.8
Japanese yen	16.6	14.0	9.7
Australian dollar	7.5	5.7	8.0
Pound sterling	7.9	6.7	4.3
Swiss franc	1.5	2.4	1.2
Hong Kong dollar	12.4	17.3	15.9
Korean won	6.3	6.2	8.3
Singapore dollar	4.9	6.2	6.7
Chinese renminbi	0.4	1.6	4.8
Indian rupee	2.0	4.5	4.4
Russian rouble	1.1	2.0	2.6
Mexican peso	1.9	2.7	1.8
South African rand	3.1	2.2	1.6
Brazilian real	0.7	0.2	1.0
Polish zloty	1.7	1.2	0.9
Emerging market currencies	43.5	55.0	60.4

¹ Outright forwards, FX swaps, currency swaps, currency options and other FX products. Because two currencies are involved in each transaction, the sum of the percentage shares of individual currencies totals 200% instead of 100%. Because not all of the currencies are listed in the table, the total of the listed percentage shares is less than 200%. Adjusted for local and cross-border inter-dealer double-counting (ie "net-net" basis).

Source: Triennial Central Bank Survey.

Another interesting development is that emerging market currencies gained share in EMEs' FX derivatives trading. The percentage of transactions in EMEs involving emerging market currencies on one side increased to 60% in 2010 from 55% in 2007 (out of a potential 200%). By contrast, the turnover of global reserve currencies other than the US dollar such as the euro, yen, pound sterling and Swiss franc – generally declined in relative terms in 2010. In particular, the share of the Swiss franc halved, probably reflecting the unwinding of derivatives positions which had hedged Swiss franc loans made in emerging Europe before the crisis. The Australian dollar was an exception among advanced economy currencies, as its share in total turnover in EMEs increased to around 8%, which is quite similar to its share in advanced economies. This undoubtedly reflected Australia's position as a major supplier of commodity exports to much of emerging Asia.

Within interest rate derivatives turnover, the US dollar also plays an important, though not quite as dominant, role, constituting nearly 20% of all turnover in emerging markets. However, the dollar's share is much higher than that of currencies of other major advanced economies – for instance, the share of euro interest rate derivatives turnover stands at just 8%. Interest rate derivatives in emerging markets are distinguished by the outsized growth of turnover in the Korean won, which in 2010 constituted more than one quarter of all turnover of interest rate derivatives in emerging markets.

CONCLUSION

The Indian forex derivatives market is still in a nascent stage of development but offers tremendous growth potential. The development of a vibrant forex derivatives market in India would critically depend on the growth in the underlying spot/forward markets, growth in the rupee derivative markets along with the evolution of a supporting regulatory structure. Factors such as market liquidity, investor behavior, regulatory structure and tax laws will have a heavy bearing on the behavior of market variables in this market.

Increasing convertibility on the capital account would accelerate the process of integration of Indian financial markets with international markets. Some of the necessary preconditions to this as suggested by the Tarapore committee report are already being met. Increasing convertibility does carry the risk of removing the insularity of the Indian markets to external shocks like the South East Asian crisis, but a proper management of the transition should speed up the growth of

the financial markets and the economy. Introduction of derivative products tailored to specific corporate requirements would enable corporate to completely focus on its core businesses, de-risking the currency and interest rate risks while allowing it to gain despite any upheavals in the financial markets.

Increasing convertibility on the rupee and regulatory impetus for new products should see a host of innovative products and structures, tailored to business needs. The possibilities are many and include INR options, currency futures, exotic options, rupee forward rate agreements, both rupee and cross currency swaptions, as well as structures composed of the above to address business needs as well as create real options. A further development in the derivatives market could also see derivative products linked to commodities, weather, etc which would add great value in an economy where a substantial section is still agrarian and dependent on the vagaries of the monsoon.

The growth of derivatives turnover in emerging markets remains more rapid than in advanced economies. The largest emerging market derivatives markets are now located in Korea, Brazil and the two Asian financial centres of Hong Kong and Singapore. About half of the derivatives turnover in emerging markets occurs over the counter, compared to one third in advanced economies. FX derivatives are by far the most commonly traded. Growth of FX derivatives turnover appears to be positively related to trade, financial activity and per capita GDP.

Derivatives turnover in emerging markets is becoming more and more global. Not only is an increasing share of emerging market transactions cross border as opposed to domestic, but the two large financial centres of emerging Asia continue to grow in importance as home to an increasingly large share of OTC derivatives trades not involving the local currency.

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