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December 2025

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Abstract

Reducing borrowing costs for emerging markets (EMs) is a challenge. The additional country risk premia that foreign investors seek are primarily driven by a fear of unexpected currency depreciation; which often does not take place. It follows there are positive excess returns from EM assets. We find while the interest rate differential (IRD) is near-zero for advanced economies, it is always positive for EMs. Excess exchange rate volatility is often due to global and not domestic factors, so that a pure float aggravates instead of mitigating shocks. Lower exchange rate volatility, risk and risk-perceptions can reduce EM IRDs. A suitable exchange rate regime and domestic as well as international prudential regulation on cross-border capital flows can lower volatility. Different phases of India's flexible float illustrate these issues well.

Keywords: Exchange rate volatility; emerging markets; advanced economies; interest rate differentials; excess returns; global shocks; policies

JEL Code: F31, F41, E65

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Exchange Rate Volatility and its Impact on Borrowing Costs

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Reducing borrowing costs for emerging markets (EMs) is a challenge. The additional country risk premia that foreign investors seek are primarily driven by a fear of unexpected currency depreciation; which often does not take place. It follows there are positive excess returns from EM assets. We find while the interest rate differential (IRD) is near-zero for advanced economies, it is always positive for EMs. Excess exchange rate volatility is often due to global and not domestic factors, so that a pure float aggravates instead of mitigating shocks. Lower exchange rate volatility, risk and risk-perceptions can reduce EM IRDs. A suitable exchange rate regime and domestic as well as international prudential regulation on cross-border capital flows can lower volatility. Different phases of India's flexible float illustrate these issues well.

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1. Introduction

Many emerging markets (EMs) moved to flexible exchange rates and inflation targeting in the 1990s as cross-border capital flows from advanced economies (AEs) rose with liberalizing reform. Under inflation targeting (IT), the exchange rate is supposed to float in response to capital flows, as this frees monetary policy to target interest rates for domestic inflation. Under canonical (IT), policy responds to exchange rate fluctuations only after they affect inflation or output, so domestic interest rates need not rise immediately. However, as there is a short lag from excess depreciation in EMs to inflation, policy rates often have to rise during periods of exchange rate pressure.

Floating exchange rates may even exacerbate booms and busts resulting from global shocks (Rajan, 2015, Rey 2013). Cumulative one-way movements and panics are possible. For example, outflows can further raise expected depreciation despite a rise in interest rates. This excess volatility in financial variables hurts the real sector. EMs had lower growth in the global crises-hit 2010s compared to the previous decade (Goyal et.al. 2021). Contrary to conventional macroeconomic theory, therefore, a floating exchange rate is not enough to shield the domestic economy from global spillovers and let policy rates target the domestic cycle.

Pragmatic EM central bankers understand this. In practice, they intervene as well as use other types of prudential policies, ignoring advice that is more relevant for AEs. Research shows FX intervention greatly enhances the efficacy of inflation targeting in EMs (Buffie, et. al). While nominal exchange rates must be flexible enough to adjust towards real equilibrium rates, excess volatility can lead to persistent real misalignment and therefore is better moderated.

Uncovered interest parity (UIP) gives the relationship between expected depreciation and the interest rate differential (IRD) for a country. Cross-currency arbitrage, under free capital flows and efficient markets, implies expected depreciation must cover higher interest rates. For example, if an AE interest rate rises, the currency jumps up immediately, so the interest rate gap is covered

by an expected depreciation. Since markets are not efficient, however, there are excess returns from the carry trade that involves borrowing in low interest rate and investing in high-interest rate countries. This is known as the "forward discount" anomaly, wherein high interest currencies show appreciation instead of the depreciation expected if the currency has over-appreciated. Carry is one source of excess inflows to EMs. Moreover, UIP need not work in the same way in EMs as in AEs (Alper et. al. 2009).

Research finds global risk-on and –off affect EM risk. Global interest rate shocks aggravate EM UIP premia on local-currency debt. UIP deviations of a group of 34 AE and EM currencies with respect to the US dollar were found to co-move with global risk perception (Das et. al., 2021, Kalemli-Özcan and Varela, 2021). Significant spillovers from AE policies affect not only capital flows and exchange rate volatility in EMs (Banerjee and Goyal, 2022) but also their borrowing costs (Kalemli-Özcan, 2019).

Use of survey data on exchange rate expectations and decomposition of the bias into risk premium and errors in exchange rate expectations shows the magnitude of expected depreciation is always high (Froot and Frankel, 1989), especially for EMs. This UIP risk raises EM IRD, even if the depreciation is only rarely observed in the data.

In covered interest rate parity (CIP) there is no uncertainty since it holds at a point in time. It requires that, for any two countries, the IRD should equal the gap between the spot and forward currency rates (the forward premium). Empirical literature on CIP, however, shows that unconventional AE policies have worsened CIP deviation. CIP held closely for three decades until the global financial crisis (GFC), after which CIP deviations went up significantly, as a result of the US dollar strength and FX liquidity conditions (Cerutti et.al. 2019).

Thus global investors charge an excess premium from EMs driven by expectations of exchange rate fluctuations due to domestic policy but also to global shocks.

This paper documents how surges and sudden stops in capital flows, often due to global risk-on and risk-off, contribute to higher exchange rate volatility in relatively thin EM FX markets. This raises country risk premia, interest rates and borrowing costs. Next, it studies changes in the structure of Indian FX intervention and shows it to be consistent with deepening FX markets. In periods when exchange rate volatility was successfully reduced despite external shocks borrowing costs fell. Potential supportive international policy measures are also briefly discussed.

1.1 Heterogeneity across EMs and AEs

Time series on major EMs and AEs is used to obtain the i) government bond yield differential over 3, 6, and 12 month horizons with respect to the US rates, ii) actual depreciation with respect to USD, and iii) forward premium (FP). CIP tells us that due to riskless arbitrage across currencies the IRD should equal the FP. Since UIP involves the expected exchange rate, the IRD covers expected depreciation plus a risk or UIP premium. Table 1 has the annual IRD, FP,[1] and depreciation for a few EMs from 2005 to 2025. Both the IRD and the FP substantially exceed actual depreciation. China has a positive IRD even though its currency appreciated on average in the period.

Tables 2 and 3 give monthly mean and standard deviation for three-month IRD and change in nominal exchange rates, Figures 1 and 2 show these time series for select EMs and AEs.[2] Two periods considered are, first, 2004 January to December 2022 and second, January 2023 to May 2025. For some EMs the first period is divided into two sub-periods. For India the second is also divided into two, since FX intervention differed in the sub-periods.

The IRD is higher for EMs compared to AEs and generally lower for EMs in periods where exchange rate volatility is lower. Volatility, as measured by the standard deviation of actual exchange rate change over a three-month period,

[1] Since many EMs do not have well-developed FX markets, the FP may not be available (Brazil) or is not properly priced.
[2] For the US IRDs are with the Euro, and the USD/Euro rate is taken.

fell for India in the 2nd period, compared to all other countries in Table 3. The interest differential also fell steeply. The Indian case is taken up in detail in the next Section.

Table 1: Excess Returns in Emerging Markets 2005-2025

	IRD %pa	FP %pa	Currency depn (+) %pa
India	4.72	4.34	3.53
China	0.94	0.27	-0.53
Indonesia	4.79	4.79	2.86
Mexico	4.86	0.01	3.41
Brazil	9.08	…….	5.20

Source: Calculated with data from CEIC Global Database

Table 2: Exchange Rates and Interest Differentials for India

	Exchange rate change*		Interest Differential	
	Mean	SD	Mean	SD
India				
01-2005 to 12-2022	**3.79**	**14.82**	**5.17**	**2.39**
01-2005 to 09-2013	4.45	18.94	5.14	2.74
10-2013 to 12-2022	3.24	9.57	5.19	2.01
01-2023 to 05-2025	**1.77**	**4.24**	**1.81**	**0.28**
01-2023 to 09-2024	1.51	1.95	1.72	0.20
10-2024 to 06-2025	2.66	8.78	2.06	0.35

Source: Calculated with data from CEIC Global Database
Note: *Domestic currency/ USD (-appreciation)

While the interest rate differential is near-zero or negative for AEs, for EMs it is positive and aggravated by higher exchange rate volatility. The cause of the volatility was the GFC, taper tantrum, pandemic, Ukraine, Israeli and finally US trade wars, all originating outside EMs.

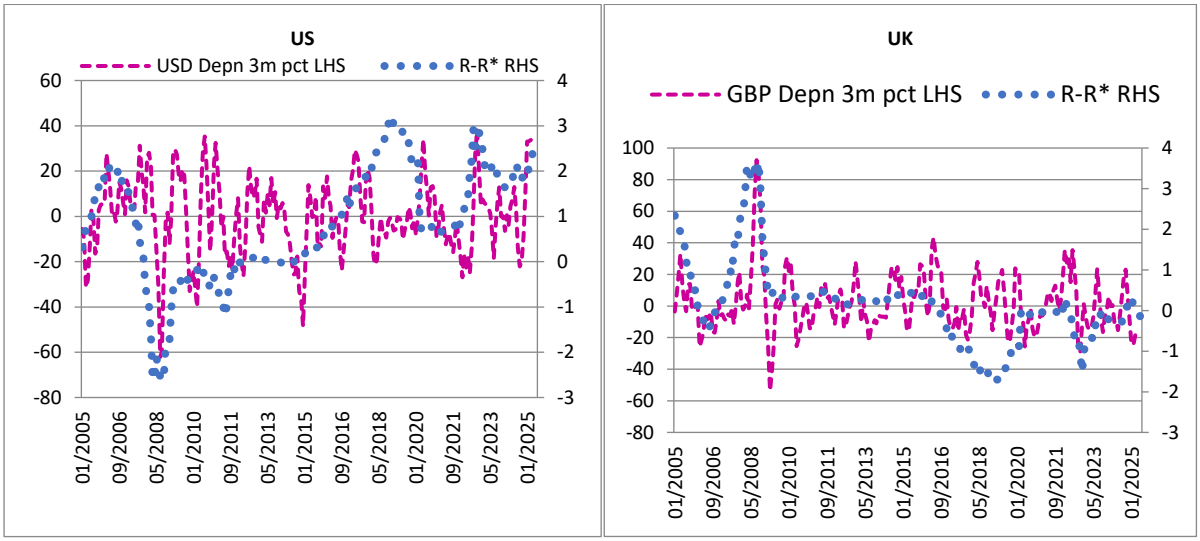
Table 3: Exchange Rates and Interest Differentials

	Exchange rate change*		Interest Differential	
	Mean	SD	Mean	SD
Emerging Economies				
Indonesia				
01-2005 to 12-2022	3.17	18.47	5.89	2.01
01-2023 to 05-2025	3.77	11.38	1.99	0.38
China				
01-2005 to 12-2022	-0.96	8.39	2.32	2.22
01-2005 to 03-2015	-2.92	3.56	2.22	2.75
04-2015 to 12-2022	1.60	11.67	2.38	1.27
01-2023 to 05-2025	2.51	7.60	-2.41	0.36
Mexico				
01-2005 to 12-2022	3.55	24.31	4.67	1.57
01-2023 to 05-2025	2.59	22.31	5.88	0.59
Brazil				
01-2005 to 12-2022	5.03	33.83	9.48	3.59
01-2023 to 05-2025	4.30	18.99	7.33	2.08
Russia				
01-2005 to 12-2022	7.40	41.53	5.44	2.44
01-2005 to 04-2014	3.18	26.67	4.55	2.49
05-2014 to 12-2022	11.94	52.84	6.20	2.13
01-2023 to 05-2025	6.75	41.23	9.56	5.38
Turkey				
01-2005 to 12-2022	16.61	38.01	12.19	4.43
01-2005 to 01-2016	7.95	26.95	10.98	3.38
02-2016 to 12-2022	30.48	50.09	14.14	5.17
01-2023 to 05-2025	35.45	39.09	21.91	22.05
Advanced Economies				
USA				
01-2005 to 01-2023	-0.69	17.20	0.70	1.26
01-2023 to 05-2025	2.95	14.46	1.98	0.25
UK				
01-2005 to 01-2023	2.84	18.71	0.19	1.03
01-2023 to 05-2025	-3.93	12.96	-0.20	0.30
European Union				
01-2005 to 01-2023	1.45	17.74	-0.70	1.26
01-2023 to 05-2025	-2.20	13.64	-1.98	0.22
Japan				
01-2005 to 01-2023	1.79	19.31	-1.21	1.55
01-2023 to 05-2025	4.42	19.02	-5.07	0.62

Source: Calculated with data from CEIC Global Database

Note: *Domestic currency/ USD (-appreciation)

Figure 1: Advanced Economies: Variations in Exchange Rates and Interest Rate Differentials



Source: Own estimation using data from CEIC Global Database.

Exchange rate volatility is in the middle range for AEs (Figure 1) but varies much more across EMs. Episodes of sharp depreciation in EMs (Figure 2) are not fully offset by appreciation, whereas in AEs there is more even two-way movement. AE depreciation is followed by appreciation, thus reducing impact on domestic interest rates and the IRD. In EMs, however, IRD over-compensates and exceeds depreciation.

Unlike in AEs, therefore, EM exchange rate flexibility, fails to reduce IRD. The UIP premium is consistently positive—Das et. al (2021) estimated an average positive value of 3. Political and default risk affect the additional country risk premia or excess returns demanded by foreign investors, but it is primarily driven by a fear of unexpected currency depreciation, which often does not take place (Tables 1, 2 and 3). Shocks to the IRD between EMs and AEs are usually not offset by realisations of EM depreciation.

FP is also higher on average than the actual depreciation (Table 1), implying that FX markets are not efficient. Over time, IRD is also consistently higher

than FP for EMs, implying positive excess returns from EM assets. Investors enjoy a significant excess compensation from investments in EM assets.

Figure 2: Emerging Markets: Variations in Exchange Rates and Interest Rate Differentials

Source: Own estimation using data from CEIC Global Database.

The average of IRD and FP is higher than depreciation in both annual and monthly series, except for countries with extreme instability such as Russia and Turkey, and the exchange rate volatility is largely due to common external shocks. Therefore, domestic exchange rate, intervention and prudential policies as well as global pooling/insurance should be able to reduce EM IRDs considerably. The Indian experience shows it is possible to reduce excess volatility despite global risk-on and offs and a large size of FX markets.

1.2 Reducing volatility: the Indian experience

India's exchange rate after the 1990s reform was market determined with intervention to reduce excess volatility. After the GFC period, however, intervention became minimal because of the fear that FX markets were now too large. Monthly FX market turnover (total purchases and sales) had risen to 1.1 trillion in 2011-12 compared to 0.11 trillion in 2001-02.

But under a new leadership intervention resumed after 2013 and was able to substantially reduce volatility (Goyal, 2018). Over 2014-17 average expected 3-month depreciation was 1.1% with standard deviation of 8.4 compared to respective values of 8.3% and 20.8 in the previous 6 years. While in most EMs exchange rate volatility rose after the 2013 taper-tantrum, in India it fell (Tables 2 and 3), although the IRD rose marginally since policy rates were higher with the introduction of inflation targeting. But real appreciation to above equilibrium value, despite a large current account deficit and higher relative inflation, increased the chances of a sharp depreciation. This did occur in 2018.

After a rise due to pandemic and Ukraine war related outflows in 2020 and 2022 respectively volatility fell steeply (Table 4) due to two-way intervention within a narrow band. The FP also fell sharply. The 3-month average FP reached a historic low of 1.1% in November 2023. FX reserves were built-up again over the non-crisis period January 2023 to September 2024, as inflows returned. Following the US post-election policy uncertainty related outflows, INR volatility increased. The FP rose to 2.3%, but it remained much below levels reached in earlier high volatility periods.

In the IMF's view the 2023 Indian regime was a 'stabilised arrangement' and too much intervention had prevented markets from functioning. But since monthly FX gross turnover (purchases plus sales) had doubled from 1.5 trillion in October 2021 to 3 trillion in January 2025, markets were growing steadily.

Table 4: Yearly Volatility of the Indian Nominal Exchange Rate

Years	Forward premia 3m, %pa	High-low month %annual change	Standard deviation	3m FL annual depreciation (+)
2005	1.41	8.8	2.7	……
2006	1.79	6.6	2.1	2.74
2007	2.85	13.6	3.8	-8.74
2008	2.99	29.2	8.1	5.22
2009	2.97	13.4	4.3	11.26
2010	4.61	8.0	2.5	-5.54
2011	6.13	23.4	7.3	2.07
2012	7.23	17.5	6.0	14.50
2013	8.09	29.1	10.9	9.66
2014	8.42	9.1	3.8	4.15
2015	7.24	9.2	4.0	5.12
2016	6.16	3.9	1.8	4.74
2017	4.70	7.2	3.3	-3.09
2018	4.34	17.4	7.8	5.02
2019	4.16	5.6	2.7	2.97
2020	3.85	8.5	4.2	5.22
2021	4.51	5.5	2.8	-0.25
2022	3.93	12.5	6.6	6.33
2023	1.68	2.7	1.5	5.09
2024	1.51	3.6	2.1	1.30
2025	2.41	4.8	2.8	2.90

Source: *Calculated with data from www.rbi.org.in*

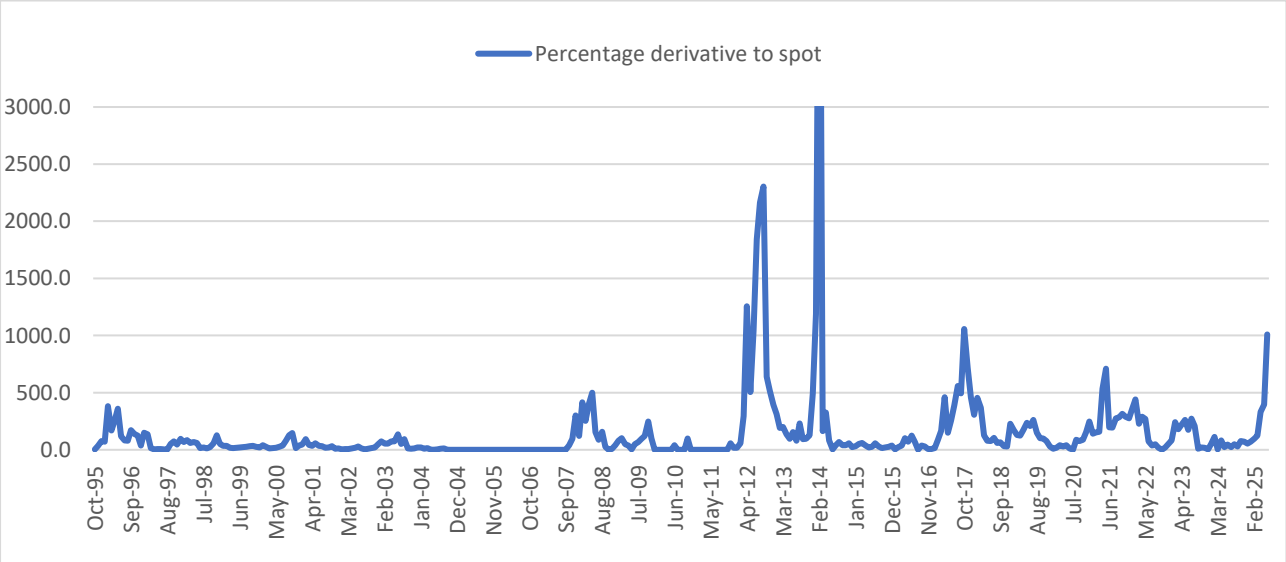
Research shows causality is from NDF to domestic markets in times of volatility, not in other times (Behera et al. 2021). The gap between one-month forward and NDF rates respectively, over domestic spot rates widens in volatile times (Table 5). Therefore, intervention in NDF markets is likely to have greater impact in such times. Over April 2020 to June 2025 the ratio of monthly RBI derivative to spot intervention averaged 165.7% compared to 38.1% in the calm years of 2015 and 2016. But Figure 3 shows the ratios in the 2020s were similar to those in volatile periods of the last decade. Intervention was therefore not excessive in 2023 but a practised response to global shocks.

Table 5: FX derivatives and the forward premium

	3m FP	3m T-bills	IRD 3m	INR 3 month ahead		USD/INR 1month forward minus spot	
				%depre (+)	SD		USD/INR 1month ndf minus spot
Jan-June 2025	2.33	6.08	1.86	-5.02	2.51	0.18	0.19
July-Dec 2024	1.73	6.58	1.97	6.82	3.99	0.11	0.11
Jan-June2024	1.32	6.93	1.69	1.78	0.53	0.08	0.08
July-Dec 2023	1.31	6.87	1.59	0.89	2.42	0.08	0.09
Jan-June2023	2.05	6.73	1.84	0.97	1.69	0.13	0.09
July-Dec 2022	2.81	6.09	2.58	6.18	6.08	0.20	0.17
Jan-June2022	4.05	4.21	3.42	11.98	2.91	0.24	0.29

Source: Calculated with RBI and Reuters data

Figure 3: Intervening more in derivative markets.



Notes: Indian banks allowed to shrink.
Sources: RBI database www.rbi.org.in

Table 6 shows changes in outright forwards in India on a net-gross basis and of INR globally on a net-net basis from the 3 year annual BIS surveys. While cross border forwards have risen in absolute amounts and as a share of spot, with some fluctuations, both domestically and globally, shares of external net-net (NDF) forwards have not exceeded 2016 peaks, despite the 2020s being periods of

global risk-off when offshore derivative activity rises. Indian banks were also allowed to take NDF positions since 2020. The share of Indian forwards (net-gross basis), however, has been rising steadily as a percentage of cross border transactions, but has never touched the peak of 2010 as a share of spot markets. This points to a relative deepening of Indian markets. Offshore markets normally wither away as domestic markets deepen (Ma, Ho and McCauley, 2004). Thus the structure of intervention was successful despite and contributed to deepening Indian FX markets.

Table 6: Cross border derivatives

	Total Outright Forwards					
	Domestic: net-gross			Global INR: net-net		
	$m	% of cross border	% of spot	$m	% of cross border	% of spot
25-Apr	11,742	46.3	27.7	91,533	65.0	172.9
22-Apr	8,411	26.7	34.3	59,645	62.9	154.8
19-Apr	4,711	14.7	25.1	62,729	56.1	209.2
16-Apr	4,529	10.8	30.2	22,884	65.0	118.4
13-Apr	3,743	14.6	24.2	24,395	60.4	160.2
10-Apr	4,895	8.6	36.5	13,620	52.1	100.7

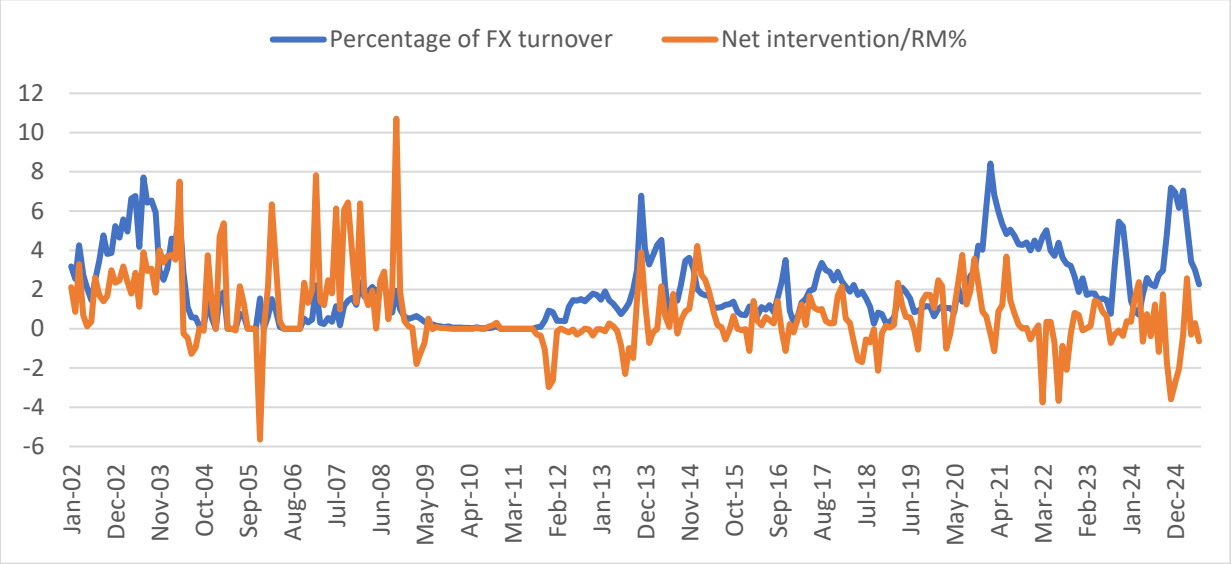
Notes: Net-gross basis adjusts for local inter-dealer double counting. Net-net basis adjusts for local and cross-border inter-dealer double counting. Net-net is double since each currency of pair is counted twice.
Source: Calculated from BIS Triennial Central Bank Surveys.

Another reason for the RBI to intervene more in derivative markets is that this does not impact reserve money. The impact of RBI cumulative annual net FX spot purchases only raised reserve money 2.7% over 2021-25, compared to 17.7% over 2002-2009.

Although intervention in the 2020s (April 2020 to June 2025) was higher in absolute amounts, as a percentage of total FX turnover it was 3.6%. This compares with 6.8% in November 2013, average of 5.4 over 2003, 4.8 in 1999 and a peak of 9.8% in August 1998. It was 6.4% November 2024 to March 2025 in the

volatility that followed Mr. Trump's election. Figure 4 shows RBI intervention as a percentage of FX market turnover in the 2020s was similar to that in the 2000s, although turnover itself increased from 1.3 trillion USD in 2021-22 to 2.4 in Oct 2024. The impact on reserve money was also less.

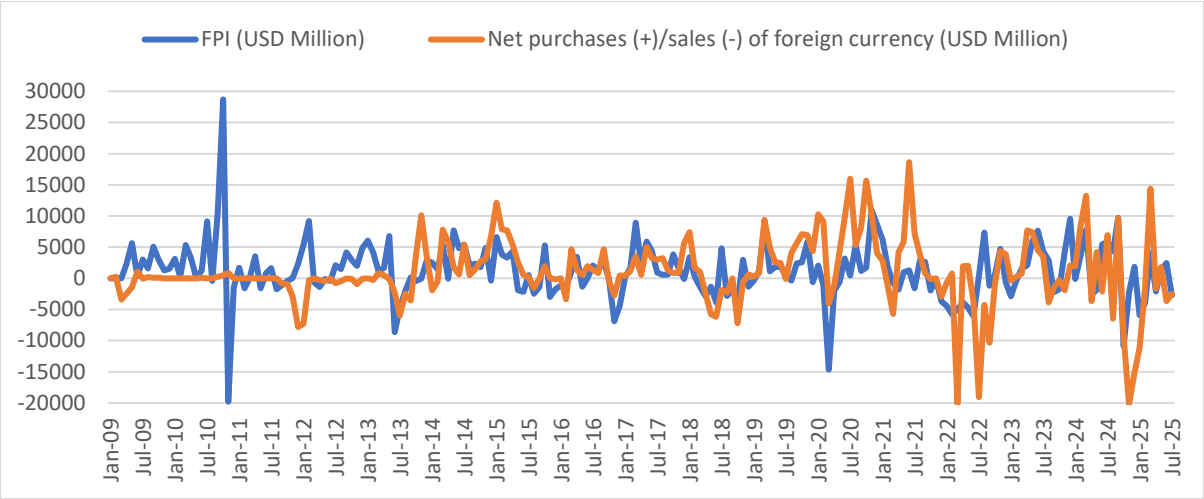
Figure 4: Relative size of intervention



Sources: RBI database www.rbi.org.in

Despite large and increasing FX turnover, the RBI retains considerable ability to reduce volatility. The design of intervention may change, but it still rises in times of global risk-off. Figure 5 brings out the close link of RBI spot net purchases to fluctuations in FPI, as part of smoothing excess capital movements. Thus, domestic policies can counter global shocks. In the post-GFC period 2009-2013 lower intervention led to steep INR depreciation. The sharp rise in derivatives during the taper tantrum in 2013 (Figure 3) was due to speculative shorting of the INR since of the absence of intervention. Figure 4 shows the relative absence of the RBI from FX markets over 2008-2012.

Figure 5: Intervention relative to foreign portfolio flows



Sources: RBI database www.rbi.org.in

More exchange rate volatility after the Trump election in end 2024 coincided with a change in RBI leadership. There was an initial rise in NDF positions[3] but INR volatility remained less than it was in 2021-22. There was more two-way movement, but active intervention resumed to prevent over-depreciation and misalignment after the double tariffs imposed on Indian in August 2025. There was no hands-off policy as in the post GFC period. The policy regime was intact. Table 5 shows the sharp rise in FP with expected depreciation in 2025, although it remained less than past risk-off periods (Table 4). More overall macro-economic stability and the absence of an announced departure from the volatility moderating policy contributed to this. But the period analysis also clearly shows the effect of higher INR volatility on raising risk premiums.

Better fundamentals were an essential factor that contributed to lower risk premia. More stable Indian macros, lower inflation differentials and stable growth, among the highest in the world, was also reducing country risk premium, as was growing economic size and diversity. Fiscal policies were moderating second round effects from supply-shocks. The sensitivity to commodity prices reduced. Timely regulatory and other relief to the financial sector, as well as their timely withdrawal, prevented moral hazard, reducing risk and interest rate spreads.

[3] https://www.reuters.com/markets/currencies/india-rupee-ndf-volume-hits-record-high-arbitrage-activity-2025-01-09/

3. International measures for risk mitigation

EMs with flexible exchange rate regimes require additional capital flow management instruments to cope with large capital inflows (Magud et.al. 2012). Analysis with the disaggregated IMF iMaPP database shows that on average, the frequency of prudential policy usage is much higher in EMs than that in AEs and it is often part of FX intervention (Alam et.al. 2019). Goyal and Ray (2023) find that the types of regulations used also differ. There was more net tightening for credit-demand than for credit-supply in most AEs and the reverse for most EMs. Tightening in AEs was largely in the banking sector, while EMs used more broad-based measures. Some minimum global utilisation of prudential regulation can reduce arbitrage and excess cross border flow volatility.

International institutions should note the issue of excess volatility in EM exchange rates due to global risk-on and off and the need for some universal prudential regulations and reform in the international financial architecture to counter this. Multilateral Development Banks (MDBs) could introduce policies to mitigate the effect of global shocks and prevent large depreciation spikes in EMs. Examples of this are improving information and analysis that would moderate excessive risk premiums and providing swap lines that get triggered with global volatility.

Innovative hedging, pooling and insurance products can lower EM borrowing costs. Hedging exchange rate risk is expensive and operationally difficult. Funds are coming up with structures that pool risk and should be scaled up. TCX[4] uses pooling to provide synthetic hedges to Development Finance Institutions (DFIs). ILX[5] co-invests in syndicated private-sector loans arranged by MDBs and DFIs to provide medium and long-term finance to EM projects and companies. A well-diversified portfolio delivers required risk-adjusted returns for its investors.

[4] https://www.tcxfund.com/cross-currency-swaps/
[5] https://www.ilxfund.com/

Seafarer[6] finds that the cost of currency risk is substantially less than the cost of hedging such risk for portfolios that are diversified across regions and sectors and identify and reduce exposure to problematic currencies.

The fear of a large depreciation, which raises the IRD for EMs, is like a catastrophe risk, which is normally covered by reinsurance. If reinsurance can be provided for the small chance of a large depreciation, insurance may offer a better way to lay off exchange rate risk. The IMF's large data base on exchange rates could be used to design reinsurance and lower the otherwise high cost of insurance. Pooling risk for different country clusters can lower costs for those with less volatility and expected depreciation. Natural cross-country hedges could be utilized. There is a Multilateral Investment Guarantee Agency (MIGA) with reinsurance facilities that could design suitable products.[7]

Using CBDCs, as they become operational, could aggregate multiple transactions, thus reducing payment risk and cost as intermediation reduces in cross border transactions. Bilateral central bank swaps can be designed to lower long-term borrowing costs since hedging is not available for the long horizons of infrastructure and SDG/ESG investment.

5. Conclusion

We find that FX risk premia exceeds exchange rate depreciation in EMs and rises with exchange rate volatility, which is often due to global shocks. Therefore a full float is not appropriate for them.

While good macroeconomic fundamentals and maintaining competitive market-determined real exchange rates are essential, precautionary reserves and intervention as well as prudential capital flow management policies can reduce globally driven exchange rate volatility and its impact on EM borrowing costs.

[6] https://www.seafarerfunds.com/commentary/managing-currency-risk-in-the-emerging-markets/

[7] In an email exchange Dr. Frannie Leautier, Chair of the G20 Capital Adequacy Framework Report 2022, backed the proposal and remarked, 'I think IFC-MIGA using the IDA Private Sector Window would be ideal for local currency risk solutions for EM clients.'

EMs should avoid pure floats but maintain sufficient flexibility of nominal exchange rates to ensure that there are no large deviations from equilibrium real exchange rates. Markets alone can result in persistent misalignment. India's successful implementation of such a policy is examined in detail and lessons extracted.

There was continuity in India's exchange rate regime, which was market determined but with intervention to reduce excess volatility. There were changes in operational aspects such as the structure and amount of intervention but it was successful despite and contributed to deepening FX markets. Since activity rises in offshore NDF markets and affects Indian markets more during volatile times, there was more intervention in NDF markets. This also reduces the impact of intervention on reserve money supply. But Indian markets continued to grow relative to offshore markets. In periods when exchange rate volatility was successfully reduced despite external shocks borrowing costs fell.

Improvements in the international financial architecture are also required to address these issues. New structures that pool risk across portfolios are becoming available and can be scaled up.

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