



FOREIGN EXCHANGE

Emerging Market (EM) Currency Futures as a Currency Overlay for Asset Managers

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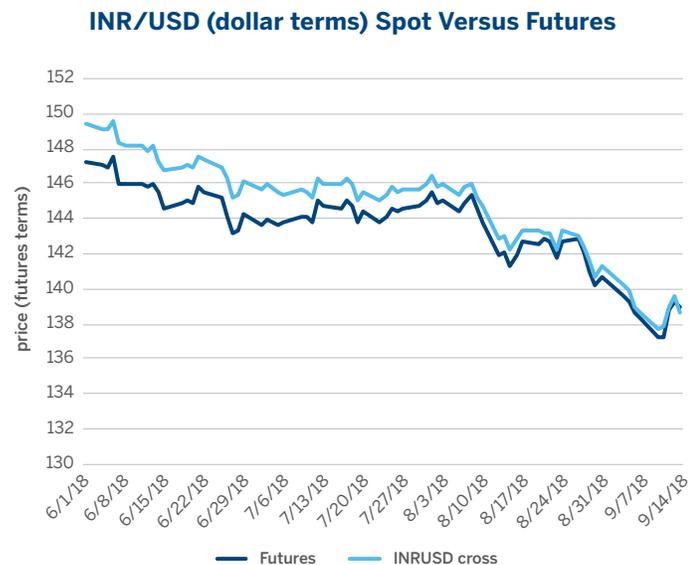
Case #1: U.S. Investor with Exposure to India's Equity Market

Recognizing the potential for profits from equity exposure to the growing Indian economy, a U.S. investor allocates \$10 million to a BSE 500 Index based product. To initiate the position the first step is to convert USD to INR to purchase the asset. Since the asset requires 100% payment the risk manager (RM) assumes two risk positions: one is the exposure to the Indian stock market as measured by the BSE 500 Index, the other the currency differential, or exchange rate, risk between the USD and the INR.

Consider the following scenario:

June 1, 2018 RM converts \$10 million to INR at spot exchange rate of 67.06 USD/INR. This results in \$670,600,000 INR for the investment. Same day BSE 500 Index is 14673.56. To create a currency overlay the RM will utilize CME Group INR/USD futures (SIR) to manage the currency exposure. September SIR futures (SIRU8) are priced and traded in USD terms (inverse to spot FX convention) and their price level that day is 147.25 (67.91 spot equivalent). Notice the difference between the spot equivalent levels between FX spot and futures. The price difference between futures and its underlying cash product is known as the basis.

The basis in FX is usually a reflection of the interest rate differential between the currencies considered. Short term interest rates in India are greater than those in the U.S. Because of this SIRU8 futures, traded in USD terms, will trade at a discount to spot until expiration. As the SIRU8 contract approaches expiration its price level converges to spot. The basis in futures is analogous to what is referred to as forward points in a forward cash FX trade.



To arrive at the proper hedge ratio for the futures currency overlay our RM takes the futures contract's (SIRU8) unit size (5,000,000 rupees) and divides it into the value at risk. In this case the risk value is 670,600,000 rupees / 5,000,000 per contract = 134 SIRU8 contracts. Since SIRU8 is traded in INR/USD terms and our investor's risk is to a weaker INR they will sell 134 SIRU8 contracts at 147.25.

Now our RM has a long BSE 500 index position and a short INR overlay position in futures.

How does this play out? Assume the RM unwinds and offsets both positions on September 14.

BSE 500 index is now 15528.44 or 5.8% higher. The USD/INR is now 71.86 which reflects on 7.2% weakening to INR versus USD. The SIRU8 contract is 138.94. The original 670,600,000 INR investment made 5.8% or 38,894,800 resulting in a closing value of 709,494,800 INR. But when converted back to USD at the current rate of 71.86 the USD equivalent is \$9,873,293 which represents a loss of 1.3%. While the equity exposure resulted in a gain the loss from the currency adjustment resulted in a net loss to the investment.

What about the futures overlay? Having sold 134 SIRU8 contracts at 147.25 and buying them back at 138.94 the hedge produced a gain of 831 points. Each point is worth \$5. Therefore 134 x \$5 x 831 points = \$556,770 gain. Adding this gain to the \$9,873,293 equity return results in \$10,430,063, or a 4.3% return.

Why not the full 5.8% from the BSE 500 Index? This was a short hedge using a futures contract that was trading at a discount to spot due to the interest rate differential. The lower net return was a result of the basis convergence against the short futures position. While the RM didn't capture the entire 5.8% equity index return, a 4.3% hedged return was certainly an improvement over a 1.3% loss.

Basis can have either a positive effect on hedge overlay depending on the net differential and length of time from hedge execution to final contract expiration.

June 1: spot (in futures terms) 1 / 67.06 = 149.12; SIRU8 = 147.25

149.12 - 147.25 = 187 points

Sep 14: spot (in futures terms) 1 / 71.86 = 139.16; SIRU8 = 138.94

139.16 - 138.94 = 22 points

(Notice the convergence over time)

187 points - 22 points = 165 points of convergence

165 pts x \$5 x 134 = \$110,550. If added back to investment would create a result of 5.4% return.

Case #2: Mexican Investor with Exposure to the U.S. Stock Market

Now let's consider another scenario, a Mexico based portfolio manager (PM) wishing to gain exposure to the U.S. stock market.

June 18, 2018 the PM converts \$400 million MXN to USD at the spot exchange rate of 20.52 USD/MXN. This transaction results in \$19,493,177 USD available for an asset allocation into a S&P 500 Index product. The S&P 500 Index (SPX) is 2773.75 on this day and the CME Group's MXN/USD futures (6MU8) for September delivery is (in USD terms) 0.04792. The PM will use Mexican peso futures to create a currency overlay position. Again, notice the difference, or basis, between the spot FX (in USD terms) and the futures: $1/20.52 = 0.04873$ (spot in futures terms) $- 0.04792 = 81$ points basis. Futures are again trading at the discount to spot due to the interest rate differential, MXN rates higher than USD rates.

Like our first example, the PM must first identify the proper hedge ratio (HR) for the overlay position. Each peso futures contract has an underlying value of 500,000 pesos. The value at risk is 400 million pesos therefore $HR = 400,000,000 / 500,000 = 800$ 6MU8 contracts. Since the 6MU8 is traded in USD terms (MXN/USD) and the PM is exposed to a stronger Mexican peso risk she would buy 800 6MU8 futures at 0.04792.

The PM is now long SPX and long 6MU8 futures as a currency overlay.

Go forward to September 14, 2018. Our PM decides to offset her position and book both transactions. SPX now at 2904.98 up 131.23 index points, or 4.7%. USD/MXN now 18.89 indicating a 7.9% appreciation in Mexican pesos over USD. And 6MU8 now at 0.05297, 505 points higher in price. How does this work out for the PM? A 4.7% gain on the

initial investment of \$19,493,177 returned \$916,179. When converted back to MXN at the current exchange rate of 18.89 the resulting position of \$385,532,735 MXN represents a \$14,467,265 MXN loss, or 3.6%. But the currency overlay produced a gain of $800 \text{ contracts} \times 505 \text{ points} \times \$5 \text{ per point} = \$2,020,000$ which, when added to the SPX gain of \$916,179 plus the initial principal results in \$22,429,356 converted back at 18.89 results in \$423,690,535 MXN, or a 5.9% gain.

In this case the currency overlay contributed to a greater net gain over the equity market gain because of the positive effects of exchange rates and the basis convergence.

Generally, cross border investments requiring the full payment in notional terms will usually result in some form of exchange rate risk exposure. CME Group's Emerging Market currencies can be used to efficiently create a currency risk overlay position. Futures contracts, like FX futures, require performance bonds, or margin, to secure an open position which may be lower than comparable capital charges on FX swaps or forwards in the OTC market. CME Group FX futures are traded electronically on CME Globex and offer full transparency of pre- and post-trade prices. Additionally, because CME acts as the buyer to every seller and vice-versa there is trade anonymity and lower counter-party risk compared to OTC transactions.

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