

The Hidden Role of Interest Rate Risks in Carry Trades

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Abstract : We study the role played interest rate risk in carry trade return in order to understand the forward premium puzzle. In this study, our goal is to investigate to what extent carry trade return is indeed due to compensation for risk taking and, more important, to reveal the nature of these risks. Using option data not only on exchange rates but also on interest rate swaps (swaptions), our first finding is that, besides the consensus currency risks, interest rate risks also contribute a non-negligible portion to the carry trade return. What strikes us is our second finding. We find that large downside risks of future exchange rate movements are, in fact, priced significantly in option market on interest rates. The role played by interest rate risk differs structurally from the currency risk. There is a unique premium associated with interest rate risk, though seemingly small in size, which compensates the tail risks, the left tail to be precise. On the technical front, our study relies on accurately retrieving implied distributions from currency options and interest rate swaptions simultaneously, especially the tail components of the two. For this purpose, our major modeling work is to build a new international asset pricing model where we use an orthogonal setup for pricing kernels and specify non-Gaussian dynamics in order to capture three sets of option skew accurately and consistently across currency options and interest rate swaptions, domestic and foreign, within one model. Our results open a door for studying forward premium anomaly through implied information from interest rate derivative market.

Keywords : carry trade, forward premium anomaly, FX option, interest rate swaption, implied volatility skew, uncovered interest rate parity

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