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## **Sources of Risk in Currency Returns**

### **Abstract**

We quantify the risks in currency returns, as a first step towards understanding the high returns to carry trades. We develop and estimate an empirical model of exchange rate dynamics that incorporates (i) Gaussian shocks to exchange rates with stochastic variance, (ii) crashes, or large moves, in exchange rates, and (iii) jumps in the variance of Gaussian shocks to exchange rates. We use a joint dataset of excess currency returns and short-term at-the-money implied variances for four currencies (AUD, CHF, GBP, and JPY). For each currency pair, we find that the probability of a large depreciation (appreciation) in the U.S. dollar is driven by the U.S. (foreign) interest rate. We also find that the variance of currency returns is itself subject to jump risk. Moreover, the probability of a jump in variance depends positively on the current level of variance. We are able to link jumps in currencies to important macro and political announcements, but cannot do the same for jumps in variance. The latter are associated with events broadly interpreted as economic uncertainty. Jumps may account for up to 25% of total currency risk, as measured by entropy. The model we estimate also has realistic implications for option valuation.