# Currency Risk in the Long Run

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For almost one-and-a-half decades, investors in the developed world, facing very low or even negative short-term interest rates at home, have raised their holding of long-term foreign bonds. For example, banks have increased their holdings of sovereign debts, while pension funds and insurers have been another source of demand for long-term foreign bonds. The following graphs are telling; they emphasize a "carry" strategy – source cheaper short-term funds at home and hold higher-interest-paying long-term bonds in foreign currencies.

(a) Source: Financial Times (2017)
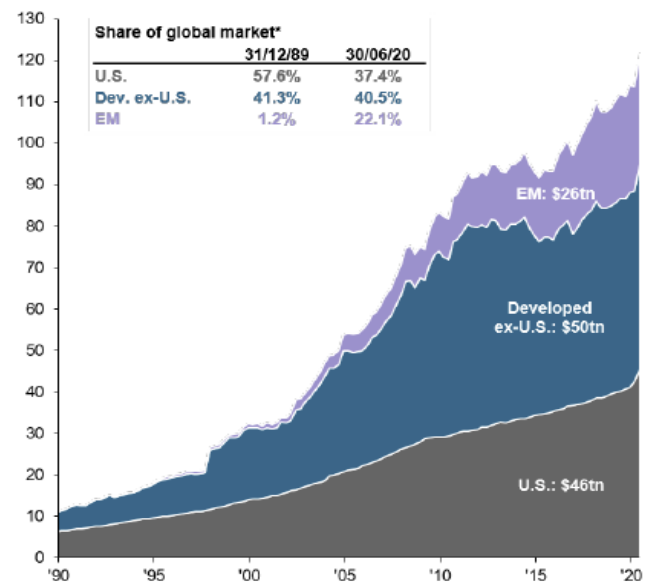
(b) Source: JP Morgan Asset Management (2020)

Against this backdrop, authors Pasquale Della Corte, Can Gao, Daniel P.A. Preve, and Giorgio Valente presented their study at the 9th Annual Conference of the Asian Bureau of Finance and Economic Research (ABFER). Their study explores the long-horizon risk profile of a currency strategy, whereby a US investor earns excess returns by entering an unhedged long position in a long-term foreign bond, funded at the risk-free domestic rate.

According to the authors, little is known about the risk of a strategy that relies on short-term dollar funding to buy and hold long-term foreign currency-denominated bonds. Their empirical investigation explores the long-term risks of such an investment strategy using data spanning over the past two centuries, from Jan 1800 to Jun 2017. The authors built their primary dataset from the Global Financial Data. Their sample comprised major countries exhibiting reasonable homogeneity and having relatively liquid and developed bond markets, i.e., Australia, Canada, Germany/Euro area, Japan, New Zealand, Norway, Sweden, Switzerland, and the UK.

Analytically, the excess returns from the strategy have three components: **bond excess returns in local currency, the real interest rate differential between foreign and domestic currency, and the bilateral real exchange rate return**. Investors should have a rational prediction of these returns. Their investment risk stems from the deviation between realized and expected returns.

However, investors have limited knowledge; they may not have information about critically important variables and parameters. Thus, investors' risk has two components: (i) the intrinsic volatility connected with variables and parameters they know, and (ii) the volatility stemming from variables they do not have information about. The authors bill the latter predictive variance.

To illustrate, given the paper's empirical setting, the authors show that these risk components are intrinsically embedded in bond excess returns, cross-border real interest rate differentials, and real exchange rate changes. Therefore, natural candidates for investors' missing information are changes in monetary and exchange rate regimes that drive realization away from expectations in the form of real interest rate differentials and real exchange rate changes.

Their research yields several interesting results. The authors' main finding is that over the full sample period and across all countries, the predictive variance of the bond investment strategy increases with the investment horizon, mainly due to an upward-sloping predictive variance. Over a 50-year horizon, the monthly predictive variance of the strategy returns increases by 200 to 300 percent across countries. For example, in the case of the US investment in the UK long-term bonds, the long-term predictive variance at a 50-year horizon reaches the value of 4.24 percent per annum, a value comparable to the long-horizon predictive variance of a US equity buy-and-hold strategy computed over the same sample period (See Figure 1).


Figure 1: Predictive Variance Ratio for the US/UK
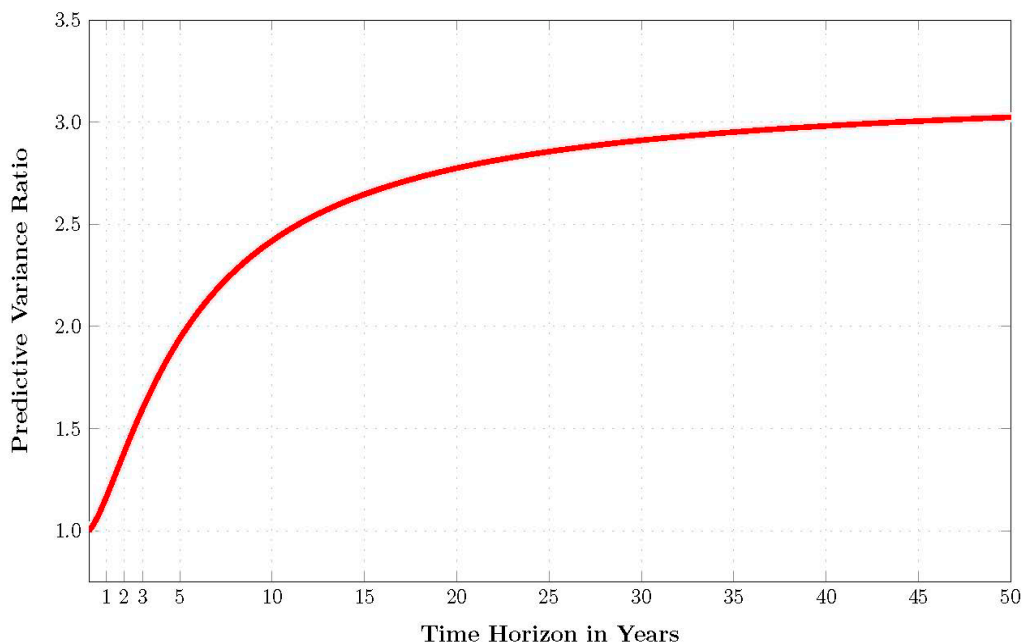
Delving deeper, the authors showed that the upward pattern in the predictive variance of the strategy is mainly due to the individual predictive variances of the real exchange rate returns and the short-term interest rate differential – with the former playing a more prominent role. Interestingly, the results show that the predictive variance of bond excess returns in local currency does not play a substantial role; its impact is relatively constant across investment horizons.

Furthermore, the authors highlighted that the predictive co-movement between bond excess returns in foreign currency on the one hand and interest rate differentials and exchange rate returns, on the other, are not important in determining the long-term risk profile of the strategy. However, the predictive co-movements between interest rates differential and real exchange rate changes are important in the long run: they tend to reduce the overall expected risk of the strategy, especially at longer horizons (see Figure 2).

Figure 2: Predictive Variance Decomposition for the US/UK

Variance(UK Bond Excess Return)
Variance(Interest Rate Differential)
Variance(Real Exchange Rate Return)
Covariance(UK Bond Excess Return, Interest Rate Differential)
Covariance(UK Bond Excess Return, Real Exchange Rate Return)
Covariance(Interest Rate Differential, Real Exchange Rate Return)
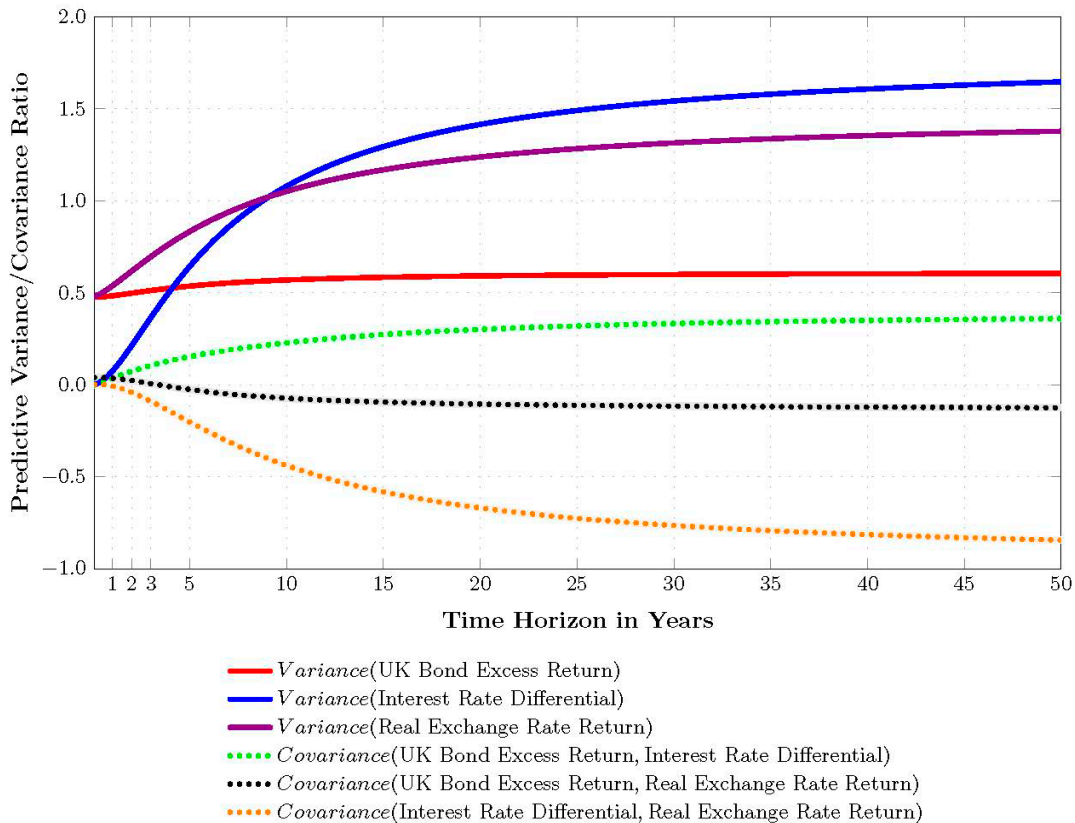
To sum up, this important study sheds light on the long-term risk profile of a US investor investing in long-term foreign currency bonds funded at the risk-free domestic rate in an unhedged manner. The authors have shown robustly that the predictive variance of the bond investment strategy increases with the investment horizon – a proposition that goes against the common lore, particularly for bond investments, that the long-term risk decreases with the investment horizon. The authors also show that the two primary drivers behind this increasing return variance are the variances of the real exchange rate returns and the short-term interest rate differential, highlighting the importance of changes in monetary and exchange rate policy regimes.