Full-Scale Currency Hedging

Accounting for the complexities of diversification

As the adage goes, “A picture is worth a thousand words,” and the same is true for diversification. That’s why summary statistics, such as correlation, fail to capture complexities that lie below the surface. For investors, these complexities matter—accounting for them can make the difference between an effective, or ineffective, hedging strategy. In the case of currencies, investors often determine risk-minimizing hedge ratios based on the portfolio’s betas to those currencies or with mean-variance optimization. In both cases, the optimal solution depends crucially on the correlation between the currencies and assets in the portfolio. But correlation misses important nuances of diversification that investors often care about. In our recent paper, “Full-Scale Currency Hedging,” we propose an alternative technique that implicitly accounts for these complexities.

Exhibit 1: Hedge Ratios for Illustrative Foreign Equity / Bond Portfolio (USD)

	Beta Monthly	Full-Scale 3-Year
Hedge Ratios		
EUR	100%	100%
JPY	34%	0%
GBP	100%	100%
CHF	100%	0%
AUD	100%	100%
3-Year Statistics of Hedged Portfolio		
Std. Dev.	19.5%	18.9%
10% Worst	-8.4%	-5.5%

Table shows optimal hedge ratios for an illustrative 60/40 foreign equity/bond portfolio from a USD base. Based on data over the period January 1995 through November 2023. Details in the paper cited below. Source: State Street Global Markets

First, there’s the challenge of divergence. This relates to the common practice of estimating correlations from monthly returns and assuming they hold for returns over longer horizons. However, this is true only if returns are independent from one period to the next. Empirically, this assumption is often misleading, sometimes dramatically so. Alternatively, we could estimate correlations from longer return intervals that match the hedging horizon. However, this fails to address another important challenge. The efficacy of a hedging policy depends on the cumulative co-movements, or co-occurrences, of the currencies and portfolio over an investor’s specific investment period. But co-occurrences vary over time. While correlation captures the average co-occurrence between a pair of assets, it ignores other important features, such as the dispersion of co-occurrences throughout the sample.

To address these challenges, we propose an alternative technique, called full-scale optimization, to determine currency hedge ratios. Rather than relying on full sample correlation estimates, this process considers the full distribution of co-occurrences between currencies and the portfolio. As shown in Exhibit 1, compared to the conventional beta-based approach, full-scale currency hedging can produce different hedge ratios with greater risk reduction.

For more on this topic, see our 2024 working paper: **“Full-Scale Currency Hedging”** by Megan Czasonis, Mark Kritzman, and David Turkington.

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