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# HEDGING FX IN GLOBAL EQUITY

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One benefit of owning global equity over U.S. equity is diversification, which is achieved despite taking on additional foreign currency exposure. For example, the standard deviation of U.S. equity is 17.0% since 1970 versus 16.4% for global equity.[1] Additionally, portfolio theory supports a global equity allocation over U.S. equity. It suggests that the capitalization-weighted global market of risky assets is the forward-looking optimal allocation (highest excess return per unit of risk) if markets are competitive. There is no requirement for U.S. investors to hedge foreign exchange (FX) risk back to the U.S. dollar to achieve this diversification benefit.

In "Go Global and Diversify," we made the case for owning global equity (unhedged) over just U.S. equity within a diversified portfolio of stocks and bonds. In contrast, we found that unhedged global bonds did not improve portfolios of global stocks and U.S. bonds, as these portfolios are only improved when the international portion of global bonds is currency hedged. This is because foreign currency contributes approximately 70% to 80% to the total dollar-based risk of global bonds while it only contributes 15% to 25% to global equities, which remain dominated by the volatile equity premium. Notably, we also found that the tax benefit of municipal bonds outweighs the diversification benefit of hedged global bonds for taxable investors in all but the most risk-averse portfolios.

There are two primary reasons to consider hedging FX risk back to the U.S. dollar. The first reason is short-term currency speculation. Short-term currency returns are driven by interest-rate differentials (carry trades) and momentum.[2] Select hedge fund managers can harvest these long-short risk premiums systematically across multiple currencies, which can provide diversification benefits to broader portfolios of stocks and bonds. However, there is no long-term return premium associated with owning the U.S. dollar versus major foreign currencies of developed countries since floating exchange rates were adopted in 1973. The returns of both the Federal Reserve Nominal Major Currencies U.S. Dollar index and Real Major Currencies U.S. Dollar index are indistinguishable from zero since their 1973 inception.[3] This has broader portfolio management implications for U.S. investors. The second reason to consider hedging FX risk back to the U.S. dollar is strategic: reduced dollar-based portfolio risk.

For investors who prefer to take a purely dollar-based view of their consumption and portfolio risk, there may be the potential to reduce dollar-based portfolio volatility further. They may achieve this by hedging the FX risk of the foreign equity portion of their global allocation back to U.S. dollars. This may be particularly relevant for some goals-based investing clients who have identified discrete, dollar-based goals driving a customized asset allocation through time.

Exhibit 1 compares the standard deviation (volatility) of hedged and unhedged global equity, as represented by hedged and unhedged versions of the MSCI World index. (The MSCI World index is a capitalization weighted, float-adjusted index of developed global equities.) The standard deviation of the MSCI World 100% Hedged USD index is 14.4% since its 2003 inception.[4] This compares to 16.6% for the unhedged MSCI World index over the same period.

There are two primary reasons to hedge FX risk back to the U.S. dollar. The first is speculation. The second is to reduce dollar-based portfolio risk.

**EXHIBIT 1: VOLATILITY OF HEDGED VS. UNHEDGED GLOBAL EQUITY**

| | 2003-2015 | 1973-2015 |
|---|---|---|
| **MSCI World (unhedged)** | 16.6% | 16.5% |
| **MSCI World (hedged/local)** | 14.4% | 15.3% |

Source: Morningstar

Perhaps 12 years is not sufficient time to conclude that there are portfolio benefits to hedging FX risk in global equity, so we indirectly evaluated a longer history. According to MSCI, the local currency version of an index represents its performance without any impact from FX fluctuations – a continuously hedged theoretical portfolio. In comparison, the hedged version of the index is investable and represents a close estimation of the local currency return that is achieved by selling foreign currency forwards at the end of each month at the one-month forward rate. The annualized tracking error between the MSCI World Local Currency index and the MSCI World 100% USD Hedged index is very small (0.3%), so we can use the local currency version of the index as a close proxy for the hedged version of the index going back to the inception of floating exchange rates in 1973. The standard deviation of the MSCI World Local Currency index is 15.3% versus 16.5% for the unhedged MSCI World index since 1973. When taking a purely dollar-based view of consumption and portfolio risk, the volatility of global equity is reduced when the foreign equity portion of global equity is currency hedged back to U.S. dollars.

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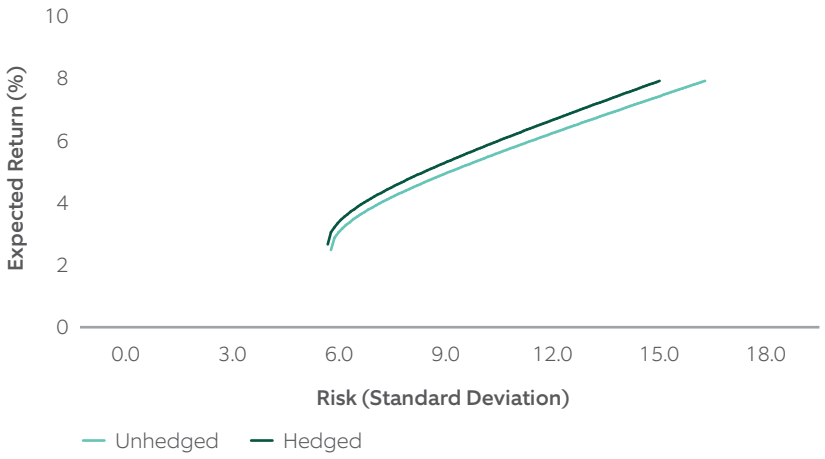
Equity risk is important, but total portfolio risk counts more. Most investors also own bonds, and total portfolio risk further depends on correlations between stocks and bonds. We next ran portfolio optimizations to evaluate whether the volatility reduction of hedged global equity survives when portfolios include diversifying bonds. We use the MSCI World (unhedged), MSCI World Local Currency (hedged proxy) and Barclays U.S. Aggregate Bond indices to represent unhedged global equity, hedged global equity and U.S. bonds, respectively. The expected return for unhedged and hedged global equity is equalized at 8.0% to isolate the benefits of diversification. Again, note that there is no long-term return premium associated with owning the U.S. dollar versus major foreign currencies. We used the 2.2% yield of the Barclays U.S. Aggregate Bond Index as of May 2015 as a simple expected return for bonds for this illustration. The standard deviation and correlation inputs represent the longest common period of the three indices (1976 to 2015).

Exhibit 2 shows the results. The unhedged efficient frontier in the exhibit results from an optimization between the Barclays U.S. Aggregate and the MSCI World (unhedged) indices. The hedged efficient frontier results from an optimization between the Barclays U.S. Aggregate and the MSCI World Local Currency (hedged proxy) indices.

Foreign currency hedging involves certain costs and complexities that investors must also weigh, including the cost of hedging, taxes and the complexities of implementing and maintaining the hedge.

**EXHIBIT 2 – EFFICIENT FRONTIERS**




Source: Morningstar and Northern Trust Research

The hedged frontier lies above the unhedged frontier for all portfolios of stocks and bonds. The optimization results suggest that dollar-based portfolio risk is reduced when the FX risk of the foreign equity portion of a global equity allocation is hedged back to U.S. dollars.

Foreign currency hedging involves certain costs and complexities that investors must also weigh. These include the cost of hedging (carry and dealer spreads), taxes and the complexities involved in implementing and maintaining the hedge, particularly for active equity strategies. The cost of carry is driven by interest rate differentials between the United States and a foreign country. Over the long run, the cost of carry for hedging FX risk in developed markets is close to zero. In contrast, the cost of carry has averaged more than 300 basis points for emerging-markets currencies. This reflects either the expectation that emerging-market currencies will appreciate due to purchasing power convergence or compensation for bearing emerging-market currency risk.

U.S. dollar investors who choose to hedge the foreign currency risk of emerging-markets equities must give up the expected currency appreciation from an unhedged emerging-market equity allocation. Dealer spreads are also much smaller in developed markets than emerging markets. The overall cost of hedging foreign currency risk in developed markets is minimal, whereas it is meaningful in emerging markets.

In many ways, these results are a mirage of dollar-based accounting. A purely dollar-based view of consumption and portfolio risk is incomplete. In reality, investors ultimately consume in multiple currencies. For example, they consume foreign travel, imported goods and global services that are ultimately sourced in multiple currencies, even if purchased and accounted for in U.S. dollars. They may prefer to retain some perceived dollar-based volatility in the equity allocation to diversify their long-term purchasing power across multiple currencies. From this more complete perspective of risk, the correct currency for hedging and portfolio performance accounting is not the U.S. dollar or any other single currency of residence but some multi-currency basket based on the investor's unique, globally sourced consumption liability. Indeed, the dominant frontier in Exhibit 2 would also result from hedging back to a multi-currency basket that is aligned with the consumption liability and serves as the portfolio's accounting currency. There is clearly added cost and complexity in identifying each investor's unique multi-currency basket and hedging back to it. But perhaps ironically, it might be roughly approximated on average by the unhedged global equity allocation. For this reason, many investors will still prefer to own unhedged global equity.

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**Notes**

1 Standard deviations are based on MSCI USA and MSCI World indices since 1970 inception to May 2015.
2 See Lustig et al, "Common Risk Factors in Currency Markets," Review of Financial Studies (2011) and Asness et al, "Value and Momentum Everywhere," Journal of Finance (2013).
3 The t-stats that test whether the returns are different from zero are 0.0 for both indices.
4 The time period covers November 2003 to May 2015.

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