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# To hedge or not to hedge? Evaluating currency exposure in global equity portfolios

Research brief

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Falling 'home bias' means that investors are increasing their allocations to foreign assets, and hence foreign currencies. For example, Australian investors reduced their home bias by 14% between 2001 and 2012.

As investors become more interested in managing their international currency exposure they need to understand the key factors that should drive their hedging decisions within the context of their overall portfolio goals.

This paper explains why a currency management framework based on reducing risk is more important than one based on maximising returns.

## **Currency volatility can be significant**

Exchange rate movements can have a significant impact on the performance of an unhedged portfolio. Investors investing in the same market can experience very different results, depending on their home currency. These different experiences are illustrated in **Figure 1**.

The stronger the foreign currency and the weaker the home currency, the better the return outcome when viewed from investor's local market. For example, in 2013 the annual return for the MSCI World Price Index in US dollars was 27.4%, while in Australian dollars it was 47.8%. During the period the Australian dollar depreciated against a basket of foreign currencies, which helped lift returns for Australian investors holding foreign assets.

## **Fixed income is different to equities**

First it's important to distinguish between currency management in fixed income and equities. As currency movements are typically more volatile than fixed income assets, investors should consider fully hedging their fixed income exposure.

The hedging decision for equities is not so straightforward. The impact of hedging on risk depends on two key factors: (1) the ratio of volatilities (currency volatility to asset volatility) and (2) the correlation between the assets and currencies.

**Figure 1** Currency's impact on portfolio return has been significant and variable

Ranked annual returns (%) of MSCI World Price Index in various currencies, 2004–2013

2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
15.2	27.5	21.8	9.6	-17.4	34.3	20.1	-1.8	31.0	54.8
10.8	26.8	20.7	7.7	-24.9	30.8	15.9	-2.7	16.5	47.8
10.2	26.7	20.2	2.7	-25.4	27.0	12.3	-4.3	15.1	35.9
7.5	23.0	12.3	1.6	-37.2	26.7	6.5	-4.7	14.7	27.4
6.9	17.6	11.7	-1.2	-40.3	16.4	1.3	-5.0	14.1	25.0
6.9	10.0	7.9	-1.6	-43.9	11.1	-1.4	-5.0	14.0	23.7
6.0	7.3	5.8	-7.1	-51.6	1.4	-2.1	-9.9	11.4	21.9

- U.S. dollar
- Swiss franc
- Japanese yen
- British pound
- Euro
- Australian dollar
- Canadian dollar

Sources: Vanguard calculations, using data from Thomson Reuters Datastream.

### When to hedge?

Vanguard's research suggests that investors should consider hedging some foreign currency exposure in their equity portfolios if they:

1. Have access to low-cost products for achieving hedged exposure.
2. Do not believe that foreign currency will diversify their portfolio.
3. Have greater exposure to foreign assets (in other words, a smaller allocation to domestic assets).
4. Have an explicit portfolio objective of minimising realised global equity volatility.

### Hedging success—aligning goal & implementation

Foreign currency exposure affects a portfolio's volatility and its long-term returns. A currency management strategy designed to maximise returns can be quite different to one that aims to reduce risk. This is why the investor's primary goal is so important when designing, implementing and evaluating a strategy.

### The cost impact

For a hedging strategy to be successful, the benefits must outweigh the costs.

Our research shows that hedged and unhedged international equity exposures deliver similar returns over the long term. However, we would expect the

long-term net returns on a hedged equity portfolio to be lower, due to the additional costs involved in implementing the strategy.

Implementing a currency hedge is an additional transaction, which comes with direct costs. Historically, these costs have been low to moderate but they can rise dramatically during periods of market uncertainty.

In addition, there are a variety of operational costs required to successfully execute a hedging strategy. These transaction costs explain why for international equity funds the expense ratio is typically higher for hedged funds compared to unhedged funds.

Transaction costs are more hidden than expense ratios and have an impact on performance over time as they are deducted from returns. Given the benefits of hedging are uncertain, many investors choose to leave their currency exposure unhedged, or partially hedged to reduce costs. For many investors, access to low-cost products that provide hedged exposure should be a key consideration in the hedging decision.

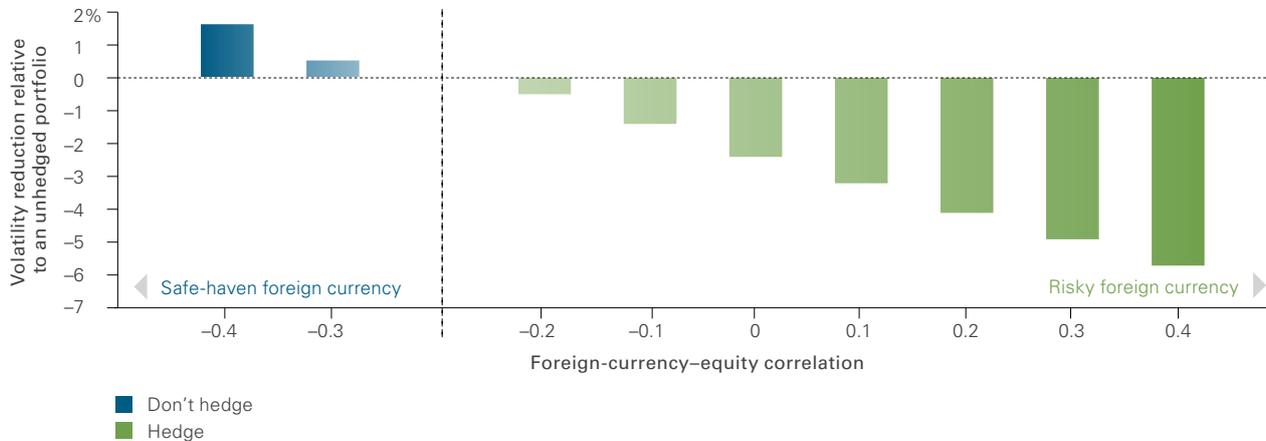
### Evaluating currency exposure in a risk-return framework

Currency exposure introduces its own volatility to a portfolio. Its impact on a portfolio's risk depends on two key factors:

- The volatility of currency relative to that of the underlying asset (the volatility ratio)

**Figure 2** Currency correlation is a key driver of risk impact from hedging foreign-equity portfolios

Hypothetical volatility impact from a full hedge as currency–equity correlation changes



Notes: Hypothetical illustration of difference in volatility between hedged and unhedged investments, with various currency–equity correlations. Figure assumes 20% equity volatility and 10% currency volatility.

Source: Vanguard.

- The interaction between currency and the underlying asset (currency-asset correlation)

The net effect of these two factors determines whether total portfolio risk is increased or decreased by hedging the foreign currency exposure.

How do we define risk? Given its common use in the investment world, we have used standard deviation of returns as our measure of risk in this paper.

### Framework for hedging decision: practical application

Our analysis demonstrates the importance of the relative volatility of foreign currency when making hedging decisions. For portfolios with a higher fixed interest exposure, the hedged portfolio is typically less risky than the unhedged portfolio.

The asset-currency correlation is not as important in a fixed interest portfolio, as this asset class is significantly less volatile than currency. The correlation becomes more important when you match currency with a more volatile asset, such as equities.

For a traditional equity and bond portfolio, our analysis showed that it was the asset allocation that largely determines the volatility ratio, which is an important factor in the hedging decision.

By implementing a currency allocation within a portfolio’s foreign equity allocation, investors can balance the overall risk of currency with the diversification benefits that the currency brings to the portfolio.

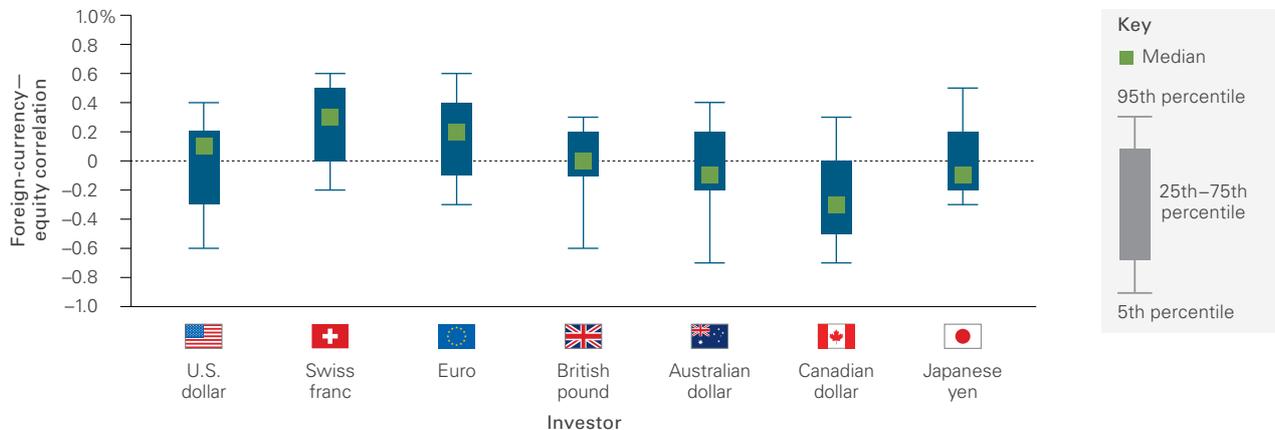
### Establishing a risk management framework

Our analysis highlights two important questions investors should answer when determining their currency exposure within a risk management framework:

- What is the portfolio’s asset allocation? Due to their lower volatility, fixed interest oriented portfolios benefit more from hedging than equity oriented portfolios. Fully hedging a portfolio’s fixed interest allocation while targeting currency exposure in the foreign equity allocation can be a useful starting point for investors.
- What is the expected correlation between currency and equities? Owning foreign currencies usually provides a diversification benefit, which is determined by the direction and magnitude of the correlation between the two assets.

**Figure 3** Currency correlations have been highly variable, across both time and markets

Percentile distributions of ten-year foreign-currency–equity correlations from the stated currency regions’ perspectives: January 1972–December 2013



**Notes:** Figure displays percentiles for ten-year correlations of annual returns, with correlations calculated between foreign currency and foreign equity from the perspective of the stated currency region. See appendix for details on data.

**Sources:** Vanguard, based on data from MSCI and International Monetary Fund.

For portfolios with higher equity weightings, the expected correlation between the portfolio’s assets and currencies becomes important.

**Figure 2** shows the impact on portfolio volatility of different correlation levels between foreign-currency and equity. As these correlations become more positive, the volatility of the unhedged portfolio increases, making hedged portfolio more attractive.

### Managing risk in an uncertain world

There is a potential diversification benefit from hedging exposure to currencies with historically positive correlations (that is, ‘risky’ currencies). Similarly, there is a potential benefit from not hedging currencies with low or negative correlations (that is, ‘safe-haven’ currencies). However, predicting long-term correlations for these currencies is difficult.

The correlations between currency and equity returns have varied significantly across markets and over time. This correlation variation means that the optimal currency exposure also varies over time, as does the impact of hedging on portfolio volatility, which is illustrated in **Figures 3** and **4**.

**Figure 4** shows that the difference in volatility between hedged and unhedged investments was significant in all markets except Australia and Canada. In these two markets, the risk reduction framework suggests that leaving foreign currency exposure unhedged would have been a better strategy after 2000, but not before!

### Is a partial hedge the answer?

A partial hedge could be a potential solution to managing the uncertainty in accurately forecasting asset-currency correlations and risk-reduction benefits. This partial hedge can be achieved either directly or through a combination of hedged and unhedged equity products.

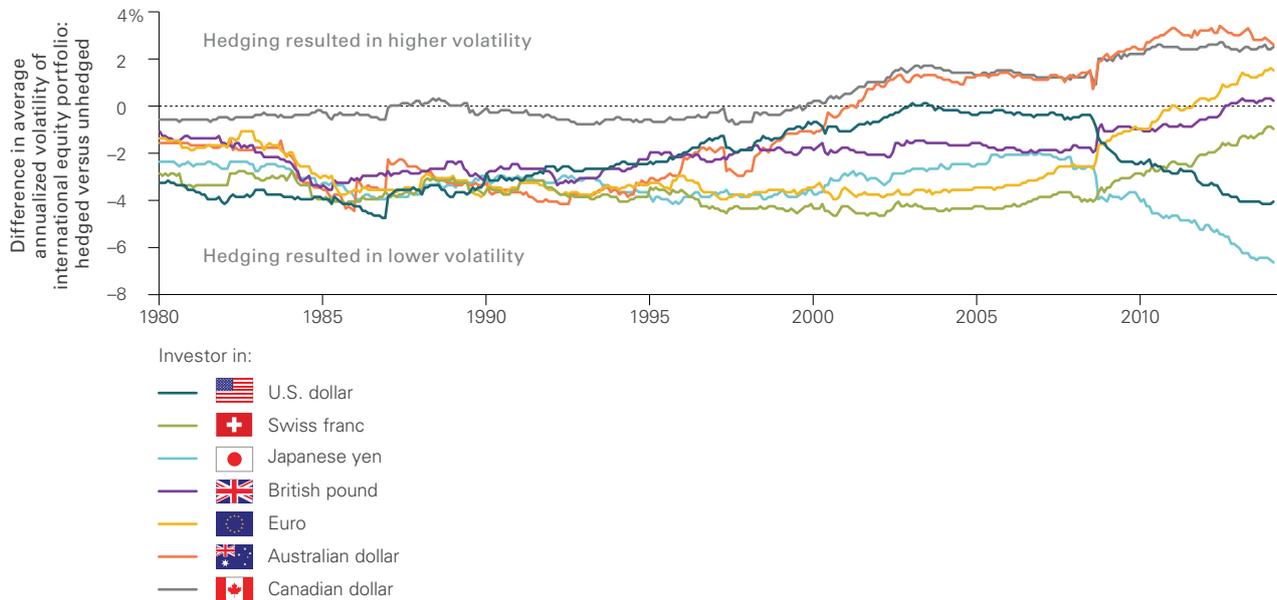
### Home bias or hedging?

The size of a local market can also have a significant impact on the currency hedging decision. An investor from a small local market (such as Australia) has a much larger foreign-currency exposure than an investor from a larger market, such as the US for example.

**Figure 4** Volatility impact of hedging is variable across time and markets

a. Variable correlations have led to variable risk outcomes, across both time and markets

Rolling ten-year difference in annualized volatility of monthly returns between hedged and unhedged portfolios invested in developed foreign equity: January 1971–December 2013



**Notes:** Figure displays difference in ten-year rolling annualized volatility of monthly returns between hedged and unhedged portfolios invested in foreign developed equity. See appendix for details on data.

**Sources:** Vanguard, based on data from MSCI and International Monetary Fund.

The argument for hedging foreign currency exposure becomes stronger when the home market is a smaller fraction of the global market. It's interesting to note, however, that investors from these smaller markets have a higher home country bias than those from larger markets. A partial hedging strategy can be a reasonable compromise, allowing for a targeted approach to currency without reducing the underlying portfolio's diversification potential.

### In summary

- Foreign currency impacts both the risk and return of a portfolio
- We expect the long-run returns of hedged foreign-equity portfolios to be lower than unhedged portfolios once costs are taken into account
- The ratio of volatilities (currency volatility to asset volatility) is a significant factor in determining the hedging strategy
- It makes sense to fully hedge fixed interest given its low volatility
- Linking currency hedging to overall equity allocation can be a good starting point
- Partial hedging can reduce the cost impact of hedging

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