



Invesco Fixed Income Investment Insights

Currency management: a simple roadmap

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Ray Uy
Head of Invesco Fixed
Income (FI) Macro Research

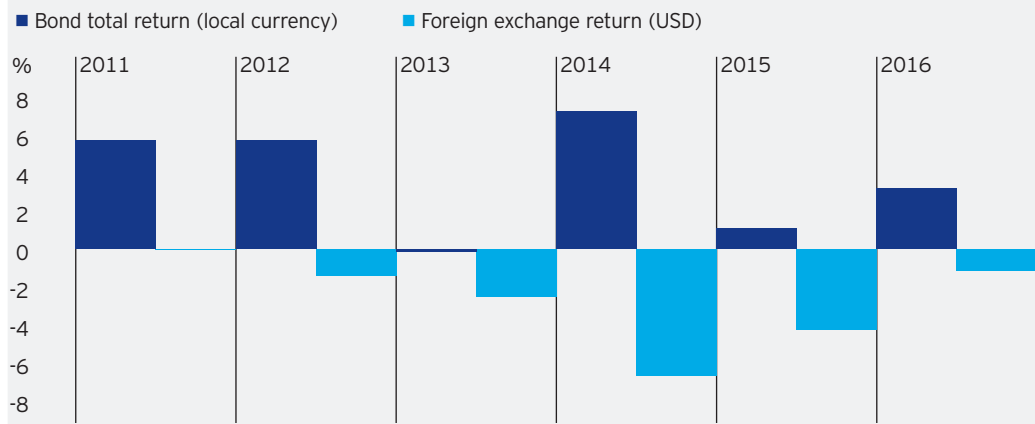
Global diversification has become standard practice among investors around the world. As the trend toward global investing grows, managing currency risk in global portfolios is likely to take on increasing importance. Sovereign wealth funds, central banks and other investors are likely to consider the benefits and challenges of currency hedging as their investment strategies become more globally focused. However, evaluating the impact of foreign exchange risk on portfolios and how to address that risk is a debated issue. Should global investors adopt strategies to specifically address currency risk or should they not?

There is no universally correct answer to this question. Rather, when determining whether to hedge currency risk or not, investors should consider their own individual investment objectives and risk preferences. Risk factors related to the constituents of the underlying portfolio must also be considered when formulating the appropriate strategy. Because risk factors differ according to each portfolio type and must be evaluated by each individual investor, it is difficult to argue broadly for or against currency hedging. In this paper, we provide investors with a simple roadmap to guide their decision-making process.

The impact of currency volatility

Currency fluctuations can significantly impact the total return profile of a portfolio. Figure 1 shows that negative currency returns on the Bloomberg Barclays Global Aggregate Bond Index (a broad basket of global, high quality bonds) have offset positive underlying bond returns in recent years.

Figure 1: Bloomberg Barclays Global Aggregate Bond Index annual total returns: currency and bond return

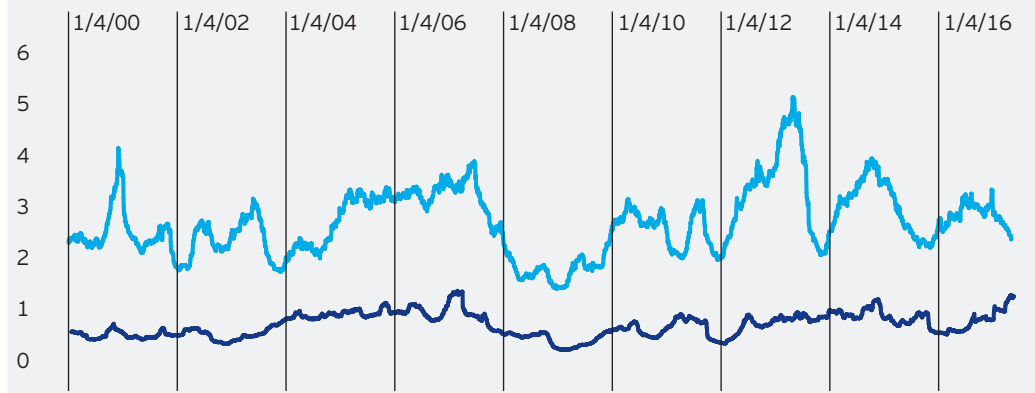


Source: Bloomberg L.P., Jan. 1, 2011 to Dec. 31, 2016. Past performance is no guarantee of future results.

The importance of currency risk relative to total portfolio risk can also depend on the underlying asset class. For example, Figure 2 shows that currency volatility relative to asset class volatility is historically greater in fixed income than it is in equity.

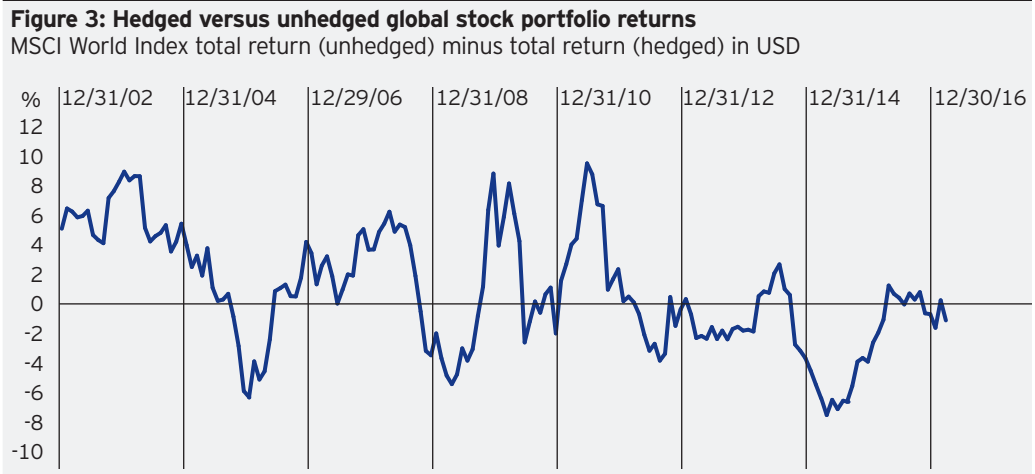
Figure 2: Ratios of currency volatility to asset class volatility

■ Equity volatility ratio (S&P 500) ■ Fixed income volatility ratio (Bloomberg Barclays Global Aggregate Bond Index)



Source: Bloomberg L.P., Invesco, Jan. 4, 2000 to Feb. 17, 2017. Ratios are based on realized price volatility of indices. Past performance is no guarantee of future results.

Opponents of currency hedging argue that, over the long run, currency values tend to revert to their long-term means. In a world where capital is free to move across borders, opponents argue that currencies will not trend in one direction relative to an investor's home currency forever.¹ Therefore, some opponents believe that, while foreign currency exposure introduces some volatility in the short term, it does not have a significant impact on long-term portfolio volatility.²



Source: Bloomberg L.P., Morgan Stanley, Invesco, Dec. 31, 2002 to Feb. 28, 2017. Past performance is no guarantee of future results.

Figure 3 shows that, over a long time horizon, the difference between the returns of a hedged and unhedged global stock portfolio is trendless - over a long time horizon, the difference between the two tends to mean revert toward zero. However, while it may be true that currencies are historically cyclical and tend to mean revert over long time horizons, currency cycles are typically far longer (7-10 years) than the average investor's return horizon. Additionally, as shown in Figure 1, for relatively lower yielding, historically less volatile asset classes, such as fixed income, total returns can be heavily dictated by currency movements. The current low interest rate environment exacerbates this situation. Global zero interest rate policy (ZIRP) has eliminated the traditional interest rate cushion that relatively insulated passive fixed income investment strategies in the past. As shown in Figure 2, the ratio of currency volatility relative to asset class volatility can serve as a guide for how vulnerable total returns are likely to be to currency fluctuations.

Defining currency risk¹

Currency risk is the risk associated with receiving future cash flows in a foreign currency. Future cash flows can be generated by a security, such as a foreign bond or stock, or alternative investment, such as a real estate holding. The value of these cash flows to the investor depends on the rate at which they can be converted into the investor's home currency. Currency risk is, therefore, the risk associated with converting foreign cash flows into the investor's home currency.

For an investor investing in foreign assets, the return on a foreign portfolio can be divided into two parts: the return on the local asset plus the return on the foreign currency:

Equation 1

Foreign portfolio return	=	Local asset return	+	Foreign currency return
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Similarly, foreign portfolio risk is equal to the risk of the local asset plus currency risk, plus any possible interaction between the two:

Equation 2

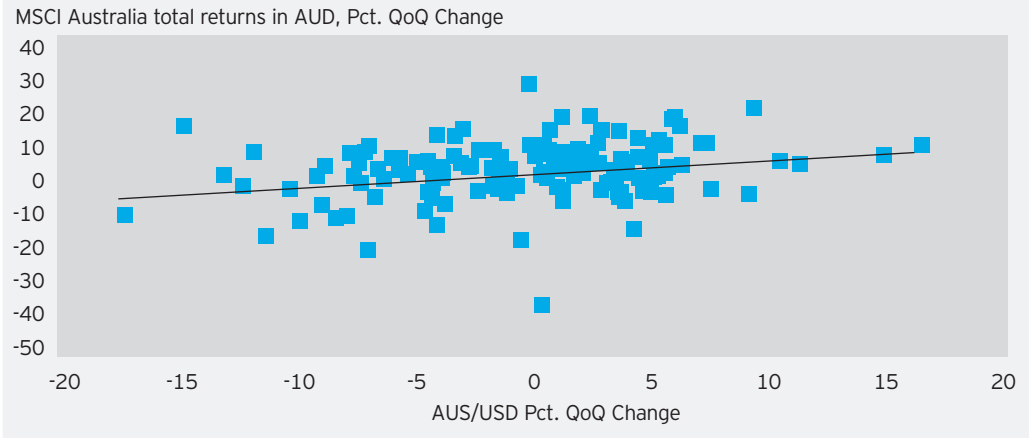
Foreign portfolio return	=	Local asset risk	+	Foreign currency risk	+	Interaction (local asset risk/foreign currency risk)
(1)		(2)		(3)		(4)

The objective of currency hedging is to lower overall portfolio volatility, or risk (1). Currency hedging does this by addressing factors (3) and (4). Factor (4), the interaction between the local asset and the foreign currency, reflects the statistical correlation between the

return on the local investment and the return on the foreign currency. For example, it could include the correlation between the return on a local stock and the movement in the foreign exchange rate of that stock. In many cases, the correlation between the local investment and the currency is relatively low. However, in some cases, the correlation can be high, meaning that reducing this risk factor can be an important objective in lowering overall portfolio risk.

For example, the Australian dollar has demonstrated a historical correlation of 25% to the Australian equity market.³ Therefore, for example, for a US dollar-based investor, an unhedged portfolio of Australian stocks would have been subject to risk generated by the interaction term shown in Equation 2.

Figure 4: Positive historical correlation of Australian currency and stocks amplified upside and downside portfolio risks

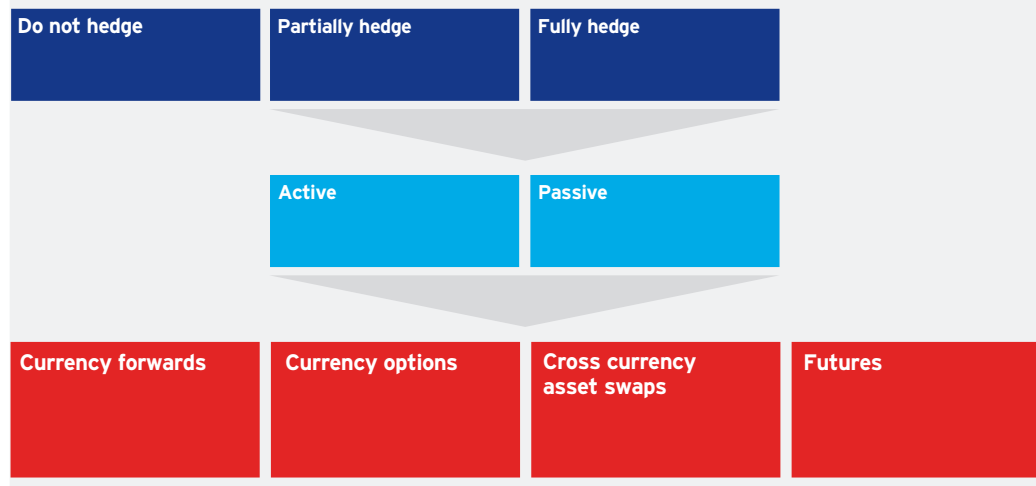


Source: Bloomberg L.P., June 30, 1981 to Dec. 31, 2016. Figure 4 plots the historical return of the MSCI Australia Index in Australian dollars versus the movements of the Australian dollar/US dollar exchange rate. Because they have been positively correlated, positive returns to local stocks tended to be amplified by an increase in the value of the Australian dollar. However, the downside risk would also be amplified by that same relationship. Past performance is no guarantee of future results.

A simple roadmap

Effectively managing currency risk can help allow portfolio returns to be dictated by the core strategy of the asset class and portfolio manager skill, potentially eliminating unintended residual risks. Managing currency risk can also be undertaken with the aim of improving a portfolio's return profile. When considering whether or not to hedge currency risk, investors face three options: fully hedge, partially hedge or do not hedge. If the decision is made to hedge, investors need to decide whether to hedge actively or passively - in other words, "set it and forget it" or make changes to the hedging strategy periodically based on chosen criteria.

Figure 5: Investors face three options



Source: Invesco Fixed Income. For illustrative purposes only.

Common hedging instruments

- **Currency forward contracts.** Custom-tailored derivative instruments that obligate both parties to buy or sell a currency on a specified future date for a particular amount and exchange rate for any given currency pair (most common hedging method).
- **Currency options.** Derivative instruments that give the purchaser the right, but not the obligation, to enter into a currency transaction at a specified date and price.
- **Cross currency asset swaps.** Derivative instruments that have specific cash flow exchanges between two currencies as specified by the cash flow schedule of the underlying security being hedged. Swaps are more common for hedging bonds and seek to eliminate currency risk for the life of the underlying security.
- **Currency futures.** Unlike custom-tailored, over-the-counter currency forward contracts, currency futures contracts are standardized, listed, exchange-traded contracts to buy or sell a currency at a future date. As such, currency futures have predefined maturity dates and contract sizes.

Four simple questions

The opportunity set of hedging options facing investors is fairly straightforward. However, the decision of whether or not to hedge and what approach involves many considerations based on the investor's investment objectives and risk preferences. We provide a list of four simple questions that investors can ask themselves to help determine whether hedging is desirable and what type of hedging strategy may be appropriate for them.

Answering the following four questions can help determine an appropriate currency management strategy:

1. What is the source and nature of currency risk to be managed?

- Investors can start by asking, what is the underlying asset class at risk from currency movements? For example, fixed income returns are especially vulnerable to currency volatility, especially at current low prevailing yields. Many equity investors, on the other hand, view unhedged portfolios as a way to preserve diversification.
- How predictable is the investment's future cash flow? The more predictable a portfolio's cash flows are, the easier it is to hedge effectively. A typical fixed income portfolio, for example, can be hedged with contract maturities synchronized around set coupon payments. However, if the asset class in question generates inconsistent cash flows, such as real estate or private equity investments, then the hedge may not be as simple or exact.

2. What is the desired hedging ratio?

- The desired hedging ratio (the portion of the portfolio that is hedged relative to the entire portfolio) will depend in part on the investor's "hedging budget." Currency hedging, like buying insurance, has a cost and this cost is deducted from investment returns. Hedging costs are largely driven by the interest rate differential between the home and foreign currencies.⁴ How much an investor is willing to spend on attempting to reduce currency risk is his or her "hedging budget."
- The hedging budget helps determine the preferred hedging ratio. Possible hedging ratios span between 0% (no hedge) to 100% (fully hedged). Aside from cost, the investor's own level of "risk aversion," or preference for certainty, is another important factor in determining his or her hedging ratio. The higher the preference for certainty, the more likely an investor is willing to pay a higher cost to reduce risk.

3. In the case of active currency management, what factors are likely to cause changes to the hedging strategy over time? In a passive strategy, what factors determine the passive hedging ratio?

- An investor in an active currency management strategy may need to ask, what are the modulation criteria? In other words, what are the criteria that will trigger changes to the hedging strategy over time? These criteria can be broadly grouped into the following categories:
 - i. Macro driven - Macro views may drive currency selection or the hedging ratio. For example, an outlook for a particular currency may drive investment and hedging decisions.
 - ii. Carry biased - Interest rate differentials between the home and foreign currency may drive hedging decisions. Investors may seek to minimize the drag on returns due to hedging costs.
 - iii. Volatility target - Comfort with certain volatility levels may determine hedging

decisions. For example, consider a portfolio that generates 10% volatility of returns due to asset prices only and 5% due to currencies. If a tolerable level of volatility is 10%, hedging strategies could be adopted to eliminate the additional 5% volatility generated by currencies. However, we believe it is important not to adopt across-the-board currency strategies. Rather, it is important to take into account the correlation of each currency to each underlying security in the portfolio, meaning each currency's sensitivity to the underlying portfolio constituents. These sensitivities are represented by factor (4) in Equation 2 and can be significant.

- An investor in a passive strategy may determine his or her passive hedging ratio based on the three criteria above or based purely on preference.

4. What is the operational set-up?

- Any currency-hedged strategy requires cash management tasks and capabilities. These capabilities and tasks include foreign account settlement capability, the establishment of credit lines and derivatives documentation, for example.

Conclusion

Currency hedging is not a one-size-fits-all strategy. Investor risk appetite, asset class characteristics and portfolio objectives all enter into the decision of whether or not to hedge. Choosing an active or passive approach is further dependent on individual investor criteria. We have provided a simple roadmap to guide the hedging decision as well as to selecting the basic approach. By answering the four questions outlined above, investors can start on the path to determining the currency management strategy most appropriate for their portfolios.

1 Source: "Investments," William F. Sharpe, Gordon J. Alexander, Jeffrey V. Bailey, Prentice Hall, Englewood Cliffs, New Jersey, 1995.

2 Source: "Four reasons why we do not hedge against currency volatility," Clas Olsson, CIO, Invesco, May 14, 2015.

3 Source: Bloomberg L.P., June 30, 1981 to Dec. 31, 2016.

4 Interest rate differentials are used to price forward currency rates using the notion of "interest rate parity." In this approach, the difference between domestic interest rates, for any given currency pair, determines the cost of hedging currency exposure. Simply put, the higher the domestic interest rate of the currency to be hedged relative to the base currency interest rate, the higher the cost of hedging.

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