



## To Hedge or Not to Hedge: Currency Hedging and International Investing

*As economies, markets, and companies become increasingly global, many investors are including foreign investments in their portfolios. Foreign investing introduces the additional dimension of currency exposure into the return equation: for a US investor, the return on any investment in a foreign market is equal to the return on the investment in local currency plus the return of the foreign currency relative to the US dollar. When the dollar is strong relative to the foreign currency, this can hurt total return, as the local currency translates into fewer dollars.*

Recent US dollar strength (the dollar was up nearly 20% between July 2014 and March 2015), has many investors arguably more focused on foreign exchange risk, and wondering what to do about it. Through hedging, investors can potentially mitigate the impact of foreign exchange movements on portfolio returns.

In this article, we evaluate hedged and unhedged equity performance using the Sharpe Ratio, which is calculated as the average excess return (return of the portfolio less the risk-free rate) divided by the standard deviation of the portfolio return. The Sharpe Ratio measures risk-adjusted performance and allows us to compare equity portfolios with different levels of risk.

When evaluating whether or not to hedge foreign equities, the following criteria may be useful:

- Does hedging increase risk-adjusted returns? If so, does the benefit come from higher average returns, lower volatility, or both?
- What are the costs of hedging? How does the hedging cost change depending on market conditions?
- What are the implementation issues associated with hedging?

This paper takes a critical look at foreign exchange hedging to understand the benefits and limitations of using such instruments to build international equity portfolios for clients. It then turns to a brief discussion of hedging as it relates to non-US bonds.

### What is a Currency Hedge?

A foreign exchange hedge is a type of derivative that provides a payoff that depends on whether currencies rise or fall. There are two main types of hedging vehicles: forward contracts and options. Forward contracts are agreements to lock in a specific exchange rate at a future date. Options provide a set rate at which the investor may choose to exchange currencies for a set period of time. Options require up-front premium payments; forward contracts do not. Both instruments also involve incurring transaction costs.

### Should you Hedge Foreign Equities?

Previous academic research has generally found limited success in forecasting future changes in foreign exchange rates.<sup>1</sup> Given the futility of predicting future changes in currency rates, the next related question is whether, over long periods of time, the US dollar generally strengthens or weakens against other major currencies. Exhibit 1 plots US dollar movements against a basket of currencies of major US trading partners. This index was close to parity in 1981, before strengthening by 60% over the next four years and then returning to the same level in 1987. We see a similar pattern of appreciation/depreciation occurring over the 1995 – 2007 period. Over long periods, however, there does not appear to be any meaningful trend in foreign exchange rates, and currency fluctuations even out such that the expected return from the currency component of an equity investment is essentially zero.

<sup>1</sup> See for example Meese and Rogoff (1983).

Based on this, we believe an investor should not use hedging instruments such as forwards and options to speculate on the future movement in exchange rates. Predicting the movement of any financial asset can be, at best, a humbling exercise and at worst, a very costly one.

**Exhibit 1: US Dollar Index Spot Exchange Rate (DXY/USD)**  
Jan. 1980 – May 2015



Note: The US Dollar Index reflects the value of the US dollar relative to a basket of major US trading partner currencies. The composition of this index as of May 2015 was 57.6% euro, 13.6% Japanese yen, 11.9% Great Britain Pound, 9.1% Canadian dollar, 4.2% Swedish krona and 3.6% Swiss franc. Declines in the index reflect dollar depreciation; increases reflect dollar appreciation.  
Source: Bloomberg

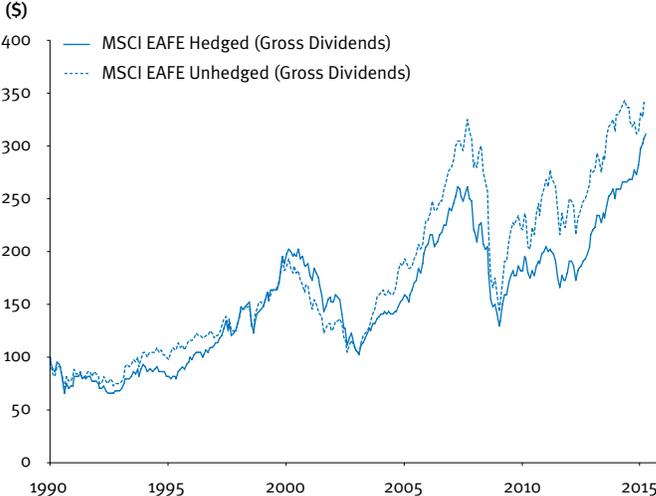
Next, we ask whether currency hedging reduces volatility. First, it's not entirely clear whether hedging *should* reduce total portfolio volatility. Consider a portfolio consisting of \$1,000 in euro-denominated equities. Assume the local return (earned by European investors) to European equities is either +15% or -5% and the currency return (from converting euro returns into USD returns) is either +10% or -10%. If the currency return is perfectly *negatively correlated* with the local return, then an unhedged investor will always earn 5% (good local return: +15% - 10% = 5%; bad local return: -5% + 10% = 5%). Hedging the currency return, on the other hand, will result in returns of +15% or -5%. In this simple example, we can see how return volatility is only reduced if the currency return is *positively* related to the local return.

While academic research documents a slightly positive relation between currency and local returns, most papers fail to find reliable reductions in equity portfolio volatility

that would lead to increases in risk-adjusted returns (as measured using the Sharpe Ratio). Using data going back to 1802, Froot (1993) finds that while hedging currency risk reduces short-term portfolio volatility, long-term volatility *increases* relative to an unhedged equity portfolio. Glen and Jorion (1993) find no reliable difference in volatility associated with hedging international equity positions for a global equity portfolio.

Exhibit 2 illustrates growth in wealth for an investment in the MSCI EAFE Unhedged and the MSCI EAFE Hedged indices over the period from January 1990 to May 2015. At the end of December 1989, \$100 invested in the MSCI EAFE Hedged and the respective unhedged index would have grown to \$310 and \$340, respectively. The relative performance difference is related to the results we saw in Exhibit 1: the outperformance of the unhedged index from 2003 to 2007 corresponds to the dollar weakening over this period.

**Exhibit 2: Growth of \$100 Invested in MSCI EAFE Indices**  
Jan. 1990 – May 2015



Sources: MSCI, Gerstein Fisher Research

Exhibit 3 reports performance of both developed non-US equity indices displayed in Exhibit 2. While the return for the unhedged index is slightly higher than that of the hedged index, the standard deviation is also higher. The net effect is similar Sharpe Ratios, which suggest that hedging does not reliably lead to differences in risk-adjusted expected returns for international equities.

### Exhibit 3: Performance Statistics for EAFE Hedged (Gross Dividends) and EAFE Unhedged (Gross Dividends) Index Returns

Jan. 1990 – May 2015

|                            | EAFE Unhedged | EAFE Hedged |
|----------------------------|---------------|-------------|
| Average Annualized Return  | 6.34%         | 5.65%       |
| Compound Annualized Return | 4.95%         | 4.57%       |
| Standard Deviation         | 17.21%        | 15.18%      |
| Sharpe Ratio               | 0.20          | 0.18        |

Sources: MSCI, Gerstein Fisher Research

One of the main reasons that hedging does not meaningfully reduce the volatility of global equity portfolios is related to the variance of the local return when compared to that of the currency return. While the local return on assets varies substantially depending on market conditions (2008 was a very negative year for local foreign returns, while 2009 was a very positive year), currency return exhibits much less volatility. Since the market volatility associated with investments in equities is so large already, hedging currency exposures does not necessarily lead to a meaningful reduction in overall portfolio volatility.

The cost of currency hedging is variable and can be quite significant for equity portfolios. Nesbitt (1991) estimates that hedging costs using forward contracts on an international equity portfolio are close to 0.25%. The cost for option-based hedging strategies is dictated by the level of option premium paid. During periods of market stress (2008 – 2009), these costs are generally quite high.

One final challenge associated with implementing and analyzing the expected cost for a currency hedging program is the so-called unknown quantity problem. When an investor enters into a hedging contract (using either an option or forward contract), there is an agreement to exchange currencies at a set quantity and rate in the future. If the foreign asset has a high local return, additional forward contracts/options would need to be purchased to maintain the hedge. The opposite happens if the local return is low. This feature of currency hedging increases the cost, either through more rebalancing associated with maintaining appropriate hedge ratios, or more rolling of hedging instruments associated with entering into short-term hedging contracts.

### Should You Hedge Foreign Bonds?

The same concerns about recent dollar strength that have investors wondering if they should hedge their foreign equities are driving similar questions about foreign bond holdings. Generally, our view rhymes with what we have just reviewed on the equities side: we would tend to leave foreign bond holdings unhedged, particularly if they are the relatively short-term, high-quality issues we prefer to hold within a diversified portfolio.

One of the main purposes of investing in foreign bonds, in our view, is currency diversification. Hedging international fixed income holdings removes that potential benefit. Additionally, unhedged foreign bonds historically have improved overall risk-adjusted returns when added to a US-dollar-denominated portfolio: over the 1985 to March 2015 period, unhedged international bonds outperformed their hedged counterparts, with annualized returns of 6.1% compared to 5.8%.<sup>2</sup> When the two respective asset classes were incorporated into a balanced portfolio comprising allocations of 60% S&P 500, 30% US short-term Treasuries, 10% short-term international bonds, over the same 30-year time period (with quarterly rebalancing), the portfolio with unhedged foreign bonds slightly outperformed the same portfolio with hedged foreign bonds, 9.52% annualized versus 9.47%. Note these results do not account for the additional cost to the investor of hedging currency.

Currency exposure also adds meaningfully to overall portfolio diversification: the correlation between US and unhedged international bonds was just 0.51 between 1985 and March 2015. Hedged foreign bonds, on the other hand, had a correlation of 0.90 with US bonds over the same period, providing little diversification benefit.

### Conclusion

In this article we evaluate whether currency hedging improves the risk-adjusted performance of global equity portfolios. We find that currency hedging, over the long run, in fact has very little effect on risk-adjusted performance, with a slight decrease in average return offset by a small decrease in volatility. Given the limited benefit of such instruments, in our view hedging foreign exchange risk for equities is not beneficial for the average investor, and even less so when costs are taken into consideration.

<sup>2</sup> Returns represented by Citigroup World Government Bond Index 1-5 Years and Citigroup World Government Bond Index 1-5 Years (Hedged), respectively.

For foreign fixed income, the story is largely similar. The currency component of foreign bonds deepens portfolio diversification, with a positive impact on the risk-adjusted returns of a diversified portfolio.

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