The potential benefits of international equity investing include participation in the fortunes of many of today’s global industry leaders and greater portfolio diversification than can be derived by investing in U.S. securities alone. Approximately two-thirds of global equity market capitalization resides outside the United States, as do almost half of the top 100 firms by market capitalization. Still, many U.S. investors appear to be underweight international equities in their portfolio allocations.

For those seeking exposure to international equities, it is important to understand how exchange-rate movements can affect equity returns in these markets. Currency hedging offers a way to invest internationally while managing against the risk a stronger U.S. dollar can impose on foreign-based equity returns. However, hedging also can reduce those returns when the U.S. dollar falls. History shows that the better-performing strategy can vary from year to year and is difficult to predict. What’s more, the best-performing strategy in one equity market might not be the best approach in another market during the same time period. In either case, whether investors utilize a fully hedged or non-hedged strategy, it is important to understand that they are effectively making a currency call that is inherently difficult to time.

Fortunately, there is an alternative to the all-or-nothing approaches many investors have taken historically to hedging currency exposure in their international portfolios. A balanced 50-percent currency-hedged portfolio may offer a reasonable alternative approach. In fact, our research shows that half-hedged portfolios reduce the potential risk of misreading extreme currency movements, in either direction, while lowering the inherent volatility in certain key markets, offering a hedge of least regret across a broad range of currency scenarios. In addition, we believe an exchange-traded fund (ETF) structure offers an efficient and attractive vehicle to implement a 50-percent currency-hedged international equity strategy.

**A Strategic Allocation, Still Skewed by Home-Country Bias**

The case for international equities as a strategic long-term portfolio allocation remains compelling. Approximately two-thirds of today’s global equity market capitalization resides outside the United States, including some of the world’s most famous—and most profitable—brands. Non-U.S. industry leaders can be found in a variety of industries, including pharmaceuticals, semiconductors, telecommunications, automobiles, oil and gas, food and beverage products, and retail.

According to the latest National Association of College and University Business Officers (NACUBO)—Commonfund Study of Endowments, the average allocation by participating institutions to international equities in 2014 was 19 percent, up from 18 percent in 2013. The share of equity mutual fund assets in domestic equities is 74 percent compared to 26 percent for world equities, with a similar breakdown in ETFs (see figure 1). Yet, many U.S. investors continue to exhibit a clear home-country bias in their asset class allocations.

The proper allocation to international equities will vary by investor, but the benefits generally center on enhanced portfolio diversification and access to dynamic...
investment opportunities not available by limiting one’s opportunity set to only U.S. securities. Moreover, now may be an attractive time to consider increasing one’s allocation to international equities. The six-year bull market in U.S. equities has escalated S&P 500 Index valuations above the historical average. In contrast, international equity valuations remain below the historical average, and in some markets, such as Japan, valuations are near the low end of the historical range (see figure 2). Add in easy monetary policies for many of these countries, and a long-term investment thesis begins to emerge.

Currency—The Other Source of Risk and Return
International equity investing typically captures two return streams for U.S. investors: equity market returns and currency returns. Although average currency returns of developed countries are widely believed to revert toward zero percent over very long time horizons, fluctuations can be dramatic during shorter periods. Figure 3 illustrates the calendar year total returns for the FTSE Developed International ex North America Index in local currency compared to U.S. dollar returns, as well as the cumulative impact that currency movements had on performance. The wide gaps in some of these years substantially increased volatility and materially affected returns, at times negatively and, at others, positively.

The Currency Conundrum
Currency hedging can help manage the risks of large currency movements, but the extremes of either 100-percent hedged or 100-percent unhedged strategies introduce an inherent view on the direction of the U.S. dollar.

The challenges around this are twofold. First, a fully hedged portfolio historically has curtailed returns when the U.S. dollar weakened, relative to international currencies, whereas an unhedged portfolio historically has underperformed when the U.S. dollar strengthened.

Unfortunately, it is notoriously difficult to predict currency movements, which can make it challenging to anticipate when a currency-hedged or -unhedged strategy might be the better option. Figure 4 compares the annual relative gain/loss of currency-hedged and -unhedged returns for the FTSE Developed Europe Index in each of the past 30 years. The fully currency-hedged returns underperformed slightly more than 50 percent of the time.

Second, whereas a fully hedged currency position often is assumed to help mitigate volatility, it actually can increase an investment’s risk profile, depending on the specific dynamics of the underlying currencies. Figure 5 shows how various degrees of currency hedging affected index volatility across the 10-year period ended in 2014. Increasing the currency-hedged percentages steadily reduced volatility in the developed European and the broader developed international markets; however, the reverse held true for Japanese markets.

The variation in these results is due to differences in correlation between the currency return and the equity market return in local currency. This correlation has been strongly negative for Japan; therefore, the unhedged currency exposure has provided a natural hedge against fluctuations in the Japanese stock market. Hedging currency risk effectively reduces this natural hedge, and thus, volatility rises as the currency hedge percentage increases.
The correlation has been positive in the markets covered by the other two indexes, which means that currency exposure has added to equity risk and hedging this exposure has reduced volatility.

The Hedge of Least Regret

Addressing currency risk, however, does not require an all-or-none approach. Our research into the interaction between currencies and equity returns shows that a neutral 50-percent currency hedge on an international equity portfolio can offer a pragmatic balance for buy-and-hold investors. It can help gain international equity exposure and mitigate the effect of exchange-rate fluctuations, without being actively bullish or bearish on the direction of the U.S. dollar or foreign currencies.

Because the relationship between volatility and the amount of hedging is not linear in nature, there likely will be times when a 50-percent currency hedge captures a large percentage of the long-term risk reduction benefits of a fully hedged or unhedged portfolio.
Figure 6 illustrates how 50-percent currency hedging, applied to the FTSE Developed Europe Index over the past 30 years, lowered volatility by 80 percent, versus leaving currency risk completely unhedged.

A 50-percent currency-hedged international equity strategy also may help to provide a stabilizing effect on relative performance. As discussed earlier, there has been a frequent, often unpredictable, rotation between when a 100-percent currency-hedged or completely unhedged approach has outperformed. Table 1 highlights that the 50-percent hedged route offers a more prudent return path that consistently delivers more balanced returns between these two extremes. These returns also highlight that the U.S. dollar does not always move uniformly across global currencies. For example, during 2008–2013, a 100-percent hedged approach was never the strongest

Table 1: Calendar Year Returns for Unhedged, 50% Hedged and 100% Hedged

<table>
<thead>
<tr>
<th>Index</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>FTSE Developed ex North America (NA)</td>
<td>13.85</td>
<td>27.64</td>
<td>12.85</td>
<td>-43.18</td>
<td>34.03</td>
<td>9.11</td>
<td>-12.05</td>
<td>18.55</td>
<td>21.98</td>
<td>-4.61</td>
</tr>
<tr>
<td>FTSE Developed ex NA 50% Hedged to USD</td>
<td>21.63</td>
<td>24.02</td>
<td>9.86</td>
<td>-41.32</td>
<td>31.10</td>
<td>8.34</td>
<td>-11.83</td>
<td>18.35</td>
<td>23.81</td>
<td>0.43</td>
</tr>
<tr>
<td>FTSE Developed ex NA 100% Hedged to USD</td>
<td>29.81</td>
<td>20.31</td>
<td>6.90</td>
<td>-39.61</td>
<td>27.97</td>
<td>7.32</td>
<td>-11.78</td>
<td>18.06</td>
<td>25.59</td>
<td>5.64</td>
</tr>
<tr>
<td>FTSE Developed Europe</td>
<td>10.05</td>
<td>34.92</td>
<td>14.88</td>
<td>-45.93</td>
<td>37.34</td>
<td>4.40</td>
<td>-11.16</td>
<td>20.21</td>
<td>26.22</td>
<td>-5.65</td>
</tr>
<tr>
<td>FTSE Developed Europe 50% Hedged to USD</td>
<td>17.69</td>
<td>28.51</td>
<td>11.38</td>
<td>-42.04</td>
<td>33.92</td>
<td>6.85</td>
<td>-9.98</td>
<td>19.03</td>
<td>24.47</td>
<td>-0.27</td>
</tr>
<tr>
<td>FTSE Developed Europe 100% Hedged to USD</td>
<td>25.70</td>
<td>22.21</td>
<td>7.91</td>
<td>-38.23</td>
<td>30.24</td>
<td>8.95</td>
<td>-9.04</td>
<td>17.65</td>
<td>22.62</td>
<td>5.32</td>
</tr>
<tr>
<td>FTSE Japan</td>
<td>24.96</td>
<td>5.61</td>
<td>-4.77</td>
<td>-28.58</td>
<td>5.81</td>
<td>15.40</td>
<td>-13.55</td>
<td>8.08</td>
<td>27.32</td>
<td>-3.29</td>
</tr>
<tr>
<td>FTSE Japan 50% Hedged to USD</td>
<td>36.07</td>
<td>8.68</td>
<td>-5.73</td>
<td>-35.84</td>
<td>7.41</td>
<td>7.31</td>
<td>-15.65</td>
<td>13.86</td>
<td>39.78</td>
<td>3.11</td>
</tr>
<tr>
<td>FTSE Japan 100% Hedged to USD</td>
<td>47.96</td>
<td>11.72</td>
<td>-6.79</td>
<td>-42.65</td>
<td>8.51</td>
<td>-0.48</td>
<td>-17.76</td>
<td>19.69</td>
<td>53.16</td>
<td>9.72</td>
</tr>
</tbody>
</table>

Source: FTSE, as of April 30, 2015. Past performance is no guarantee of future results. Index performance is not intended to predict or project any specific investment. It is not possible to invest directly in an index.

Table 2: Advantages of Implementing 50% Currency Hedging with One ETF

<table>
<thead>
<tr>
<th></th>
<th>Single 50% Currency-Hedged ETF</th>
<th>Equally Splitting Assets between a Fully Hedged ETF and a Fully Unhedged ETF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial transaction costs</td>
<td>Required for one ETF</td>
<td>Doubled</td>
</tr>
<tr>
<td>Annual trading costs</td>
<td>Lower</td>
<td>Higher due to ongoing reallocations</td>
</tr>
<tr>
<td>Rebalancing tax implications</td>
<td>Automatic rebalancing within a single portfolio</td>
<td>Potentially higher due to ongoing need to sell shares of one ETF to buy shares of the other</td>
</tr>
<tr>
<td>Statements</td>
<td>Streamlined single line item</td>
<td>Multiple line items</td>
</tr>
<tr>
<td>Efficient allocation across hedging strategies</td>
<td>Professionally managed, automatically ongoing, and completely transparent</td>
<td>Potentially inefficient due to limited investor research resources</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Potential to make a wrong call if not allocated properly at any given time</td>
</tr>
</tbody>
</table>
ETFs Offer Efficient Implementation

ETF innovation makes it easy to access a 50-percent currency-hedged international equity strategy that fits comfortably into any size portfolio through a single product offering. While replicating a 50/50 approach can be achieved by equally investing in two ETFs, one fully hedged and one fully unhedged, but this presents several unnecessary challenges such as higher investment costs and greater administrative complexity. Table 2 highlights some of these drawbacks and why a single-ETF strategy may make more sense. Plus, investors still benefit from the liquidity, transparency, low cost, and tax efficiency of ETF investing.

A Timely Positioning Move?

We believe a neutral 50-percent currency hedge makes particular sense in today’s uncertain markets because it removes the need to take an active currency view. Figure 7 shows that the bulk of international ETF assets and 12-month net flows is in fully unhedged currency strategies. Consequently, the vast majority of investors are making a clear currency call for a weaker U.S. dollar, whether they know it or not. Moreover, most of the 12-month net flow increases into currency-hedged ETFs occurred after the recent large U.S. dollar gains, which indicates that many of these investors might have been chasing returns and may not have fully benefited from the hedge when it was most needed to protect foreign-based equity returns; their portfolios also now may be more vulnerable to any U.S. dollar declines. Now may be an opportune time to reallocate away from both of these types of currency hedging extremes into a more balanced approach.

Conclusion

In the absence of strong convictions around the direction of the U.S. dollar, euro, yen, and other global currencies, investors interested in international equities may find the most practical way to address exchange-rate risk is through a balanced, fixed 50-percent currency hedge. As discussed in this article, a consistent application of this disciplined approach has demonstrated clear advantages in reducing risk exposure. It also provided steadier performance, compared to fully hedged or unhedged indexes (table 1), which, by their very nature, were shown to underperform and outperform on a relative basis as market conditions continuously evolved. Finally, accessing this strategy through a rules-based ETF portfolio can be a less costly and more efficient manner than dual-hedged and non-hedged approaches.

Appendix: Theory and Economics Applied in Our Research

Correlations and Currency Risk

The unhedged U.S. dollar (USD) return on an investment in a foreign currency equity market is approximately:

\[ r_{USD} = r_{JPY} + f_{JPY} \]

In other words, the USD return on, for example, Japanese equities \((r_{USD})\) is approximately equal to the yen (JPY) return on Japanese equities \((r_{JPY})\) plus the currency return on JPY \((f_{JPY})\). Thus, there is a gain in USD if the Japanese market rises and/or the JPY rises. The first effect is obvious. The second is simply because the investor holds JPY to invest in the Japanese equity market. If the JPY is more valuable when the investment is exchanged into USD at the end of the investment period than it was at the beginning of the period, the investor has made money on the movement in the exchange rate.

A simple application of basic statistics illustrates:

\[ \sigma^2_{USD} = \sigma^2_{JPY} + \sigma^2_{f_{JPY}} + 2 \rho_{r_{JPY},f_{JPY}} \sigma_{r_{JPY}} \sigma_{f_{JPY}} \]

In this equation, \(\sigma^2\) is the variance of the return, \(\sigma\) is the volatility or standard deviation, and \(\rho\) is the correlation between the JPY return on Japanese equities and the currency return on JPY.
The currency-hedged USD return on an investment in a foreign currency, such as JPY again, equity market is approximately:

\[ r_{USD} = r_{JPY} - \text{cost} \]

The USD return is simply the JPY return minus the cost to hedge away the exchange-rate return. This cost is approximately the risk-free interest-rate differential between the two currencies. If (annualized) risk-free interest rates are 1-percent lower in USD than in JPY, then it will cost about 1 percent per year to hedge the JPY. If USD rates are higher than JPY rates, then the cost will be negative and the currency hedging will generate revenue. The variance of the hedged USD return is approximately:

\[ \sigma^2_{r_{USD}} \approx \sigma^2_{r_{JPY}} \]

This equals the variance of the JPY equity return. The intuition is that the cost term varies very little over time relative to either currency or equity returns. Its variance is more than 100 times smaller; therefore we can safely ignore it for developed markets where interest-rate differentials are small and vary very little over time.

Result: Hedging reduces risk.

Intuition: From the equations for the variance of the hedged and unhedged returns, it is clear that the hedged variance is smaller as long as:

\[ \sigma^2_{f_{JPY}} > -2 \rho_{r_{JPY},f_{JPY}} \sigma_{r_{JPY}} \sigma_{f_{JPY}} \Rightarrow \rho_{r_{JPY},f_{JPY}} > -\frac{\sigma_{f_{JPY}}}{2\sigma_{r_{JPY}}} \]

Hedging always reduces risk if the correlation is zero or positive. Even if the correlation is negative, it would have to be less than approximately –0.25 (assuming currency volatility is half equity volatility) in order for the unhedged strategy to be lower risk. Basically, unless the currency return moves strongly in the opposite direction of the local currency equity return, adding currency risk increases overall risk.

Hedging and Returns

Result: Hedging has a minimal long-term effect on average returns.

Intuition: From the equations above, it is clear that the hedged and unhedged return will be equal, on average, if the average hedging cost equals the average return on the foreign currency. This is exactly the condition referred to as uncovered interest-rate parity (UIP). While UIP does not hold in the short term, there is increasing evidence that it does hold in the intermediate to long term. Thus, hedging does not sacrifice returns. The economic intuition is that both currency returns and interest-rate differentials are driven, in the longer term, by inflation-rate differentials across the two currencies. High-inflation currencies both depreciate (referred to as purchasing power parity or PPP) and have higher interest rates (this is an implication of the Fisher effect).

Partial Hedging and Risk

When hedging a fraction \( \omega \) of the currency risk (for example 50 percent), the return is approximately:

\[ r_{USD} = r_{JPY} + (1 - \omega) f_{JPY} + \omega \text{cost} \]
The variance of the return is approximately:

\[ \sigma_{\text{USS}}^2 \approx \sigma_{\text{JEP}}^2 + (1 - w)^2 \sigma_{\text{JEP}}^2 + 2(1 - w) \rho \sigma_{\text{JEP}} \sigma_{\text{JEP}} \]

**Result:** There is substantial hedging-associated risk reduction from only partial hedging.

**Intuition:** Note that in the variance equation the hedging weight appears as a squared term multiplying the currency return variance. Therefore, for example, for 50-percent hedging the coefficient on the currency variance is only \(0.5^2 = 0.25\). In essence, this eliminates 75 percent of the currency risk with a 50-percent hedge.

**Result:** In terms of risk reduction, there is an optimal hedge ratio that depends on the correlation and the relative volatilities of the local currency equity return and the currency return.

**Intuition:** It is simple to show (taking a derivative) that the amount of hedging that results in the lowest volatility is approximately:

\[ w = \frac{\rho \sigma_{\text{JEP}} \sigma_{\text{JEP}} + \sigma_{\text{JEP}}}{\sigma_{\text{JEP}}} \]

If the correlation is zero, then 100-percent hedging provides minimum risk. As the correlation turns negative, the optimal fraction to hedge is below 100 percent. If local currency equity returns are twice as volatile as currency returns and the correlation is \(-0.25\), then 50-percent hedging is optimal.

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