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Research Insight

Why Currency Returns and Currency Hedging Matters

An Update on the MSCI Hedged Indices

Jennifer Bender, Roman Kouzmenko, and Zoltan Nagy

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Overview

With the growth of international investing, the impact of currency movements continues to be a significant issue. All investors are exposed to currency risk when investing abroad and adverse moves in exchange rates can dramatically impact their performance. Hedging currency exposure is one technique for taking currency risk out of the equation when investing in foreign companies. The MSCI Hedged Indices provide one way to measure the performance of a currency hedged equity index. Here we explore the effects of currency on foreign investments and how currency hedging can help investors who do not have a viewpoint on the direction of exchange rates.

The Impact of Currency Returns on Foreign Investments

Currency returns (or exchange rates) are essential for the simple reason that they have direct impact on the value of any foreign investment. Consider a US investor who purchased shares of Daimler AG, the German auto manufacturer, in May 2009 and then sold the shares in June 2010. The cost to this US investor in May 2009 would have been $3,670.70 (100 shares x 25.85€ x 1.42 EUR/USD) when the exchange rate was 1.42 EUR/USD (a cost of $1.42 for each Euro), as shown in Exhibit 1.

Exhibit 1: A Simple Example Illustrating the Impact of Exchange Rates on Foreign Investments

		Number of Shares	Price (EUR)	Total Value (EUR)	Exchange Rate (EUR/USD)	Price (USD)	Total Value (USD)
Purchase date:	May 2009	100	25.85 €	2,585.00 €	1.42	$36.71	$3,670.70
Sell date:	June 2010	100	41.92 €	4,192.00 €	1.22	$51.14	$5,114.24
Profit (%)				62.17%			39.33%

In June 2010, the exchange rate was 1.22 EUR/USD, as the Euro had depreciated relative to the US dollar over this time period. The investor received $5,114.24 for a profit of 39.3% in US dollars In Euros, however, the profit on Daimler AG would have been 62.2%. The depreciation of the Euro over this time period therefore resulted in a reduction of the US investor's profit.[1]

In effect, this example demonstrates that investing in foreign companies in periods when the corresponding foreign currency (here, the Euro) depreciates, will reduce the gains from foreign investments. Conversely, if the foreign currency appreciates, the gains from the foreign investment are enhanced.[2]

[1] Note that even when American Depository Receipts (ADRs) are used (priced in US dollars), the currency effect is embedded in the price of the ADR.

[2] It may be helpful to note that the return of a foreign investment to a US investor is calculated as the return on the investment (in local currency) plus the return on the currency, plus the product of the return on the investment and the return on the currency. In our example, 39% ≈ 62% - 14% - (62%*14%).

In general, investors with short to medium horizons should account for the currency impact on their foreign investments. In the example above, the 14% decline in the EUR/USD exchange rate from 1.42 to 1.22 had a significant effect on the investment return. Exhibit 2 shows the annualized average returns of various foreign currencies relative to the US dollar. Positive returns denote a strengthening of the foreign currency relative to the dollar.[2]

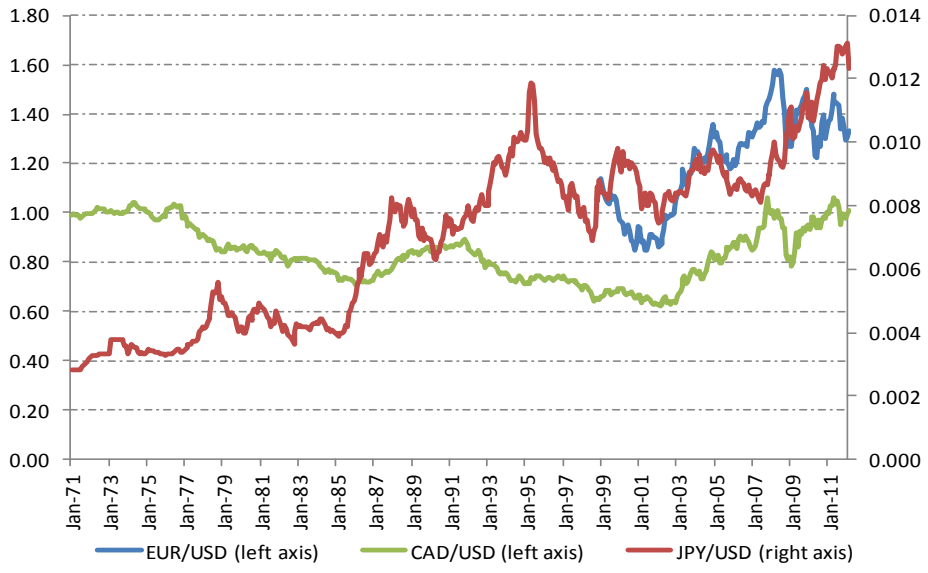
Exhibit 2: Nominal Exchange Rate Returns for Selected Currencies (Annualized Averages)

	January 1971 to February 2012	1971-1979	1980-1989	1990-1999	2000-2011
Euro	N/A	N/A	N/A	N/A	2.34%
Deutsche mark	2.23%	8.70%	0.21%	-1.39%	N/A
Swiss franc	3.87%	11.75%	0.35%	-0.32%	4.75%
Japanese yen	3.68%	4.56%	5.27%	3.44%	1.94%
Canadian dollar	0.04%	-1.64%	0.09%	-2.20%	3.16%
Australian dollar	-0.11%	-0.16%	-3.33%	-1.82%	4.12%
British pound	-1.01%	-0.96%	-3.14%	0.04%	-0.14%

Source: MSCI, WM/Reuters

Changes in exchange rates can be considerable depending on the time period. In the last decade, for example, most currencies have appreciated relative to the US dollar—particularly the Swiss franc and Australian dollar. In contrast, the dollar rose relative to major currencies in the 1990s (Exhibit 2). In Exhibit 3 we highlight various exchange rates and illustrate how extensive exchange rate moves can be over time. From the Euro trough relative to the US dollar (February 2002) to early this year (February 2012), we see the Euro gained 53%. And since 1971 to February 2012, the Japanese yen gained 340% relative to the US dollar.

Exhibit 3: Nominal Exchange Rates over Time (USD/JPY, USD/EUR, USDCAD)



Source: WM/Reuters

We have focused on nominal exchange rates thus far, however, it is also useful for investors to consider real exchange rates, which adjust nominal exchange rates by differences in the price levels between two currencies. In theory, real exchange rates should be a more relevant measure of currency returns as the local price of equities should adjust according to inflation levels.[3] However, real exchange rates cannot be observed and there are various challenges to estimating them accurately.

Why Hedge Currency Risk?

One of the most well known tenets in economics is that over the long term, there is an equilibrium real exchange rate between any two currencies. According to "purchasing power parity" (PPP), exchange rates between currencies are in equilibrium when the purchasing power of each is the same in each of the two countries.[4] PPP would imply that currency hedging isn't worthwhile since exchange rates should revert back to this equilibrium rate.[5] In reality, however, exchange rates can deviate substantially from this equilibrium rate, especially in the short run.

What drives exchange rates or currency returns in the short run? They can move for a variety of reasons including:

- **Central bank decisions or anticipated changes in monetary policy.** When central banks raise interest rates, bonds and other local assets appear more attractive relative to other countries. The country's currency will therefore appreciate as its assets are purchased by foreign investors.
- **Changes in expected inflation.** If investors anticipate higher inflation in the future, they generally expect the central bank to raise interest rates to combat this potential inflation. This produces the same effect as the previous point.
- **Changes in the balance of trade.** If demand for a country's goods increases on the part of foreign buyers, its currency will appreciate. Similarly, if domestic consumers import more goods from abroad than they buy locally, their currency will depreciate.
- **Changes in the attractiveness of financial assets.** Similar to goods, a net demand for a country's assets (irrespective of interest rates) will also impact the currency. The more attractive a country's assets, the more demand there is for that country's currency, all else being equal. Assets can change in their attractiveness (apart from interest rates) due to a country's regulations, policies, its financial health, as well as investor sentiment.

Currencies are the most heavily traded asset class with average daily turnover estimated at $3.98 trillion as of April 2010, according to the Bank for International Settlements.[6] A wide variety of participants trade currencies including large banks, central banks, institutional investors, currency speculators, corporations, governments, other financial institutions and retail investors.

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[3] For example, the currency of a country with high inflation will typically depreciate, but the local price of a stock will appreciate (this is especially true if the company in question operates globally).

[4] This means that the exchange rate between two countries should equal the ratio of the two countries' price levels for a fixed basket of goods and services.

[5] For example, Rogoff (1996) makes the observation that deviations from PPP do dampen out but only very slowly and over long periods, at roughly 15% per year.

[6] See the eighth Triennial Central Bank Survey of Foreign Exchange and Derivatives Market Activity (BIS 2010).

To hedge or not to hedge is a question that ultimately depends on whether the investor wishes to be exposed to the movements in exchange rates. When the US investor makes a decision to buy Daimler AG stock, for example, is it to make an investment in Daimler or to make an investment in Daimler *and* the EUR/USD currency return? For investors in foreign equities who do not wish to take a position on currencies[7], one clear solution is to hedge currencies as long as the costs associated with hedging are minimal.[8]

Hedging Currencies

We have shown that currencies fluctuate significantly over time. Next, we quantify the impact of hedging foreign equities by examining the MSCI Hedged Indices. The MSCI Hedged Indices include both equities and a currency component and measure the effects of hedging foreign currencies back to the base (home) currency. MSCI has constructed a range of hedged indices including those for five major base currencies (USD, AUD, EUR, GBP, and JPY). The equities included in each MSCI Hedged Index are based on an unhedged MSCI parent index, or a traditional free-float market-capitalization-weighted equity index. MSCI Hedged Indices represent a close estimation of the return that can be achieved by hedging the currency exposures of the parent index by selling foreign currency forwards at one-month forward rates. (See the "MSCI Hedged Indices, MSCI FX Hedge Indices, and MSCI Global Currency Indices Index Methodology" for further details.) We confine our analysis here to the US investor perspective and illustrate the behaviour of the MSCI Hedged Indices with a US dollar base currency.[9]

Exhibit 4 shows the returns of select global equity indices with the currencies in these indices hedged back to the US dollar. The historical performance of the MSCI Hedged Indices is compared to their unhedged parent indices. From January 2002 to February 2012, the MSCI Hedged Indices underperformed their unhedged counterparts due to the depreciation of the US dollar relative to most other currencies in this timeframe. However, in 2011 when the US dollar strengthened, the MSCI Hedge Indices generated higher returns than their parent indices. Exhibit 5 shows the cumulative returns to hedged and unhedged versions of the MSCI ACWI Index in 2011.

[7] It should be noted that partial hedging is also an alternative; the hedge ratio desired by the investor can take any value between 0 and 100%. In fact, there has been a long-standing debate among academics as to the optimal hedge ratio. See Fisher Black (1989)'s universal hedge ratio and Gardner and Wuilloud (1995)'s "no regret" 50% hedge ratio for examples.

[8] The costs of hedging can vary depending on the currency. In theory, the cost of hedging is determined by the interest rate differential. An investor selling a EUR vs USD forward contract will be long USD (and thus gets paid the USD interest rate) and is short the EUR (and thus pays the EUR interest rate). Under a no arbitrage condition ***called Covered Interest Rate Parity***, the cost of hedging should be equal to the interest rate differential. Some investors will actually pay no cost for hedging but in fact receive gains; these investors' home countries have higher interest rates than the countries whose currencies they are hedging (e.g., Australia). Meanwhile other investors (e.g., Japan) whose country's interest rates are low, must pay the interest differential to hedge. There are still further factors that can impact the cost of hedging: transaction costs, political risks regulations (such as capital controls in emerging markets), tax implications for interest earnings versus gains from foreign exchange and differences in liquidity.

[9] Chang (2009) presents results for other currencies (AUD, EUR, GBP, JPY and NZD) and finds that results can vary significantly depending on the base currency.

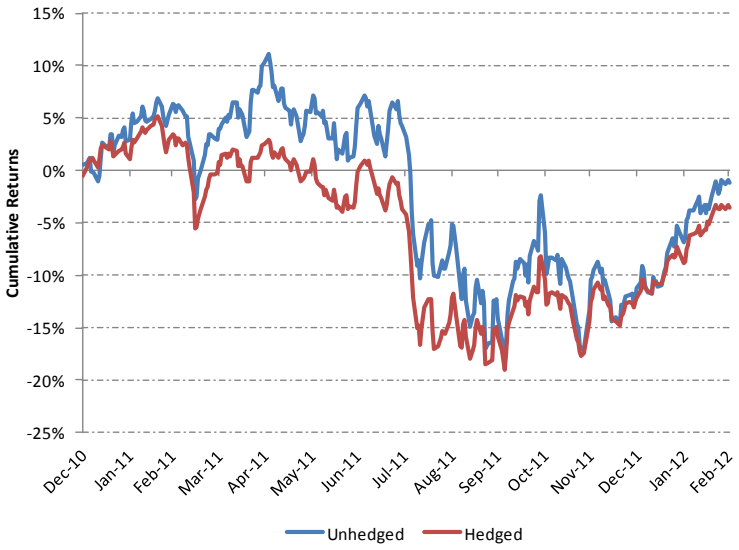
Exhibit 4: A Comparison of Hedged and Unhedged Returns for a US Dollar-Based Investor
(Average Annualized Returns of MSCI Hedged Indices and Their Unhedged Parent Indices, Gross Monthly Returns)

	January 2002 - February 2012		2011	
	Unhedged	**Hedged**	**Unhedged**	**Hedged**
MSCI World	5.09%	3.32%	-5.02%	-4.93%
MSCI EAFE	6.16%	2.37%	-11.73%	-11.69%
MSCI Emerging Markets	15.82%	11.65%	-18.17%	-14.12%
MSCI Brazil*	23.53%	-2.00%	-21.59%	-17.44%
MSCI Canada	10.91%	8.08%	-12.16%	-9.88%
MSCI Japan	4.02%	0.60%	-14.19%	-18.36%

Source: MSCI Data for Brazil begins in September 2010.

Exhibit 5 shows the cumulative returns to hedged and unhedged versions of MSCI ACWI in 2011.

Exhibit 5: Performance of Currency Hedged MSCI ACWI
(Cumulative Returns of Currency Hedged MSCI ACWI with US Dollar as Base Currency and the Unhedged Parent Index, MSCI ACWI USD Gross, January 2011 to February 2012)



The value of hedging ultimately depends on the base currency, the foreign currencies, and the time period. Two MSCI Index Research papers—Chang (2010) and "Global Investing—The Importance of Currency Returns and Currency Hedging" (2011)—consider a more exhaustive set of time periods and base currencies.

Hedging Currency Risk Reduces Volatility

A second equally important rationale for hedging currency risk is that it can significantly reduce the volatility or risk of an equity portfolio,[10] in addition to impacting foreign investment returns. As

[10] In fact, early research on the effectiveness of currency hedging focused more on risk reduction potential rather than return enhancement; see Black (1989) and Adler and Dumas (1983), and Perold and Schulman (1988).

demonstrated in Exhibit 3, currencies fluctuate considerably over time. This has a significant impact on the volatility of an investor's portfolio.

Exhibit 6 displays the standard deviations (or volatilities) of hedged and unhedged MSCI index returns. MSCI Hedged Indices show consistently lower volatility than their unhedged parent indices.

Exhibit 6: Risk of Unhedged versus Hedged Index Returns
(Annualized Standard Deviation of Currency Hedged MSCI Indices and Unhedged (USD Return) MSCI Indices, Gross Monthly Returns)

	January 2002 - February 2012		2011	
	Unhedged	**Hedged**	**Unhedged**	**Hedged**
MSCI World	4.89%	4.43%	5.06%	4.13%
MSCI EAFE	5.41%	4.53%	5.64%	3.89%
MSCI Emerging Markets	7.02%	5.57%	7.07%	4.52%
MSCI Brazil	8.80%	4.58%	8.77%	4.18%
MSCI Canada	6.30%	4.17%	6.02%	3.57%
MSCI Japan	4.94%	5.36%	4.19%	3.91%

From a US investor perspective, the MSCI Hedged Indices universally reduced volatility relative to their unhedged parent indices ove rthe period January 2002 through February 2012. This risk reduction result usually occurs regardless of currency as exchange rates would have to have very low correlation with equity returns in order for risk to be higher with hedging. [11]

Conclusions

As investors continue to embrace foreign equities, the impact of exchange rates (currencies) and whether or not to hedge this type of risk remains an essential decision. Currencies and their returns can fluctuate considerably over time and can have a meaningful impact on the investor's realized return. Investors in foreign equities who do not wish to take a position on currencies should consider hedging currency risk. This allows an investor to make a "direct" investment in a foreign company without currency risk. Hedging currency risk also can significantly reduce the volatility of equity investments.

[11] That said, there may be partial hedge ratios that reduce risk even more effectively. Campbell, Serfaty-de Medeiros, and Viceira (2007) for instance find that investors should more than fully hedge currencies negatively correlated with local equity markets, such as the USD, and less than fully hedge currencies positively correlated with local equity markets, such as the CAD. They suggest that the USD, EUR, and CHF are reserve currencies that benefit from "flight to quality" periods and thus benefit often when the corresponding equity markets decline.

References

Adler, Michael and Bernard Dumas (1983), "International Portfolio Choice and Corporation Finance: A Synthesis," Journal of Finance, Vol. 38, No. 3, 1983, pp. 925-984.

Black, Fischer (1989), "Universal hedging: Optimizing currency risk and reward in international equity portfolios", Financial Analysts Journal July-August, 16-22.

Campbell, John Y., Karine Serfaty de Medeiros, and Luis M. Viceira (2007), "Global Currency Hedging," HBS Working Paper 07-084, April 2007.

Chang, K. (2010), "Currency Hedging: A Free Lunch?" MSCI Barra Research Insights, April 2009.

Gardner, G. W., Wuilloud, T. (1995), "Currency risk in international portfolios: how satisfying is optimal hedging," Journal of Portfolio Management, 21, 59-67.

MSCI Research (2011), "Global Investing- The Importance of Currency Returns and Currency Hedging," MSCI Research Bulletin, April 2011.

Perold, André F. and Evan C. Schulman (1988), "The Free Lunch in Currency Hedging: Implications for Investment Policy and performance Standards," Financial Analysts Journal, Vol. 44, No. 3, 1988, pp. 45-50.

Rogoff, Kenneth (1996), "The Purchasing Power Parity Puzzle," Journal of Economic Literature, Vol. 34, No. 2 (June 1996), pp. 647-668.

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[1] *As of June 30, 2011, based on eVestment, Lipper and Bloomberg data.*