

## The Importance of Currency Return and Risk

Dramatic movements in the equity and bond markets have largely overshadowed those in the currency markets during the past few months. But currency markets have also moved substantially. In fact, currency losses have sometimes outstripped equity market declines. For example, a USD investor during the last six months experienced losses of 26% in the Australian equity market and 22% in the UK market; however the same investor experienced currency declines of 30% and 26%, respectively. Thus, currency movements more than doubled the equity market losses for the USD based investor in the Australian and UK markets. Big movements like these highlight the potential importance of currency hedging for investors with foreign assets.

But does currency hedging pay off in the long run? We investigate this question using data from the hedged and unhedged versions of the MSCI Global Investable Market Indices, which allow us to perform comparisons of unusually large breadth (4 base currencies and 40 markets) and history (1987 to 2008). Our research indicates that the answer depends not only on the base currency, market, and hedging horizon, but also on the investor's goals, e.g. risk reduction or return/risk maximization. Our research determined that if the goal was risk reduction, JPY based investors would have benefited from hedging during the period we observed, but for investors in other base currencies, the results varied depending on the market and/or hedging horizon. Our research also concluded that if the goal was return/risk maximization, EUR and AUD based investors would have benefited for the most part, while USD and JPY investors would have largely fared better during the period we observed from not hedging their currency exposures.

## Reducing Currency Risk

In the decision to hedge portfolio currency exposures, some investors care only about reducing currency risk rather than about the potential return opportunities. For an analysis from this perspective, we examined one measure of currency risk contribution: the percent increase or decrease in total risk from hedging ("Percent of Total Risk"). We started with monthly hedged and unhedged MSCI index data from 1987 to 2008 for 40 indices and four base currencies -- USD, EUR, JPY, and AUD. We then calculated annualized returns and the standard deviation of those returns for hedging horizons of 1, 3, 6, and 12 months.<sup>1</sup> For each index, we then calculated the Percent of Total Risk, defined as the difference between the standard deviation of the hedged index and the standard deviation of the unhedged index, divided by the standard deviation of the unhedged index. The Percent of Total Risk measures the incremental increase or decrease in total risk from currency hedging and uses the unhedged portfolio as the benchmark for the hedged portfolio.

Table 1 provides the mean Percent of Total Risk from 1987 to 2008 for selected indices: MSCI USA, MSCI Germany, MSCI UK, MSCI Japan, and MSCI World Indices. We chose these indices to provide a diverse view of the developed markets. The highlighted, negative values mean currency hedging decreased risk, and thus, from the perspective of reducing risk, hedging made sense.

The results show a somewhat mixed picture of whether hedging was beneficial from a risk reduction perspective. JPY based investors across markets and horizons benefited from hedging since it reduced risk. Investors in the MSCI USA Index also benefited from hedging regardless of their base currency. No other clear picture emerges; everything else depends on the market and/or the hedging horizon. For example, from the perspective of the USD based investor in the

<sup>1</sup> The vast majority of amounts in OTC foreign exchange derivative instruments are in maturities of one year and less. See Bank for International Settlements, *Triennial Central Bank Survey 2007: Foreign Exchange and Derivatives Market Activity in 2007*, BIS Press & Communications, 2007, Table C.7. The most common CME Globex futures contract lengths are 6 months for the major currencies and 12 months for some emerging market currencies. See [www.cme.com](http://www.cme.com).

MSCI World Index, hedging was beneficial for the 1 and 3 month horizons but not for the 6 and 12 month horizons. For investors in Japan, hedging on the 1 month horizon was beneficial for all base currencies, while hedging on the 6 and 12 month horizons was not beneficial; for the 3 month horizon, USD and EUR based investors benefited from hedging but AUD based investors did not. Also note that the range is large, with a decrease of risk by 32% for the JPY investor in the MSCI USA Index and an increase of risk by 15% for the AUD investor in the MSCI Japan Index.

These results indicate that for the investor interested in reducing risk through currency hedging, the investor needs to pay close attention to all three variables – base currency, hedging horizon, and markets – before making a decision regarding whether to hedge.

Table 1: Percent of Total Risk, Mean 1987-2008\*

MSCI Index	Hedging Horizon in Months	Base Currency			
		USD	EUR	JPY	AUD
USA	1		-12.3%	-25.9%	-10.8%
	3		-8.0%	-26.5%	-9.8%
	6		-19.5%	-32.0%	-13.2%
	12		-20.6%	-17.6%	-7.8%
Germany	1	-4.2%		-18.8%	-2.1%
	3	0.0%		-14.4%	2.0%
	6	11.9%		-9.5%	13.0%
	12	14.6%		-2.3%	6.7%
Japan	1	-13.9%	-7.5%		-7.2%
	3	-2.8%	-0.3%		2.0%
	6	4.4%	3.4%		11.9%
	12	7.1%	1.7%		15.4%
UK	1	-15.0%	-6.9%	-28.9%	-1.9%
	3	-8.4%	-4.3%	-21.6%	3.6%
	6	-1.6%	-6.7%	-22.0%	6.2%
	12	2.6%	-16.8%	-7.2%	3.1%
World	1	-9.1%	-9.3%	-19.4%	-6.6%
	3	-5.7%	-5.9%	-14.1%	0.3%
	6	4.2%	-11.6%	-14.9%	4.9%
	12	8.4%	-19.9%	-1.3%	3.1%

\*EUR data from 1999 forward. Returns are calculated using rolling windows of 1, 3, 6, and 12-months with means and standard deviations calculated from the values during the prior 12 months.

## Return and Risk

While some investors are only interested in reducing risk by hedging their currency exposures, others are also interested in the potential return opportunities. In this section, we look at the currency hedging decision from the return and risk perspective. Our measure for analyzing return and risk is the information ratio. For the same dataset described above, we first calculate the

annualized excess returns of the hedged over the unhedged indices for the 1, 3, 6, and 12 month hedging horizons, as well as means and standard deviations of the excess returns. From these values, we calculated the information ratio, which is defined as the mean excess return divided by the standard deviation of the excess returns.

Table 2 provides the values of the mean information ratios from 1987 to 2008. As in Table 1, we present results for the MSCI USA, MSCI Germany, MSCI UK, MSCI Japan, and MSCI World Indices, and negative values are highlighted. However, in Table 2, negative values are negative information ratios and mean no hedging benefit resulted from a return and risk perspective. Positive values mean hedging was beneficial.

**Table 2: Information Ratios, Mean 1987-2008\***

MSCI Index	Hedging Horizon in Months	Base Currency			
		USD	EUR	JPY	AUD
USA	1		0.03	-0.19	0.03
	3		0.20	-0.26	0.16
	6		0.65	-0.26	0.28
	12		1.44	-0.28	0.54
Germany	1	-0.06		-0.24	0.05
	3	-0.08		-0.35	0.15
	6	-0.28		-0.50	0.18
	12	-0.43		-0.95	0.21
Japan	1	-0.05	0.18		0.08
	3	0.14	0.57		0.32
	6	0.26	1.14		0.53
	12	0.39	2.68		0.86
UK	1	-0.15	-0.04	-0.29	0.00
	3	-0.21	-0.07	-0.46	0.03
	6	-0.44	-0.10	-0.70	-0.08
	12	-0.82	-0.18	-1.44	-0.16
World	1	-0.07	0.06	-0.21	0.07
	3	0.00	0.26	-0.28	0.23
	6	-0.08	0.74	-0.39	0.26
	12	-0.22	1.68	-0.74	0.41

\*EUR data from 1999 forward. Information ratios calculated on excess returns of hedged over unhedged. Returns are calculated using rolling windows of 1, 3, 6, and 12-months with means and standard deviations calculated from the values during the prior 12 months.

The results from a return and risk perspective are clearer relative to those from a risk reduction perspective. The results group around base currencies. For JPY investors, hedging was not beneficial since information ratios were negative across all markets and hedging horizons. For the EUR and AUD based investors, information ratios were positive across all hedging horizons and almost all markets, with the exception of the MSCI UK Index, indicating the benefits of hedging for investors in these base currencies. As for USD based investors, hedging was not beneficial except for those investors in the MSCI Japan Index. As recent events have shown, the JPY can

be one of the only currencies that appreciates relative to the USD when the USD itself appreciates against most other currencies.<sup>2</sup>

Note that the values of the information ratios can be relatively high. For the positive information ratios, the highest value is 2.68 with 33% of the positive values at 0.50 and above. According to Richard Grinold and Ronald Kahn, the values 0.50 and greater are in the 75<sup>th</sup> percentile and above for all fund managers before fees.<sup>3</sup> The results are particularly interesting given that they relate to return and risk considerations from passive hedging rather than from actively seeking alpha from a currency overlay.

### Conclusions

The magnitude and volatility of currency movements during the past months underscore the importance of the currency hedging decision for investors. Using MSCI index data, we have highlighted some of the relevant factors for the hedging decision including: (1) goals: e.g. risk reduction or return/risk maximization, (2) base currency, (3) hedging horizon, and (4) market or portfolio. Based on the goal of risk reduction, JPY investors benefited from hedging from 1987 to 2008. From the perspective of return and risk, EUR and AUD investors benefited from hedging, while JPY and USD investors did not. However, the results were less clear cut for risk reduction than for return and risk.

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<sup>2</sup> The JPY appreciated 22% versus the USD during the past six months.

<sup>3</sup> Richard C. Grinold and Ronald N. Kahn, *Active Portfolio Management: A Quantitative Approach For Providing Superior Returns and Controlling Risk*, Second Edition, McGraw Hill: San Francisco, 2000, p. 114.

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