UBS ETF *Market Matters*

Controlling the Risk of Currency Volatility in an International Equity Portfolio

- The recent ECB announcement and Scotland's independence vote have triggered increased currency volatility.
- Currency volatility can add (undesired) noise to a portfolio of international equities and can increase its overall risk.
- Given low interest rate differentials, it can be beneficial for investors in international equity to mitigate currency risk by applying currency hedged building blocks.

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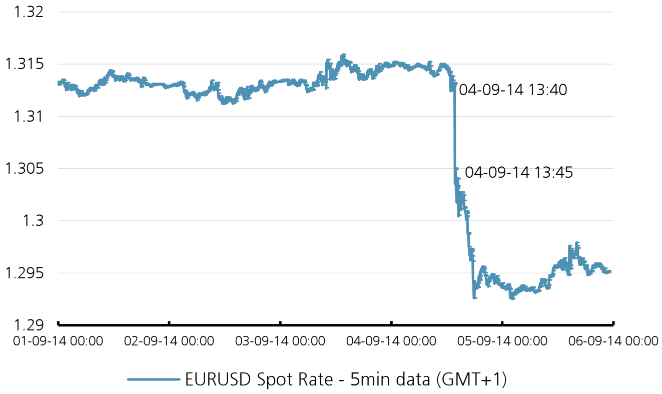
On Thursday September 4th, the ECB surprised global investors by announcing another set of monetary policy easing measures aimed at staving off EMU deflationary trends and stimulating an economic recovery. The key policy action was the cut in Eurozone rates by 10 basis points, to record low levels. In addition, the ECB pledged to begin purchasing private sector asset-backed securities. This news pushed the Euro down by 1.6% vs. the USD, with most of the value erosion taking place within a few minutes after the announcement (**Figure 1**). On that day, the Euro also dropped against other major currencies: 0.75% vs. GBP and 0.03% vs. CHF, closing in on the 1.20 floor of EUR/CHF, set by the SNB.

Currency market volatility has been low since 2012 (**Figure 2**). The majority of statistical models for realised volatility detect its mean-reverting property, implying one could expect currency volatility growth in the mid-term. Volatility tends to cluster for extended periods of time at above-average or below-average levels. The current geopolitical issues (Ukraine/Russia, Israel/Gaza or Scotland's independence vote) have actually triggered additional currency uncertainty. For investors interested in *pure* international equity exposure, increased currency volatility implies (undesired) volatility noise, as it provides no explicit return such as dividend, earnings growth or capital appreciation. While exchange rates fluctuate around long-run equilibriums, mid-term currency movements may substantially add to interim risk of international equity portfolio. The return-risk components of a single unhedged foreign equity investment are as follows.

unhedged return	≈	return in foreign currency on the investment	+	return on foreign currency in home currency		
variance of unhedged return	≈	variance of return in foreign currency on the investment	+	variance of return on foreign currency in home currency	+	twice covariance between return in foreign currency on the investment and return on foreign currency in home currency

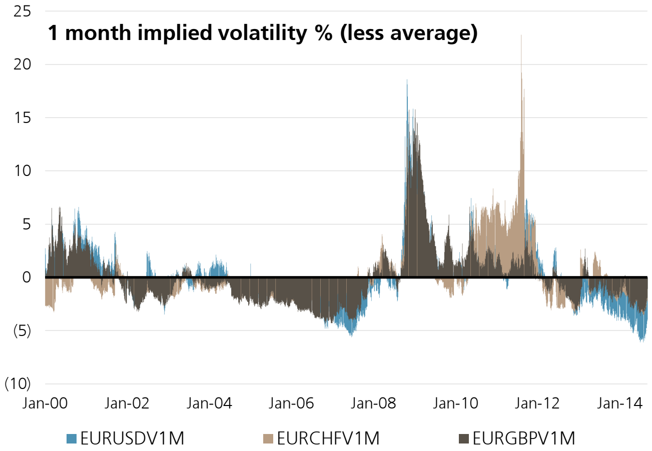
This shows that currency movements contribute to overall risk through their own variance and twice their covariance with foreign equity returns. With a positive relationship of foreign equity and foreign currency (positive covariance), investors may be compensated for additional risk. However, relative valuation depends on the magnitude of currency risk (variance term). In an unhedged international multi-currency equity portfolio, proper currency risk management involves the forecasting of possible currency movements, currencies' interrelationships, and currencies' relationships with foreign equities. Currency movements can be very dynamic and every investor needs to develop their own currency risk management tools to suit their investment objective. The following example shows a possible solution of global equity exposure achievable by aggregating regional currency hedged building blocks.

Figure 1: EURUSD in the week 02/09/2014-05/09/2014



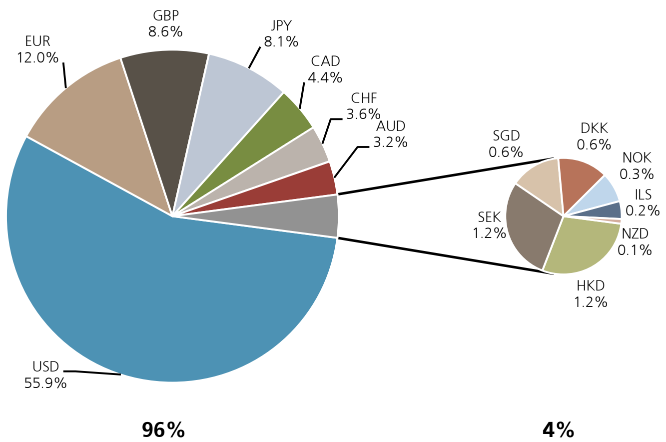
Source: Bloomberg, UBS Global Asset Management, as of 5 September 2014

Figure 2: EUR volatility



Source: Bloomberg, UBS Global Asset Management, as of 31 August 2014

Figure 3: MSCI World - currency allocation



Source: MSCI, UBS Global Asset Management, as of 31 August 2014

For all charts/tables: Past performance is not a reliable indicator for the future.

Global Equity – *Currency Hedged Building Blocks*

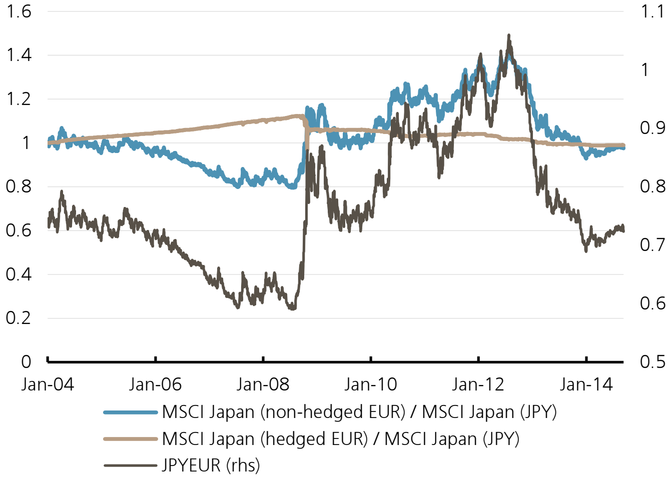
Assuming an investor has a global equity benchmarked portfolio implies a combined exposure to foreign equity markets and foreign currencies (long foreign equity and long local currency vs. home funding currency). **Figure 3** presents the current currency allocation of the MSCI World Index. The top seven currencies correspond to approx. 96% of the market capitalisation of the developed equity market, while the remaining currencies have individual contributions of less than or equal to 1%, totalling approx. 4%. One way to mitigate currency risk is by aggregating currency hedged regional building blocks. **Table 1** shows portfolio weights implied by currency allocation and assuming 4% is left in cash as a buffer or for discretionary reasons. While the MSCI World benchmark with a multi-currency hedge overlay is available the market, using a building block approach offers flexibility for discretionary decisions. For example, UBS Chief Investment Office Wealth Management overweights US equities and USD as a separate asset class (UBS Chief Investment Office WM, September 2014) implying a combined positive outlook for the *unhedged* US equity building block. The relevance of currency hedging is demonstrated in **Figure 4**, using an example with the MSCI Japan for a EUR investor. The performance of non-hedged exposure (left-hand scale) is largely driven by the JPY/EUR rate (right-hand scale). For example, while the MSCI Japan (JPY) increased by nearly 55% in 2013, the MSCI Japan non-hedged, denominated in EUR, increased by only 22% due to the strong decline of the JPY/EUR exchange rate throughout this year.

Table 1: MSCI World exposure hedged by building blocks

Investor	MSCI USA	MSCI EMU	MSCI UK	MSCI Switzerland	MSCI Japan	MSCI Canada	MSCI Australia
USD Investor	56%	12% (h. to USD)	9% (h. to USD)	4% (h. to USD)	8% (h. to USD)	4% (h. to USD)	3% (h. to USD)
EUR Investor	56% (h. to EUR)	12%	9% (h. to EUR)	4% (h. to EUR)	8% (h. to EUR)	4% (h. to EUR)	3% (h. to EUR)
GBP Investor	56% (h. to GBP)	12% (h. to GBP)	9%	4% (h. to GBP)	8% (h. to GBP)	4% (h. to GBP)	3% (h. to GBP)
CHF Investor	56% (h. to CHF)	12% (h. to CHF)	9% (h. to CHF)	4%	8% (h. to CHF)	4% (h. to CHF)	3% (h. to CHF)

Source: UBS Global Asset Management, as of 31 August 2014

Figure 4: MSCI Japan Total Return Net and JPYEUR



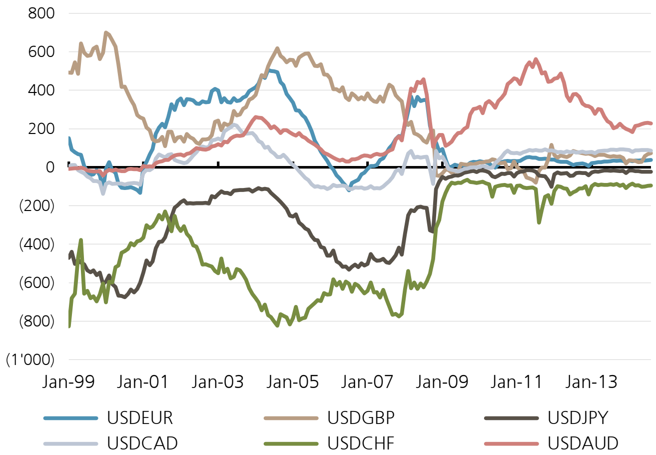
Source: Bloomberg, UBS Global Asset Management, as of 31 August 2014

Hedging Method – *Exchange Traded Funds*

Currency hedging is commonly carried out with forward contracts, which are agreements between counterparties to buy or sell one currency against another, at a pre-specified exchange rate (forward rate) and pre-defined time (1 month, 1 week, 1 day etc.). The agreed forward rate is derived from the spot rate and interest rate differential of the hedged and base currency. The forward rate can be either at premium or discount to the spot rate, depending on whether the interest rate of the base currency is lower (premium) or higher (discount) than the interest rate of the foreign currency. Unlike the future spot rate, the forward rate is known at the beginning of the contract and the difference between the forward rate and the current spot (forward points) determines the part of the expected currency movement driven by the interest rate differential. **Figure 5** shows the current annualized forward premium/discounts of the USD, which are proportional to short-term interest rate differentials. The major developed economies have been in a low interest rate environment since 2009, with the only substantial "outlier" being AUD. The overall low interest rate differentials among major developed currencies suggest that opportunity costs of hedging are relatively small, while currency "surprises" (Figure 1) may occur.

Currency hedging in an Exchange Traded Fund (ETF) follows the mechanics described in the index provider's rule book. It typically involves rolling a one-month forward contract at the end of the business month, with the notional amount calculated at month end. The direct costs of hedging involve mainly transaction costs (incl. bid-ask spreads) and custody fees for both a) the opening and closing of hedging contracts and b) hedging investment activities for the underlying equity baskets due to realised currency profit or loss. The hedge ratio is determined by notional amount at the beginning of the forward contract, and no adjustments are carried out throughout the contract duration (intra-month), implying that an under- or over-hedge is possible, dependent on investment movements. While daily hedging (using Tomorrow Next forward contracts) is technically feasible, it is cost intensive. UBS Global Asset Management offers a wide range of physically replicated currency hedged building blocks ETFs listed in **Table 2**.

Figure 5: Annualized Forward Premium/Discount of the USD
(based on 1-month forward rates)



Source: Bloomberg, UBS Global Asset Management, as of 31 August 2014

For all charts/tables: Past performance is not a reliable indicator for the future.

Table 2: UBS ETFs - currency hedged equity *building blocks* offering as of August 2014

Fund name	TER	AuM in USD m	NAV Ccy	Replication	Distribution	Listings / Key exchanges SIX	XETRA	LSE	Borsa	ISIN
CHF hedged										
UBS ETF (LU) MSCI Switzerland UCITS ETF	0.20%	296	CHF	Physical	No	CHF			EUR	LU0977261329
UBS ETF (IE) MSCI Australia hedged to CHF UCITS ETF	0.50%	6	CHF	Physical	No	CHF				IE00BD4TY675
UBS ETF (IE) MSCI USA hedged to CHF UCITS ETF	0.30%	188	CHF	Physical	No	CHF				IE00BD4TYL27
UBS ETF (LU) MSCI Canada hedged to CHF UCITS ETF	0.43%	222	CHF	Physical	No	CHF				LU0950673011
UBS ETF (LU) MSCI EMU hedged to CHF UCITS ETF	0.33%	86	CHF	Physical	No	CHF				LU0950669175
UBS ETF (LU) MSCI Japan hedged to CHF UCITS ETF	0.45%	131	CHF	Physical	No	CHF				LU0950672120
UBS ETF (LU) MSCI United Kingdom hedged to CHF UCITS ETF	0.30%	221	CHF	Physical	No	CHF				LU0950671072
EUR hedged										
UBS ETF (LU) MSCI EMU UCITS ETF	0.23%	1'630	EUR	Physical	Yes	CHF/EUR	EUR	GBp	EUR	LU0147308422
UBS ETF (LU) EURO STOXX 50 UCITS ETF	0.15%	848	EUR	Physical	Yes	CHF/EUR/GBP	EUR	GBp/EUR	EUR	LU0136234068
UBS ETF (IE) MSCI Australia hedged to EUR UCITS ETF	0.50%	6	EUR	Physical	No	EUR			EUR	IE00BD4TY899
UBS ETF (IE) MSCI USA hedged to EUR UCITS ETF	0.30%	504	EUR	Physical	Yes	EUR				IE00BD4TYF66
UBS ETF (IE) MSCI USA hedged to EUR UCITS ETF			EUR	Physical	No	EUR	EUR		EUR	IE00BD4TYG73
UBS ETF (LU) MSCI Canada hedged to EUR UCITS ETF	0.43%	282	EUR	Physical	No	EUR	EUR		EUR	LU0950673284
UBS ETF (LU) MSCI Japan hedged to EUR UCITS ETF	0.45%	110	EUR	Physical	Yes	EUR				LU0937837945
UBS ETF (LU) MSCI Japan hedged to EUR UCITS ETF			EUR	Physical	No	EUR	EUR		EUR	LU0950672476
UBS ETF (LU) MSCI Switzerland hedged to EUR UCITS ETF	0.30%	105	EUR	Physical	Yes	EUR				LU0979892220
UBS ETF (LU) MSCI Switzerland hedged to EUR UCITS ETF			EUR	Physical	No	EUR			EUR	LU0977260941
UBS ETF (LU) MSCI United Kingdom hedged to EUR UCITS ETF	0.30%	161	EUR	Physical	Yes	EUR				LU0937836970
UBS ETF (LU) MSCI United Kingdom hedged to EUR UCITS ETF			EUR	Physical	No	EUR	EUR		EUR	LU0950671239
USD hedged										
UBS ETF (LU) MSCI USA UCITS ETF	0.20%	1'935	USD	Physical	Yes	CHF/USD/GBP	EUR		EUR	LU0136234654
UBS ETF (IE) S&P 500 Index SF UCITS ETF	0.05%	151	USD	Synthetic	No	USD	USD	GBp	EUR	IE00B4JY5R22
UBS ETF (IE) MSCI Australia hedged to USD UCITS ETF	0.50%	7	USD	Physical	No	USD				IE00BD4TYD43
UBS ETF (LU) MSCI Canada hedged to USD UCITS ETF	0.43%	184	USD	Physical	No	USD				LU0950673441
UBS ETF (LU) MSCI EMU hedged to USD UCITS ETF	0.33%	432	USD	Physical	Yes	USD				LU0937835576
UBS ETF (LU) MSCI EMU hedged to USD UCITS ETF			USD	Physical	No	USD				LU0950669415
UBS ETF (LU) MSCI Japan hedged to USD UCITS ETF	0.45%	174	USD	Physical	Yes	USD				LU0979891768
UBS ETF (LU) MSCI Japan hedged to USD UCITS ETF			USD	Physical	No	USD				LU0977260867
UBS ETF (LU) MSCI Switzerland hedged to USD UCITS ETF	0.30%	82	USD	Physical	Yes	USD				LU0979892659
UBS ETF (LU) MSCI Switzerland hedged to USD UCITS ETF			USD	Physical	No	USD				LU0977261089
UBS ETF (LU) MSCI United Kingdom hedged to USD UCITS ETF	0.30%	164	USD	Physical	Yes	USD				LU0937837275
UBS ETF (LU) MSCI United Kingdom hedged to USD UCITS ETF			USD	Physical	No	USD				LU0950671403
GBP hedged										
UBS ETF (LU) FTSE 100 UCITS ETF	0.20%	274	GBP	Physical	Yes	CHF/GBP	EUR	GBp	EUR	LU0136242590
UBS ETF (LU) MSCI United Kingdom UCITS ETF	0.20%	746	GBP	Physical	Yes	CHF/GBP		GBp		LU0937836467
UBS ETF (IE) MSCI Australia hedged to GBP UCITS ETF	0.50%	5	GBP	Physical	Yes	GBP		GBp		IE00BD4TY907
UBS ETF (IE) MSCI Australia hedged to GBP UCITS ETF			GBP	Physical	No	GBP		GBp		IE00BD4TYB29
UBS ETF (IE) MSCI USA hedged to GBP UCITS ETF	0.30%	44	GBP	Physical	Yes	GBP		GBp		IE00BD4TYH80
UBS ETF (IE) MSCI USA hedged to GBP UCITS ETF			GBP	Physical	No	GBP		GBp		IE00BD4TYJ05
UBS ETF (LU) MSCI Canada hedged to GBP UCITS ETF	0.43%	83	GBP	Physical	Yes	GBP		GBp		LU0937838836
UBS ETF (LU) MSCI Canada hedged to GBP UCITS ETF			GBP	Physical	No	GBP		GBp		LU0950673797
UBS ETF (LU) MSCI EMU hedged to GBP UCITS ETF	0.33%	198	GBP	Physical	Yes	GBP		GBp		LU0937835733
UBS ETF (LU) MSCI EMU hedged to GBP UCITS ETF			GBP	Physical	No	GBP		GBp		LU0950669688
UBS ETF (LU) MSCI Japan hedged to GBP UCITS ETF	0.45%	79	GBP	Physical	Yes	GBP		GBp		LU0969638401
UBS ETF (LU) MSCI Japan hedged to GBP UCITS ETF			GBP	Physical	No	GBP		GBp		LU0969638583
UBS ETF (LU) MSCI Switzerland hedged to GBP UCITS ETF	0.30%	10	GBP	Physical	Yes	GBP		GBp		LU0977261246
UBS ETF (LU) MSCI Switzerland hedged to GBP UCITS ETF			GBP	Physical	No	GBP		GBp		LU0977261162
SGD hedged										
UBS ETF (LU) MSCI Canada hedged to SGD UCITS ETF	0.43%	6	SGD	Physical	No	SGD				LU1048313461
UBS ETF (LU) MSCI EMU hedged to SGD UCITS ETF	0.33%	12	SGD	Physical	No	SGD				LU1048312653
UBS ETF (LU) MSCI Japan hedged to SGD UCITS ETF	0.45%	15	SGD	Physical	No	SGD				LU1048313206
UBS ETF (LU) MSCI Switzerland hedged to SGD UCITS ETF	0.30%	6	SGD	Physical	No	SGD				LU1048313628
UBS ETF (LU) MSCI United Kingdom hedged to SGD UCITS ETF	0.30%	6	SGD	Physical	No	SGD				LU1048313032

AuM in USD, million, as of end August 2014.

How to contact us

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About UBS ETFs

Passive capital investments have been a core competence of UBS Global Asset Management for over 30 years. This business segment, which includes UBS ETFs, has assets under management of EUR 160,4 billion (June 2014). Assets under management in UBS ETFs total approx. EUR 14,8 billion (July 2014). UBS is one of Europe's leading ETF providers, and Europe's second largest provider of physically replicated ETFs (measured by assets under management). UBS ETFs replicates 138 indices covering equities, bonds, precious metals, real estate, commodities and alternative investments. UBS ETFs are listed on four of Europe's leading stock exchanges: Borsa Italiana, the German Stock Exchange (XETRA), the London Stock Exchange (LSE), and the SIX Swiss Exchange.

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