



Conscious Currency[®]

A transparent, rules-based
currency factor strategy

FOR PROFESSIONAL CLIENTS ONLY

INVESTED. **TOGETHER.**[™]



Executive summary

In the current environment of low expected returns, investors continue to seek ways to improve their multi-asset portfolio returns through more dynamic allocations, diversity and opportunities to add value in non-traditional areas.

Currency management is an often-overlooked aspect of multi-asset portfolio management. Some investors simply believe that it is a zero sum game and can be ignored. Others view it as difficult to get a cost-effective strategy that adds value. However, what is most often unappreciated is that currency can present very attractive return characteristics, with little to no correlation to traditional asset classes. Therefore, you can potentially add value by incorporating a currency strategy into your portfolio which is specifically designed to deliver alpha.

There is widespread academic support showing that currency factors can offer valuable, persistent and relatively uncorrelated return sources. In particular, Carry, Value and Trend are the strategies that we believe are best placed to generate these positive returns at moderate volatility over long periods:

- › **Carry** captures the tendency of higher interest rate currencies to earn higher returns than lower interest rate currencies as a compensation for higher risk.
- › **Value** takes advantage of the tendency of currencies to mean-revert to a level of long-term economic equilibrium, such as purchasing power parity (PPP).
- › **Trend** exploits the propensity of currency returns to persist over short- to medium-term horizons so that past returns have some predictive power for future returns.

Whilst each of the currency factors in isolation has experienced periods of significant negative returns, these falls do not often occur at the same time. As such we believe there is an advantage to investors in accessing a combination of the three currency factors. A rules-based approach offers a cost-effective way to access these risk premia.

Russell Investments' Conscious Currency proposition (Conscious Currency), based on the Russell Investments' Conscious Currency® Index, has been designed as a robust and transparent rules based strategy which gives a diversified exposure to Carry, Value and Trend. Over the last 17 years, Conscious Currency has achieved an annualised return of 3.5%, with a return-to-volatility ratio (Sharpe Ratio) of 0.8. Conscious Currency has a low correlation to traditional assets and thus can enhance multi-asset portfolio returns with modest or no additional risk.

In this paper, we make the case for adding Conscious Currency to diversified portfolios. In particular, we explain:

- › How Conscious Currency can benefit you and why it may be the right time to consider this strategy
- › How we construct and manage the Conscious Currency strategy
- › The different ways you could incorporate Conscious Currency into your portfolio
- › Other, bespoke ways you can gain access to the individual currency factors

Over the last 17 years, Conscious Currency has achieved an annualised return of 3.5%, with low correlation to traditional asset classes.



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Background

The currency market

According to the Bank for International Settlement (2016)¹, the foreign exchange markets are the largest and arguably most liquid financial markets in the world with daily turnover of US\$5 trillion. The size and depth of the currency markets offers sufficient capacity to implement currency factor strategies in large size for institutional investors.

The average daily currency trading is dominated by a few currencies, with the U.S. dollar, euro, Japanese yen, British pound sterling and Australian dollar making up around 80% of the daily trading volume (Exhibit 1).

Exhibit 1: Currency trading volume – Top 5

	2004	2007	2010	2013	2016
Average Daily Volume (\$ trillion)	1.9	3.3	4.0	5.3	5
Top five currency share of daily turnover (%)					
USD	44	43	42	44	44
EUR	19	19	20	17	16
JPY	10	9	10	12	11
GBP	8	7	6	6	6
AUD	3	3	4	4	3
TOTAL	84	81	82	82	80
Top five currency pair (%)					
USD/EUR	28	27	28	24	23
USD/JPY	17	13	14	18	18
USD/GBP	13	12	9	9	9
USD/AUD	6	6	6	7	5
USD/CAD	4	4	5	4	4
TOTAL	68	62	62	62	59

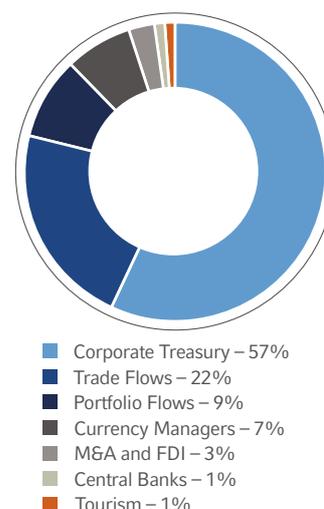
Source : Bank of International Settlement, April 30

A diverse group of individuals and institutions participate in the global foreign exchange markets: Corporations, commercial banks, equity and bond investors, currency managers, central banks and tourists. Participants can be broadly classified as:

- › **Hedgers** – These are a broad group of global corporations & investors who systematically convert their foreign currency revenues or exposures into their home currencies. Central banks are also active participants as they hedge to manage capital and currency flows.
- › **Profit seekers** – Currency managers, global bond managers, hedge fund managers and commodities trading advisors (CTAs) are active participants, with profit-seeking objectives.
- › **Dealers** – Commercial banks provide liquidity and facilitate trading activities by acting as intermediaries.

Despite the high average daily turnover, the majority of the market's trading volume is estimated to be hedging activity related to corporate treasuries and asset management portfolios (Exhibit 2). For this reason, profit-seeking currency managers and investors, whose activities make up only a smaller portion of the market's volume, can seek to exploit the persistent inefficiencies in the currency market.

Exhibit 2: World currency trade



Source: Source: BIS, IMF, US Federal Reserve, World Tourism Organisation, Datastream, First Quadrant, L.P. Data as of 31/12/2010.

¹ BIS, 2016. Triennial Central Bank Survey of foreign exchange and derivatives market activity in 2016. Basel. <http://www.bis.org/publ/rpfx16.htm>

Three compelling currency factors

There are a number of characteristics that can be used to describe the economic aspects of a currency – such as its interest rate, the cost of a basket of goods in that currency or its returns in the recent past. If these characteristics of different currencies can be grouped together we can consider these economic aspects as currency factors.

There are several well-understood currency factor strategies which have received wide academic support over many decades². They have been shown to present valuable, persistent and relatively uncorrelated return sources over different market regimes.

Below, we discuss the premise for what we believe to be three compelling currency factors: **Carry**, **Value** and **Trend**.

Carry

In a Carry strategy, investors buy high-interest-rate currencies and sell low-interest-rate currencies. Carry currency trades bear the risk of changing interest rates and exchange rates. For example, if the one-year interest rate in the U.S. is 1.0% and the one-year interest rate in Australia is 2.5%, a U.S. investor can enter into a one-year forward contract by buying AUD and selling USD. The investor could potentially make money if the USD appreciated less than 1.5% (2.5% minus 1.0%) against the AUD.

The persistency of Carry trades appears to contradict the uncovered interest rate parity (UIP) theory, which states that high-interest-rate currencies are expected to depreciate relative to low-interest-rate currencies commensurate with the interest rate difference. Yet academics and investment practitioners have shown that currencies in countries with high interest rates do not depreciate against currencies in countries with low interest rates, on average. This anomaly constitutes the term “forward rate bias”, with the implication that investors can make systematic profits by selling (taking a short position) the low-yielding currency and buying (taking a long position) the high-yielding currency.

In periods of relatively low volatility, Carry strategies can generate relatively stable returns. However, Carry strategies are vulnerable during periods of increased market volatility and in market environments where investors flee to safe-haven instruments. Thus, it is possible for suddenly distressed market environments to induce sudden reversals in the Carry strategy’s performance. So whilst Carry has the highest long-term returns, it has been subject to the largest falls and its returns can be the most correlated to traditional asset classes.

Value

A Value strategy purchases currencies that are undervalued relative to their “fair value” and sells currencies that are overvalued. One of the oldest and most popular measures of currency fair value is “purchasing power parity” (PPP). The economic intuition of PPP is based on the arbitrage of goods across countries. If, at market exchange rates, a basket of goods costs significantly less in one country than another, the country with the cheaper goods basket is said to have an undervalued currency. A strong incentive should exist to buy goods in the cheaper country and ship them to the more expensive country, which increases prices in the cheaper country, creates demand for its undervalued currency and helps to equalise the cost of the goods basket in both countries. In equilibrium, purchasing power parity prevails, i.e. an identical basket of internationally traded goods costs the same in both economies (and all countries for that matter).

²For example Daskov, N. & Swinkels, L.A.P., 2015. Empirical evidence on the currency carry trade, 1900-2012. *Journal of International Money and Finance*, 51, 370-389. This found that the Carry strategy would have generated positive returns since 1900.



Currency value strategies take advantage of the tendency of exchange rates to revert to their PPP levels over time. However, Value strategies have a long investment horizon because the pace at which exchange rates return to long-term equilibrium levels, as estimated by “fair value” models, can be slow.

Trend

The Trend strategy involves buying currencies that have experienced high recent returns and selling currencies that have had low recent returns. One simple implementation of a Trend strategy is to buy when the currency level is above its moving average, and to sell when it is below. Another common implementation is to buy when backward-looking currency returns over a certain fixed period are positive and sell when they are negative.

The insight used in a Trend strategy is that the expected distribution of next period’s return depends on its recent history. It continues to trend up if it was recently up or trends down if it was recently down. This “momentum effect” is believed to explain some of the movements in the currency market, as well as in equity, bond and commodity markets.

The economic rationale for the Trend factor is not well-explored. Unlike Carry, Trend (also known as ‘momentum’) is not explained by traditional risk factors, i.e. the Trend factor returns are not closely correlated to the equity risk premium or the credit premium. Academic research³ finds that the Trend factor is consistent with behavioural anomalies, such as investor under- and over-reaction. The Trend strategy tends to perform best when markets evidence a persistent trend and worst when markets are “choppy” in range-bound conditions. The momentum effect is more difficult to exploit in markets that are relatively less liquid.

Why is now the right time to consider currency factor investing as a source of return?

Eight years have passed since the depths of the global financial crisis. Despite a relatively lacklustre economic recovery, these eight years have been surprisingly kind to multi-asset investors. Bond yields have fallen to unprecedented levels and risky asset prices were boosted by unconventional central bank policies. Between January 2009 and the end of 2016, a 60-40 global equity-bond portfolio achieved a compound return of 8.7% in pound sterling on a fully currency-hedged basis.

We believe it is unlikely for this performance to be repeated in the years that lie ahead of us. The yield on the Barclays Global Aggregate Bond Index at the beginning of January 2017 was a scant 1.6%. While equities have performed strongly since 2009, their gains have arguably borrowed from future expected returns. At the end of 2016, the cyclically-adjusted price-earnings ratio of the US stock market was around 28, substantially above its post-World War II average of 18. Alas, there are no signs that the forces that brought us into this low-return environment are fading. Real bond yields are being kept artificially and deliberately low. Global economic growth appears to be on a slow structural decline exerting long-term drag on corporate profits.

Ways to improve multi-asset portfolios returns include more dynamic allocations, diversity and opportunities to add value in non-traditional areas. Another way is to be a more discerning buyer of skill, leading to the increased consideration of transparent, rules-based “smart beta” strategies in areas where you can gain exposures to systematic and replicable factor returns more cost-effectively.

A transparent, rules-based strategy can offer more efficient access to desirable currency risk premia, at lower cost than using active currency managers.

³For example: Menkhoff, L., Sarno, L., Schmeling, M., Schrimpf, A., 2012. Currency momentum strategies. *Journal of Financial Economics* 106, 660 – 684.

Our internal analysis shows that Carry, Value and Trend explain a substantial part (as much as half) of successful active currency manager returns over the last decade. We also find that only about 1/6th of active currency managers generate alpha that goes over and above exposure to these three currency factors.

Given that the currency markets are also liquid, with low trading costs, this creates a powerful basis for a transparent rules-based strategy. Such strategies should offer simple, fundamental capture of the currency factors that is not over-engineered (and thus susceptible to hindsight bias). Such a systematic, rules based approach would be amenable to low cost management and thus more efficient capture of these factors than the majority of active managers.



Russell Investments' Conscious Currency

Carry, Value and Trend are three currency factors that have demonstrated significant average returns at moderate volatility over long periods. Whilst each of the currency factors in isolation has experienced periods of significant negative returns, these falls do not often occur at the same time. As such we believe there is an advantage to investors in accessing a combination of the three currency factors.

Conscious Currency was designed as a robust and transparent rules-based strategy giving efficient exposure to Carry, Value and Trend factors. The strategy is constructed by equally weighting Carry, Value and Trend, using the major developed market currencies, rebalancing back to equal weights on a monthly basis.

The rules-based construction methodology we employ for each underlying factor is explained in Exhibit 3 below.

Exhibit 3: Russell Investments' Conscious Currency Index Methodology

	CARRY INDEX	VALUE INDEX	TREND INDEX
OBJECTIVE	Carry aims to capture long exposure to high-yielding currencies and short positions in low-yielding currencies.	Value aims to capture long exposure to undervalued currencies and short positions in overvalued currencies.	Trend aims to capture long exposure to positive trend currencies and short positions in negative trend currencies.
METRIC	10-day average of (1-month forward rate / spot rate) based on foreign currency/USD. Using a 10-day average smoothes effects from spikes on a single day.	(20-day average of spot rate) / PPP based on foreign currency/USD. Using a longer estimation period, the 20-day average, is consistent with an expectation of gradual convergence to PPP.	[(50-day average of spot rate) – (200-day average of spot rate)] / (200-day average of spot rate) based on USD/foreign currency. Relevant and current window of time, which represents currency trend.
RANKING	The currency with the highest carry metric is assigned to the top rank and the currency with the lowest carry metric is assigned to the bottom rank.	The most undervalued currency is assigned to the top rank and the most overvalued currency is assigned to the bottom rank.	The currency with the highest trend metric is assigned to the top rank and the currency with the lowest trend metric is assigned to the bottom rank.
WEIGHTING	Allocate 1/3 long position to each of the 3 top-ranked currencies and 1/3 short position to each of the 3 bottom-ranked currencies.	Allocate 1/3 long position to each of the 3 top-ranked currencies and 1/3 short position to each of the 3 bottom-ranked currencies.	Allocate 1/3 long position to each of the 3 top-ranked currencies and 1/3 short position to each of the 3 bottom-ranked currencies.

The currencies currently eligible to be constituents of the Conscious Currency strategy are the G10 major developed market currencies, as listed in Exhibit 4.

Exhibit 4: Currencies included in Conscious Currency

AUD Australian Dollar	EUR Euro	NOK Norwegian Kroner	SEK Swedish Kroner	CHF Swiss Franc
CAD Canadian Dollar	GBP Pound Sterling	NZD New Zealand Dollar	USD United States Dollar	JPY Japanese Yen

Carry

The Carry factor calculations are performed using currency forward curves rather than short-term interest rates (such as the London Interbank Offered Rate, LIBOR). Forward and spot rates are tied to the currency market, are directly observable and can be validated by market transaction behaviour. Specifically, we use the ten-day average of the ratio of one-month forward rate to the spot rate (quoted as units of currency per one USD), which gives the implied one-month interest rate difference between the currency and the US dollar. Using a 10-day average smooths daily changes and makes the calculations less susceptible to spikes in the market. The currency with the highest implied carry is assigned to the top rank and the currency with the lowest carry is assigned to the bottom rank. We then allocate 1/3 long (buying) position to each of the 3 top-ranked currencies and 1/3 short (selling) position to each of the 3 bottom-ranked currencies. Exhibit 5 below shows the current annualised implied carry for the G10 and the resulting positions as of 31st Jan 2017.

Exhibit 5: Example Rate differentials and Carry factor weightings

Currency	Rate Differential	Conscious Currency Weight
NZD	0.10%	0.333
AUD	0.08%	0.333
USD	0.00%	0.333
NOK	-0.02%	0.000
CAD	-0.03%	0.000
GBP	-0.07%	0.000
JPY	-0.10%	0.000
EUR	-0.13%	-0.333
SEK	-0.15%	-0.333
CHF	-0.16%	-0.333

Source: FTSE Russell, As of 31/01/2017.

Value

The PPP exchange rates for the value factor are sourced from the Organisation for Economic Cooperation and Development (OECD). We first calculate the ratio of the 20-day average spot exchange rate to the PPP exchange rate (both quoted as currency per 1 USD) as the metric of currency value. The currency with the lowest value metric is assigned to the top rank and the currency with the highest metric is assigned to the bottom rank. As in the Carry index, 1/3 of the long position is allocated to each of the 3 top-ranked currencies and 1/3 of the short position to each of the 3 bottom-ranked currencies. In Exhibit 6 we report the value metric and the corresponding value factor positions as of 31st January 2017.

Exhibit 6: Example PPP differentials and Value factor weightings

Currency	PPP Differential	Conscious Currency Weight
EUR	26%	0.333
GBP	18%	0.333
JPY	13%	0.333
CAD	6%	0.000
SEK	1%	0.000
USD	0%	0.000
NZD	-2%	0.000
AUD	-7%	-0.333
NOK	-12%	-0.333
CHF	-19%	-0.333

Source: FTSE Russell, As of 31/01/2017.

Trend

The trend factor employs the percentage deviation of the 50-day (short term) average of spot rate from the 200-day (longer term) average of spot rate as the Trend indicator. The exchange rates are quoted as USD per 1 unit of the respective currency. By definition, the Trend variable is zero for the US dollar. Currencies are ranked in descending order by the Trend indicator. Like for the other two currency factors, 1/3 of the long position is then allotted to each of the 3 top-ranked currencies and 1/3 of the short position to each of the 3 bottom-ranked currencies. In Exhibit 7, we show the Trend indicators and corresponding positions in the Russell Investments' Conscious Currency Trend index as of 31st January 2017.

Exhibit 7: Example 50 vs 200 day moving average and Trend factor weightings

Currency	50 vs 200 day moving average	Conscious Currency Weight
USD	0.00%	0.333
NZD	-0.55%	0.333
AUD	-1.34%	0.333
CAD	-1.72%	0.000
NOK	-2.38%	0.000
CHF	-2.85%	0.000
EUR	-4.02%	0.000
SEK	-5.51%	-0.333
GBP	-5.83%	-0.333
JPY	-6.69%	-0.333

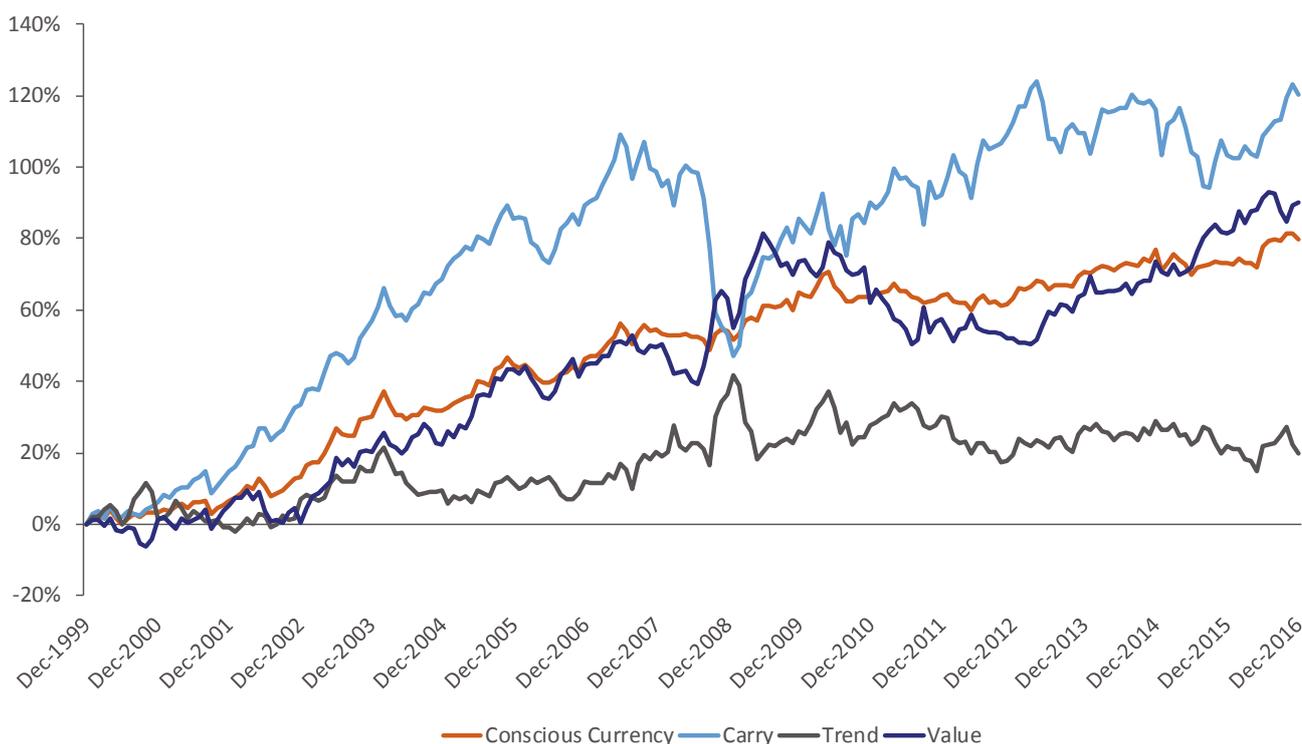
Source: FTSE Russell, As of 31/01/2017.

Conscious Currency return characteristics

The Conscious Currency strategy has earned an average return of 3.5% per annum between Nov. 30, 1999 and Dec. 31, 2016. Given annualised volatility of 4.5%, the reward-to-risk ratio is an attractive 0.8⁴.

In Exhibits 8 and 9, we demonstrate the stability of the Conscious Currency strategy, relative to the individual components of Carry, Value and Trend. Each of the individual currency factors has experienced significant negative returns, however typically at different times. As a result, Conscious Currency achieves a better balance of return to risk with much shallower falls, with the largest fall being 6.1%.

Exhibit 8: Russell Investments' Conscious Currency vs individual currency factors



Source: Bloomberg, data from 31/12/1999 to 31/12/2016

Exhibit 9: Conscious Currency Performance Characteristics

Currency	Carry	Trend	Value	Conscious Currency®
Annualised Return (%)	4.8%	1.1%	3.9%	3.5%
Annualised Std. Deviation (%)	8.6%	8.5%	7.6%	4.5%
Cumulative Return (%)	120.3%	19.7%	90.1%	79.7%
Worst 12 months	-24.6%	-11.8%	-14.1%	-3.4%
Max fall	-29.7%	-17.2%	-17.1%	-6.1%

Source: FTSE Russell, Russell Investments. Data between 30/11/1999 and 31/12/2016

You achieve a more stable return profile by combining Carry, Value and Trend.

⁴ We base all calculations of Russell Investments' Conscious Currency strategy using the Russell Investments' Conscious Currency® Index.

Low correlations to traditional asset classes

The benefit of Conscious Currency is not limited to its stand-alone return and risk properties. As supported by academic research⁵, Carry, Value and Trend provide economically large and significant diversification benefits within broader multi-asset portfolios.

Our view is that Conscious Currency can play an important role in both multi-asset and single-asset portfolios. For multi-asset investors, a potential diversification benefit derives from currency's low correlations with multi-asset portfolios. For investors in single assets – particularly, fixed income portfolios – currency may serve as both a diversifier and a potential source of returns.

In Exhibit 10, we show the correlations of Conscious Currency and its underlying factors with other typical asset classes:

Exhibit 10: Correlations between currency factor strategies and standard asset classes (GBP)

CORRELATION MATRIX	Conscious Currency®	Carry	Value	Trend	Equities	Gilts	IL Gilts	Investment Grade	High Yield	Property	Hedge Funds	Balanced portfolio ⁶
Conscious Currency®	1.00											
Carry	0.59	1.00										
Value	0.49	-0.01	1.00									
Trend	0.54	-0.07	-0.11	1.00								
Equities	0.23	0.41	0.01	-0.05	1.00							
Gilts	-0.06	-0.10	0.04	-0.04	-0.02	1.00						
IL Gilts	-0.03	0.06	-0.10	-0.01	0.21	0.75	1.00					
Investment Grade	0.06	0.39	-0.21	-0.10	0.35	0.32	0.44	1.00				
High Yield	0.12	0.53	-0.15	-0.20	0.58	-0.08	0.24	0.74	1.00			
Property	0.02	0.16	-0.08	-0.05	0.12	-0.10	-0.05	0.09	0.16	1.00		
Hedge Funds	0.16	-0.03	0.12	0.17	0.48	0.16	0.24	0.06	0.07	0.00	1.00	
Balanced portfolio ⁶	0.18	0.38	-0.03	-0.06	0.90	0.35	0.59	0.57	0.63	0.11	0.52	1.00

Source: FTSE Russell, Russell Investments, Bloomberg and Barclays Capital between 31/12/1999 and 31/12/2016

Conscious Currency exhibits low correlations to all these asset classes, ranging from mildly positive correlation with global equities (0.22) and mildly negative correlation with UK Gilts (-0.06). Among the individual factor strategies, Carry has the highest correlation with equities (0.41), Investment Grade Credit (0.39) & high yield (0.53), whereas the Trend and Value have low or even negative correlations to the other asset classes. The relatively high correlation of Carry to equities and credit emphasises the benefit of combining it with Value and Trend.

As we will see later, it is also possible to enhance or reduce exposure to individual factors such as Carry, in a customised or more dynamic version of the strategy.

⁵ Kröncke, Tim-Alexander, Felix Schindler und Andreas Schrimpf (2014), International Diversification Benefits with Foreign Exchange Investment Styles, Review of Finance 18 (5), 1847-1883.

⁶ For calculation purposes, we assume a UK global balanced portfolio based on the PPF allocations: 34.7% ACWI Global Equities, 50% Fixed Income (10.0% Gilts, 20% ILG, 15% IG, 5% HY), 3.7% Libor 3m, 5.1% UK IPD & 6.4% HFRX. Equities unhedged, everything else hedged.

Putting Conscious Currency into practice

Investors can incorporate the Conscious Currency strategy into their portfolios in different ways:

- › As an absolute return strategy;
- › Part of their currency overlay programme.

In each case, the strategies are implemented with currency forwards which is a very efficient use of capital. This allows the rest of the portfolio to remain invested in equities, bonds and other long-only asset classes with minimal or very modest impact to the rest of the portfolio.

The strong historical risk/return ratio, low negative returns and low correlations to traditional assets make the Conscious Currency strategy attractive to consider as an absolute return strategy.

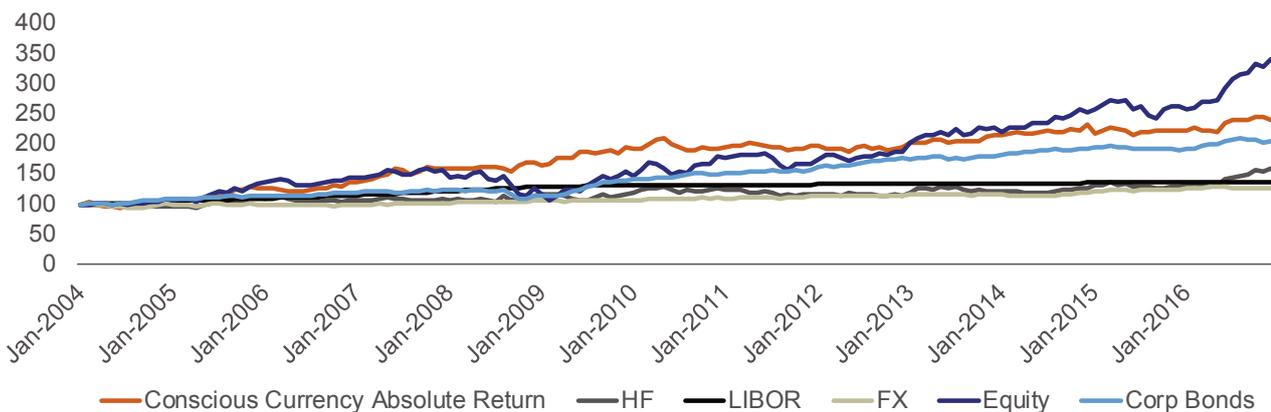
An absolute return strategy

The strong historical risk/return ratio, low negative returns and low correlations to traditional assets make the Conscious Currency strategy attractive to consider as an absolute return strategy. The liquid nature of the currency futures markets means it can be executed very efficiently even for large investors, and the low-cost implementation improves net-of-fee outcomes.

Importantly, we can scale Conscious Currency to meet a particular volatility requirement. As noted earlier, the standard Conscious Currency strategy has a historic volatility of 4.5%, however we can scale this up to suit an investor's individual risk budget. As an illustration, let's consider an exposure with double the Conscious Currency positions (9% volatility), taking it closer to a typical risk budget of an active currency strategy (around 10% volatility). We'll call this the "Conscious Currency Absolute Return" strategy.

The Conscious Currency Absolute Return strategy has performed well against almost all assets including the HFRX (Hedge Fund Index) and Barclays Trader FX Global (an index of currency strategies) over sustained periods. Highlighted in Exhibit 11, the Conscious Currency Absolute Return strategy's performance is in between that of equities and corporate bonds since 2004. If we extend the history back to November 1999 the Conscious Currency Absolute Return strategy also outperforms equities, but of course this period includes the 2000 market crash and ensuing equity bear market.

Exhibit 11 – Comparison of a Conscious Currency Funded strategy relative to other assets



Source: FTSE Russell, Russell Investments, Bloomberg and Barclays Capital between 31/01/2004 and 31/12/2016.

The risk/return impact of a 5% allocation within a typical global balanced portfolio for a UK institutional investor⁶ (funding this by 2.5% from Cash and 2.5% from Hedge Funds) is highlighted below in Exhibit 12.

Exhibit 12 – Impact of adding a 5% allocation to a balanced portfolio⁶

Currency	Without currency	With 5% Conscious Currency Absolute Return
Portfolio returns pa	6.7%	7.0%
Portfolio volatility	7.0%	7.0%
Return-to-volatility	0.95	1.00
Worst 1-year	-13.3%	-13.4%
Peak-trough fall	-15.5%	-15.5%

Source: FTSE Russell, Russell Investments, Bloomberg and Barclays Capital between 31/12/1999 and 31/12/2016.

In this balanced portfolio example, the return was increased by 0.3% pa with little impact on the risk metrics. Naturally, the diversification benefits obtained using Conscious Currency as an absolute return portfolio vary depending on the broader portfolio mix.

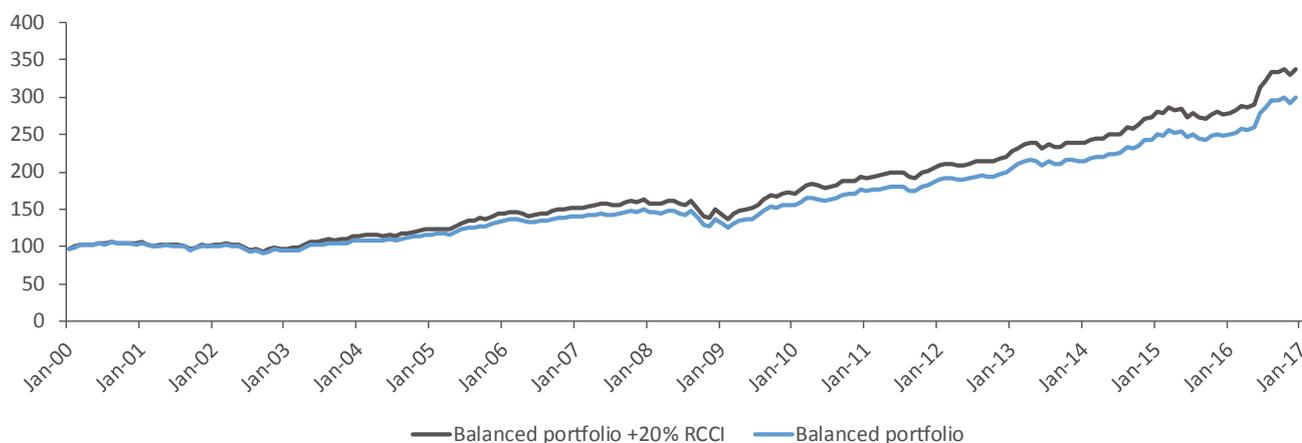
Part of a currency overlay programme

Many investors seek to hedge all or part of their currency exposures through a passive currency overlay programme. Rather than taking a passive approach, the Conscious Currency strategy can be incorporated within the overlay so that now the funds take “conscious” control of the currency factors they want to be exposed to, retaining those that are expected to have a positive long-term return. This replaces “random volatility” with conscious risk exposures.

This replaces “random volatility” with conscious risk exposures.

In this scenario, investors would typically hedge a portion or all their intrinsic currency exposure back to their base currency. From there, they can add exposure to the Conscious Currency strategy. Since Conscious Currency does not need to be funded, a 20% overlay can be added to a balanced portfolio without reducing the allocations to the traditional asset classes. We highlight the impact of adding a 20% allocation to Conscious Currency in Exhibit 13.

Exhibit 13: Impact of adding a 20% currency overlay programme to a balanced portfolio⁶ (%)



Source: FTSE Russell, Russell Investments, Bloomberg and Barclays Capital between 31/12/1999 and 31/12/2016.

In Exhibit 14, we extend the analysis to compare the return and risk characteristics of the balanced portfolio against an addition of 10%, 20% & 30% Conscious Currency strategy overlay.

Exhibit 14 – The impact of varying the allocation to the currency overlay programme on a global balanced portfolio⁶

	Without currency overlay	With 10% Conscious Currency overlay	With 20% Conscious Currency overlay	With 30% Conscious Currency overlay
Portfolio returns pa	6.7%	7.1%	7.4%	7.8%
Portfolio volatility	7.0%	7.1%	7.2%	7.4%
Return-to-volatility	0.95	0.99	1.03	1.06
Worst 1-year	-13.3%	-13.5%	-13.6%	-13.7%
Peak-trough fall	-15.5%	-15.5%	-15.6%	-15.6%

Source: FTSE Russell, Russell Investments, Bloomberg and Barclays Capital between 31/12/1999 and 31/12/2016.

The annual return increases as the Conscious Currency exposure is raised – from 0.4% with a 10% overlay to 1.1% with a 30% overlay. However, the risk levels are almost unchanged. Focusing on the 20% overlay, the portfolio return increases from 6.7% to 7.4% whilst volatility increases from 6.9% to 7.1%, resulting in an improvement in the return-to-risk ratio from 0.95 to 1.03. In terms of downside risk outcomes, the portfolio with the 20% currency overlay has almost identical one-year falls and peak-to-trough falls as the portfolio without the Conscious Currency strategy.

The Conscious Currency strategy does not have to be part of a hedging overlay but simply managed on its own on an “unfunded” basis. The impact is the same as the overlay above. So, a 20% unfunded Conscious Currency allocation would have added around 70 bps per year of additional returns over the last 17 years. When managed on an unfunded basis, investors must be mindful of margin obligations.

A 20% unfunded Conscious Currency allocation would have added around 70 bps per year of additional returns to a typical balanced portfolio⁶ over the last 17 years.



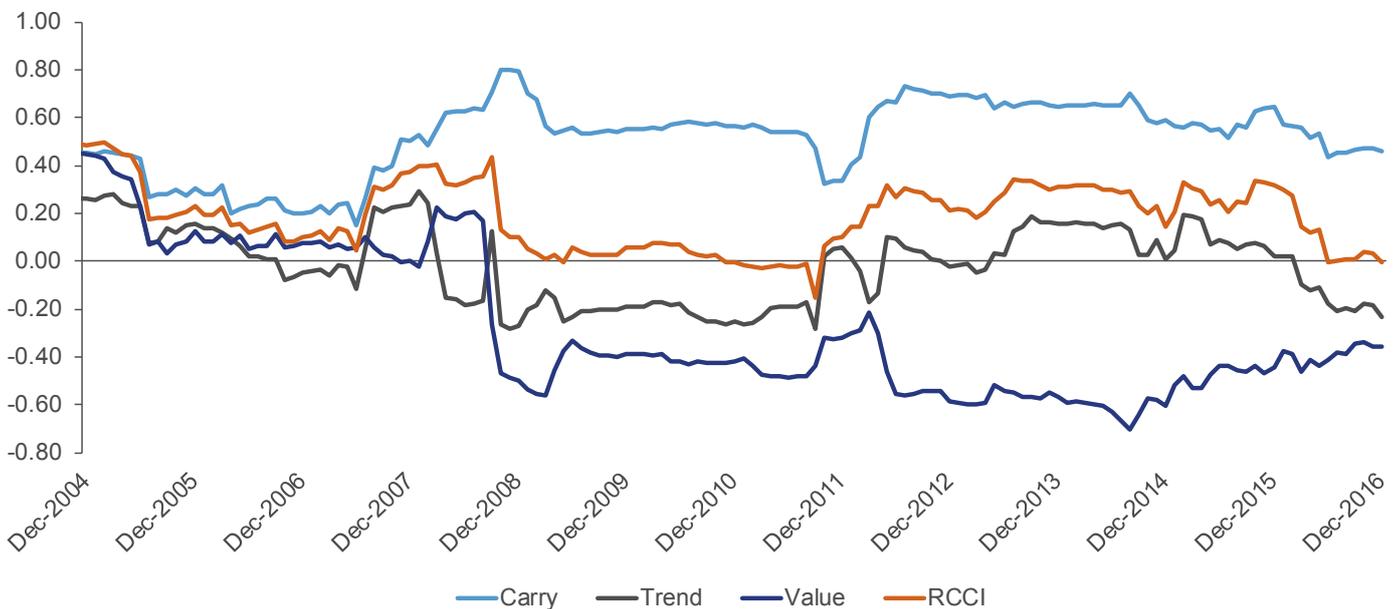
Enhanced/Customised versions of Conscious Currency

It is possible to consider customised allocations to Value, Carry and Trend. In particular, the Carry factor's higher correlation to equity and credit risk means that improved results can be obtained by lowering the Carry weight or even using an adaptive approach to respond to rises in volatility.

Custom weighting scheme

Exhibit 15 below shows how the Carry Value and Trend factors have been correlated to the Barclays Global Credit index. The Trend and Value factors show low correlations to this index. However, Carry has had a positive correlation throughout, rising to over 0.8 and has a long term average around 0.5.

Exhibit 15: Currency and Credit Correlations



Source: FTSE Russell, Russell Investments, Barclays Capital between 31/12/2004 and 31/12/2016. Correlations are to the excess returns (over equivalent duration government bonds) of the Barclays Global Credit Hedged GBP Index.

Portfolios with large exposures to equity and credit may want to emphasise Value and Trend rather than Carry. As an example, we run a bespoke strategy for a fixed income portfolio which targets 50% value, 20% carry and 30% momentum. This underweight to Carry was preferred given the broader fixed income portfolios high exposure to credit.

Adaptive Conscious Currency

Investors could also seek to increase return or reduce risk by varying exposures to the factors over time. Whilst Carry can be a hugely beneficial currency factor from a return perspective, it can be interpreted as a risk premium. As such, investors could gain additional benefit by reducing the weight to Carry in more challenging markets.

Our forthcoming adaptive version of Conscious Currency varies the weight to Carry over time based on the prevailing risk environment. The objective is to limit exposure to Carry in high volatility periods when the Sharpe Ratio of the strategy is unfavourable. Academic research has shown that financial market volatility exhibits clustering. Large price changes are more likely to be followed by more large changes, and small changes are more likely to be followed by small changes. If we know that volatility is, at least at some extent, predictable and that the Carry strategy performs poorly in periods of high volatility, we can adjust our exposure depending on the prevailing volatility regime.

To construct the adaptive version of Conscious Currency, we use a composite volatility index to change the weight to Carry over time and redistribute the remainder equally to Value and Trend. First, we compute the percentage deviation of four implied volatility indicators from their moving average. We then use the equal-weighted average deviation as a tilting factor for the Carry strategy. If composite implied volatility is above its average, this signifies an increase in risk and the adaptive strategy reduces the Carry weight and re-allocates equally to Trend and Value. If implied risk is below its average, we raise the Carry weight and reduce Trend and Value allocations accordingly. As we can see in Exhibit 16, the return of Adaptive Conscious Currency has historically exceeded the static version by 40 basis points per annum and the return-to-risk ratio increased from 0.80 to 0.85.

Exhibit 16: Adaptive Conscious Currency

	Adaptive Conscious Currency	Conscious Currency (static)
Return-to-Volatility	0.85	0.80
Annualised Std. Deviation (%)	4.7%	4.4%
Annualised Return (%)	4.0%	3.6%
Cumulative Return (%)	94.5%	81.9%
Worst 12 months	-4.9%	-3.4%
Max drawdown	-6.6%	-6.1%

Source: Russell Investments. Data from 31/12/1999 to 31/12/2016.

While volatility and one-year falls are higher for the adaptive version, this increase in stand-alone risk does not carry through when the currency factor strategy is added to a balanced global portfolio. As we show in Exhibit 17, compared with the equally-weighted static overlay, the balanced portfolio⁶ with Adaptive Conscious Currency has slightly higher returns with similar volatility and lower downside risk.

Exhibit 17: Adaptive versus static Conscious Currency within a balanced portfolio⁶

	Without Conscious Currency	With 20% Conscious Currency overlay	With 20% Adaptive Conscious Currency overlay
Portfolio returns pa	6.7%	7.4%	7.5%
Portfolio volatility	7.0%	7.2%	7.2%
Return-to-volatility	0.95	1.03	1.04
Worst 1-year	-13.3%	-13.6%	-13.3%
Portfolio fall	-15.5%	-15.6%	-15.0%

Source: Russell Investments. Data from 31/12/1999 to 31/12/2016.



Conclusion

Especially when expected returns from traditional asset classes are low, making conscious decisions on currency can be a valuable return source.

There is widespread academic support showing that currency factors can offer, persistent and relatively uncorrelated return sources. In particular, we believe that Carry, Value and Trend are strategies that are well placed to generate these positive returns at moderate volatility over long periods.

Our internal analysis shows that Carry, Value and Trend explain a substantial part (and as much as half) of successful active currency manager returns over the last decade. We also find that only about 1/6th of active currency managers generate alpha that goes over and above exposure to these three currency factors. For this reason, we believe a systematic, rules based strategy can offer efficient access to this return opportunity.

We designed the Conscious Currency strategy to be a robust and transparent rules-based strategy giving efficient and diversified exposure to Carry, Value and Trend factors. Over the last 17 years, this strategy has achieved strong returns with low correlation to traditional assets. As such it offers you the opportunity to enhance your multi-asset portfolio returns with modest or no additional risk.

Whilst the core version of the Conscious Currency strategy offers a robust investment solution, there is also scope for investors to design custom versions or consider an enhanced version of the strategy, using volatility indicators to vary the weight of Carry.



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