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Currencies: Momentum Investing

- In this paper, we outline our preferred systematic approach to momentum-based investment in currencies. In earlier research, we had shown that momentum strategies are one of the central sources of returns in currency markets.
- While currency market professionals have always used trend-following strategies, academics have until recently shown less interest in them, not least because such strategies violate the efficient markets hypothesis
- However, academic studies have shown the existence of statistically significant profits based on the trend-following strategies, though since the 1990s, the returns have fallen.
- Explanations for the violation of the efficient markets hypothesis include the existence of irrational investors, the possibility that prices provide information about non-fundamental currency determinants and the existence of temporary market inefficiency.
- The latter should concern investors, however we suggest that macro-economic developments that have resulted in weaker currency trends are the more likely culprit for lower returns, rather than the greater number of trend-followers
- Our momentum strategy ranks G10 currencies by their 12-month change, and buys the top-3 performing currencies and sells the bottom-3 performing currencies. Annual excess returns since 1980 have been 3% with a Sharpe ratio of 0.35. Though returns are lower than other strategies, they are more stable.

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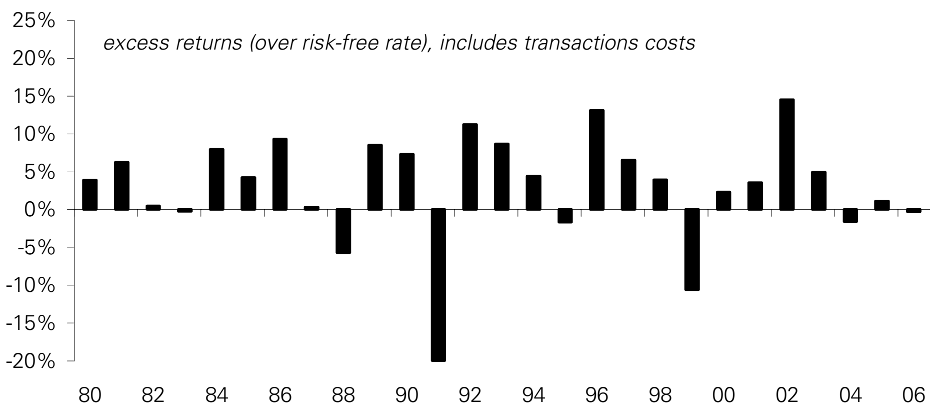
Annual Excess Returns of Our Momentum Strategy



Source: Deutsche Bank

Academics Jump On To the Trend

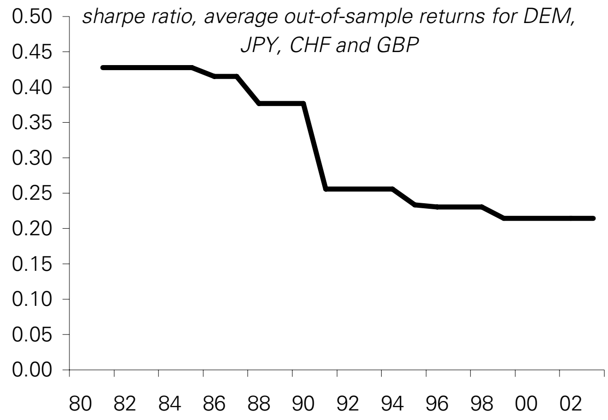
Currency investors have been using some form of trend-following strategies for decades. The most recent surveys indicate that technical analysis is used as much as fundamental analysis by currency market professionals[1]. Yet, academics have been reluctant to analyse the phenomena. Indeed, from 1960 to 1994, only 11 academic papers had been written on the subject for currency markets. Since then, 33 papers have been written[2]. Part of this was likely due to the scepticism many academics felt towards technical analysis, as it was in clear violation of the standard efficient market hypothesis, which states that the current price contains all available information, so using past prices should prove to be futile for investors. Of course, most studies have now shown that trend-following strategies have been profitable in violation of the standard efficient markets hypothesis. They show that the most statistically significant profits occurred before the 1990s, and then returns appear to have experienced a sharp drop in the early 1990s[3] (see second chart).

Several explanations have been put forward to explain why trend-following strategies have been profitable (and why profits have fallen since 1990). These include the existence of irrational traders ("noise traders"), the possibility that prices adjust slowly to new information, the possibility that prices provide information about non-fundamental currency determinants and finally the existence of temporary market inefficiency. There is some evidence for each one of these[4], though the last one is perhaps the most concerning for currency investors.

The Extinction of Trend-Following Returns?

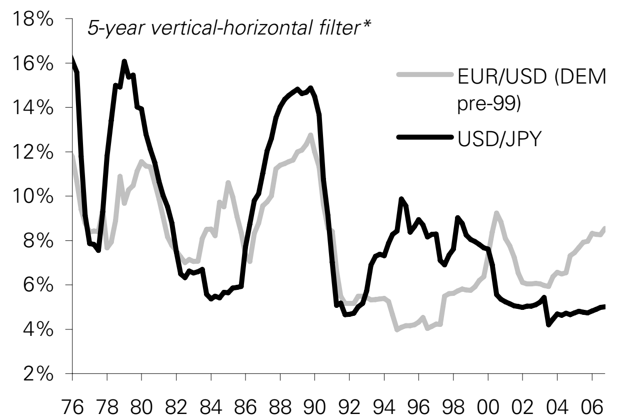
Several factors may alleviate concerns of the possibility that trend-following returns will no longer occur. First, the duration of very high returns in the 1970s and 1980s may perhaps be too long for an inefficiency to have existed. Plus, it would be unclear why other widely-known strategies, which violate the standard efficient markets hypothesis, such as carry trades, have not shown a decline in returns. Moreover, the decline in trend-following returns did not occur gradually, but instead very rapidly in the early 1990s. Second and perhaps more importantly, the strength of currency trends in the majors showed sharp declines from the early 1990s onwards (particularly USD/JPY, see second chart). That is, the major exchange rates exhibited large and durable trends in the 1970s and 1980s, but the 1990s saw more range-bound markets. It would be unlikely that a greater number of trend-followers in currency markets in the early 1990s resulted in the disappearance of multi-year trends in currency markets. Instead, larger macro-economic developments were the likely cause. These would include the efforts of policymakers to stabilise currencies through the Louvre Accord[5] finally bearing fruit in the early 1990s, and importantly the marked decline in the volatility of growth and inflation across the G10 world seen since the early 1990s. Looking ahead, the macro environment could well change, and so generate larger trends.

Average Risk-Adjusted Returns of Momentum Trading Rules Tested in Academia



Source: Neely, Weller, Ulirich (2006), Qi & Wu (2006), Park & Irwin (2005)

Strength of FX Trends Have Declined From the 1990s



*Source: DB Global Markets Research. * The vertical-horizontal filter is a measure of the steepness and smoothness of a trend. The higher the number, the stronger the trend.*

[1] Gehrig and Menkhoff (2003), "Technical Analysis in Foreign Exchange – The Workhorse Gains Further Ground."

[2] Park and Irwin (2006), "What Do We Know About the Profitability of Technical Analysis?"

[3] We take an average of out-of-sample Sharpe ratios for different models tested in academia. As we do not have the year-by-year Sharpe ratios for a given model, we assume a constant Shape ratio over the sub-period each model was tested over. Models are taken from Neely, Weller, Ulrich (2006): "The Adaptive Markets Hypothesis: Evidence from the Foreign Exchange Market", Qi and Wu (2006), "Technical Trading-Rule Profitability, Data Snooping and Reality Check: Evidence from the Foreign Exchange Market", Park and Irwin (2005), "A Reality Check on Technical Trading Rule Profits in US Futures Markets"

[4] Menkhoff and Taylor (2006), "The Obstinate Passion of foreign Exchange Professionals: Technical Analysis",

[5] A coordinated attempt to stabilize currencies initiated in 1987

Therefore, it would appear that there are grounds to believe that trend-following strategies may well work in the future, particularly if prices continue to show evidence of adjusting slowly to information and of containing non-fundamental currency determinants. The question, then, is what strategy best captures this.

Keeping the Momentum Going

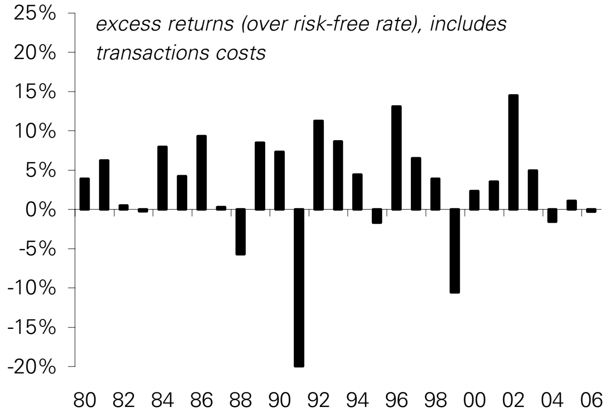
In the literature on trend-following or momentum strategies, approaches have varied from using simple currency returns to moving average cross-over rules to more complex Markov switching models. The essence of all these approaches is that they profit when currencies trend, and that they cover the time horizon over which fundamental models having little forecasting power (that is, over the short- to medium-run). These need to be retained in any strategy. Additionally, switches in signals should be kept to a minimum to reduce transaction costs. Bearing all of these factors in mind, two questions need to be answered: what type of momentum rule should we use (eg a moving average) and which currency pairs should we use?

For the rule, we opt for using 12-month changes in spot exchange rates – an even simpler approach than using a moving average cross-over[6]. It has the advantage of minimising the frequency of signal changes, while remaining within the time horizon where trend-following rules are effective. Picking which currency pairs to apply this rule to is more problematic as there would be scope to data mine, and pick crosses that have worked well in the past. However, a ranking of the changes in spot across all G10 currencies would sidestep this issue. Our approach therefore ranks all G10 currencies[7] by their change over the past 12 months, and then we buy the top-3 performing currencies and we sell the bottom-3 performing currencies. We assess the ranking each month. In this way, the choice of currency pairs is left to the strategy itself.

How Does It Perform?

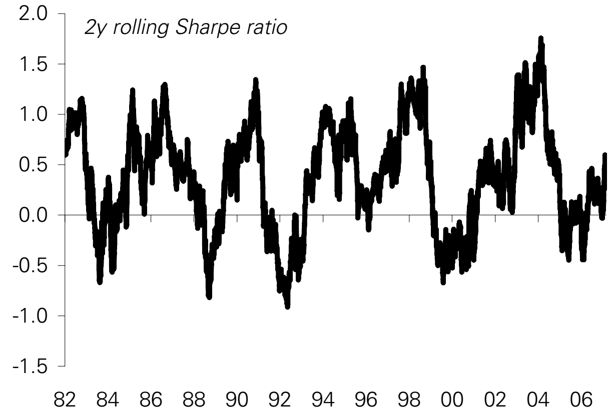
The strategy delivers an annual excess return of 3% from 1980-2006 with a Sharpe ratio of 0.35 and a maximum peak-to-trough drawdown of 24%. More detailed returns are shown in the charts on the right. Notable aspects of the strategy are the overall stability of returns and the large loss in 1991. The former appears to be due to the longer horizon over which the trend is measured (ie 12-months) and the neutral approach to picking currencies, while the latter was due to a sharp mid-year trend reversal in the US dollar (partly due to recession concerns). On balance, our approach appears to be able to capture profits from any trends that do emerge.

Excess Returns of Momentum Strategy



Source: DB Global Markets Research

Rolling 2-Year Risk-Adjusted Returns



Source: DB Global Markets Research

Summary Statistics of Momentum Strategy

	1980-2006	1990-2006	2000-2006
Excess Returns*	3.0%	2.8%	3.5%
Volatility	8.7%	8.8%	7.6%
Sharpe ratio	0.35	0.32	0.46
Max. Drawdown	-24%		

** Includes transaction costs and carry, and excludes legacy Euro currencies, save DEM. Including them, would have raised 1990-2006 returns by 0.3%, but kept other time periods unchanged*

Source: DB Global Markets Research

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[6] A longer moving cross-over rule such as a 20-day/200-day one would broadly deliver the same returns as using 12-month changes, but one would need to pick the currency pairs upfont.

[7] USD, EUR , JPY, CHF, GBP, NOK, SEK, AUD, NZD, CAD. For the pre-1999 period, we exclude legacy euro currencies, except DEM

Appendix 1

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