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Time series momentum and its role in a portfolio

1 Introduction

Momentum strategies – which typically buy strong performing assets and sell weak performing assets – have valuable properties when diversifying portfolios. Momentum strategies role in asset allocation is in this paper highlighted with the help of concrete examples from well-known institutional portfolios. Momentum strategies are traditionally regarded as a substitute to investments in high-quality government bonds. In this paper, we however argue that they rather complement each other.

2 A momentum strategy

Momentum strategies are based on exploiting a pricing anomaly referred to as time series momentum. This pricing anomaly states that previous returns of an asset are indicative of future returns. More specifically, the strong recent performance of a given asset indicates an increased probability of strong future performance. The converse can also be seen concerning recent negative returns. Time series momentum may therefore most easily be described by the statement *“The trend is your friend”*.

Momentum, or trend following, strategies are often used by Commodity Trading Advisors

or, in short, CTAs. This relatively broad term refers to hedge funds that use futures contracts for investing. A CTA can also be referred to as a managed futures fund. CTAs implement a wide range of strategies, but historically, different trend following strategies have been an important component.¹

This analysis constitutes of two main parts, an implemented momentum strategy which takes the form of an asset and a number of portfolios to which the momentum asset can be added in order to study the effect. The momentum asset was chosen to be the SG CTA Trend index, an index with 10 CTAs particularly focused on trend following strategies². A weight of 20 % is assigned to the momentum component. The other weights are simultaneously reduced by 20 % which means the portfolios are not leveraged.

The portfolios used in this analysis referred to as “models”, are inspired by the asset allocation of well-known asset managers and institutions. The models were created by using the portfolio weights, reported annually, and indices to mirror the different asset classes. Taking inspiration from actual funds allowed exploration of different allocations grounded in realistic assumptions. The funds studied in the

¹ Baltas, Akindynos-Nikolaos, and Robert Kosowski. "Momentum Strategies in Futures Markets and Trend-following Funds." SSRN Electronic Journal, 2013. doi:10.2139/ssrn.1968996.

² "SG Prime Services Indices." Société Générale. Accessed November 2019. <https://cib.societegenerale.com/en/prime-services-indices/>.

article were The Government Pension Fund of Norway, currently the biggest sovereign wealth fund in the world, AP4, a Swedish pension fund, and the Yale Endowment fund. Additionally, to these three portfolios, an 100 % equity model was included.

3 Results

The inclusion of a trend following strategy through the addition of the SG CTA Trend Index was shown to have a positive impact on the portfolio statistics for all models in the analysis. As the portfolios differ substantially, the increase in risk adjusted returns shows the versatility of a CTA as a diversifying component, see *Table 1*.

While the statistics in *Table 1* undoubtedly motivates an inclusion of a momentum component in the portfolio, investors often need to be patient. As can be seen in *Figure 1*, the trend following strategies can experience long periods of lacklustre performance. However, the patient investor has historically been rewarded with great hedging properties in times of crisis.

Portfolio managers not seldom experience that equity is the most volatile asset class in the portfolio. Furthermore, CTAs is often considered as a, to equities, negatively correlated addition to the portfolio. However, while there is some truth to it, this is a mischaracterization of the asset. A trend following strategy should rather be considered a to equities, uncorrelated asset which historically, in times of crisis, has been negatively correlated.

Fixed income is a common alternative to a CTA for downside protection. When comparing the two, the fixed income and the momentum component appear to have similar properties. However, at closer examination, the two assets seem to be more complements than substitutes. The momentum strategy appears to have a return signature with a uniquely strong emphasis on the extreme market moves, highlighting the dangers of dismissing downside protecting assets as a homogenous asset class.

Tables and figures

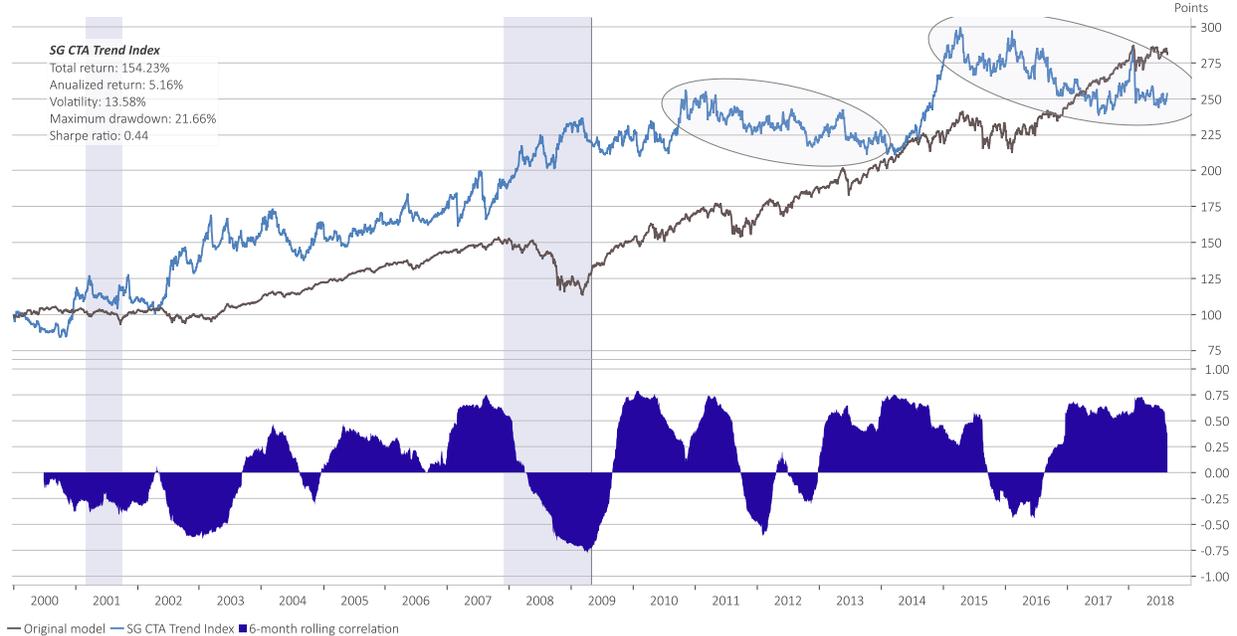
Table 1

| | NBIM | | AP4 | | YALE | |
|--------------------------|--------------|------------------|--------------|------------------|--------------|------------------|
| | <i>Model</i> | <i>Model wmc</i> | <i>Model</i> | <i>Model wmc</i> | <i>Model</i> | <i>Model wmc</i> |
| Total return | 160.07% | 168.62% | 190.27% | 186.28% | 296.97% | 263.16% |
| Annualized return | 5.28% | 5.47% | 6.02% | 5.94% | 8.03% | 7.49% |
| Volatility | 7.78% | 6.76% | 9.20% | 7.92% | 9.48% | 7.59% |
| Maximum drawdown | 28.17% | 19.44% | 33.39% | 25.99% | 35.20% | 26.23% |
| Sharpe ratio | 0.7 | 0.82 | 0.68 | 0.77 | 0.9 | 1.03 |

Table 1 The performance of the three models inspired by established funds. Note that “wmc” means “with momentum component” and refers to case where a weight of 20% has been assigned to the momentum strategy.

Figure 1

NBIM: Original model and SG CTA Trend Index



MACROBOND

Figure 1 NBIM: Original model, SG CTA Trend Index and 6-month rolling correlation, 1/3/2000-8/15/2018.

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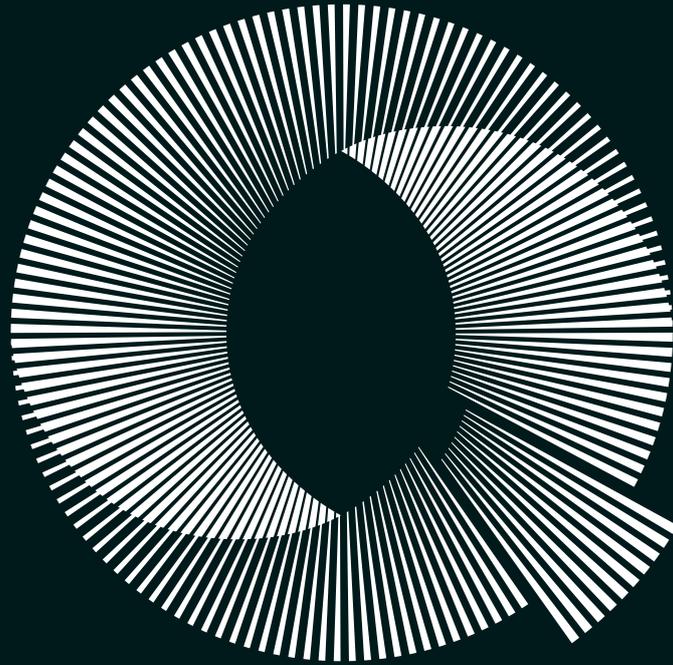
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Sweden
Denmark

Norra Vallgatan 64 SE-211 22 Malmö
Copenhagen FinTech Lab Applebys Plads 7 DK-1411 Copenhagen
+46 (0) 40 643 31 50 hello@oqam.se oqam.se