Submission for “The NAAIM 2013 Wagner Award”

“Momentum Strategies in Futures Markets and Trend-following Funds”

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Executive Abstract: Research Objectives, Literature & Methodology

In this paper we rigorously establish a relationship between time-series momentum strategies in futures markets and commodity trading advisors (CTAs), a subgroup of the hedge fund universe that has grown to USD 300 billion and has attracted a lot of attention during the financial crisis. Building on this relationship, we carry out the first rigorous test of the hypothesis that capacity constraints exist in trend-following investing. Using a cross-section of 71 futures contracts over the period 1974-2012, we first construct one of the most comprehensive sets of time-series momentum portfolios across various trading frequencies. Second, we provide evidence that CTAs follow time-series momentum strategies, by showing that such benchmark strategies have high explanatory power in the time-series of CTA returns. Third, based on this result, we investigate whether there exist capacity constraints in time-series momentum strategies. Consistent with the view that futures markets are relatively liquid, we do not find evidence of statistically significant capacity constraints when using two different methodologies and several robustness tests. Our results have important implications for hedge fund studies and investors.

Motivated by the fact that CTA funds differ in their forecast horizons and trading activity (e.g. Hayes 2011) we extend the work of Moskowitz, Ooi and Pedersen (2012) and evaluate time-series momentum strategies in futures markets over a broad grid of lookback periods, investment horizons and frequencies of portfolio rebalancing. We find strong time-series momentum patterns in monthly, weekly
and daily frequencies across 71 futures contracts over a 35-year period (January 1978 - January 2012). The different strategies achieve annualised Sharpe ratios of above 1.20 and appear to take advantage of both up and down markets, hence exhibiting important diversification benefits. Additionally, not only do we confirm that strategies at monthly, weekly and daily frequency have low correlation between each other, hence they capture distinct phenomena of return continuation, but we also find, using time-series analysis, that CTA funds do in practice employ time-series momentum strategies using futures contracts over multiple frequencies. Interestingly, the inclusion of the time-series strategies among the benchmark factors of the Fung and Hsieh (2004) 7-factor model for hedge fund returns dramatically increases its explanatory power, while the statistical significance of some of the straddle-based trend-following factors is driven out.

The above findings along with the fact that the CTA industry has dramatically increased during the last 30 years raise concerns about the existence of capacity constraints in the time-series momentum strategies that are followed by CTAs. Using two different methodologies we find that there is no statistically and economically significant evidence of capacity constraints in trend-following strategies. First, based on predictive regressions of momentum strategy performance on lagged capital flows into the CTA industry, we show that lagged fund flows into the CTA industry are not statistically significantly related to the future performance of time-series momentum strategies and the relationship even exhibits time-variation. This is in contrast to evidence reported for carry trades (Jylhä and Suominen 2011) or for some investment styles of the hedge fund industry (Naik, Ramadorai and Stromqvist 2007), even if the unconditionally negative (though insignificant) fund flow effect is consistent with Berk and Green (2004), Naik et al. (2007), Aragon (2007) and Ding, Getmansky, Liang and Wermers (2009). We find that our conclusions regarding capacity constraints remain unchanged when we apply a second methodology based on a thought experiment, in which we simulate what would happen if the entire AUM of the systematic CTA industry were invested in a time-series momentum momentum strategy.

Our methodology could be extended in several ways to account for transaction costs and fees as well as optimizing for contract liquidity. This is beyond the scope of this academic study since doing so in a realistic way would require gathering detailed information for each contract and over time. We leave this extension for future work.

Our results have important implications for hedge fund studies and investors. From a theoretical
perspective, the strong evidence of time-series momentum profitability implies strong autocorrelation in the individual return series of the contracts and therefore poses a substantial challenge to the random walk hypothesis and the market efficiency. Given the existence of a broad range of rational (e.g. Berk, Green and Naik 1999, Chordia and Shivakumar 2002, Johnson 2002) and behavioural (e.g Barberis, Shleifer and Vishny 1998, Daniel, Hirshleifer and Subrahmanyam 1998, Hong and Stein 1999) attempts to explain the momentum patterns, the need for a unified theoretical explanation remains a fertile ground for future research. From an investment perspective, the findings of this paper suggest the use of time-series momentum strategies over different frequencies when evaluating the risk-return profile of CTA and managed futures funds.

References


