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► Volume 17, Issue 3 ► Time series momentum and moving average ….

Research Papers

Time series momentum and moving average trading rules

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Abstract

We compare and contrast time series momentum (TSMOM) and moving average (MA) trading rules so as to better understand the sources of their profitability. These rules are closely related; however, there are important differences. TSMOM signals occur at points that coincide with a MA direction change, whereas MA buy (sell) signals only require price to move above (below) a MA. Our empirical results show MA rules frequently give earlier signals leading to meaningful return gains. Both rules perform best outside of large stock series which may explain the puzzle of their popularity with investors, yet lack of supportive evidence in academic studies.

Keywords:

Technical analysis   Time series momentum   Moving average   Return predictability

JEL Classification:

G11   G12

Acknowledgements

Notes

[1] This is different to Jegadeesh and Titman's (1993) momentum anomaly which focuses on cross-sectional return comparisons. Here, an asset would be purchased if it was among those with the strongest past returns, even if the asset's price had declined during the evaluation period and the relative out-performance was simply due to its returns being less negative than its peers. In contrast, a time series momentum strategy would not buy this asset until it had positive past returns.

[2] Other papers also find support for time series momentum. Baltas and Kosowski (2013) show volatility estimators can be used to improve the performance of time series momentum strategies and Antonacci (2013) shows time series momentum or 'absolute momentum' as they call it has value as a stand-alone or overlay strategy.

[3] These results are not inconsistent. The average monthly return on cross-sectional momentum winner stocks (from Ken French's website) over the 1963–2011 period is 1.51% compared to 0.88% for the CRSP value-weighted index. However, the correlation between these two series is 0.85.

[4] We thank Ken French for making these data available on his website.

[5] MA examples include Brock et al. (1992) for the US and Ratner and Leal (1999) for Asian and Latin American markets. The TSMOM paper of Moskowitz et al. (2012) is also

based on equity indices/futures contracts on these indices. A MA exception is Lo et al. (2000) who consider US stocks from different size quintiles.

[6] The results of Neely et al. (2014) suggest another explanation. They find technical trading rules complement predictions based on fundamental factors.

[7] We thank an anonymous referee for highlighting this point.

[8] We do not attempt to contribute to the literature that considers more sophisticated ways of defining and implementing moving average rule trading strategies (e.g. Hong and Satchell 2015). Rather, we apply basic MA and TSMOM rules that have been widely used in the literature. This allows us to compare and contrast these rules without the suggestion of us tilting the test in the favour of one particular rule by considering a specification that is favourable to it.

[9] We are grateful to Henry C. Stern for explaining the equations and discussion in this section to us.

[10] We present results for the 50-day look-back period as it is in between the shortest (10 days) and longest (200 days) look-back periods. Results for the other look-back periods are available on request.

[11] We thank an anonymous referee for suggesting we consider these two scenarios separately.

[12] For example, from table 1, we see the mean excess returns p.a. for the 50-day look-back rule on quartile 3 stocks is 12.4%. The average holding period from table 3 is 22 days which implies 11.3 trades per year. If we assume average one-way transaction costs of 40 basis points, we get a total of 11.3 × 2 × 0.4 = 9.0% of transaction costs, which leaves 3.4% of net profit.

[13] See Daniel and Moskowitz (2011) for more detail on these variables.

[14] Each of the alpha estimates is annualized.

[15] The international market results we generate also address this issue.

[16] We thank an anonymous referee for highlighting this.

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