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# Time series momentum and contrarian effects in the Chinese stock market

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## Abstract

This paper concentrates on the time series momentum or contrarian effects in the Chinese stock market. We evaluate the performance of the time series momentum strategy applied to major stock indices in mainland China and explore the relation between the performance of time series momentum strategies and some firm-specific characteristics. Our findings indicate that there is a time series momentum effect in the short run and a contrarian effect in the long run in the Chinese stock market. The performances of the time series momentum and contrarian strategies are highly dependent on the look-back and holding periods and firm-specific characteristics.

*Keywords:* Econophysics; Time series momentum effect; Time series contrarian effect; Trading strategy; Chinese stock market

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## 1. Introduction

Market anomalies provide the direct evidence against the Efficient Markets Hypothesis (EMH). Among the anomalies, there are two renowned phenomena, namely, the momentum and contrarian effects, which are widely investigated. There are two versions of momentum or contrarian effects. The earlier and first version is the cross-sectional momentum and contrarian effects [1, 2]. The cross-sectional momentum and contrarian effects are found to be ubiquitous in many asset classes as well as in most of regions around the world. Although the majority of earlier studies focus on the U.S. market [1–4], a large body of research reported evidence of the momentum (contrarian) effects in other regions or markets, including the UK [5, 6], Japan [7], Australia [8], China [9–14], to list a few. Moreover, the momentum and contrarian effects are also found in many other asset classes [15, 16], including funds [17, 18], currencies [19–21], and commodities [22, 23].

In essence, the cross-sectional momentum (contrarian) portfolios are zero-cost arbitrage portfolios that are constructed via buying (selling) winners and selling (buying) losers. Apart from the cross-sectional momentum (contrarian) effect, a newer version of momentum anomaly was unveiled recently [24], that is, the time series momentum effect (briefly, the TSMOM effect). It describes the predictability of future price trend of a single asset based on its past own performance. Evidence of a trend-following phenomenon has been documented for 58 futures and forward contracts from different asset classes, and it is argued that the TSMOM effect represents one of the most direct tests of the random walk hypothesis and a number of prominent behavioral and rational asset pricing theories [24].

Compared with the cross-sectional momentum (contrarian) effect, studies on the TSMOM effect are relatively fewer, most of which focus on the futures or forwards markets [24–27], mainly owing to less constraint of short selling as well as less trading cost. Meanwhile, a growing body of research directs attention on the stock market, particularly on stock indexes [28–30]. Most of aforementioned works follow the trading signaling process derived in Ref. [24] to study the TSMOM effect by holding the long (short) positions if the average excess return over past periods is positive (negative). Alternatively, a slightly different signaling method has been proposed with an indicator

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