



Momentum is really short-term momentum



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ABSTRACT

We demonstrate the estimation biases that arise when stock returns from 12 month prior and 2 month prior are included within intermediate and recent past momentum profits. These biases lead to an overestimation of intermediate past momentum but an underestimation of recent past momentum in the US market. There is no significant difference between the predictability of stock performance in the intermediate past and the recent past once we exclude these two months from the construction of momentum strategies in the US and each of the 26 major international markets.

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1. Introduction

Momentum indicates the fact that past winner stocks continue to outperform past losers in terms of their returns in finance literature. However, in a recent paper, [Novy-Marx \(2012\)](#) shows that in the US market, it is the intermediate horizon past performance over the past 12–7 months, not the recent past performance over the past 6–2 months, that drives momentum in individual stocks, which indicates that stock return predictability looks more like an “echo” than like “momentum”. This finding is difficult to reconcile with the traditional view of momentum.

Momentum has been well known since the publication of the study by [Jegadeesh and Titman \(1993\)](#), who show that when stocks are ranked into deciles based on their returns over past 12–2 months, the top decile portfolio continues to outperform the bottom decile portfolio in the next year. Momentum has been shown to be pervasive because it exists not only cross-sectionally in individual stocks ([Jegadeesh and Titman, 1993, 2001](#)) but also in time series ([Moskowitz et al., 2012](#)); it occurs in industries ([Moskowitz and Grinblatt, 1999](#)), size and book-to-market portfolios ([Lewellen, 2002](#)), and other asset classes ([Asness et al., 2013](#));

and it is also prevalent in international markets (e.g., [Rouwenhorst, 1998, 1999](#); [Chan et al., 2000](#); [Griffin et al., 2003](#); [Chui et al., 2010](#)). To investigate this phenomenon, many behavioral models (e.g., [Barberis et al., 1998](#); [Daniel et al., 1998](#); [Hong and Stein, 1999](#)) and risk-based explanations (e.g., [Johnson, 2002](#); [Sagi and Seasholes, 2007](#)) have been proposed. However, none of them can explain the observed term structure of momentum information documented in [Novy-Marx \(2012\)](#).

In this paper, we reexamine the intermediate past and recent past momentum strategies in the US and international markets to better understand the puzzle. One key issue is determining what horizon we should use to define the intermediate past and recent past momentum strategies. In a recent paper, [Goyal and Wahal \(forthcoming\)](#) find that there are 55 different ways to define intermediate and recent returns over the period from the previous 12–2 months, and the puzzling finding could be driven by data-snooping biases. Using simple specification analysis, we show that two empirical facts can explain the outperformance of intermediate over recent past momentum returns in the US market if we construct them following the same definition as in [Novy-Marx \(2012\)](#): (1) the negative serial correlation between a stock return this month and its return two months ago, which implies short-term return reversals ([Jegadeesh, 1990](#)); and (2) the positive serial correlation between a stock return this month and its return 12 months ago (e.g., [Jegadeesh, 1990](#); [Heston and Sadka, 2008, 2010](#)), which indicates annual seasonality. These two effects point

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to an estimation bias when stock returns 2 months ago are included in the recent past momentum strategy and/or stock returns 12 months ago are included in the intermediate past momentum strategy. In particular, the coefficients on the recent past and intermediate past momentum returns are negatively and positively biased, respectively, which leads to a larger return difference between the two momentum strategies. Estimation bias arises because of the misspecifications that stipulate that the coefficient on month 2 be the same as that on the other recent months and that on month 12 be the same as that on the other intermediate months.

Our empirical results support the reasoning above. Using the Fama and MacBeth (1973) regressions with US data from 1926 to 2012, we find that the coefficient on the past 12- to 7-month returns is 0.78, whereas that on the recent 6- to 2-month returns is only 0.25. The difference is significant at the 5% level. However, if we exclude month 2 from the recent past momentum strategy, the coefficient on the recent 6- to 3-month returns increases to 0.66, which is insignificantly different from that on the past 12- to 7-month returns. Similarly, if we exclude month 12 from the intermediate recent past momentum strategy, the coefficient on the past 11- to 7-month returns drops to 0.65, and it is insignificantly different from that on the recent 6- to 2-month returns. When we construct our recent and intermediate past momentum strategy based on stocks returns in the past 6–3 months and past 11–7 months, respectively, we find that the coefficient on the intermediate past momentum returns (0.65) is almost indistinguishable from that on the recent past (0.64).

A similar pattern appears in portfolio analyses, where we find no evidence that the intermediate past stock performance contributes more than its recent past to the standard 12–2 momentum strategy. The spanning tests show that both momentum strategies add significantly to the investment opportunity set spanned by the three Fama and French (1993) factors.¹ However, they cannot replace each other, and they contain significant independent information in terms of their predictability for stock returns in the future. We can improve the standard 12–2 momentum strategy once the contamination by prior month 2 is eliminated.

We further compare these two momentum strategies in international markets. In our sample of 26 major international stock markets, 17 and 13 show significant profits from the two immediate past momentum strategies, whereas 14 and 16 show significant profits from the two recent past momentum strategies. Outside January, none of the differences from the intermediate and recent momentum strategies is significant in any market. When stock returns in prior month 12 and/or month 2 are excluded from these two momentum strategies, there is no market in which the intermediate past momentum effect is significantly stronger than its recent past momentum over all months. Consistent with the evidence obtained in the US market, the results from the international markets once again confirm that momentum is really short-term momentum.

The remainder of the paper is organized as follows. In Section 2, we propose a simple linear model to demonstrate the estimation bias driven by bundling two explanatory variables together when they have different coefficients. Section 3 presents empirical evidence of the intermediate past and recent past momentum

strategies in the US and international markets. We conduct both cross-sectional regressions and portfolio analyses, with a particular focus on the comparison between the situations in which stock returns 12 and 2 months prior to portfolio formation are excluded from these two momentum strategies. Section 4 provides concluding remarks.

2. Specification bias

2.1. Literature review

Jegadeesh and Titman (1993) show that stock returns during the previous 2–12 months have strong predictability for their future returns: winner stocks in the past 2–12 months will continue to be the winners, while losers will still underperform in the next year. This important phenomenon is called momentum in the literature. To construct the momentum portfolio, the previous one-month return is excluded from the portfolio formation period due to the short-term return reversals documented in Jegadeesh (1990) and Lehmann (1990); the formation period could be 3 months or longer, starting from the return in prior month 2 until one year ago. In a recent paper, Novy-Marx (2012) finds that in the US market momentum is primarily driven by firms' performance 12–7 months prior to portfolio formation, rather than the recent 6–2 months. This finding indicates that the intermediate past returns during the last 12–7 months, rather than the recent past during the last 6–2 months, better predict stock returns in the future. This result is inconsistent with the literal meaning of “momentum” and also poses a challenge to the current models of momentum reported in the literature.

It is noteworthy that Novy-Marx (2012) divides the previous 12–2 months into intermediate past and recent past around the middle of the previous year. In contrast, Goyal and Wahal (forthcoming) suggest that any month in the past 12–2 months can be used to define the two formation periods; intermediate and recent periods are not necessarily continuous, i.e., several months can be skipped between these two periods. With this definition, there are 55 different ways to construct intermediate and recent portfolio strategies from these 11 months of returns in the past. When they take account of the dependences between all these 55 strategies, Goyal and Wahal find that the return difference between the intermediate past and recent past is insignificant from 0 at the conventional levels.

When we divide the previous 2- to 12-month returns into intermediate past and recent past periods, we implicitly assume that every month in the same period has a similar impact on future stock returns, whereas the months in different periods may not. However, two important empirical facts suggest that this assumption is false. The first is related to stock returns two months before the holding period. Jegadeesh (1990) shows that the first-order autocorrelation of monthly stock returns is negative. This one-month reversal leads to the exclusion of stock returns in the previous month from the momentum portfolio construction. Less attention is paid to Jegadeesh's finding in the same paper in which a negative second-order autocorrelation is also reported, especially for small firms, although it is much weaker than the first-order autocorrelation. This evidence indicates that the reversal is extended to two months prior to portfolio formation. These two months are very different from the other months in the previous year because the higher-order (>2) autocorrelations are all positive.

Short-term return reversal phenomenon has received numerous examinations in the literature since its initial report. Among them, Jegadeesh and Titman (1995a) and Subrahmanyam (2005) suggest that short-term reversal profits are evidence that market prices may reflect investor overreaction to information, while models in

¹ We assume that the exposures to the three Fama-French factors are time-invariant in this paper. Wu (2002) shows that by incorporating conditioning information of some market-wide financial variables, the three factors are able to capture both short-term momentum and long-term reversal. To the extent that these factors represent risk, the evidence in Wu (2002) indicates that risk stories can explain momentum.

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