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Short-term residual reversal

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Abstract

Conventional short-term reversal strategies exhibit dynamic exposures to the Fama and French (1993) factors. We develop a novel reversal strategy based on residual stock returns that does not exhibit these exposures and consequently earns risk-adjusted returns that are twice as large as those of a conventional reversal strategy. Residual reversal strategies generate statistically and economically significant profits net of trading costs, even when we restrict our sample to large-cap stocks over the post-1990 period. Our results are inconsistent with the notion that reversal effects are the result of trading frictions or non-synchronous trading of stocks and pose a serious challenge to rational asset pricing models.

JEL classification: G11; G12; G14

Keywords: Short-term reversal; Dynamic risks; Residual returns; Trading costs; Market efficiency

1. Introduction

A conventional short-term reversal strategy as documented by Lehmann (1990) and Jegadeesh (1990), i.e., a strategy that buys (sells) stocks with low (high) total returns over the past month, exhibits dynamic exposures to the Fama and French (1993) factors. As these implicit factor bets are inversely related to factor return realizations over the formation month, the reversal strategy is negatively exposed to the short-term momentum

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effect in factor returns of Moskowitz and Grinblatt (1999) and Chen and De Bondt (2004). As a result, the dynamic factor exposures of a reversal strategy are likely to negatively affect its profitability, while, at the same time, contributing significantly to the risks involved.

We introduce a short-term reversal strategy based on residual stock returns that does not exhibit such dynamic factor exposures and find that this strategy earns returns that are higher and substantially less volatile than those of a conventional short-term reversal strategy. More specifically, stock residual returns are computed by adjusting total returns for the stocks' exposures to the Fama-French factors and scaling the residual returns by their volatility. We document that this reversal strategy earns risk-adjusted returns that are twice as large as those of a conventional reversal strategy. Our results also show that the strategy's profitability has been relatively stable over our sample period from January 1929 to December 2010, including the more recent decades, and that profitability remains economically and statistically significant after taking trading costs into account. In addition, we show that residual stock returns have predictive power for future returns above and beyond that of total stock returns.

Several authors have argued that the profits of conventional short-term reversal strategies largely disappear once trading costs are taken into account (e.g., Ball, Kothari and Wasley, 1995; Conrad, Gultekin and Kaul, 1997; Avramov, Chordia and Goyal, 2006). Consistent with this stream of literature, we find that, indeed, the returns of a conventional reversal strategy net of trading costs are indistinguishable from zero or even negative. However, when we investigate the impact of trading costs on the profitability of residual reversal strategies, we find that the profits of the strategy exceed any reasonable level of trading costs by a wide margin. Even though reversal strategies generate high portfolio turnover, we find that residual reversal strategies yield significantly positive returns of more than 7% per annum net of trading costs.

The large residual reversal profits we document are remarkably robust over time and the cross-section of stocks. We find that the residual reversal strategy outperforms a conventional reversal strategy during every single decade in our sample in terms of risk-adjusted return. Most notably, the residual reversal strategy earns large positive returns during the two most recent decades, following the public dissemination of the reversal effect, while the conventional reversal strategy earns returns close to zero over the same period. In fact, over the post-1990 period, the residual reversal strategy yields large positive returns after trading costs even when we restrict the investment universe to the 500 or only 100 largest U.S. stocks. Also during the five most recent years in our sample, which include the "quant meltdown" of August 2007 and its aftermath, we observe that the residual reversal strategy consistently outperforms a conventional reversal strategy. Moreover, when we evaluate reversal profits within different industries, we find that the strategy based on residual returns outperforms the conventional strategy within each of the 10 industries of French (2011).

Our results shed new light on several alternative explanations that have been put forward in the academic literature to understand the reversal effect. Our finding that net reversal profits persist over the most recent decades in our sample, during which trading volumes dramatically increased, does not support the explanation that reversals are induced by inventory imbalances by market makers and that reversal profits are a compensation for bearing inventory risks (e.g., Jegadeesh and Titman, 1995b). In addition, the finding that reversal profits are observed among the 500 or even 100 largest stocks is inconsistent with the notion that non-synchronous trading contributes to reversal profits