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A prospect-theoretical interpretation of momentum returns☆

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Abstract

The puzzling evidence of seemingly high momentum returns is related to an understanding of risk as a simple covariance. However, by applying a prospect-theoretical assessment of US stock momentum returns we provide a possible direction for explaining the puzzle.

Keywords: Momentum trading; Market efficiency; Prospect theory

JEL classification: G11; G12; G14

1. Introduction

According to standard theory, returns on investment strategies might be higher than returns on holding the market portfolio if they carry a higher systematic risk. It is therefore surprising that simple momentum investment strategies seem to contradict this conventional wisdom by offering high returns that are not explained by conventional risk factors. The challenge to traditional capital market theory is particularly bold as momentum strategies are extremely simple by just buying those assets which performed best in the past reference period and selling short the worst performing assets. Thus momentum strategies do not require any fundamental understanding of asset markets and also no effort to forecast future returns. Despite this effrontery to capital market theory, the observation of highly significant momentum returns in the US stock market (Jegadeesh and Titman, 1993) was abundantly confirmed (e.g., Jegadeesh and Titman, 2001) and

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extended to other markets as well (Rouwenhorst, 1998). Thus, momentum returns represent a fascinating puzzle.

We contribute towards a possible understanding of high momentum returns by following the analytical perspective suggested by Benartzi and Thaler (1995).[1] We find, indeed, that risk considerations as implemented by prospect theory might be a key: the prospect utility of US stock momentum returns is not higher than that of a comparable market portfolio. Therefore, prospect theory provides a possible direction for explaining the puzzle.

We proceed as follows: Section 2 introduces data and the puzzling multi-factor interpretation of US stock momentum returns. Section 3 demonstrates the riskiness of momentum and market returns by highlighting the higher-order statistical moments. Section 4 consequently presents the application of prospect theory to the momentum and market strategies respectively. Section 5 concludes.

2. Data and the multi-factor interpretation of momentum returns

We use data on the US stock market from July 1963 to December 2005. This monthly data set comprises the CRSP market return, the risk free rate, the market excess return and momentum returns from NYSE–AMEX stocks. The construction of momentum returns follows the method employed in Fama and French (1996). Stocks are ranked into deciles based on their returns in the formation period over the last year. Decile portfolios are equally weighted and momentum returns are obtained by taking a long position in the stocks of the tenth decile (P10) and shorting stocks in the first decile (P1). Portfolios are rebalanced monthly and 1 month is skipped between the end of the formation and the beginning of the holding period. The holding period is 1 month.

At the core of the momentum puzzle is the fact that this strategy is self-financing and has a significantly positive mean return, which does not seem to be compensating for any kind of conventional measure of risk. Neither traditional beta-factors nor multi-factor analyses inspired by Fama and French have been successful in capturing momentum returns (see Fama and French, 1996; Grundy and Martin, 2001). Consider for example the popular Fama-French three-factor model that "explains" returns by their exposure to three risk factors. A time-series regression using GMM applied to our data leads to the following result

$$\underset{}{\mathrm{MOM}_t} = \underset{[3.05]}{1.50} - \underset{[-1.99]}{0.24}\mathrm{ER}_t - \underset{[-0.13]}{0.02}\mathrm{SMB}_t - \underset{[-1.17]}{0.21}\mathrm{HML}_t\,, \qquad R^2 \approx 1\% \tag{1}$$

with t-statistics in parentheses and MOM, ER, SMB and HML denoting monthly momentum returns, market returns in excess over the risk free rate and the SMB (size) and HML (leverage) factor, respectively. As can be directly inferred, a conventional momentum strategy yields risk adjusted returns of about 1.5% each month over the whole sample of 42 years. A similar conclusion can be drawn from using a simple one-factor market model. Seen from the viewpoint of these models, momentum strategies offer a free lunch.

3. Comparing statistics of market and momentum returns

Linear factor models look at first and second-order (cross-)moments of return distributions. However, there is a tendency in economics and finance to consider more complex and in particular asymmetric

[1] The failure of traditional models to explain the puzzling findings has stimulated a large body of behavioral models which inter alia include Barberis et al. (1998), Daniel et al. (1998), and Hong and Stein (1999).