



Momentum and mean reversion across national equity markets

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Abstract

Numerous studies have separately identified mean reversion and momentum. This paper considers these effects jointly. Our empirical model assumes that only global equity price index shocks can have permanent components. This is motivated in a production-based asset pricing context, given that production levels converge across developed countries. Combination momentum-contrarian strategies, used to select from among 18 developed equity markets at a monthly frequency, outperform both pure momentum and pure contrarian strategies. The results continue to hold after corrections for factor sensitivities and transaction costs. They reveal the importance of controlling for mean reversion in exploiting momentum and vice versa. © 2005 Elsevier B.V. All rights reserved.

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1. Introduction

Considerable evidence exists that both contrarian and momentum investment strategies produce excess returns. The work of DeBondt and Thaler (1985, 1987), Chopra et al. (1992), Richards (1997), and others finds that a contrarian strategy of sorting (portfolios of) firms by

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previous returns and holding those with the worst prior performance and shorting those with the best prior performance generates positive excess returns. On the contrary, the work of Jegadeesh and Titman (1993), Chan et al. (1996, 2000), Rouwenhorst (1998), Grundy and Martin (2001), Jegadeesh and Titman (2001), Lewellen (2002), Patro and Wu (2004) and others reveals that a momentum strategy of sorting (portfolios of) firms by previous returns and holding those with the best prior performance and shorting those with the worst prior performance generates positive excess returns.

There is no direct contradiction in the profitability of both contrarian and momentum investment strategies since contrarian strategies work for a sorting period ranging from 3 to 5 years prior and a similar 3 to 5 years holding period, while momentum strategies typically work for a sorting period ranging from 1 month (or more commonly 3 months) to 12 months and a similar 1 (or 3) to 12 months holding period.² The results correlate well with the findings of mean reversion at horizons of around 3 to 5 years and the findings of return continuation for horizons up to 12 months.³ Furthermore the overreaction hypothesis of DeBondt and Thaler (1985, 1987), as formalized by DeLong et al. (1990), and the behavioral theories of Daniel et al. (1998), Barberis et al. (1998), and Hong and Stein (1999) imply the observed pattern of momentum/continuation at short horizons and mean reversion at long horizons.⁴ Of course, apparent overreaction may also be generated in an efficient market when unanticipated persistent changes in risk or risk premia occur: For instance, when a persistent increase in systematic risk comes about, returns are initially low as prices adjust but subsequently are higher as expected returns have increased due to the increased reward for risk; similarly, if previous return realizations correlate with future risk sensitivities, as suggested by Berk et al. (1999), a price pattern resembling overreaction may result.

The purpose of this paper is to explore the implications of an investment strategy that considers momentum and mean reversion jointly. Chan et al. (1996, p.1711) state prominently: “Spelling out the links between momentum strategies and contrarian strategies remains an important area of research”. Subsequent research by Lee and Swaminathan (2000), and Jegadeesh and Titman (2001) exploring these links confirms an earlier finding of Jegadeesh and Titman (1993) (hereafter JT) that particular momentum-sorted portfolios experience eventual partial mean reversion. This finding is important since it suggests that momentum and mean reversion, which in principle may occur in different groups of assets, occur in the same group of assets. This reversal pattern, however, needs further corroboration: it is established for U.S. data only; is weak in the 1982–1998 period; may not hold for large firms after risk correction; and appears to be insignificant for prior losers (Jegadeesh and Titman, 2001).

While it is essential to consider momentum and mean reversion effects jointly, traditional *non-parametric* approaches make a combination strategy awkward. One could, for instance, construct a portfolio of firms with a combination of high returns in the previous 1–12 months period and low returns in the previous 3–5 years period, and buy this portfolio. One problem is:

² Lehmann (1990) and Jegadeesh (1990) find profitability of contrarian strategies for very short—1 week to 1 month—periods. We refer to the horizon from one month to up to one year as “short” although some authors (for instance Lee and Swaminathan, 2000) refer to this horizon as “intermediate”.

³ For the early work on these issues, see for instance Lo and MacKinlay (1988), Fama and French (1988), and Poterba and Summers (1988).

⁴ Consistent use of terminology suggests that a process of *mean reversion* leads to profitable *contrarian* investment strategies; and a process of *continuation* leads to profitable *momentum* investment strategies. We prefer, however, the more common use of the term “momentum” to indicate both the process and the strategy.

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