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Style investing, comovement and return predictability ☆

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Barberis and Shleifer (2003) argue that style investing generates momentum and reversals in style and individual asset returns, as well as comovement between individual assets and their styles. Consistent with these predictions, in some specifications, past style returns help explain future stock returns after controlling for size, book-to-market and past stock returns. We also use comovement to identify style investing and assess its impact on momentum. High comovement momentum portfolios have significantly higher future returns than low comovement momentum portfolios. Overall, our results suggest that style investing plays a role in the predictability of asset returns.

1. Introduction

Barberis and Shleifer (2003) present a parsimonious model in which investors allocate capital based on the relative performance of investment styles. Their model generates a rich set of predictions, some of which have received empirical attention. First, style-level return-chasing behavior generates both style and asset-level momentum. Barberis and Shleifer (2003) argue that the evidence in Moskowitz and Grinblatt (1999), Lewellen (2002), and Haugen and Baker (1996) is consistent with the profitability of style-level momentum (see also Teo and Woo, 2004). Second, they show that style investing generates excess comovement of assets within styles. Consistent with this, Barberis, Shleifer, and Wurgler (2005) show that when a stock is added to the Standard & Poor's 500 index, its comovement with the index increases (see also Greenwood, 2008; Boyer, 2011). Finally, they show that style-based investing can generate momentum in individual asset returns at intermediate horizons and reversals at longer horizons. In their words:

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"If an asset performed well last period, there is a good chance that the outperformance was due to the asset's being a member of a 'hot' style... If so, the style is likely to keep attracting inflows from switchers next period, making it likely that the asset itself also does well next period" (pp. 183–184). It is this hitherto unexplored connection between style investing and asset-level return predictability that we investigate in this paper.

A simple way to test whether style investing is responsible (at least in part) for asset-level return predictability is to see if past style returns have any predictive power in the cross section. We identify styles using the now ubiquitous size and value-growth grids, and then estimate Fama and MacBeth (1973) regressions of future stock returns on size, book-to-market ratios, past stock returns, and past style returns.[2] We find that between 1965 and 2009, over one, three, six and 12-month future return horizons, style returns measured over the prior 12 months are significant predictors of future returns. We subject this basic result to a series of robustness checks. In some (but not all) specifications, style returns measured over the prior six months are also significant predictors. If we construct size breakpoints using NYSE stocks instead of all stocks, the slope coefficients on style returns are similar in magnitude and retain their statistical significance. If we limit our sample to all-but-tiny stocks (those above the 10th percentile in NYSE size), style returns remain statistically significant using 12-month prior style returns. However, if we use six-month prior returns, style returns are important only in explaining longer horizon future returns. We do not find predictability of past style returns among big stocks only (those above the median NYSE size), implying that style returns based on value-growth alone do not help explain cross-sectional variation in returns among large stocks. The slopes on style returns are stronger in the second half of our sample period (1988–2009). Prior to that, the coefficients of past style returns are mostly indistinguishable from zero. In that latter period, which coincides with increased use of size and value categorization in mutual funds and institutional portfolios, the slopes on style returns are large and reliably positive.

Although the Fama-MacBeth regressions are suggestive of the role of style investing, a prediction of Barberis and Shleifer (2003) allows us to specifically identify its impact; namely, that style investing generates not only momentum but also comovement of a stock with its style. Comovement is an outcome of their model-not a primitive, but it serves as a valuable instrument for style investing. It frees us from treating all stocks as equally important to style investors because we can focus on stocks with extreme past returns and use a stock's comovement with its style to refine our assessment of the predictability induced by style investing. An added advantage is that comovement can be measured with precision, particularly compared with other measures of (aggregate) investor sentiment, behavioral biases, or style flows.[3] Therefore, we implement a second set of tests that exploit this metric. If style-based investing generates asset-level momentum and comovement, then one should be able to use comovement to generate variation in momentum profits.[4]

Each month, we sort stocks into deciles (R1 through R10) based on past six-month returns (Jegadeesh and Titman, 1993). In the same month, we measure the comovement of a security with respect to its style by estimating its beta with respect to style returns over the prior three months (similar to Barberis, Shleifer, and Wurgler, 2005). Using these style betas, we independently sort all stocks into comovement terciles (C1 through C3). If the comovement metric is useful, a momentum portfolio that buys high comovement winners and sells high comovement losers should have higher returns than a momentum portfolio that buys low comovement winners and sells low comovement losers over intermediate horizons. We detect a monotonic relation between momentum profits and comovement. For example, for the six-month portfolio formation and evaluation period, the average winner minus loser (R10–R1) monthly portfolio return for the lowest comovement tercile (C1) is 0.71% per month. This increases to 0.96% for the second tercile (C2) and 1.15% for the highest comovement tercile (C3). The difference of momentum returns between C3 and C1 is large: 0.44% per month with a *t*-statistic of 2.98. Estimates of alphas based on the Fama and French (1993) model display a similar pattern. These return differences are generated from both the short and long side of the portfolio strategy. Winner portfolio returns increase and loser portfolio returns decrease as comovement increases.

Our comovement-based tests drop tiny stocks and are robust to using value-weighted returns, dependent sorts, and measuring comovement using various windows, lags, and style cut-offs. Perhaps the most serious concern with the comovement-based tests is that of spurious correlations with other variables known to influence momentum. Size and book-to-market ratios are obvious candidates (Hong, Lim, and Stein, 2000; Lakonishok, Shleifer, and Vishny, 1994; Asness, 1997; Fama and French, 1996). Another possibility

[2] Using size and value-growth grids to identify styles has several advantages. First, they represent a long-standing approach to thinking about investing, dating back to Banz (1979) for size and Graham and Dodd (1934) for value. The proliferation of retail and institutional investment products based on these categories speaks volumes about the importance of these styles. Second, such a style definition is comprehensive and mutually exclusive. It covers the entire spectrum of domestic equities and does so in a way that a security can belong to only one style at a time. Third, such a style categorization is objective, can be replicated, and can be estimated for a long time series.

[3] Baker and Wurgler (2007) point out the difficulties in measuring aggregate sentiment despite attempts by many authors using trades and flows (see, for example, Kumar and Lee, 2006; Frazzini and Lamont, 2008).

[4] Numerous rational and behavioral theories attempt to explain momentum. Examples of the former include Conrad and Kaul (1998), Berk, Green, and Naik (1999), Johnson (2002), and Sagi and Seasholes (2007), in which momentum can arise from (rational) variation in expected returns, endogenously chosen investment expenditures, expected dividend growth rates, and growth options, respectively. Examples of the latter include Barberis, Shleifer, and Vishny (1998), Hong and Stein (1999), and Daniel, Hirshleifer, and Subrahmanyam (2001) in which momentum arises from the price impact of traders who suffer from a particular behavioral bias (such as overconfidence and representativeness).