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Trend salience, investor behaviours and momentum profitability

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ABSTRACT

Trend extrapolation in financial markets has been well documented, however it is contentious as to which trends will be extrapolated or mean reverted. This paper examines whether investors are more likely to extrapolate trends that they perceive to be salient, thereby providing an empirical test of the behavioural models of momentum. We employ an investment strategy that exploits trend salience by considering both the magnitude and the persistence of recent return performance. Consistent with behavioural models of momentum, an investment strategy based on trend salience significantly outperforms traditional momentum strategies and is not explained by the four-factor model. The relative performance of the trend salience signal is robust across different investment horizons and size-sorted portfolios, although is time-varying; the strategy does not outperform momentum in "down" markets or periods of high volatility in the formation period where trends are more difficult to identify.

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1. Introduction

There is now such voluminous evidence in support of the profitability of momentum strategies that momentum is recognised as the "premier anomaly" (Fama and French, 2008). Despite the weight of evidence supporting momentum, there is no consensus view on the rationale for the existence of momentum returns. In light of the inability of risk-based models to explain momentum (Fama and French, 1996; Grundy and Martin, 2001), behavioural models have been developed to explain this phenomenon. Daniel et al. (1998) propose a feedback model that incorporates investor overconfidence due to biased self-attribution. Hong and Stein (1999) suggest an alternate model and argue that a market is made up of two heterogeneous investors; "newswatchers" and "momentum traders" that demonstrate bounded-rationality. A model that incorporates investor forecasts is proposed by Barberis et al. (1998), who suggest investors initially underreact to news due to conservatism, resulting in positive autocorrelation, and ultimately overreact over long periods due to the representative heuristic (Tversky and Kahneman, 1974). Within each of these models, momentum profits and subsequent momentum reversals may be explained by market inefficiency due to either individual investor behaviour (Barberis et al., 1998; Daniel et al., 1998) or market imperfections (Hong and Stein, 1999).

Trend extrapolation is an important feature in each of these behavioural models. In the model proposed by Barberis et al. (1998), successive positive returns are likely to trigger the representative heuristic as investors react to the strength of information rather than its statistical weight (Griffin and Tversky, 1992). In this model, investors may overreact to recent extreme

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past performance; producing the momentum effect. The momentum traders described by Hong and Stein (1999) are conditioned on past returns; therefore stronger recent performance is likely to facilitate a stronger reaction from these traders. In the Daniel et al. (1998) model, recent strong performance is likely to induce a confirmation bias leading to overconfident/self-biased attribution traders to be more confidence in their stock picking ability, producing a momentum effect. In each case, a stock with strong recent returns is likely to induce a stronger momentum effect than a stock with recent performance that is less extreme.

Evidence of trend extrapolation exists in both psychology and finance settings.[1] Extrapolation may occur as individuals react to the strength of information rather than its statistical weight (Griffin and Tversky, 1992). This process involves investors using the 'law of small numbers' to overestimate the probability of a particular stock belonging to a particular distribution. The extent to which an investor extrapolates a past trend may depend on the salience of that trend. Andreassen (1990) uses laboratory experiments to show that the relative salience of information affects both forecasts of financial time-series and trading behaviour. This result is consistent with Andreassen and Kraus (1990), who argue that investors will only incorporate trends that they perceive to be salient into their forecasts of future prices. Further, Andreassen and Kraus (1990) argue that if the salience of the information used by investors to formalise forecasts increases; this leads to a greater responsiveness to recent changes.

A considerable amount of survey and experimental studies show that past changes in price are positively related to the mean subjective forecast of aggregate stock market returns (De Bondt, 1993; Fisher and Statman, 2000; Qiu and Welch, 2004; Vissing-Jorgensen, 2002). Building on Andreassen and Kraus (1990), an increase in the rate of change of past prices should lead to a greater sensitivity to these changes in future forecasts. It therefore follows that a positive trend that is improving should be more salient, and therefore more likely to be extrapolated, than a positive trend that is deteriorating.

Traditional momentum strategies do not account for the salience of the trend, focusing entirely on the level of returns within the formation period. We examine whether the momentum premium can be improved by including (excluding) stocks with a salient (non-salient) trend, where salience is measured by examining the rate of change of returns across the formation period. We argue that investors will extrapolate a recent trend if they consider that trend to be salient, hence a strategy that identifies winner stocks with an increasing recent rate of change in returns and loser stocks with a decreasing recent rate of change in returns should outperform the traditional momentum strategy.

Our paper provides an empirical test of the models that propose trend extrapolation. We use the recent trend of "winners" and "losers" during the formation period as a measure of the salience of a trend. Consistent with the predictions of Andreassen and Kraus (1990), we show that stocks with a strengthening trend exhibit stronger price continuations than stocks with a deteriorating trend. We develop an investment strategy based on the salience of a momentum trend whereby the investor purchases salient winners and sells salient losers. This investment strategy significantly outperforms a traditional momentum strategy and is robust to size of the stocks in the sample and a risk based explanation. However, the premium is sensitive to the market state, which suggests that the salience of the trend is altered by the condition of the market.

2. Data

The data used in this study is sourced from the Australian Graduate School of Management (AGSM) database and comprises of stocks listed on the Australian Stock Exchange for the period January 1992 to December 2011.[2] We use the 90-day bank bill rate, obtained from the AGSM database to proxy for the risk-free rate. The Australian equity market is used for this study because despite the voluminous literature documenting the success of the momentum trading strategy in Australia, very few studies have sought to explain this success or investigate investment strategies that may further improve momentum profitability. The Australian equity market comprises characteristics that differ from other developed markets, such as the United States, most particularly because the market capitalisation, trading and institutional ownership are concentrated amongst a relatively small number of large firms (Gaunt and Gray, 2003). Gallager and Looi (2006) report that outside the largest 100 listed stocks in Australia there is a decrease in the degree of analyst coverage, information flows and market efficiency. Given these characteristics, the use of Australian data may provide interesting insights into existing behavioural theories. Comparing the evidence of trend extrapolation on both large and small stocks provides an indirect test of the argument that experienced traders are less likely to exhibit behavioural biases.[3]

For a stock to be included in the sample it must have been listed for a full 12 months prior to the holding period. After filtering the data, all stocks were ranked on market capitalisation as at 31 December of each year and the largest 500 were included in the sample, which we define as the ASX500. All stocks outside the ASX500 are excluded given the small market capitalisation and consequent illiquidity of these stocks. Our sample of the 500 largest stocks covers 98.70% of the market capitalisation of all stocks listed on the Australian stock market.

The restriction of our study to the ASX500 is consistent with other studies of momentum in Australia. Hurn and Pavlov (2003) and Li et al. (2014) use a restricted sample of the top 200 stocks; Bettman et al. (2009), Demir et al. (2004) and Marshall and Cahan (2005) restrict their sample to stocks that are approved for short-selling on the Australian Stock Exchange. Brailsford and O'Brien (2008) find an interaction between firm size and momentum in Australian equities; specifically they do not find a momentum premium outside

[1] For example see: Choi et al., 2010; Delong et al., 1990; Frankel and Froot, 1988; Fuster et al., 2010; Haruvy et al., 2007; Smith et al., 1988.

[2] The first year in the sample is 1990, as the 12 month/12 month momentum strategy requires 24 lagged months returns data; the first full calendar year that can be examined is 1992.

[3] For example see: Caginalp et al., 2000; De Bondt, 1993; Edwards, 1968; Greenwood and Nagel, 2008; Smith et al., 1988.

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