

## Systematic noise

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### Abstract

We analyze trading records for 66,465 households at a large discount broker and 665,533 investors at a large retail broker to document that the trading of individuals is highly correlated and persistent. This systematic trading of individual investors is not primarily driven by passive reactions to institutional herding, by systematic changes in risk-aversion, or by taxes. Psychological biases likely contribute to the correlated trading of individuals. These biases lead investors to systematically buy stocks with strong recent performance, to refrain from selling stocks held for a loss, and to be net buyers of stocks with unusually high trading volume.

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In 1986, Fischer Black predicted that, “someday ... [t]he influence of noise traders will become apparent.” Noise traders are those who “trade on noise as if it were information... . Noise makes financial markets possible, but it also makes them imperfect. If there is no noise trading, there will be very little trading in individual assets” (Black, 1986, pp. 529–530). Many theoretical models (e.g., Kyle, 1985) attribute noise traders with

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random aggregate demand and no persistent or predictable influence on stock prices. Black, though, thought that the influence of noise traders would be cumulative.

Although Black did not specify which traders are noise traders, individual investors are prime candidates for the role. According to Black (1986, p. 531), “[m]ost of the time, the noise traders as a group will lose money trading.” Though individual investors earn positive returns in rising markets, they lose money trading (Odean, 1999; Barber and Odean, 2000; Barber et al., 2009a, b); this is particularly true when their trades are ostensibly speculative; that is, not triggered by liquidity demands, tax-losses, or the need to rebalance (Odean, 1999).

As Shleifer (2000, p. 12) notes, “investor sentiment reflects the common judgment errors made by a substantial number of investors, rather than uncorrelated random mistakes.” For changes in investor sentiment to have a significant impact on returns, individual investors must choose to buy the same stocks or sell the same stocks at about the same time; that is, their buy/sell decisions must be correlated. While a substantial literature in institutional herding examines reasons for and evidence of correlated trading across institutional investors,<sup>3</sup> little has been written about the extent to which individual investor trading is correlated. We document that the trading of individuals is highly correlated, surprisingly persistent, and not a passive reaction to institutional herding.

Institutional herding could result from principal-agent concerns (Scharfstein and Stein, 1990), informational cascades (Bikhchandani et al., 1992; Welch, 1992), or a common rational response to correlated information. In Section 4, we argue that these mechanisms are unlikely to coordinate the trading of individual investors. We believe, rather, that the trading of individual investors is correlated by shared psychological biases.

Recent studies examine the trading patterns of individual investors and possible psychological motivations for those patterns. For example, individual investors tend to hold on to losing common stock positions and sell their winners (Shefrin and Statman, 1985; Odean, 1998; Shapira and Venezia, 2001; Dhar and Zhu, 2006). They also sell stocks with recent gains (Odean, 1999; Grinblatt and Keloharju, 2001; Jackson, 2004). While most investors buy stocks that have performed well, investors who already own a stock are more likely to buy additional shares if the price is lower than their original purchase price (Odean, 1998). Investors who previously owned a stock are more likely to buy it again if the price has dropped since they last sold it (Barber et al., 2004). Investors tend to buy stocks that catch their attention (Barber and Odean, 2008). And investors tend to underdiversify in their stock portfolios (Lewellen et al., 1974; Barber and Odean, 2000; Goetzmann and Kumar, 2008); and in their retirement accounts (Benartzi and Thaler, 2001; Benartzi, 2001).<sup>4</sup>

For changes in investor sentiment to have a significant cumulative effect on asset returns, two conditions are necessary. First, there must be limits to the ability and willingness of better informed traders to offset the pricing effects of sentiment driven

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<sup>3</sup>For example, Lakonishok et al. (1992), Grinblatt et al. (1995), Wermers (1999), and Sias (2004).

<sup>4</sup>Other related work includes Kumar (2007), who analyzes the trading patterns of individual investors across style categories; Kumar and Lee (2006), who analyze the relation between individual investor buy imbalance and return anomalies; Goetzmann and Massa (2003), who analyze the impact of S&P 500 index mutual fund flows on market returns; Cohen (1999), who analyzes individual investor purchases and sales of equity and equity mutual funds in response to market returns; and Brown et al. (2003), who develop a measure of investor sentiment using daily mutual fund flow data.

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