

Behavioral Finance for Emerging Markets

Wei Xiong

Miami Behavioral Finance Conference

Dec 8, 2022

Progresses of Behavioral Finance

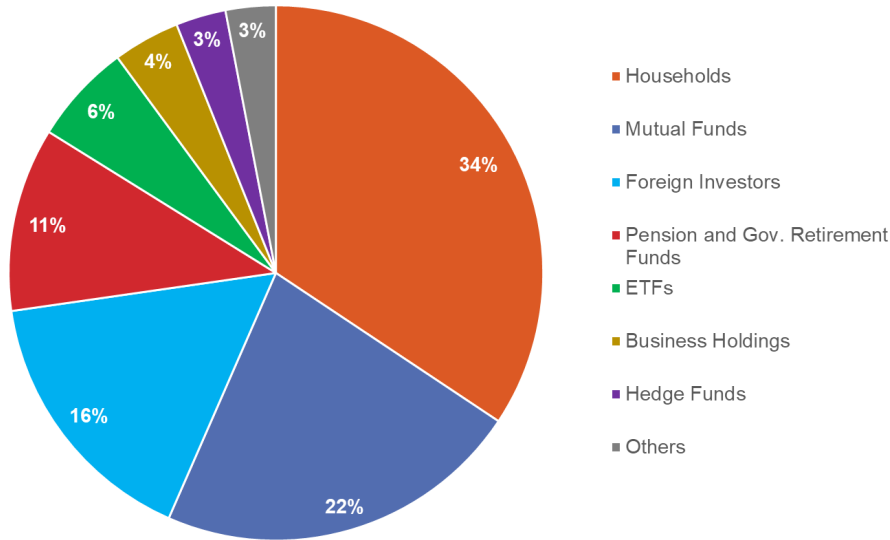
- Great progresses in BF, mostly anchored on US markets
 - Empirics:
 - Market inefficiency: Shiller (1981), DeBondt & Thaler (1985), Jegadeesh & Titman (1993)
 - Investor behavior: Odean (1998, 1999), Barber & Odean (2000, 2001)
 - Theories:
 - Belief biases: Barberis, Shleifer & Vishny (1998), Daniel, Hirshleifer & Subramanyam (1998), Bordalo, Gennaioli & Shleifer (2012)
 - Limits of arbitrage: DSSW (1990), Shleifer & Vishny (1997), Abreu & Brunnermeier (2003)
 - Heterogeneous beliefs: Miller (1977), Harrison & Kreps (1978), Hong & Stein (1999), Scheinkman & Xiong (2003)
 - Prospect theory preferences: Barberis, Huang & Santos (2001), Barberis & Huang (2001), Barberis & Xiong (2009, 2012)
 - Investor attention: Hirshleifer & Teoh (2003), Peng & Xiong (2006)
- Ongoing challenges
 - Biases, risk premia, or frictions?
 - A unified foundation for BF

Emerging Markets

- Rapid growth expected for emerging economies
 - China, India, ...
- New investors in emerging markets are particularly susceptible to biases and heuristics
 - Unique environments to study investor behavior
- Important issues about finance development
 - Paternalistic government policies? If so, how?

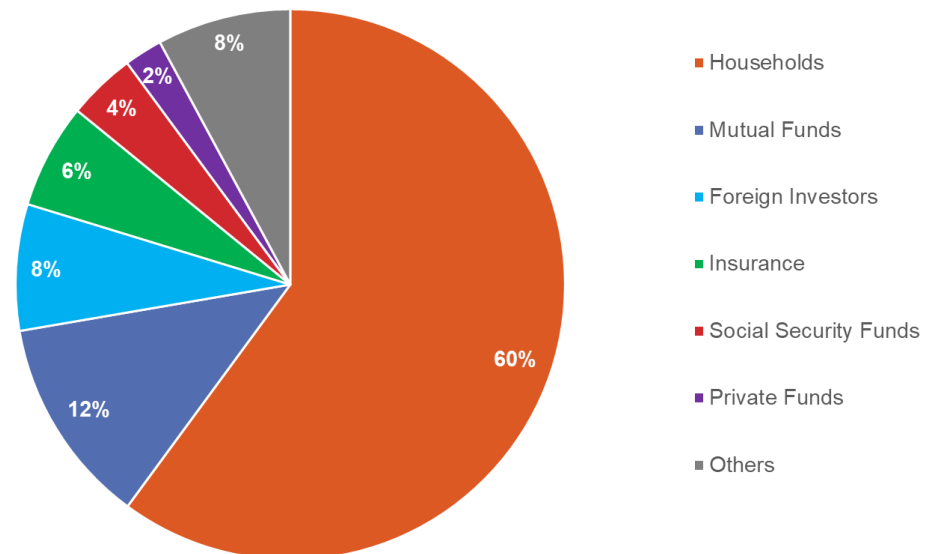
The Chinese Stock Market

Ownership of U.S. Equity Market (2020.03.31)



- Despite being the second largest equity market with over 4,700 stocks, the Chinese stock market was reopened only in early 1990s
 - Dominated by retail investors

Ownership of China A-Share Market (2020.06.30, Only Shares in Circulation)



A Speculative Stock Market

- A-B or A-H price differential
 - Mei, Scheinkman & Xiong (2009), Hong, et al. (2014), Jia, Wang & Xiong (2017)
- Warrants bubble
 - Xiong & Yu (2011), Liao et al. (2014), Gong, Pan & Shi (2017), Li, Subrahmanyam & Yang (2021), Pearson, Yang & Zhang (2021), Cai et al. (2021)
- Excessive trading
 - Liu, Peng, Xiong & Xiong (2022)
- Leverage and stock market cycle
 - Bian, Da, He, Lo, Shue & Zhou (2021), Hansman, Hong, Jiang, Liu & Meng (2021)
- Risk premia and anomalies
 - Liu, Stambaugh & Yuan (2021)
- Paternalistic government interventions
 - Daily price limits & circuit breakers: Chen et al. (2019), Chen et al. (2022)
 - IPO regulations and speculation: Allen et al. (2021)
 - Counter-cyclical intervention and investor speculation: Brunnermeier, Sockin & Xiong (2022)

Taming the Bias Zoo

Journal of Financial Economics (2022)

Hongqi Liu, CUHK Shenzhen

Cameron Peng, LSE

Wei A. Xiong, Shenzhen Stock Exchange

Wei Xiong, Princeton

The Bias “Zoo”

- Behavioral finance has made significant advancement over the last few decades
- A byproduct: multiple behavioral biases for each single anomaly
- The large set of behavioral biases is not satisfying
 - unlikely that all the biases are equally important
 - possible that certain biases would be subsumed by others
- To eventually arrive at a unified conceptual framework, it is important to consolidate the bias zoo

Excessive Trading Puzzle

- Retail investors appear to be trading too much (Odean 1999; Barber and Odean 2000)
- Many behavioral explanations have been proposed
 - overconfidence
 - realization utility
 - gambling preference
 - sensation seeking
 - social interaction
 - ...
 - as well as various rational explanations
- Need to narrow down to the few that are most relevant

A New Survey-Based Approach

- Combining surveys with transactions
 - overcome the challenges faced by existing approaches
 - rank biases not directly by survey responses but rather by their **cross-sectional explanatory power** for observed trading
- A nationwide survey among Chinese retail investors
 - more than 10,000 individuals randomized across provinces, brokerages, and branches
 - questions designed to measure an exhaustive list of trading motives
- Merge survey responses with account-level transaction data at the Shenzhen Stock Exchange
 - survey responses are largely consistent with trading behavior (e.g., gambling preference → buy lottery-like stocks)
- Two sets of exercises
 - a horse race among survey-based measures of trading motives
 - a comparison between survey-based and transaction-based measures

A Horse Race

Monthly Turnover in % (2018:10 to 2019:06)

| | Univariate | Multivariate | | Univariate | Multivariate |
|--|------------------------|-----------------------|-----------------------------------|------------------------|----------------------|
| Actual performance in 2017 | 4.104*** (5.332) | 4.198*** (5.219) | Realization utility, winner | 7.188* (1.874) | 7.049* (1.848) |
| Over-placement, performance | 15.695*** (2.760) | 11.549** (2.063) | Realization utility, loser | 0.409 (0.093) | -2.321 (-0.538) |
| Financial literacy score | 11.922*** (3.127) | 7.065* (1.800) | Sensation seeking, novelty | 10.184** (2.270) | 6.598 (1.360) |
| Over-placement, financial literacy | 1.729 (0.400) | -2.621 (-0.625) | Sensation seeking, volatility | 11.984*** (2.885) | 3.632 (0.824) |
| Miscalibration | 1.116 (0.289) | -2.989 (-0.764) | Perceived information advantage | 21.747*** (4.254) | 15.660*** (2.988) |
| Underestimation of transaction cost | -3.549 (-0.980) | -3.989 (-1.071) | Dismissive of others' information | 4.778 (1.318) | 2.942 (0.805) |
| Do not consider transaction cost | -2.143 (-0.548) | -4.029 (-1.052) | Affected by family and friends | -15.647*** (-3.317) | -7.839 (-1.616) |
| Do not think bid-ask spread is a cost | -15.135*** (-4.254) | -9.456*** (-2.650) | Affected by investment advisors | -16.469** (-2.708) | -12.089* (-1.943) |
| Extrapolation, up | 4.379 (1.110) | -1.255 (-0.254) | Controls | | YES |
| Extrapolation, down | 3.810 (1.005) | -1.208 (-0.262) | | | |
| Gambling preference, with prob. weighting | 10.924*** (2.878) | 11.764*** (2.920) | Male | | 21.488*** (6.124) |
| Gambling preference, without prob. weighting | 2.750 (0.684) | -1.159 (-0.263) | R2 | | 0.089 |
| | | | N | | 4,648 |

Main Findings

- Two trading motives stand out : gambling preferences and perceived information advantage
 - gambling preference: 21%; perceived information advantage: 24% (s.d. of turnover is 126%)
- Additional evidence further supports these two trading motives
 - gambling preference: trade smaller, high-beta, more volatile, and more positively skewed stocks
 - information advantage: no better returns → overconfidence about information advantage
- Certain explanations are indeed subsumed by others
 - e.g., sensation seeking is significant in univariate regressions, but not in multivariate regressions
- For a given bias with multiple forms, they don't have the same explanatory power
 - e.g., out of the three forms of overconfidence, overconfidence about having an information advantage works well while miscalibration of uncertainty works poorly

New Investors and Anomalies in an Emerging Stock Market

Zhenyu Gao, CUHK

Wenxi Jiang, CUHK

Wei A. Xiong, Shenzhen Stock Exchange

Wei Xiong, Princeton

Key Question

- A stock market anomaly is often attributed to investor bias, or risk premium, or market friction
- Identification is difficult due to the lack of data on individual trading
- New investors as a sharp measure of noise traders
 - Particularly relevant for emerging stock markets

Summary

- Account-level data from Shenzhen Stock Exchange to analyze trading of different groups
- New investors trade very differently from other investors
 - A sharp measure of noise trading
- Trading of new investors helps to understand anomalies common to developed markets
 - Strong explanatory power for turnover effect and volatility effect, even though retail investors as a whole do not
 - Modest explanatory power for value effect and return reversal
 - No power for size effect
- The trading of new investors also helps to understand anomalies specific to Chinese stock market
 - The lack of medium-term momentum
 - The presence of daily momentum

Related Literature

- Noise trading (Kyle, 1985; Black, 1986)
 - Empirical: e.g., Lee, Shleifer, and Thaler (1991), Neal and Wheatley (1998), Nagel (2005), Kumar and Lee (2006), Baber, Odean, and Zhu (2009)
 - Our paper: new investors' trading as a sharp measure of noise trading
- Individual investors in emerging markets
 - Chinese markets: An, Lou, and Shi (2022), Jones et al. (2021), Liao, Peng, and Zhu (2021), Chen et al. (2019), Liu et al. (2022)
 - Indian markets: Balasubramaniam et al. (forthcoming), Anagol, Balasubramaniam, and Ramadorai (2021), Campbell, Ramadorai, and Ranish (2019)
 - Taiwan markets: Barber et al. (2014), Lee, Lin, and Liu (1999)
 - Our paper: heterogeneity in retail investors with a focus on new investors

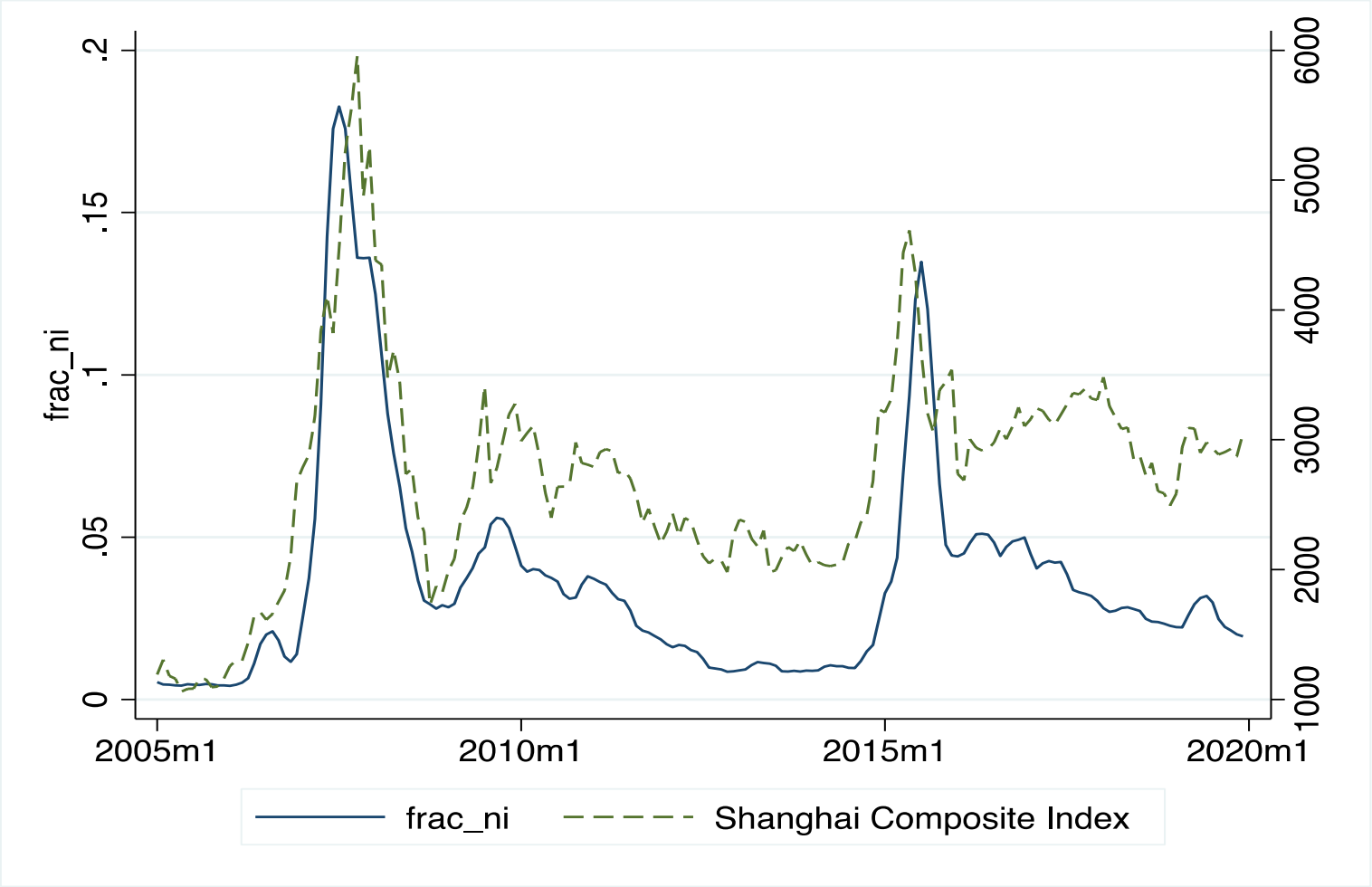
Related Literature

- Implication of investor characteristics for portfolios and asset prices
 - Balasubramaniam et al. (forthcoming), Betermier, Calvet, and Sodini (2017), Betermier et al. (2022)
 - Our paper: investor inexperience explains a rich set of return predictability and anomalies in China
- Investment experience/inexperience
 - Greenwood and Nagel (2009): younger fund managers as trend chasers and perform poorly during the tech bubble
 - Barber et al. (2022), Welch (2022): inexperienced Robinhood users during 2018-20
 - Our paper: a systematic analysis of new and experienced investors in a long sample period, including both booms and non-booms

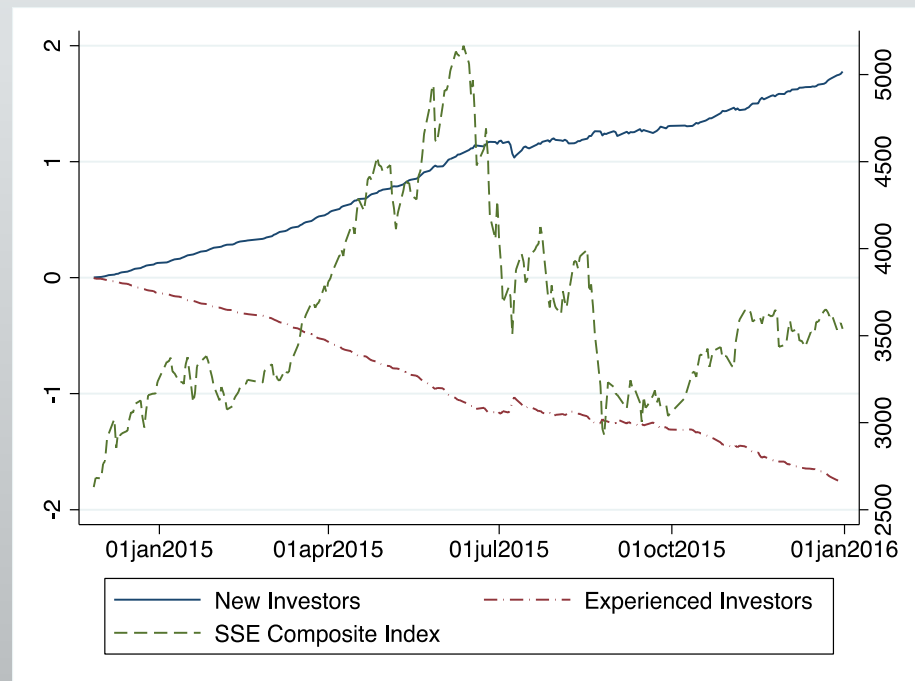
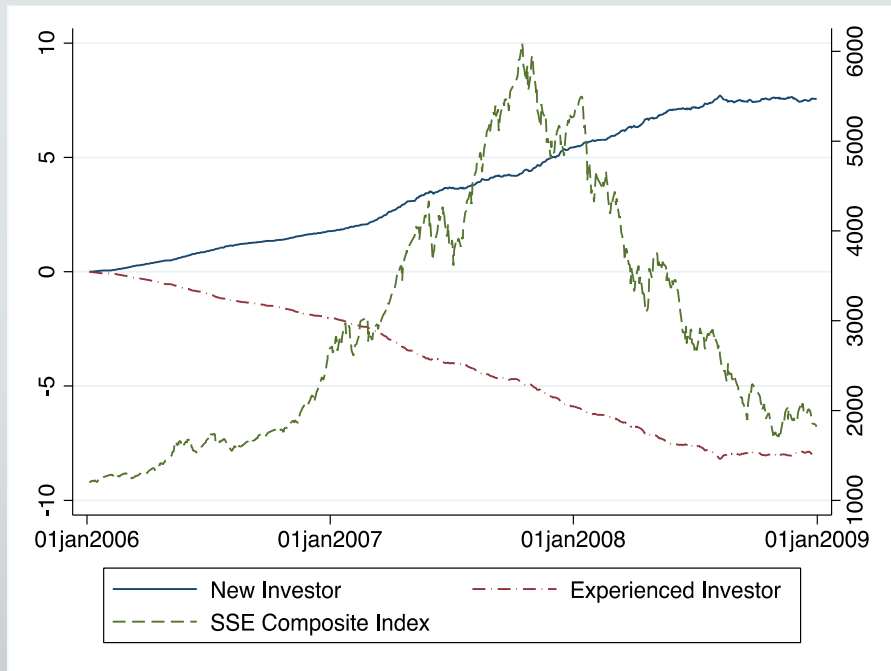
Data Description

- Account-level transaction data from Shenzhen Stock Exchange in 2005-2020
 - Each individual account is identified by a unique national ID
- 3 retail investor groups
 - **New investors**: accounts less than 3 months and with a balance value less than 3 million RMB
 - Experienced investors: accounts older than 3 months and with a balance value less than 3 million RMB
 - Large investors: accounts with a balance larger than 3 million
- 2 institutional investor groups
 - Mutual funds
 - Other institutions

Fraction of New Investors



Net Buy of New Investors and Experienced Investors



Road Map

1. New investors as a clear measure of noise traders
 - Time-series of market returns
 - Cross-section of stock returns
2. New investors and anomalies common to developed markets, e.g., Liu, Stambaugh & Yuan (2019)
 - Volatility effect
 - Turnover effect
 - Value effect
 - Return reversal
 - Size
3. New investors and anomalies specific to the Chinese market
 - The lack of medium-term momentum
 - Daily momentum

A Sharp Measure of Noise Trading

- The arrival of new investors negatively predicts market returns
- The fraction of new investors' netbuy negatively predicts individual stock returns

New Investors and Market Returns

Newey-West Regressions (with lags of 11 months)

| | Mkt_ret_f1m | Mkt_ret_f3m | Mkt_ret_f6m | Mkt_ret_f12m |
|---------------------|-------------|-------------|-------------|--------------|
| | (1) | (2) | (3) | (4) |
| Frac_ni | -0.52890 | -2.39608 | -6.67920 | -15.80738 |
| | (-1.48) | (-2.20) | (-2.70) | (-2.82) |
| Mkt_vol | 0.03633 | 0.35082 | 0.73012 | 1.77305 |
| | (0.87) | (2.48) | (3.02) | (4.04) |
| Mkt_turnover | -0.00008 | -0.00058 | -0.00121 | -0.00144 |
| | (-0.42) | (-1.22) | (-1.33) | (-0.85) |
| Mkt_Bm | 0.04942 | 0.19951 | 0.22204 | 0.30962 |
| | (0.86) | (1.19) | (0.77) | (0.69) |
| Mkt_ret | 0.14782 | 0.43617 | 0.85764 | 1.02343 |
| | (2.30) | (2.49) | (3.01) | (2.52) |
| Mkt_ret_l12m | 0.03414 | 0.10962 | 0.21454 | 0.37635 |
| | (1.25) | (1.44) | (1.43) | (1.65) |
| Constant | -0.01968 | -0.15201 | -0.12471 | -0.15404 |
| | (-0.50) | (-1.33) | (-0.54) | (-0.38) |
| N | 180 | 180 | 180 | 180 |
| R-sq | 0.048 | 0.151 | 0.272 | 0.393 |

Correlations With Other Groups

Fama-MacBeth Regressions

| | Netbuy(S_New) | | | |
|---------------|---------------|-----------|-----------|-----------|
| | (1) | (2) | (3) | (4) |
| Netbuy(S_Exp) | | 0.29754 | | |
| | | (7.31) | | |
| Netbuy(L) | | | -0.07025 | |
| | | | (-5.37) | |
| Netbuy(MF) | | | | -0.20380 |
| | | | | (-19.00) |
| Netbuy(OI) | | | | -0.19146 |
| | | | | (-11.26) |
| Ln_cap | -0.22046 | -0.23182 | -0.22158 | -0.22144 |
| | (-8.36) | (-8.46) | (-8.36) | (-8.57) |
| Abn_turnover | 0.61602 | 0.44797 | 0.60055 | 0.48336 |
| | (9.20) | (7.76) | (9.18) | (8.75) |
| BM | -0.06384 | -0.07697 | -0.06121 | -0.07112 |
| | (-1.50) | (-2.14) | (-1.42) | (-1.94) |
| Ret | 0.09449 | 1.77078 | 0.21233 | 1.24956 |
| | (0.54) | (7.50) | (1.37) | (7.17) |
| Ret_l1_11m | 0.06822 | 0.05397 | 0.05589 | 0.08411 |
| | (2.79) | (2.02) | (2.39) | (3.22) |
| Vol | 27.89254 | 24.63279 | 26.99830 | 26.39033 |
| | (10.84) | (11.05) | (10.68) | (11.22) |
| Max | -0.86225 | -0.69271 | -0.81330 | -0.80120 |
| | (-1.91) | (-1.65) | (-1.88) | (-1.90) |
| Illiq | -18.38669 | -20.63522 | -18.48832 | -19.29961 |
| | (-5.48) | (-5.30) | (-5.52) | (-5.39) |
| N | 108303 | 108303 | 108303 | 108303 |
| R-sq | 0.27 | 0.35 | 0.28 | 0.34 |

Cross-section of Stock Returns

Fama-MacBeth Regressions

| | Ret f1m | | | | | | |
|----------------|----------|----------|----------|----------|----------|----------|----------|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| Netbuy(S_New) | -0.00611 | | | | | -0.00436 | |
| | (-7.63) | | | | | (-5.41) | |
| Netbuy(S_Exp) | | -0.00860 | | | | -0.00719 | |
| | | (-11.65) | | | | (-2.79) | |
| Netbuy(L) | | | 0.00554 | | | 0.00423 | |
| | | | (6.29) | | | (4.72) | |
| Netbuy(MF) | | | | 0.00344 | | -0.00071 | 0.00317 |
| | | | | (5.62) | | (-0.36) | (1.61) |
| Netbuy(OI) | | | | | 0.00318 | -0.00028 | 0.00241 |
| | | | | | (6.23) | (-0.25) | (1.44) |
| Netbuy(Retail) | | | | | | | -0.00106 |
| | | | | | | | (-0.38) |
| Ln_cap | -0.00475 | -0.00294 | -0.00317 | -0.00322 | -0.00317 | -0.00396 | -0.00317 |
| | (-2.48) | (-1.58) | (-1.68) | (-1.72) | (-1.67) | (-2.02) | (-1.70) |
| Abn_turnover | -0.00672 | -0.00620 | -0.00984 | -0.00930 | -0.00979 | -0.00461 | -0.00830 |
| | (-3.30) | (-3.06) | (-4.43) | (-4.52) | (-4.32) | (-2.46) | (-4.10) |
| BM | 0.01065 | 0.01061 | 0.01082 | 0.01059 | 0.01082 | 0.01121 | 0.01049 |
| | (2.57) | (2.71) | (2.52) | (2.55) | (2.66) | (2.67) | (2.67) |
| Ret | -0.02885 | -0.07452 | -0.04088 | -0.04026 | -0.03615 | -0.07105 | -0.04750 |
| | (-3.02) | (-8.52) | (-4.52) | (-4.38) | (-3.93) | (-9.35) | (-5.39) |
| Ret_l1_11m | 0.00028 | 0.00011 | 0.00049 | -0.00062 | -0.00031 | 0.00056 | -0.00055 |
| | (0.08) | (0.03) | (0.13) | (-0.17) | (-0.08) | (0.15) | (-0.15) |
| Vol | 0.34015 | 0.21227 | 0.19527 | 0.14938 | 0.17887 | 0.35721 | 0.17584 |
| | (3.06) | (1.89) | (1.65) | (1.31) | (1.58) | (3.06) | (1.57) |
| Max | -0.12005 | -0.10924 | -0.11183 | -0.11122 | -0.11245 | -0.11628 | -0.11093 |
| | (-4.36) | (-3.70) | (-3.89) | (-3.99) | (-3.84) | (-4.07) | (-3.88) |
| Illiq | 0.34452 | 0.51365 | 0.46845 | 0.46978 | 0.46996 | 0.42320 | 0.48155 |
| | (2.52) | (3.59) | (3.28) | (3.33) | (3.21) | (3.10) | (3.35) |
| N | 108303 | 108303 | 108303 | 108303 | 108303 | 108303 | 108303 |
| R-sq | 0.12 | 0.12 | 0.12 | 0.11 | 0.11 | 0.13 | 0.11 |

Anomalies Common to Developed Markets

- Liu, Stambaugh & Yuan (2019) survey 14 anomalies in 9 categories
 - size (market cap), value (earnings-to-price, book-to-market, and cashflow-to-price), profitability (return-on-equity), volatility (one month return volatility and maximum return), reversal (one month return), turnover (12-month turnover rate and one month abnormal turnover), investment (asset growth), accruals (accrual and net-operating assets), and illiquidity (Amihud illiquidity ratio)
 - These anomalies are well documented in developed markets
- We confirm **8 significant anomalies** in 5 categories
 - Volatility effect: volatility (*Vol*), maximum daily return (*Max*)
 - Turnover effect: Turnover and *Abn_turnover*
 - Value effect: earnings-to-price (*EP*), book-to-market (*BM*)
 - Return reversal
 - Size effect

Volatility Effect

Fama-MacBeth Regressions

| | Ret_f1m | | | | | | | |
|----------------------|----------|----------|----------|----------|----------|----------|----------|----------|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Vol | -0.41720 | -0.10590 | -0.42978 | -0.39958 | | | | |
| | (-4.49) | (-1.19) | (-4.53) | (-4.36) | | | | |
| Max | | | | | -0.18252 | -0.11863 | -0.20825 | -0.18697 |
| | | | | | (-5.72) | (-4.07) | (-7.02) | (-6.15) |
| Netbuy(S_New) | | -0.00659 | | | | -0.00599 | | |
| | | (-8.14) | | | | (-8.57) | | |
| Netbuy(S_Exp) | | | -0.00559 | | | | -0.00581 | |
| | | | (-6.51) | | | | (-6.94) | |
| Netbuy(L) | | | | 0.00551 | | | | 0.00560 |
| | | | | (7.08) | | | | (7.22) |
| N | 108303 | 108303 | 108303 | 108303 | 108303 | 108303 | 108303 | 108303 |
| R-sq | 0.02 | 0.03 | 0.03 | 0.03 | 0.01 | 0.02 | 0.02 | 0.02 |

Turnover Effect

Fama-MacBeth Regressions

| | Ret_f1m | | | | | | | |
|----------------------|----------|----------|----------|----------|----------|----------|----------|----------|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Turnover | -0.25972 | -0.11535 | -0.26139 | -0.24646 | | | | |
| | (-3.55) | (-1.40) | (-3.64) | (-3.31) | | | | |
| Abn_turnover | | | | | -0.01379 | -0.00907 | -0.01350 | -0.01396 |
| | | | | | (-5.51) | (-3.86) | (-5.32) | (-5.52) |
| Netbuy(S_New) | | -0.00663 | | | | -0.00549 | | |
| | | (-7.90) | | | | (-7.68) | | |
| Netbuy(S_Exp) | | | -0.00531 | | | | -0.00482 | |
| | | | (-6.07) | | | | (-5.28) | |
| Netbuy(L) | | | | 0.00545 | | | | 0.00546 |
| | | | | (7.10) | | | | (6.51) |
| N | 108303 | 108303 | 108303 | 108303 | 108303 | 108303 | 108303 | 108303 |
| R-sq | 0.02 | 0.03 | 0.03 | 0.02 | 0.02 | 0.02 | 0.03 | 0.02 |

Value Effect

Fama-MacBeth Regressions

| | Ret_f1m | | | | | | | |
|----------------------|---------|----------|----------|---------|---------|----------|----------|---------|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| EP | 0.16346 | 0.10110 | 0.17253 | 0.17255 | | | | |
| | (2.19) | (1.64) | (2.35) | (2.25) | | | | |
| BM | | | | | 0.01579 | 0.01310 | 0.01651 | 0.01486 |
| | | | | | (2.88) | (2.28) | (3.07) | (2.72) |
| Netbuy(S_New) | | -0.00664 | | | | -0.00664 | | |
| | | (-9.20) | | | | (-10.26) | | |
| Netbuy(S_Exp) | | | -0.00543 | | | | -0.00546 | |
| | | | (-6.34) | | | | (-5.95) | |
| Netbuy(L) | | | | 0.00561 | | | | 0.00551 |
| | | | | (7.40) | | | | (7.56) |
| N | 108303 | 108303 | 108303 | 108303 | 108303 | 108303 | 108303 | 108303 |
| R-sq | 0.02 | 0.03 | 0.03 | 0.03 | 0.02 | 0.03 | 0.03 | 0.02 |

Return Reversal

Fama-MacBeth Regressions

| | Ret_f1m | | | |
|----------------------|----------|----------|----------|----------|
| | (1) | (2) | (3) | (4) |
| Ret | -0.04973 | -0.04172 | -0.08810 | -0.06005 |
| | (-5.27) | (-4.54) | (-10.64) | (-6.49) |
| Netbuy(S_New) | | -0.00617 | | |
| | | (-8.89) | | |
| Netbuy(S_Exp) | | | -0.00929 | |
| | | | (-12.03) | |
| Netbuy(L) | | | | 0.00631 |
| | | | | (7.56) |
| N | 108303 | 108303 | 108303 | 108303 |
| R-sq | 0.02 | 0.03 | 0.03 | 0.03 |

Size Effect

Fama-MacBeth Regressions

| | Ret_f1m | | | |
|---------------|----------|----------|----------|----------|
| | (1) | (2) | (3) | (4) |
| Ln_cap | -0.00434 | -0.00597 | -0.00445 | -0.00429 |
| | (-2.07) | (-2.68) | (-2.15) | (-2.06) |
| Netbuy(S_New) | | -0.00784 | | |
| | | (-8.81) | | |
| Netbuy(S_Exp) | | | -0.00519 | |
| | | | (-6.49) | |
| Netbuy(L) | | | | 0.00537 |
| | | | | (7.45) |
| N | 108303 | 108303 | 108303 | 108303 |
| R-sq | 0.04 | 0.05 | 0.05 | 0.04 |

New Investors and Well-Known Anomalies

- The volatility effect and the turnover effect can be mostly explained by the trading of new investors and not by other investors
- The value effect and the return reversal effect can be partially explained by the trading of new investors, albeit not by other retail investors
- The size effect is not related to the trading of new investors

Price Momentum

- Medium-term price momentum is commonly observed in developed equity markets but absent from the Chinese market (e.g., Chui, Titman, and Wei (2010), Du et al. (2022))
 - the medium-term past return, such 6- or 12-month, does not positively predict the subsequent stock returns
 - Instead, there is a powerful reversal effect from 1, 3, 6, 12 months to five years
- We find a significant momentum effect in daily returns

Absence of Medium-Term Momentum

Portfolio Sorting

| | Future one month return | | | |
|------------------------|-------------------------|------------|-----------|---------|
| | Value-weight | | | |
| Sorting return horizon | 1m | 3m | 6m | 12m |
| | -0.0086* | -0.0121* | -0.0107 | -0.0048 |
| | (-2.08) | (-2.39) | (-1.93) | (-0.83) |
| | | | | |
| | Equal-weight | | | |
| Sorting return horizon | 1m | 3m | 6m | 12m |
| | -0.0087* | -0.0153*** | -0.0122** | -0.0083 |
| | (-2.32) | (-3.96) | (-3.11) | (-1.92) |

Daily Momentum

Portfolio Sorting

| Value-weight | I: Holding horizon | | | | | |
|----------------------------------|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| | 1 day | 2 days | 3 days | 4 days | 5 days | 10 days |
| J: Sorting return horizon | | | | | | |
| 1 day | 0.0037*** (9.42) | 0.0030*** (5.81) | 0.0030*** (5.09) | 0.0031*** (4.59) | 0.0014* (1.99) | 0.0020* (2.50) |
| 2 days | 0.0017*** (5.30) | 0.0009 (1.88) | 0.0007 (1.27) | -0.0006 (-0.91) | -0.0023** (-3.18) | -0.0012 (-1.29) |
| 3 days | 0.0012*** (4.32) | 0.0005 (1.22) | -0.0007 (-1.17) | -0.0021** (-3.08) | -0.0035*** (-4.48) | -0.0020* (-1.97) |
| 5 days | -0.0001 (-0.55) | -0.0018*** (-4.25) | -0.0030*** (-5.01) | -0.0039*** (-5.20) | -0.0046*** (-5.36) | -0.0033** (-2.67) |
| 10 days | 0.0001 (0.58) | -0.0006 (-1.55) | -0.0012* (-1.99) | -0.0017* (-2.30) | -0.0022* (-2.38) | -0.0014 (-0.85) |
| Equal-weight | | | | | | |
| | I: Holding horizon | | | | | |
| | 1 day | 2 days | 3 days | 4 days | 5 days | 10 days |
| J: Sorting return horizon | | | | | | |
| 1 day | 0.0039*** (12.51) | 0.0035*** (7.82) | 0.0041*** (7.48) | 0.0046*** (7.37) | 0.0032*** (4.67) | 0.0057*** (5.90) |
| 2 days | 0.0016*** (6.01) | 0.0009* (2.17) | 0.0010* (1.98) | -0.0002 (-0.36) | -0.0017* (-2.49) | 0.0008 (0.83) |
| 3 days | 0.0010*** (4.17) | 0.0002 (0.42) | -0.0011* (-2.24) | -0.0026*** (-4.29) | -0.0037*** (-5.45) | -0.0014 (-1.48) |
| 5 days | -0.0006** (-2.73) | -0.0026*** (-7.27) | -0.0039*** (-8.08) | -0.0048*** (-8.34) | -0.0055*** (-8.31) | -0.0042*** (-4.23) |
| 10 days | -0.0004* (-2.35) | -0.0017*** (-5.36) | -0.0025*** (-5.59) | -0.0034*** (-5.82) | -0.0041*** (-5.89) | -0.0049*** (-3.94) |

Investor Reactions to Past Returns

Panel Regressions with Daily Fixed Effects

| | Netbuy(S_New)_f1d | Netbuy(S_Exp)_f1d | Netbuy(L)_f1d | Netbuy(OI)_f1d | Netbuy(MF)_f1d |
|-------------------|-------------------|-------------------|---------------|----------------|----------------|
| | (1) | (2) | (3) | (4) | (5) |
| Ret | 3.29422 | 6.00943 | -21.76306 | -0.31041 | 12.82259 |
| | (30.51) | (7.47) | (-41.80) | (-0.96) | (32.39) |
| Ret_115d | 0.13980 | -4.61873 | 0.39833 | 0.70496 | 3.20052 |
| | (5.62) | (-21.27) | (2.89) | (6.01) | (24.25) |
| Ret_16121d | -0.03081 | -0.48357 | -0.13694 | -0.10433 | 0.71682 |
| | (-2.83) | (-4.89) | (-2.29) | (-1.96) | (11.81) |
| Ln_cap | -0.00232 | 0.22111 | -0.14861 | -0.02270 | -0.02799 |
| | (-3.04) | (21.22) | (-20.84) | (-4.47) | (-7.19) |
| Turnover | 2.07445 | 20.62085 | -16.31009 | -3.83209 | -1.41429 |
| | (29.49) | (35.81) | (-39.29) | (-14.29) | (-7.05) |
| BM | 0.01044 | 0.09885 | -0.05274 | -0.02544 | 0.00113 |
| | (5.48) | (4.30) | (-3.93) | (-2.42) | (0.11) |
| Constant | 0.05826 | -3.93407 | 2.64251 | 0.40264 | 0.44933 |
| | (4.91) | (-24.18) | (23.52) | (5.18) | (7.56) |
| Daily FE | Yes | Yes | Yes | Yes | Yes |
| N | 2108794 | 2108794 | 2108794 | 2108794 | 2108794 |
| R-sq | 0.088 | 0.031 | 0.036 | 0.035 | 0.025 |

New Investors and Daily Momentum

Panel Regressions with Daily Fixed Effects

| | Ret_f1d | Ret_f2f6d | Ret_f2f21d | Ret_f1d | Ret_f2f6d | Ret_f2f21d |
|----------------------|----------|-----------|------------|----------|-----------|------------|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Ret | 0.04298 | -0.07276 | -0.06603 | 0.04411 | -0.07551 | -0.07070 |
| | (12.95) | (-11.95) | (-6.06) | (13.41) | (-12.59) | (-6.60) |
| Ret_1I15 | -0.01382 | -0.02484 | -0.04507 | -0.02145 | -0.02741 | -0.04861 |
| | (-10.11) | (-7.61) | (-6.80) | (-16.39) | (-8.46) | (-7.40) |
| Ret_16I21 | -0.00095 | -0.01023 | -0.03233 | -0.00150 | -0.01043 | -0.03261 |
| | (-1.55) | (-5.45) | (-7.30) | (-2.59) | (-5.56) | (-7.38) |
| Ln_cap | -0.00053 | -0.00206 | -0.00719 | -0.00015 | -0.00194 | -0.00704 |
| | (-9.06) | (-11.26) | (-13.41) | (-2.78) | (-10.71) | (-13.17) |
| Turnover | -0.03746 | -0.09541 | -0.28708 | -0.01140 | -0.08865 | -0.27824 |
| | (-16.37) | (-16.99) | (-21.37) | (-5.48) | (-16.01) | (-20.74) |
| BM | 0.00004 | 0.00095 | 0.00419 | 0.00017 | 0.00098 | 0.00423 |
| | (0.31) | (2.11) | (3.13) | (1.34) | (2.19) | (3.17) |
| Netbuy(S_New)_f1 | -0.00322 | -0.00131 | -0.00174 | | | |
| | (-17.36) | (-9.60) | (-7.75) | | | |
| Netbuy(S_New)_f1*Ret | 0.04911 | -0.00045 | -0.01020 | | | |
| | (19.22) | (-0.15) | (-2.07) | | | |
| Netbuy(S_Exp)_f1 | | | | -0.00180 | -0.00052 | -0.00067 |
| | | | | (-65.33) | (-24.67) | (-19.85) |
| Netbuy(S_Exp)_f1*Ret | | | | 0.00942 | 0.00089 | -0.00019 |
| | | | | (25.61) | (2.39) | (-0.38) |
| Constant | 0.00959 | 0.03626 | 0.12773 | 0.00287 | 0.03420 | 0.12500 |
| | (10.79) | (13.14) | (15.76) | (3.56) | (12.48) | (15.47) |
| Daily FE | Yes | Yes | Yes | Yes | Yes | Yes |
| N | 2108794 | 2108794 | 2108794 | 2108794 | 2108794 | 2108794 |
| R-sq | 0.445 | 0.454 | 0.506 | 0.523 | 0.455 | 0.507 |

Discussions

- Why daily, not monthly, momentum?
 - New investors are highly attentive to the stock market
 - An adverse effect of investor attention
- Daily momentum is also present in other emerging markets
 - Indian stock market also shows daily momentum
 - South Korean and Taiwanese markets showed daily momentum earlier but not in recent years
- Any need for paternalistic government interventions to protect new investors?
 - Daily price limits in China have led to destructive behaviors of large investors, e.g., Chen et al. (2019)
 - Intraday trading halts in South Korea led to greater losses by retail investors, e.g., Noh (2022)

Summary

- Important heterogeneity even among retail investors
 - Particularly relevant for emerging stock markets
- New investors serve as a particularly reliable measure of market sentiment and noise trading
 - Trading often in opposite to large investors
 - May trade even differently from experienced investors
- The trading of new investors helps to understand various anomalies
 - Anomalies common to developed markets: strong power for turnover effect and volatility effect, modest power for value effect and return reversal, no power for size effect
 - Anomalies specific to Chinese market: daily momentum and the lack of medium-term momentum