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Summary of "Connected Stocks"[1]

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Price dislocation often arises from the simultaneous liquidity needs of market participants when there does not exist a well-diversified rational investor with deep pocket. Value investing captures premia by providing liquidity. The key is to identify liquidity-driven price pressure and subsequent reversal.

Driven by fund flows, the involuntary trading by mutual funds exerts price pressure simultaneously upon the stocks in portfolio, when the market is not perfectly liquid. This often gives rise to excess correlation between stock returns. Using a sample of mutual fund holdings and big stocks from 1980 to 2008,[2] the authors show that common mutual fund ownership predicts excess correlation between stock returns.[3] While some may argue that funds prefer to hold stocks that exhibit comovement beyond what is implied by fundamentals, the authors supports the causal relation between common ownership and comovement by exploiting exogenous fund flow due to an illegal trading scandal.

Common ownership has a stronger effect on subsequent excess correlation when the common owners are experiencing strong net flows either into or out of their funds. The effect is also stronger when the stocks in the pair have relatively low float, indicating less capacity to accommodate large trades. The authors argue that excess correlation is a symptom of price pressure induced by common ownership, and suggest common mutual fund ownership as signal for liquidity-driven price pressure.

The authors define stock i's "connected stocks" as the ones owned by common active mutual funds, and form a "connected portfolio" that weighs each connected stock by its degree of shared ownership with stock i.[4] If stock i experiences a negative price shock *and* connected stock j's price also drops, they conjecture that stock i's drop is probably due to the "fire sale" of common mutual funds to fulfill liquidity needs. 25 portfolios are formed via intersecting two quintile-sorts by stocks' own past three-month return and the past three-month return to stocks' connected portfolio.[5]

The figure shows the buy-and-hold cumulative abnormal returns on an equal-weighted portfolio of stocks that are in the low own-return *and* low connected-return portfolio ("low") and an equal-weighted portfolio of stocks that are in the high own-return *and* high connected-return portfolio ("high"). "Low minus High" is a long-short strategy that buys stocks with negative price pressure and sells those with positive price pressure, taking advantage of common mutual fund owners' forced trading. Abnormal
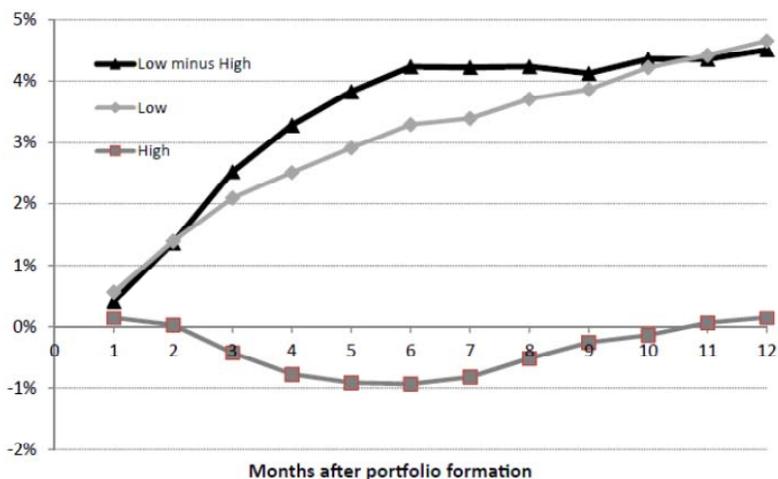
return is defined as the "five-factor" alpha with respect to the Fama-French-Carhart four-factor model augmented with the one-month reversal factor, which is often regarded as another liquidity provision strategy.[6] These patterns last for the next six months. The profitability of the long-short strategy mainly comes from buying the temporarily distressed stocks, since "fire sale" usually leads to more price pressure than "fire purchase".

To fully isolate their findings from the one-month reversal effect, the authors then skip a month after the sort and hold the stocks for five months. Following Jegadeesh and Titman (1993), each month they update one-fifth slice of each of the 25 double-sorted portfolios,[7] so each portfolio now is an equal-weighted average of the corresponding simple strategies initiated one to five months prior. The "slicing" aims to capture the average profitability over the six-month life of abnormal returns and to reduce transaction cost. The "connected-stock strategy" ("CS") that buys the "low" portfolio and sells the "high" portfolio achieves statistically significant five-factor alpha of 76 basis points per month. As expected, CS covaries positively with the Pástor -Stambaugh market liquidity factor,[8] although the coefficient is only marginally significant.

Can hedge funds front-run the anticipated forced trades of mutual funds? In this paper, the answer is no. The long-short hedge fund index of CSFB/Tremont loads negative on CS, and especially so when VIX is high. It seems that the price dislocation cannot be easily arbitraged away by hedge funds that face their own limits to arbitrage, such as constraints on funding liquidity.

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[1] Antón, Miguel, and Christopher Polk, 2014, *Journal of Finance* 69, 1099-1127.

[2] Common stocks from NYSE, Amex, and NASDAQ whose market capitalizations are above the NYSE median.

[3] For any stock pair, they identify the common mutual fund owners via the quarterly filings of mutual fund portfolio holdings. Excess correlation between stocks is defined as the daily correlation between their time-series residuals under Fama-French-Carhart model. The predictive regression controls for pair-wise similarity in industry, size, book-to-market, and momentum characteristics as well as the degree of common analyst coverage. For the Fama-French-Carhart four factors, please refer to: Fama, Eugene F., and Kenneth R. French, 1993, Common risk factors in the returns on stocks and bonds, *Journal of Financial Economics* 33, 3-56; Carhart, Mark M., 1997, On persistence in mutual fund performance, *Journal of Finance* 52, 57-82.

[4] The common ownership is refined as the residual ownership after controlling for industry, size, book-to-market, and momentum characteristics, the degree of common analyst coverage, and other pair-wise characteristics in the cross-section regression. This is to isolate a component that is not information -based and serves as a more precise signal for liquidity-driven price pressure.

[5] The authors use connected returns as signal to avoid using signals based on fund flow. Cash buffer, reinvestment policy, acquisition, liquidation, and merger of funds, complicate the calculation of fund flow.

[6] The short-term reversal factor is explained and can be downloaded from Prof. Kenneth R. French's website.

[7] Jegadeesh, Narasimhan, and Sheridan Titman, 1993, Returns to buying and selling losers: Implications for stock market efficiency, *Journal of Finance* 48, 65–91.

[8] Pástor, Luboš, and Robert F. Stambaugh, 2003, Liquidity risk and expected stock returns, *Journal of Political Economy* 111, 642-685.