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Caught on tape: Institutional trading, stock returns, and earnings announcements ☆

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ABSTRACT

Many questions about institutional trading can only be answered if one tracks high-frequency changes in institutional ownership. In the United States, however, institutions are only required to report their ownership quarterly in 13-F filings. We infer daily institutional trading behavior from the "tape", the Transactions and Quotes database of the New York Stock Exchange, using a sophisticated method that best predicts quarterly 13-F data from trades of different sizes. We find that daily institutional trades are highly persistent and respond positively to recent daily returns but negatively to longer-term past daily returns. Institutional trades, particularly sells, appear to generate short-term losses—possibly reflecting institutional demand for liquidity—but longer-term profits. One source of these profits is that institutions anticipate both earnings surprises and post-earnings announcement drift. These results are different from those obtained using a standard size cutoff rule for institutional trades.

1. Introduction

How do institutional investors trade in equity markets? Do they hold stocks that deliver high average returns? Do they arbitrage apparent equity market inefficiencies such as post-earnings announcement drift (PEAD), the tendency for stocks to continue to move in the same direction after an earnings announcement? More generally, are institutions a stabilizing or destabilizing influence on stock prices? These questions have been the focus of a large empirical literature.

In the United States, institutional investors are required to report their equity positions quarterly in 13-F filings to the Securities and Exchange Commission (SEC). These quarterly data show that changes in institutional

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equity holdings are positively serially correlated and positively correlated with future stock returns, and institutional purchases appear to be positively correlated with lagged stock returns. That is, institutions trade persistently, their trades are profitable on average, and they buy recent winners and sell recent losers as momentum traders would do. Contemporaneously, changes in institutional equity holdings are positively correlated with stock returns and earnings growth, but it is hard to know how to interpret these correlations because institutional trading can both drive stock returns and react to stock returns within the quarter and can predict or follow earnings announcements.

To get a clearer picture of institutional trading patterns, one would like to be able to measure changes in institutional ownership as they occur. An obvious way to do this is to infer changing institutional ownership from equity transactions of different sizes. Several authors have done this assuming that large trades, above a fixed cutoff size, are institutional. In this paper we combine 13-F data with trade size data over the period 1993–2000 to estimate a function mapping trades of different sizes into implied changes in institutional ownership. We find that the optimal function fits quarterly changes in institutional ownership much better than the cutoff rules that have been used in previous research.

Our method reveals some important properties of institutional trading. First, across all trades (ignoring trade sizes), volume classifiable as buys predicts an increase and volume classifiable as sells predicts a decline in reported institutional ownership. These results suggest that institutions consume liquidity. Second, buying at the ask and selling at the bid is more likely to be indicative of institutional buying or selling if the trade size is either very small or very large. Trades that are either under $2,000 or over $30,000 in size reveal institutional activity, whereas intermediate size trades reveal individual activity. Finally, small trades are stronger indicators of institutional activity in stocks that already have a high level of institutional ownership.

We use our method to infer daily institutional flows and provide new evidence on the relation between daily institutional trading, daily stock returns, and earnings surprises for a broad cross section of US stocks in the late 1990s. We have five main findings. First, daily institutional trading is highly persistent, consistent with the quarterly evidence. Second, daily institutional trading reacts positively to recent daily returns, but negatively to longer-term past daily returns. This suggests that institutions are high-frequency momentum traders but contrarian investors at somewhat lower frequencies, a result not found in quarterly data. Third, daily institutional trading predicts near-term daily returns negatively and longer-term daily returns positively. The latter result is consistent with the quarterly evidence that institutions trade profitably, but the former result suggests that institutions demand liquidity when they trade, moving stock prices in a manner that reverses the next day. Fourth, there is an asymmetry in this reversal. Next-day returns are significantly positive for institutional sales but not significantly negative for institutional purchases, suggesting that institutions demand more liquidity when they sell than when they buy. Fifth, institutional trading anticipates both earnings surprises and PEAD. That is, institutions buy stocks in advance of positive earnings surprises and sell them in advance of negative surprises. Furthermore, the stocks they buy tend to experience positive PEAD while the stocks they sell tend to experience negative PEAD.

We compare these results with those that would be obtained using the standard cutoff rule approach. Basic findings such as trading persistence and the positive effect of very recent returns on institutional trades are common to both approaches. Many other findings, however, such as the negative effect of longer-term past returns on institutional trades, the tendency for short-term reversal, and the longer-term profitability of institutional trading are much stronger and more consistent across all categories of stocks when we use our method for inferring institutional order flow. Finally, the predictive ability of institutional order flow for the earnings surprise and PEAD does not survive when flows based on a cutoff rule are used in place of flows created using our method.

1.1. Related literature

Institutional equity holdings have interested finance economists ever since the efficient markets hypothesis was first formulated. One straightforward way to test the hypothesis is to inspect the portfolio returns of investors that are presumed to be sophisticated, such as mutual fund managers, to see if they earn more than a fair compensation for risk. Jensen (1968) pioneered this literature, finding little evidence to support the proposition that mutual fund managers earn abnormal returns. Many subsequent studies have examined the returns of mutual funds (e.g., Hendricks, Patel, and Zeckhauser, 1993; Carhart, 1997) or the returns on the portfolios that they report quarterly (e.g., Daniel, Grinblatt, Titman, and Wermers, 1997; Wermers, 2000).

In recent years the literature on institutional holdings has moved in several new directions. First, other institutions besides mutual funds have been included in the investigation. Lakonishok, Shleifer, and Vishny (1992) examined the behavior of pension funds, Nofsinger and Sias (1999) looked at institutional equity owners as defined by Standard and Poors, and many recent papers have studied all institutions that are required to make quarterly 13-F filings to the SEC. Second, the literature has examined the characteristics of stocks that institutional investors hold and not just their subsequent returns. Gompers and Metrick (2001) and Bennett, Sias, and Starks (2003), for example, run cross-sectional regressions of institutional ownership onto characteristics of individual stocks, showing institutional preferences for large, liquid stocks and changes in those preferences over time.

Third, there has been increased interest in the changes in institutional positions, their flows instead of their holdings. Quarterly institutional flows appear to be positively correlated with lagged institutional flows (Sias, 2004), contemporaneous quarterly stock returns (Grinblatt, Titman, and Wermers, 1995; Wermers, 1999,