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ScienceDirect
Journal of Banking & Finance 33 (2009) 9–19
Journal of BANKING & FINANCE
www.elsevier.com/locate/jbf

Stock returns, order imbalances, and commonality: Evidence on individual, institutional, and proprietary investors in China

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Received 30 January 2006; accepted 7 August 2006
Available online 8 December 2007

Abstract

Using a unique dataset from the Shanghai Stock Exchange, we study the relation between daily open-to-close stock returns and order imbalances, and the commonality in order imbalances across individual, institutional, and proprietary investors. We find that institutional (proprietary) order imbalances have a larger price impact, but account for a significantly smaller proportion of daily price fluctuations. Commonality is much stronger for individual, rather than institutional (proprietary), order imbalances. Institutional (proprietary) investors favor large capitalization stocks, and co-movement in institutional (proprietary) order imbalances is stronger for these stocks.

JEL classification: G10; G15

Keywords: Order imbalance; Commonality; Individual; Institutional; Proprietary investors

1. Introduction

This study exploits a novel data set to explore two related questions in market microstructure. First, we study individual, institutional, and proprietary account order imbalances and their associations with stock returns.[1] In general, order imbalances are highly persistent and positively related to contemporaneous stock returns on an individual stock basis. Second, we study the commonalities in order imbalances among different account types.[2] For a large cross-section of stocks on the NYSE, Chordia et al. (2000) report significant and positive loadings on a market-wide liquidity factor for about a third of their sample stocks while Hasbrouck and Seppi (2001) report stronger commonality in order imbalances.[3]

Institutions often break an order into smaller pieces (Chan and Lakonishok, 1995; Biais et al., 1995) and brokers trade based on their own in-house research or imitate the trades of informed clients (Sarkar, 1990), thereby inducing correlation in order imbalances. Given their size and potential information content, the impact of institutional trades should be larger than that of individual trades. The trading patterns of individual investors can also be persistent and strongly influence stock returns for a variety of reasons ranging from public information arrival to noisy trading. The contrast between the effects of institutional versus individual order imbalances is particularly interesting if we view institutions as informed professionals and individuals as information-poor and more subject to behavioral biases.

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[1] See Chordia et al. (2002, 2005a), Griffin et al. (2003), Chordia and Subrahmanyam (2004), Lee (1992), Hasbrouck and Seppi (2001), Corwin and Lipson (2000), among others.

[2] See Chordia et al. (2000), Hasbrouck and Seppi (2001), Huberman and Halka (2001).

[3] Other studies of commonality examine stocks handled by the same specialist firm (Coughenour and Saad, 2004), stocks traded in limit order markets (Friederich and Payne, 2002), stocks in different countries (Stahel, 2003), and stocks and bonds (Chordia et al., 2005b; Goyenko, 2005).

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doi:10.1016/j.jbankfin.2006.08.007

A number of explanations for commonality have been proposed. Shleifer and Summers (1990) suggest that individual investors may herd if they follow the same signal, such as brokerage recommendations. Individual investors may also herd if they engage in positive-feedback trading (Lakonishok et al., 1994) or negative feedback trading (Shefrin and Statman, 1995). If institutions are better informed, institutional investors will be more likely to herd in under-valued stocks (Nofsinger and Sias, 1999) which, in turn, induces stronger commonality in the order imbalances of winner stocks. Herding studies are usually based on quarterly or annual holdings disaggregated into institutional versus individual holdings. However, the commonality literature typically does not distinguish between different types of investors.[4] Indeed, Chordia and Subrahmanyam (2004) call for additional research to "analyze imbalance caused by different agents (that is, institutions versus individual investors)" and to "identify informed traders and liquidity traders in a more precise manner".

Our study considers the relative importance of order imbalances from individual, institutional, and proprietary investors in determining daily individual stock returns and the degree of commonality in order imbalances among different account types. This substantial extension of the existing literature is made possible by the recent availability of a proprietary tick data set from the Shanghai Stock Exchange (SSE). The limit order trading system on the SSE records the identity and shareholdings of each investor who trades in China. With this data, we can classify each trade as initiated from an individual, an institution (ordinary firms, listed firms, insurance companies), or a proprietary account (brokerage firms, mutual funds, and Qualified Foreign Institutional Investors, QFIIs). Broadly speaking, institutional investors are more sophisticated than individual investors, and proprietary accounts are likely to be more sophisticated than those of other institutions. For example, mutual fund managers have more professional training, richer experience, and stronger incentives to perform than other investors do. Similarly, QFIIs are typically well-capitalized foreign financial institutions with a great deal of experience investing in international stock markets. Aside from offering the data needed to support a more detailed study of order imbalances, the Chinese stock market is particularly interesting because of its size, volatility, large presence of individual investors, and substantial scope for information asymmetries given poor disclosure and governance standards.

Our main findings can be summarized as follows. First, with an average autocorrelation of 0.378, proprietary order imbalances are most persistent, and have the largest impact on daily returns. However, the association between order imbalances and daily price movements is significantly lower for institutional (proprietary) investors than it is that for individual investors. By itself, individual order imbalances explain as much as 21.8% of the fluctuation in daily open-to-close returns, followed by proprietary order imbalances (5.8%) and institutional order imbalances (3.1%). Proprietary and institutional investors jointly explain 8.5% of daily price movements. Second, individual order imbalances exhibit a strong pattern of co-movement that is larger than the corresponding pattern for institutions (proprietary investors). For a majority (95.5%) of stocks in the sample, individual imbalances respond significantly to movement in market-wide individual imbalances. In contrast, institutional imbalances co-move significantly with market-wide institutional imbalances for only 24.7% of stocks. The proportion of stocks that exhibit commonality in proprietary imbalances is also low at 36.9%.[5]

The rest of the paper is organized as follows: Section 2 describes the data set and sample selection. Section 3 reports summary statistics. Section 4 documents the relation between daily stock returns and order imbalances of individual and institutional investors while Section 5 documents commonality in order imbalances of individual and institutional investors. Section 6 summarizes and concludes the study.

2. Data and sample selection

Our sample consists of 198 stocks, including the current components of the Shanghai 180 index, plus 18 stocks that were replaced after December 2003. The component stocks of this index comprise more than half of the total market capitalization of the SSE as of December 2003. Data on individual trades are supplied by the SSE for the period from October 2003 to March 2004, a total of 117 trading days. Each record includes the investor identity code for both sides of the trade, date, trade sequence, exchange seat code, trade size, stock holding after transaction for both sides of the trade, stock code, order time, trade time, trade price, trade amount, order sequence number, and other variables. The investor identity code allows us to classify both sides of each trade as originating from an individual account, institutional account (ordinary firms, listed firms, insurance companies), or a proprietary account (brokerage firms, mutual funds, and QFIIs). The order sequence number allows us to distinguish which party initiates the transaction.

The SSE is open from Monday to Friday, with 9:15 am to 9:25 am reserved for an opening batch auction while 9:30 am to 11:30 am and 1:00 pm to 3:00 pm are reserved

[4] An exception is Griffin et al. (2003). For a sample of NASDAQ 100 stocks, they examine daily and intraday associations between stock returns and the trading of individual and institutional investors.

[5] Our study is related to the work of Lee et al. (2004) on buy and sell orders submitted to the Taiwan Stock Exchange for the 30 largest stocks over the period from September 1996 through April 1999. Their dataset allows them to identify each order as having been submitted by a domestic individual, a domestic institution, or a foreign institution. In contrast to our analysis of 198 individual stocks, they focus on value-weighted average imbalances and average stock returns from 30 largest stocks on the Taiwan Stock Exchange.