What Make Chinese Institutional and Individual Investors Trade Excessively?

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Abstract

A unique data set allows us to examine the institutional and individual investors' buying and selling activities in the emerging Chinese stock market on a weekly basis. Specifically, we employ binary and multinomial logistic regressions to investigate the difference on determinants of institutional and individual trading activities. We find strong evidence that institution's trading exhibits a positive feedback pattern, while individual's trading behavior is associated with a contrarian character. We also find institutions are more likely to have large excess selling in stocks with small market capitalizations while individuals are more likely to have large excess selling in stocks with large market capitalizations. Earnings per share have different impact on institutional and individual trading behaviors. Institutions tend to have large excessive buying in stocks with high EPS and large excessive selling in stocks with low EPS. Individuals prefer to trade, either buy or sell, excessively in stocks with high EPS and large excess selling pattern is more apparent. Finally, individual investors are more likely to trade excessively stocks with low return volatility, while no obvious pattern is found for institutional investors.

1. Introduction

There is a rich literature investigating the investment pattern differences between institutional and individual investors. Specifically, previous studies have concentrated on the following two important issues: First, do institutional and individual investors response to past stock prices differently? In other words, are they momentum or contrarian traders? Second, do institutional and individual investors pick different types of stocks in terms of the firm size, risk, and financial fundamentals? Previous studies provide interesting yet mixed answers for the two questions. Moreover, most of the previous studies have been concentrated on developed markets, mainly the U.S. market. There have been very limited published studies that investigate these important issues for the emerging stock markets.

Using mutual funds data, Grinblatt, Titman, and Wermers (1995) find institutions are momentum investors and tend to follow past prices. Nofsinger and Sias (1999) find that institutional herding is positively correlated with lag returns and appears to be related to stock return momentum. Badrinath and Wahal (2001) find that the propensity of momentum trading varies substantially across institution types and is primarily limited to new equity positions. Dennis and Strickland (2002) find institutions herd together and trade with the momentum of the market on days when there are large moves in the stock market. Opposing trading patterns are found for individual investors. Odean (1998) finds that individual investors demonstrate a significant preference for selling winners and holding losers. Similarly, Barber and Odean (2000) find that individual investors are “anti-momentum” investors. While Grinblatt and Keloharju (2000) find that Finnish individuals are contrarian investors.

Institutional and individual investors may have different patterns in picking different types of stocks as well. Based on the firm size, Gompers and Metrick (2001) find that institutional investors tend to increase demand for large firms and this compositional shift itself accounts for a nearly 50% increases in the price of large firms relative to small companies. On the other hand, however, Wermers (1999) documents strong evidence of herding by mutual funds in small and growth-oriented stocks. Using non-parametric contingency table analysis and panel regression, Kumar (2005) finds that individual investors prefer lottery-type stocks that are low-priced with small but positive potential for high returns.

In this study, we investigate the trading style differences between Chinese institutional and individual investors. We focus on the difference on determinants of institutional and individual

trading activities. Our study contributes to the literature by providing new empirical evidence from the largest emerging stock market in the world, and providing new insights to the overall understanding of trading style differences between institutional and individual investors.

Institutional investors in general have a long term investment perspective and tend to base investment decisions on the fundamental value of stocks, while individual investors are in general to be viewed as having short term and speculative investment perspective. However the Chinese stock market has been dominated by individual investors. In terms of number of investor accounts, by the end of 2004, there were more than sixty million investor accounts and more than 90% of them belonged to individual. In term of total trading volume, another statistics showed that about 80% trades in Chinese A-share market were driven by individual. In such an individual investors dominated huge emerging stock market, what roles have been played by individual and institutional investors respectively? Will individual and institutional investor behave differently from that in developed stock markets such as the U.S. market? Are there any differences in the factors which impact the individual and institutional investors' trading decisions? To address these questions, it would be useful to understand what motivates trades and whether such motivations are rooted in the belief of contrarianism or momentum in the stock market of China. It would also be useful to analyze the different impacts of the potential trade-motivating factors on the Chinese institutional and individual investors.

Due to data availability, most previous studies on institutional and individual trading behaviors are focused on a specific group of investors, such as mutual funds (Grinblatt, et al., 1995; Wermers, 1999, 2000), pension funds (Laknoishok et al., 1992), or individual investor accounts in a particular discount brokerage (Odean, 1999, 2000), and rely on institutional holding or other proxies to examine the behaviors of institutional and individual investors (Sias and Starks, 1997; Edelen and Warner 2001; Cai and Zheng, 2004). In this study, we use a unique huge database that contains the weekly trading history among all institutional and individual investors who traded the component stocks of the Shanghai stock Exchange (SHSE) 180 Stock Index from July 1, 2002 to December 31, 2004. This unique data set allows us to monitor the buying and selling activities, and analyze the trading motivations for the Chinese individual and institutional investors.

Specifically, in this paper, we use logistic regressions to identify the motivation of large excess buying and selling activities by different investor groups, i.e., institutions and individuals.

To investigate the excess level of trading, for each week between July 1, 2002 and December 31, 2004, institutional and individual trading activities on individual sample stocks are classified into three categories based on their degree of money amount buy-sell imbalance: large excess buying, large excess selling and moderate trading. We choose weekly updated cut-off points for classification. In each week, for the net buyers whose buy-sell imbalance is greater than zero, we define the large excess buying as the quartile of firms with largest excess demand in terms of imbalance. We may also call that investors have buying herding in this group of stocks. Among the net sellers, the large excess selling group contains the top quartile of stocks with the largest net sell level. We may also call that investors have selling herding in this group of stocks. And the moderate trading contains the remaining stocks. In the empirical analysis, we also aggregate the large excess buying group and large excess selling group into an excessive trading group. By this classification, we can directly compare the excessive trading with moderate trading to investigate what drives institutions and individuals trading excessively. We then use binary logistic and multinomial logistic regression models to analyze the institutions and individual trading behaviors.

From logistic regression results, we find there are commons as well as differences in the excess buying and selling activities by institutional and individual investors in terms of firm size, risk, financial fundamentals and other characters. First, the results for the institutional trading behaviors suggest that institutions are momentum trader. They are more likely to have large excess buying in stocks with good performance on the most recent past returns and large excess selling in stocks with bad performance on the most recent past returns. On the contrary, individuals adopt negative feedback trading strategy. They tend to have large excess buys in stocks with low past recent returns and large excess sell on stocks with high past recent returns. Moreover, the impact of the variance of the lagged returns on institutional trading is not larger than that on individual trading. Individuals are more likely to have large excess buying and selling in stocks with small variance of recent past returns. Second, institutions tend to have large excess selling in stocks with small market capitalization while individual is more likely to large excess selling in stocks with large market capitalization. Individuals also have high propensity to trade excessively (include buying and selling) in stocks with low book-to-market ratio. Third, Earning per share also has different impact on institutional and individual trading behaviors. Institutions tend to buy more stocks with high EPS and sell more stocks with low EPS.

Institutions exhibit large excessive trading behavior, either buy or sell, in the stocks with high EPS. The rest of this paper is organized as follows: Section 2 describes the data and background information. Section 3 describes the methodology and sample construction. Section 4 analyzes the institutional extraordinary trading activities. Section 5 separately investigates individual trading behaviors. Section 6 compares institutional excess trading with individual excess trading. Section 7 concludes the paper.

2. Market background and Data

The primary data set for this paper are extracted from the complete transaction records of all traders on the Shanghai Stock Exchange 180 Stock Index (SHSE 180 hereafter) component stocks from July 1, 2002, the launching date of SHSE 180 index to December 31, 2004. Mainland China has two stock exchanges, the Shanghai Stock Exchange (SHSE), and the Shenzhen Stock Exchange (SZSE), and the SHSE is larger than SZSE in terms of number of listed firms, total market capitalization of all listed firms, and trading volumes. The Shanghai Stock Exchange was founded on Nov. 26th, 1990 and in operation on Dec.19th the same year. After several years' operation, the SHSE has become the most preeminent stock market in Mainland China. By the end of 2004, SHSE has a total 996 listed securities and 837 listed companies. As a collectivity, these company stocks have a total market capitalization of RMB 2.6 trillions. The number of investors with accounts reached 37.87 million.[1] On July 1, 2002, SHSE offered SHSE-180 index to replace the former SHSE-30 index. The 180 component shares of SHSE 180 index are selected from all A share stocks by fully considering their representation in industry, market scale, trading activity, and business performance, etc. By the end of 2005, the coverage of total market capitalization, floating capitalization and trading value of the SSE 180 have been 67%, 56% and 53%, respectively.

This paper utilizes weekly data on trading volumes in monetary terms obtained form the SHSE from July 1, 2002 to December 31, 2004. Because the component stocks of the SSE 180 index are adjusted every half year and the proportion of adjustment is limited to 10% or less, there are totally 251 stocks included in SHSE 180 index during the sample period. The dataset

[1] More detailed information about the Chinese stock market can be found from the website of Shanghai stock exchange http://www.sse.com.cn.

consists of 126 weeks[2] trading information for the 251 SHSE 180 stocks. This dataset also identifies the trading values on every 251 stock for purchases or sales and for institutions or individuals. In China, institutions are not allowed to open accounts using individual identity. Thus, the trading in shares can be separated by individuals or institutions.

Besides trading history, the dataset also contains weekly individual stock returns. For each security of the 251 sample stocks, we further collect information, including SHSE 180 market index returns and market trading volume, market capitalization (*MktCap*), quarterly- earning per share *(EPS)*, annual-cash dividend per share *(Dividend)* and book to market ratio *(B/M)*, from the Taiwan Economic Journal (*TEJ)* China database. Book-to-market ratio is defined by dividing the book value of equity from a firm' annual statement at the end of last year by the total (including both tradable and non-tradable) market value of A-shares of the firm at the that time. This additional information allows us to investigate the difference in determinates of institutional and individual trading decisions. The summary statistics for these variables are listed in Table 1.

3. Methodology and Sample Construction

3.1 Measures of Investor Trading Activities

To gauge how investors buy and sell stocks, we examine their excess buying and selling activities for each sample stock. We employ the money amount buy-sell imbalance (*Dratio*) as the excess demand measure, which was introduced by Lakonishok, Shleifer, and Vishny (1992). For a given stock, in week *t*, *Dratio* for investor group *G* is defined as

$$Dratio_{i,t}^{G} = \frac{\$buys_{i,t}^{G} - \$sells_{i,t}^{G}}{\$buys_{i,t}^{G} + \$sells_{i,t}^{G}}$$

where

G = Institution or Individual.

$\$buy_{i,t}^{G}$ = RMB amount buying volume of stock *i* by group G investors in week *t*[3].

[2] There are total 131 weeks from July 1, 2002 to December 31, 2004. We delete the weeks without trading days and get 126 weeks of trading record.

[3] In this paper, $\$buy_{i,t}^{G}$ is average RMB purchase of stock *i* in week *t*. It is calculated by dividing total RMB purchase by number of trading days of stock *i* in this week t. This action is to avoid the influence of difference in the number of trading days in some week for different stock. Same with buying, $\$sell_{i,t}^{G}$ is average RMB selling volume by number of trading days of

$\$sell_{i,t}^{G}$ = RMB amount selling volume of stock *i* by group G investors in week *t*.

Dratio is scaled by the total RMB amount trading volume to eliminate the impact of total trading activity and reflect the level of trading imbalance among the investor group. Large positive (negative) *Dratio* signals that buying (selling) plays predominant role in the trading for the stock.

To examine the degree of excess trading of institutional and individual investors in China stock market, we summarize the deciles statistics of *Dratio* for institution and individual investors. We sort all stocks included in the SHSE 180 index in every week into 10 portfolios based on their *Dratio* values and take the mean in every portfolio as cross-sectional decile statistics. And then we compute the time-series averages of the cross-sectional decile statistics for index SHSE 180 component shares over the 126 weeks from July 1, 2002 to December 31, 2004. The results are shown in Table 2. We can see that the trading imbalance level (TIB) of institution is higher than that of individuals in the same portfolio. For example, in the highest decile, the TIB of institutions is about 0.866 while that of individuals is 0.153. We can also see that the variation of *Dratio* for institutions is much larger than that for individuals. One reason may be that the total trading volume ($\$buys_{i,t} + \$sells_{i,t}$) of individuals is always much larger than that of institutions. In terms of RMB total trading volume, statistics showed that about 80% trades in Chinese A-share market were driven by individuals.

3.2 Portfolios analysis

Trading behaviors for investors based on the firm-specific information have been documented by previous literature. Gompers and Metrick (2001) find that institutional investors tend to increase demand for large firms and this compositional shift itself accounts for a nearly 50% increases in the price of large firms relative to small companies. On the other hand, however, Wermers (1999) documents strong evidence of herding by mutual funds in small and growth-oriented stocks. Using non-parametric contingency table analysis and panel regression, Kumar (2005) finds that individual investors prefer lottery-type stocks (low-priced with small but positive potential for high returns). To investigate the relationship between the level of institutional and individual trading activities and firm-specific information, we form portfolios based on the market capitalization (*MktCap*), earnings per share (*EPS*), cash dividend per share

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stock *i* in this week t.

(*Dividend*) and book-to-market ration (*B/M*). First, we sort all SHSE 180 index component stocks into 10 size portfolios based on the market capitalization at the beginning of each quarter. Then we calculate the time-series average of the *Dratio* for institutions on the ten size portfolios. The results are reported in Panel A of Table 3. In the table, the statistical significance at 1% shown by *, is computed by a paired t-test estimated from the time series of the difference between the corresponding portfolio's *Dratio* and the mean across all portfolios. We can find that institutions have significant excess selling in stocks with small market capitalizations. In the lowest two deciles, the level of excess selling is significant and much higher than that of other deciles. Large excess buying of institutions seems to occur in securities with relative large market capitalizations because institutional excess buying is significant in the 8^{th} and 10^{th} deciles. However the level of excess buying in stocks with largest market capitalization is not as significant as the level of excess selling in small stocks. Moreover, large net buying also occurs in the portfolio with medium market capitalization as shown in the sixth decile. Second, we sort all the stocks included in SHSE 180 index into deciles by the end of previous year's book-to-market ratio. Penal B in Table 3 shows the institutional trading imbalance level, *Dratio*, for every book-to-market ratio portfolio. We do not find significant institutional trading pattern associated with book-to-market. Only in the seventh decile of book-to-market ratio, institutions show significant excess buying. Third, we sort all SHSE 180 index component shares into 10 portfolios separately based on the prior year's dividend and the prior quarter's earnings per share. The yearly average of institutional trading imbalance level (*Dratio*) on each dividend and the quarterly average of that on each EPS portfolios are listed on Panels C and D, respectively. We can see the excess trading pattern in EPS is more clearly. Significant institutional excess selling occurs in categories with low earning per share, while large excess buying is significant in portfolios with high earning per share. In the lowest two deciles the level of excess selling is very significant, on the other hand, obviously excess buying behaviors can be found in the highest two deciles. It is not obvious for the excess trading pattern for dividend. In general, institutions seem to exhibit large excess selling character in low dividend stocks and large excess buying behavior in high dividend stocks as shown in the third lowest dividend portfolios and the two highest dividend portfolios. However there are some variations, e.g., there is no significant excess selling in lowest dividend portfolios and both significant excess buying and selling occur in the medium dividend portfolio.

Same portfolio analysis is carried out for individual investors and the results are reported in Table 4. First, we find the degree of individual trading imbalance is generally lower than that of institutions. Besides the larger total money amount trading volume by individuals, the lower degree of excess trading by individuals may also because that individuals' buying and selling activities are quite even across different stocks. They are uninformed investors and don't have excess information about particular stocks. Second, different from institutional investors, individuals are more likely to exhibit large excess selling in securities with larger market capitalizations and large excess buying in stocks with smaller market capitalizations. For book-to-market ratio, all *Dratio* values in deciles are negative because the average of *Dratio* values by individuals over the whole component stocks during the sample period is negative. It seems that the excess trading by individual occurs in the relative low book-to-market portfolios. There are similar excess trading patterns on dividend and EPS by individuals. Significant excess selling can be found both in high dividend and high EPS portfolios. However there is no apparent excess buying pattern across all portfolios.

There are also rich literature investigating the relationship between investor's trading behavior and past returns. The information-based models suggest that informed investors' trading would exhibit a positive or momentum, pattern. That is, high (low) returns in one period will be associated with a high degree of investor buying (selling) in the next period. This trading behavior is the result of a group of investors trading on the same (or correlated) information signals (see Froot et al., 1992; Bikhchandani et al., 1992; Hirshleifer et al., 1994). Empirical evidence suggests that some investors' trading exhibits a positive feedback pattern. Grinblatt et al. (1995) argue that a trade imbalance by one investor type that is correlated with past returns is considered feedback trading. Nofsinger and Sias (1999) provide empirical evidence that U.S. institutional investors positive feedback trade. Grinblatt and Keloharju (2000) find that foreign investors in Finland exhibit positive feedback trading patterns. Froot et al. (2001) use daily international portfolio flow data and find strong evidence of positive feedback trading in international flows. Lastly, Bange (2000) reports evidence of positive feedback trading by U.S. individual investors. In this paper, we also want to know if there is any difference in the impacts of lag return on trading behaviors between Chinese institutional and individual investors. Therefore we also form portfolios based on the lagged returns (*lag_return*) and variance of lagged return (*Variance*). First, we sort all SHSE 180 index component stocks into 10 size

portfolios based on the average of the previous four week returns (*lag_return*). Then we calculate the time-series average of *Dratio* for institutions on the ten portfolios. The results are reported in Panel E of Table 3. We can find that the lowest return portfolio has significant excess selling and the highest lagged return portfolio has significant excess buying. This indicates that institutions are positive feedback trading investors. Second, we sort all SHSE 180 index component stocks into 10 size portfolios according to the variance of 12-week lagged return (*Variance*). Then we calculate the time-series average of *Dratio* for institutions on the ten portfolios. Table 3 Panel F shows that variance dose not appear to be related to the excess trading behavior because no significant excess trading occurs across all portfolios.

Similarly, we make the same portfolio analysis for individual investors based on lagged return and the variance of lagged return. Results are shown in panel E and F of Table 4. Different from institutions, individuals exhibits significant excess buying character in lowest return portfolios and significant excess selling in highest return portfolios. That means individuals adopt negative feedback trading strategy. From Panel F of Table 4, we can see individuals exhibit significant excess selling in securities with lowest variance. There are no significant excess buying behaviors across all portfolios because all of the averages of the trading imbalance in portfolios are negative. We can see that the averages of *Dratio* in the three highest variance portfolios are also significant. However the significance does not mean significant excess selling because the significance is the result compared with the mean across all 10 portfolios. It just indicates that the levels of excess selling in the three highest variance portfolios are less than others.

3.3 Sample Construction for classification

To further investigate what makes the institutional and individual investors trade some stocks excessively and whether there is any difference between institutional and individual traders' concerns, we analyze the trading behaviors of investors by classification methods. We construct a set of comparable samples by the following way. In the first step, for each week over the whole sample period, institutional or individual's trading activities on stocks are classified into three categories according to their degree of trading imbalance level (*Dratio*), large excess buying, large excess selling and moderate trading. Following Lakonishok, Shleifer, and Vishny (1992), we choose weekly updated cut-off points for classification. In each week, if the investor's trading

imbalance between RMB purchases and sells is greater than zero, the investor is a net buyer. We define the large excess buying stocks as the top quartile of firms with largest excess demand in terms of *Dratio*. For the net sellers, whose trading imbalance is negative, the large excess selling group contains the top quartile of stocks with the largest absolute value of *Dratio*. And the moderate trading group contains the remaining stocks. By directly comparing these three categories of trading, we can investigate what drives investors' large excess trading more easily and clearly. Second, in order to consider the time-series effect and get enough observations in the model, we adopt a 12-week moving window method to construct the classification sample. During the sample period from July 2002 to Dec 2004 which includes 126 trading weeks, all 180 SHSE component stocks that have been classified to three categories (large excess buying, large excess selling and moderate trading) in every 12 weeks are aggregated to construct a sample. Because we employ a 12-week moving window, we can get 115 (from the 12^{th} week to the 126^{th} week) 12-week samples for this kind of classification. In the new sample, a three-value variable is used to represent the outcomes: large excess buying (code as "1"), large excess selling (code as "-1") and moderate trading (code as "0"). Therefore, we get two groups of samples separately for institutions and individuals. To investigate what makes investors trading excessively including large excess buying and large excess selling, we also combined the large excess buying group and large excess selling group into one group referred as large excess trading. Then we can compare large excess trading with moderate trading by binary logistic regression. In our data set, net institutional buying activity would be offset by individual selling activity, since for every buyer there must be a seller. That means if institutional investor is the net buyer in one stock, the individual investor must be the net seller for the same stock. This ensures that the "institutional large excess buying" and "individual large excess buying" will not be occurred simultaneously for the same stock. For the same reason, "institutional large excess selling" and "individual large excess selling" will not be occurred simultaneously for the same stock. Therefore besides comparing institutional excess trading with its own moderate trading, we also can directly compare the "institutional large excess buying" with the "individual large excess buying", and "institutional large excess selling" with the "individual large excess selling".

3.4 Methodology:

Extraordinary trading activities of institutional and individual investors are our most

concerned. By dividing the trading behaviors into three categories: large excess buying, moderate trading, large excess selling, we can investigate what makes investors to trade excessively. In this paper, we use both binary logistic regression and multinomial logistic regression to analyze the investors' trading behaviors. Logistic regression has been widely applied to classification problems including the analysis of finical markets. Marke Grinblatt and Matti Keloharju (2001) used logistic regression to identify the determinants of buying and selling activities in the Finish stock market. They successfully explain the role of past return, disposition effect, tax-loss selling and reference price effects in affecting trading decision. Logistic regression model is more suitable for comparisons as compared with OLS. It provides a non-linear estimate for probability by the logistic model. In this empirical analysis, we also employ one extension of logistic regression, multinomial logistic regression, sometimes referred as polychotomous logistic regression, which is always adopted when the outcome is recorded at more than two levels (Hosmer & Lemeshow, 2000). In our classification, there are three levels, large excess buying, large excess selling and moderate trading. For both institutions and individuals, we used the followed multinomial logistic regression model

$$\begin{aligned}\log\frac{\Pr(\text{large excess buying})}{\Pr(\text{moderate trading})} &= \alpha_1+\beta_{11}MktCap+\beta_{12}EPS+\beta_{13}Dividend+\beta_{14}B/M+\beta_{15}Var\\ &\quad+\beta_{16}Lag\_return+\beta_{17}RM+\beta_{18}MktVol \qquad (1)\\ \log\frac{\Pr(\text{large excess selling})}{\Pr(\text{moderate trading})} &= \alpha_2+\beta_{21}MktCap+\beta_{22}EPS+\beta_{23}Dividend+\beta_{24}B/M+\beta_{25}Var\\ &\quad+\beta_{26}Lag\_return+\beta_{27}RM+\beta_{28}MktVol\end{aligned}$$

that can be written as:

$$\Pr(\text{large excess buying})=\frac{\exp(\alpha_1+\beta_{11}MktCap+\beta_{12}EPS+\beta_{13}Dividend+\beta_{14}B/M+\beta_{15}Var+\beta_{16}Lag\_return+\beta_{17}RM+\beta_{18}MktVol)}{1+\sum_{i=1}^{2}\exp(\alpha_i+\beta_{i1}MktCap+\beta_{i2}EPS+\beta_{i3}Dividend+\beta_{i4}B/M+\beta_{i5}Var+\beta_{i6}Lag\_return+\beta_{i7}RM+\beta_{i8}MktVol}$$

$$\Pr(\text{large excess selling})=\frac{\exp(\alpha+\beta_{21}MktCap+\beta_{22}EPS+\beta_{23}Dividend+\beta_{24}B/M+\beta_{25}Var+\beta_{26}Lag\_return+\beta_{27}RM+\beta_{28}MktVol)}{1+\sum_{i=1}^{2}\exp(\alpha_i+\beta_{i1}MktCap+\beta_{i2}EPS+\beta_{i3}Dividend+\beta_{i4}B/M+\beta_{i5}Var+\beta_{i6}Lag\_return+\beta_{i7}RM+\beta_{i8}MktVol}$$

$$\Pr(\text{moderate trading})=1-\Pr(\text{large excess buying})-\Pr(\text{large excess selling})$$

In model (1), there are eight independence variables: Market capitalization (*MktCap*), Earning per share (*EPS*), cash dividend per share (*Dividend*), Book-to-market ration (*B/M*), average of the four period lagged returns (*lag_return*), variance of lagged 12-weeks return (*Var*), the average weekly SHSE 180 market index returns *(RM)*, average weekly money amount market

trading volume (*MktVol*). The first six are variables related to firm-special information and past returns we have mentioned. We now also include the information about the market since the impact of market index on trading behaviors is also concerned by many studies.

In the multinomial logistic regression model, one group will be chosen as the base-line category (same results will be obtained whichever group is chosen) and the other groups will be compared with this group. The parameters will be estimated simultaneous for all the comparisons. We use moderate trading is as the base-line category and make two contrasts: large excess buying versus moderate trading, and large excess selling versus moderate trading.

In this paper, we also compare the large excess trading with moderate trading by binary logistic regression. In the model, large excess buying and large excess selling are combined to compare with moderate trading. Similar to model (1), the logistic regression model for both institutions and individuals is:

$$\log \frac{\Pr(\text{large excess trading})}{\Pr(\text{moderate trading})} = \alpha + \beta_1 MktCap + \beta_2 EPS + \beta_3 Dividend + \beta_4 B/M + \beta_5 Var + \beta_6 lag\_Return + \beta_7 RM + \beta_8 MktVol \quad (2)$$

This model can be written as,

$$\Pr(\text{Large excess trading}) = \frac{\exp(\alpha + \beta_1 MktCap + \beta_2 EPS + \beta_3 Dividend + \beta_4 B/M + \beta_5 Var + \beta_6 Lag\_return + \beta_7 RM + \beta_8 MktVol)}{1+\exp(\alpha + \beta_1 MktCap + \beta_2 EPS + \beta_3 Dividend + \beta_4 B/M + \beta_5 Var + \beta_6 Lag\_return + \beta_7 RM + \beta_8 MktVol)}$$

$$\Pr(\text{Moderate trading}) = 1 - \Pr(\text{Institutional herding})$$

4. Institutional excess trading

4.1 Evidence from multinomial logistic regression for institutional trading

In this section, we analyze the factors which have effects on institutional trading. For each week over the whole sample period, institutional trading are classified into three categories large excess buying, large excess selling and moderate trading. Classification samples are obtained by aggregating institutional trading in all the 180 SHSE component stock in every 12 weeks[4]. Therefore, we get a total of 115 (from the 12th week to the 126th week) 12-week samples with a three level output variable and eight regressors. The results of maximum likelihood estimate of

[4] We also have performed the same analysis using 8 weeks and 24 weeks to ensure that our test statistics are not biased by serial correlation. Although the coefficients and its' statistics have slightly difference, the variables with high significant in 12-week model still keep the high significance for 8-week and 24 week situation.

the multinomial logistic regression are shown in Table 5. In this model, moderate trading is chosen as the base-line category and two contrasts: large excess buying versus moderate trading, large excess selling versus moderate trading are estimated simultaneously. Table 5 Panel A shows the estimation results for “institutional large excess buying versus moderate trading” and Panel B shows the results for “institutional large excess selling versus moderate trading”. To facilitate interpretation, all variables are standardized prior to estimation. The first column in the two Panels reports the average maximum likelihood regression coefficients for eight regressors. The second and third columns show the percentages of models with positive and negative coefficients that are significantly different from 0 at 5% confidence level (%pos.sig., %neg.sig.) in all regressions for the 115 samples.

From Panel A of Table 5 we can see the averages of coefficients for market capitalization is not significant different from zero. That means there is no significant large excess buying pattern on market capitalization. However, in panel B, we can see we can see the averages of coefficients for market capitalization is negative. Moreover the percentage of the negative coefficients that are significantly different from 0 is much larger than percentage of the positive coefficients. The average of coefficients on market capitalization is -0.71 and more than 72% of the stocks have significantly negative coefficients. Because the data has been standardized, this figure indicates a decrease of standard one-unit in market capitalization will increase the log odds of institutional large excess selling by 0.71 conditional other variables. This result means the less the stock’s market capitalization is, the more likely institutional investors are to exhibit large excess selling behavior. In Panel A, We also can find the averages of coefficients for earning per share is positive and the percentage of the significant positive coefficients is relative large. The average EPS coefficient is 0.25 and 48.6% of the stocks have statistically significantly positive coefficients. This positive coefficient indicates that the increase of EPS will increase the propensity of institutional large buying. That is, the stocks with good financial condition are attractive to institutions to large buy. On the contrary, in Panel B the average of coefficients for earning per share is negative and the percentage of the negative coefficients is relative large. The average EPS coefficient is -0.38 and 55% of the stocks have statistically significantly negative coefficients. That indicates institutions are more likely to large sell in the stock with low EPS. For dividend, there seems to be the similar pattern with EPS, large buying in stocks with high dividend and large selling in stocks with low dividend, because the coefficient in Panel A is

positive and that in panel B is negative. However the pattern is not significant because the difference between the percentage of the negative coefficients and that of the positive coefficients is too small. The average coefficient of book-to-market ratio in Panel A is also positive, however the percentages of the significant positive is not large, only 23.4%. The average coefficient of book-to-market ratio in Panel B is negative and the percentage of the significant negative coefficients is 24.3%, not much larger than percentage of the positive coefficients. That means there is not obviously trading patter for institutions in the stock with book-to-market ratios.

From this table, we can see that recent past return is the most import factor to determinate institutional investors' large buying or selling activities. In Panel A, the percentage of the significant positive coefficients is much higher than that of significant negative coefficients. The average of coefficients on lagged returns is 0.64, which is 67% higher than that for the stocks having significantly positive coefficients. On the contrary, in Panel B, the percentage of the significant negative coefficients is much higher than that of significant positive coefficients. The average of coefficients on lagged returns is -0.61 and more than 61% of the stocks having significantly negative coefficients. These results indicate the past recent return is most concerned by institutions and high past returns will lead institutions to buy excessively and low past returns will lead large excess selling. That means institutional investors are momentum traders.

We find the average coefficient of variance for lagged returns is not significant in both panel A and Panel B. That means the impact of variance on institutions' large excess trading is not large. For market information variables, there is no evidence that they have impacts on the institutional large excess trading.

4.2 Evidence from binary logistic regression on institutional large excess trading versus moderate-herding

In this section, the group of classification sample "institutional large excess trading versus institutional moderate trading" is analyzed. The categories of large excess buying and large excess selling are combined into one category of large excess trading. And for every 12 weeks, all the stocks with institutional large excess trading (code as "1") and moderate trading (code as "-1") are aggregated to generate a sample. In above sections, cut point is chosen as quartile. In

each week, we let large excess buying group to include the quartile of firms with largest *Dratio* for net buyers and large excess selling group to include the top quartile firms with largest absolute *Dratio* for net sellers. In this experiment, in order to check the robustness of our models, we employ different cut points to define large excess trading group. The cut points are chosen as γ =25% and γ =50%. Similar results are obtained under the two cut points as shown in Panels A and B of Table 6. From this table we can see the average of coefficients for market capitalizations is negative. Moreover the percentage of the significant negative coefficients is much larger than the percentage of the significant positive coefficients. For example, in Panel A the average of coefficients for market capitalization is -1.96 and more than 96% of the stocks have significant negative coefficients. That suggests that institutional investors are more likely to exhibit large excess trading or in stocks with small capitalizations. We also find the averages of coefficients for earning per share (EPS) is negative (-0.3) and the percentage of the significant negative coefficients is relative large, 51.3%. This negative coefficient indicates that the increase of EPS will reduce the propensity of large excess trading for institutional investors. That does not means the stocks with good financial condition are not attractive to institutional traders. From Table 5, we can see the level of institutional large selling behaviors in low EPS is stronger than the level of institutional large buying behaviors in high EPS. So the finial results show large excess trading is associated with low EPS. The average coefficient of book-to-market ratio is positive however the percentage of the significant positive coefficients is not much larger than percentage of the positive coefficients, especially in Panel A. That means institutions do not exhibit significant trading pattern associated with book-to-market. We also find the average coefficient of variance of lagged returns is not significant negative, especially for Panel B. Because the variance of lagged returns reflects the risk, this result indicates risk of stock has not large impact on the institutions excessive trading. It seems that lag returns have not strong impacts on the institutional large excess trading because there is no large difference between the percentage of positive coefficient and negative coefficient. However this phenomenon maybe just due to the offset between high lag returns associated with large excess buying and low lag returns associated with large excess selling. For other variables, there is no evidence that they have impacts on the institutional excess trading.

In summary, institutions prefer to sell excessively stocks with small market capitalization, and also are more likely to buy excessively stocks with high EPS and sell excessively securities

with low EPS. Institutions follow positive feedback trading strategy that is buying the winner and selling the loser. There is also some weak evidence that institutions are more likely to trade excessively stocks with high book-to-market.

5. Individual Trading

5.1 Evidence from multinomial logistic regression for individual trading

In this section, the sample construction and classification model is completely the same as that for institutions in the previous section. In this group of sample, for every 12 weeks, all the stocks with individual large excess buying, large excess selling and moderate trading are aggregated to generate a sample. The dependent variable is still a three categories variable that obtains the value of one when individuals are large excess buyers, the value of minus one when individuals exhibit large excess selling and the value of zero when individuals are belong to moderate trading group. Here, we still choose moderate trading as the base-line category and two contrasts, large excess buying versus moderate trading, large excess selling versus moderate trading are estimated simultaneously. Table 7 Panel A shows the estimation results for "individual large excess buying versus moderate trading" and Panel B shows that for "individual large excess selling versus moderate trading".

From Panel A of Table 7 we can see the average of coefficients for market capitalization is not significant. That means there is no significant large excess buying pattern on market capitalization. However, in Panel B, we can see the averages of coefficients for market capitalization is 0.22 and the percentage of positive coefficients is 84.7% much larger than the percentage of negative coefficients. That suggests that individual investors are more likely to sell excessively stocks with large capitalization. We can also find that the averages of coefficients for EPS are positive both in Panel A and Panel B. For the case "large excess buying versus moderate trading", the coefficients is 0.52 and 77% of the stocks have statistically significant positive coefficients. For the case "large excess selling versus moderate trading", the coefficients is 0.62 and 100% of the stocks have statistically significant positive coefficients. These two positive coefficients indicate that the increase of EPS will increase the propensity of individual trading. That is, the stocks with good financial condition are attractive to individuals to trade excessively. For dividend, it appears that individuals have large excess selling in stocks with high dividend. The results in Panel A also show that individuals have large excess buying activities in stocks

with high dividend, but the evidence is not so strong since only 23.4% of stocks have positive coefficients. The average coefficient of book-to-market ratio in Panel A is negative, however the percentage of the significant negative coefficients is not large, only 17.1%. While, the average coefficient of book-to-market ratio in Panel B is negative and the percentage of the significant negative coefficients is 48.6%, which is much larger than percentage of the positive coefficients 7.2%. That means individuals have high propensity to sell excessively stocks with low book-to-market.

From this table, we also can see that the recent past return is very important factor. In Panel A for large excess buying, the average of coefficients on lagged return is -0.27 and more than 68% of the stocks have significantly negative coefficients. On the contrary, in Panel B for large excess selling, the average of coefficients on lagged return is 0.27 and more than 65% of the stocks have significantly positive coefficients. These results indicate that the past recent return is one of the most concerned by individuals and high past returns will lead individuals to sell excessively and low past returns will lead large excess buying. That is individual investors adopt negative feedback trading strategy. We also find the average coefficient of variance for lagged return is negative for “large excess selling versus moderate trading” and the percentage of significant negative coefficients is relative large. That shows individuals are more likely to sell excessively stocks with low variance.

For market information variables, there is no significant evidence that they have any impacts on the individual large excess trading. However, it seems that the increase in the total trading volume will increase the propensity of individuals to buy excessively and the decrease in total trading volume will increase the propensity of individuals to sell excessively.

5.2 Binary logistic regression on individual large excess trading versus moderate-herding

In the section, the group of classification sample “individual large excess trading versus individual moderate trading” is analyzed. The sample construction and classification model is completely same as that for institutional investors in section III. Panel A and Panel B in Table 8 show the results for the two cut points, 25% and 50%. From this table we can see the averages of coefficients for market capitalization are positive. The percentage of significant positive coefficients is much larger than percentage of significant negative coefficients. For example, in Panel A the average of coefficients on market capitalization is 0.31 and more than 79% of the

stocks have significantly positive coefficients. This suggests that individual investors are more likely to trade, either buy or sell, excessively stocks with large capitalization. We also find the averages of coefficients for EPS and dividend are both positive and the percentage of the significant positive coefficients is relative large. Individual investors prefer to trade excessively, either buy or sell, stocks with higher EPS and higher dividend. This result is the same as that obtained in the previous section A. The average coefficient of book-to-market ratio is negative and the percentage of the significant negative coefficients is larger than the percentage of the positive coefficients, especially in Panel A. That means individuals have propensity to either buy or sell excessively stocks with low book-to-market although the propensity is not very high. We also find the average coefficient for variance of lagged returns is negative. However the percentage of significant negative coefficients is only about 20%. That means individuals maybe more likely to trading, either buy or sell, excessively stocks with low risk, however the evidence is not so strong. It seems that the lag return has little impact on the individual large excess trading. This may be the phenomena also due to the offset between high lag return associate with large excess selling and low lag return associated with large excess buying. For other variables, RM and market volume, there is no evidence that they have impacts on the individual excessively buying or selling activities.

In summary, individuals prefer to trade, either buy or sell, excessively in stocks with large market capitalization and high EPS and high dividend. Individuals are more likely to have large excess trading in stocks with low book-to-market and low risk. Individuals follow negative feedback trading strategy that is to sell the winner and buy the loser.

6. Institutional herding versus individual herding

6.1 Evidence from institutional buy-herding versus individual buy-herding

In this group of sample, for every 12 weeks, all the stocks with institutional large excess buying and individual large excess buying are aggregated to generate a sample. This comparison can help us directly to learn the difference between the determinants of institutional large buying and individual large buying. In our data set, net institutional buying activity would be offset by individual selling activity, since for every buyer there must be a seller. That means if the institution is the net buyer in one stock, the individual must be the net seller in this stock. This ensures the “institutional large excess buying” and “individual large excess buying” will not

occur simultaneously in the same stock. In this section, the dependent variable is a dummy variable that obtains the value of one when institutions belong to large excess buying and the value of minus one when individuals belong to large excess buying. Panel A in Table 9 shows the logistic regression for this sample.

From Panel A of Table 9, we can see the average of coefficients for market capitalization is negative (-2.19). Moreover the percentage of the significant negative coefficients is 80.2%, while there are no significant positive coefficients. This suggestions that institutional investors, compared with individual investors, are more likely to exhibit large excess buying in stocks with small capitalization. The average EPS coefficient is 0.05 and only 9.5% of the stocks have statistically significantly positive coefficients. The average of coefficients for cash dividend per share is also not large positive. That means individual investors and institutional investor exhibit similar buying pattern in the stocks with good financial conditions.

We also find that the percentage of the significant positive coefficients for lagged return is large (61.3%) in Panel A of Table 9. This result is consistent with previous ones obtained in section IV and V. Institutions exhibit large excess buying in stocks with high lagged return, while individuals have large excess buying in stocks with low lagged return. Therefore, the coefficient for lagged return in "institutional excess buying versus individual excess buying" is significantly positive (0.34). For other variables including variance, *RM* and *MakVol*, there is no evidence that they have different impacts on the institutional large excess buying and individual large excess buying.

6.2 Evidence from institutional large excess selling versus individual large excess selling

In this group of sample, all the stocks with institutional large excess selling and individual large excess selling are aggregated to construct a sample. The regression results are listed in Panel B of Table 9. There are still several interesting findings. First the same as the large buy situation, the average coefficient of market capitalization is negative (-4.61) and the percentage of the significant negative coefficients is 91.9%, while there are no significant positive coefficients. These figures show that individual investors, compared with institutions, prefer to sell excessively stocks with large market capitalization. Second, the averages of coefficients for EPS and cash dividend per share are both negative and the percentages of the significant negative coefficients for both variables are also much large. EPS is strong negatively related to

the odd of institutions herding in selling, compared with individuals. Its coefficient is -0.96 and 85.6% stocks have statistically significant negative coefficients. Those negative coefficients support the conclusion obtained in separately analyzing institutions and individuals trading behaviors that institutions are more likely to sell excessively stocks with high EPS while individuals are more likely to sell excessively stocks with low EPS. Third, different from the case of large excess buying, the coefficient for the lagged return is negative (-0.6) and the percentage of the significant negative coefficients for lagged return is about 76.6%. That shows that individual investors, compared with institutional traders, are more likely to sell excessively stocks with high recent past return, i.e., individuals sell winners. For other variables, there is no evidence that they have different impacts on the institutional and individual large selling decisions.

The results obtained by directly comparing the institutions' herding behavior to individuals' herding behavior are consistent with those obtained by separately analyzing excessive trading behaviors of the two investor groups. Individuals, compared with institutions, are more likely to trade excessively in stocks with large market capitalization and high EPS. Institutional trading exhibits a positive feedback pattern, while individual trading behavior is associated with negative feedback.

7. Conclusions

In this paper, we present a comprehensive analysis of the determinants of excessive buying and selling activities for both institutional investors and individual investors in the emerging Chinese equity market. Specifically, we test whether past returns, variance of past returns, firm size, earnings per share, dividend payment, and book to market ratio are determinants of investors' excessive trading activities.

The trading behaviors of institutions and individuals are separately classified into large excess buying, large excess selling and moderate trading groups. In order to investigate what makes institutions or individuals trade excessively, we use multinomial logistic regression and binary logistic regression models to analyze various kind of contrast, such as institutional large excess buying versus institutional moderate trading, institutional large excess trading versus institutional moderate trading and institutional large excess buying versus individual large excess buying.

The results of the logistic regression suggest that Chinese institutional investors tend to be momentum traders. Institutions are more likely to buy excessively stocks with good past returns and sell stocks with bad past performance. On the contrary, individuals tend to be contrarian investors, i.e., they tend to buy excessively stocks with low past recent returns and sell excessively stocks with high past recent returns. Moreover, the estimated coefficient of the variance of lagged returns for individual trading is larger than that for institutional trading, which implies that individuals are more sensitive to return volatility.

The estimates of the logistic regression show that institutions tend to sell excessively stocks with small market capitalization, while individuals are more likely to sell excessively stocks with large capitalization. Individuals also tend to trade (either buy or sell) excessively stocks with low book-to-market ratio. Earnings per share also have different impact on institutional and individual trading behaviors. Institutions tend to buy excessively stocks with high EPS and sell excessively stocks with low EPS. Whereas individuals tend to trade excessively stocks with high EPS.

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Table 1 Summary statistics (July 2002 - December 2004)

The sample period is from July 1, 2002 to December 31, 2004. Because the component stocks of the SSE 180 index are adjusted every half a year and the proportion of adjustment is limited to 10% or less, there are totally 252 stocks included in SHSE 180 index during the sample period. Market index and finical statements are collected directly from the Taiwan Economic Journal (*TEJ)* China database. This table list summary statistics of variables that reflect information of all 252 individual stocks and SHSE market during sample period. MktCap is total market capitalization of individual stock (including both tradable and non-tradable). The unit of MktCap is million RMB. EPS is quarterly- earning per share. Dividend is annual-cash dividend per share. Return is weekly return of individual stock. RM_idx is SHSE 180 market index weekly returns. MktVol is money amount market trading volume. B/M is book-to-market ratio. Book-to-market ratio is defined by dividing the book value of equity from a firm' annual statement in the end of last year by the total (including both tradable and non-tradable) market value of A-shares of the firm at the end of December last year.

	Mean	Median	St. Dev.	Min	Max
MktCap (Mil)	8,093.91	3,960.89	20,894.87	740.90	391,003.60
EPS	0.167	0.12	0.24	-2.01	2.85
Dividend	0.12	0.10	0.12	0.00	0.90
B/M	0.389	0.369	0.164	0.070	0.949
Return	-0.002	-0.003	0.049	-0.500	1.650
RM_idx	-0.002	-0.007	0.025	-0.076	0.116
MktVol	8,784,698,338	6,892,697,408	4,958,459,006	3,629,274,110	254,576,96,116

Table 2 Decile statistics of trading imbalance for institutional and individual investors

The summary statistics represent the time-series averages of the cross-sectional decile statistics for an average of stocks in SHSE 180 over 122 weeks from July 1, 2002 to December 31, 2004. In Each week stocks included in SHSE 180 index are sorted into 10 portfolios based on their trading imbalance. The average trading imbalance on 10 portfolios during whole sample periods are listed.

	Lowest	Decile 2	Decile 3	Decile 4	Decile 5	Decile 6	Decile 7	Decile 8	Decile 9	Highest
Institutional Trading Imbalance	-0.9454	-0.719	-0.4827	-0.2722	-0.0923	0.0625	0.2112	0.3823	0.59	0.8658
Individual Trading Imbalance	-0.2711	-0.0948	-0.0395	-0.0164	-0.0059	0.0005	0.0077	0.0205	0.0475	0.1535

Table 3 Input variables (Mktcap, B/M, EPS, dividend) portfolios and institutional trading imbalance

All the component stocks of the SHSE 180 index are sorted into 10 portfolios by market capitalization, previous year's book to market ratio, prior year dividend payment, last quarter's earnings per share, the average return of the previous four weeks, and the variance of 12-week lagged returns, at the beginning of each quarter, respectively. In each quarter, the average institutional trading imbalance (*Dratio*) on 10 portfolios is calculated for the above defined different portfolios. The results are reported in Panels A to F, respectively. The statistical significance at 1% shown by *, is computed by a paired t-test estimated from the time series of the difference between the corresponding portfolio's *Dratio* and the mean across all portfolios.

	Lowest	Decile 2	Decile 3	Decile 4	Decile 5	Decile 6	Decile 7	Decile 8	Decile 9	Highest
A: Market Capitalization portfolios (Mil) and their institutional trading imbalance(Mil)										
Mktcap	1927.2	2473.8	2808.1	3185.1	3728.0	4354.5	5253.8	6517.3	9228.1	36159.5
	-0.0754*	-0.0755*	-0.0288	-0.026*	-0.0014	0.0299*	-0.0128	0.0328*	0.011	0.0306*
B: Book to market ratio portfolios and their institutional trading imbalance										
B/M	0.1649	0.239	0.2852	0.3201	0.3547	0.3985	0.4269	0.4661	0.5372	0.6923
	-0.0336	0.0137	-0.0272	-0.0301	0.0098	-0.01	0.0213*	-0.0366	-0.0197	0.0114
C: Dividend portfolios and their institutional trading imbalance										
Dividend:	0.0001	0.002	0.0278	0.0518	0.084	0.1011	0.13	0.1689	0.2221	0.3741
	-0.0064	-0.0285	-0.0574*	-0.0223	0.028*	-0.0625*	0.037*	0.0034	0.0758*	0.0611*
D: Earning Per share portfolios and their institutional trading imbalance										
EPS	-0.1132	0.0276	0.0565	0.084	0.1112	0.143	0.1776	0.2358	0.3075	0.5435
	-0.0633*	-0.0749*	-0.0487*	-0.0507*	-0.0031	0.0004	0.0234	0.0314*	0.0576*	0.0761*
E: lag return portfolios and their institutional trading imbalance										
Lag_return	-0.0619	-0.0341	-0.0234	-0.016	-0.0096	-0.0035	0.0031	0.0107	0.0215	0.0541
	-0.11*	-0.0708*	-0.0639*	-0.0403	-0.0083	0.0168	0.0408	0.0468	0.0707*	0.0776*
F: variance of lag return portfolios and their institutional trading imbalance										
Variance	0.0123	0.0195	0.0237	0.0272	0.0307	0.0344	0.0384	0.0434	0.0502	0.0775
	0.0056	0.0092	-0.0156	0.0111	0.0007	-0.0138	-0.0236	-0.0093	-0.0172	0.0055

Table 4 Input variables (Mktcap, B/M, EPS, Dividend) portfolios and their individual trading imbalance

All the component stocks of the SHSE 180 index are sorted into 10 portfolios by market capitalization, previous year's book to market ratio, prior year dividend payment, last quarter's earnings per share, the average return of the previous four weeks, and the variance of 12-week lagged returns, at the beginning of each quarter, respectively. In each quarter, the average individual trading imbalance (*Dratio*) on 10 portfolios is calculated for the above defined different portfolios. The results are reported in Panels A to F, respectively.

	Lowest	Decile 2	Decile 3	Decile 4	Decile 5	Decile 6	Decile 7	Decile 8	Decile 9	Highest
A: Market Capitalization portfolios (Mil) and their individual trading imbalance										
Mktcap	1927.2	2473.8	2808.1	3185.1	3728.0	4354.5	5253.8	6517.3	9228.1	36159.5
	0.0019*	0.0039*	-0.0052*	-0.0034*	-0.008	-0.0242*	-0.0075	-0.0303*	-0.0297*	-0.0427*
B: Book to market ratio portfolios and their individual trading imbalance										
B/M	0.1649	0.239	0.2852	0.3201	0.3547	0.3985	0.4269	0.4661	0.5372	0.6923
	-0.0239*	-0.0146	-0.0132	-0.0132	-0.0135	-0.0167	-0.012	-0.0111	-0.0177	-0.0074*
C: Dividend portfolios and their individual trading imbalance										
Dividend:	0.0001	0.002	0.0278	0.0518	0.084	0.1011	0.13	0.1689	0.2221	0.3741
	-0.0087	-0.0052*	-0.0091	-0.0073	-0.0128	0.0013	-0.0314*	-0.0195	-0.0411*	-0.0446*
D: Earning Per share portfolios and their individual trading imbalance										
EPS	-0.1132	0.0276	0.0565	0.084	0.1112	0.143	0.1776	0.2358	0.3075	0.5435
	-0.003*	0.0034*	0.0018*	-0.0006*	0.0015*	-0.0143	-0.0184	-0.0308*	-0.0387*	-0.0537*
E: lag return portfolios and their individual trading imbalance										
Lag_return	-0.0619	-0.0341	-0.0234	-0.016	-0.0096	-0.0035	0.0031	0.0107	0.0215	0.0541
	0.0116*	0.006*	0.0002*	-0.0028	-0.0057	-0.0175	-0.0269*	-0.0278*	-0.0408*	-0.0404*
F: variance of lag return portfolios and their individual										
Variance	0.0123	0.0195	0.0237	0.0272	0.0307	0.0344	0.0384	0.0434	0.0502	0.0775
	-0.0256*	-0.022*	-0.0165	-0.0123	-0.0163	-0.0152	-0.0164	-0.0104*	-0.0077*	-0.0036*

Table 5 Multinomial logistic regression for institutional trading imbalance

This table reports maximum likelihood regression coefficients and t statistics for multinomial logistic regressions on institutional trading imbalance. The dependent variable is based on a three categories variable that obtains the value of one for institutional large excess buying, the value of minus one for institutional large excess selling and the value of zero for institutional moderate trading. Panel A shows the multinomial logistic regression result obtained when trading imbalance measured by *Dratio*. Moderate trading is chosen as base-line category and multinomial logistic regressions model are applied as following.

$$\log\frac{\Pr(\text{instiutional large excess buying})}{\Pr(\text{instiutional moderate trading})} = \alpha_1 + \beta_{11}MktCap + \beta_{12}EPS + \beta_{13}Dividend + \beta_{14}B/M + \beta_{15}Var + \beta_{16}Lag\_return + \beta_{17}RM + \beta_{18}MktVol$$

$$\log\frac{\Pr(\text{instiutional large excess selling})}{\Pr(\text{instiutional moderate trading})} = \alpha_2 + \beta_{21}MktCap + \beta_{22}EPS + \beta_{23}Dividend + \beta_{24}B/M + \beta_{25}Var + \beta_{26}Lag\_return + \beta_{27}RM + \beta_{28}MktVol$$

To facilitate interpretation, all variables are standardized prior to estimation. In this table, the first column is the average value of these coefficients. The second and the third rows show the percentage of models with positive and negative coefficients that are significantly different from 0 at 5% confidence level (%pos.sig., %neg.sig.).

Institutional trading imbalance based on *Dratio*						
	Panel A : Large excess buying versus moderate trading			Panel B: Large excess selling Versus moderate trading		
	Coefficients	%pos.sig	%neg.sig	Coefficients	%pos.sig	%neg.sig
α	-1.89	0	100	-2.01	0	100
MktCap	-0.08	0	13.8	-0.71	0	72.8
EPS	0.25	48.6	0	-0.38	0	55
Dividend	0.06	8.1	0	-0.1	0	9
B/M	0.09	23.4	9	-0.05	6.2	24.3
Variance	-0.03	2.7	3.4	-0.05	0	5.4
lag_Return	0.64	67.2	0	-0.61	0	61.3
RM	0	0	1.8	-0.03	5.4	8.1
MktVol	-0.01	0	0	0.08	12	0

Table 6 Logistic regression for institutional large excess trading versus moderate trading

This table reports maximum likelihood regression coefficients and t statistics for logistic regressions on the sample of institutional large excess trading versus moderate trading. The dependent variable is based on a dummy variable that obtains the value of one when institutional investor trading belongs to large excess trading and the value of minus one when institutional investor exist herding behavior. For every week, the trading of each stock will be classified into group with institutional large excess trading when it belongs large excess buying or large excess selling. Panel A shows the logistic regression result for cut point γ to classify trading behaviors being 25%. Panel B shows the result for cut point to classify trading behaviors being 50%. The results of Panel A and Panel B are both obtained when trading imbalance measured by *Dratio*. Logistic regressions model are applied as following.

$$\log\frac{\Pr(\text{institutional large excess trading})}{\Pr(\text{institutional moderate trading})} = \alpha + \beta_1 MktCap + \beta_2 EPS + \beta_3 Dividend + \beta_4 B/M + \beta_5 Var + \beta_6 lag\_Return + \beta_7 RM + \beta_8 MktVol$$

To facilitate interpretation, all variables are standardized prior to estimation. In this table, the first is the average value of these coefficients. The second and the third rows show the percentage of models with positive and negative coefficients that are significantly different from 0 at 5% confidence level (%pos.sig., %neg.sig.).

Institutional trading imbalance based on Dratio						
	Panel A : Large excess trading ($\gamma = 25\%$) versus moderate trading			Panel B: Large excess trading ($\gamma = 50\%$) Versus moderate trading		
	Coefficients	%pos.sig	%neg.sig	Coefficients	%pos.sig	%neg.sig
α	-1.54	0	100	-0.14	0	42.3
MktCap	-1.69	0	96.2	-1.23	0	95.4
EPS	-0.3	0	53.1	-0.24	0	47.4
Dividend	-0.01	1.8	5.4	-0.01	0	0
B/M	0.04	17.1	0	0.11	32.3	0
Variance	-0.07	0	25.9	-0.04	0	6.3
lag_Return	0.06	15.3	0	0.10	28.6	0
RM	-0.02	0	0	-0.03	0	0
MktVol	0.08	7.2	0	0.08	6.3	0

Table 7 Multinomial logistic regression for individual trading imbalance

This table reports maximum likelihood regression coefficients and t statistics for multinomial logistic regressions on individual trading imbalance. The dependent variable is based on a three categories variable that obtains the value of one for individual large excess buying, the value of minus one for individual large excess selling and the value of zero for individual moderate trading. Panel A shows the multinomial logistic regression result obtained when trading imbalance measured by *Dratio*. Moderate trading is chosen as base-line category and multinomial logistic regressions model are applied as following.

$$\log\frac{\Pr(\text{individual large excess buying})}{\Pr(\text{individual moderate trading})} = \alpha_1 + \beta_{11}MktCap + \beta_{12}EPS + \beta_{13}Dividend + \beta_{14}B/M + \beta_{15}Var + \beta_{16}Lag\_return + \beta_{17}RM + \beta_{18}MktVol$$

$$\log\frac{\Pr(\text{individual large excess selling})}{\Pr(\text{individual moderate trading})} = \alpha_2 + \beta_{21}MktCap + \beta_{22}EPS + \beta_{23}Dividend + \beta_{24}B/M + \beta_{25}Var + \beta_{26}Lag\_return + \beta_{27}RM + \beta_{28}MktVol$$

To facilitate interpretation, all variables are standardized prior to estimation. In this table, the first column is the average value of these coefficients. The second and the third rows show the percentage of models with positive and negative coefficients that are significantly different from 0 at 5% confidence level (%pos.sig., %neg.sig.).

Individual trading imbalance based on Dratio						
	Panel A: Large excess buying versus moderate trading			Panel B: Large excess selling Versus moderate trading		
	Coefficients	%pos.sig	%neg.sig	Coefficients	%pos.sig	%neg.sig
α	-1.91	0	100	-1.91	0	100
MktCap	0.02	7.4	0	0.22	84.7	0
EPS	0.52	77.2	0	0.62	100	0
Dividend	0.11	23.4	0	0.19	42.1	4.7
B/M	-0.07	0.9	17.1	-0.16	7.2	48.6
Variance	-0.05	0	7.2	-0.21	0	38.7
lag_Return	-0.27	0	68.1	0.27	65.3	0
RM	-0.04	2.7	0	0.02	4.5	0
MktVol	0.18	32.3	0	-0.09	0	12.9

Table 8 Logistic regression for individual large excess trading versus moderate trading

This table reports maximum likelihood regression coefficients and t statistics for logistic regressions on the sample of individual large excess trading versus moderate trading. The dependent variable is based on a dummy variable that obtains the value of one when individual investor trading belongs to large excess trading and the value of minus one when individual investor exist herding behavior. For every week, the trading of each stock will be classified into group with individual large excess trading when it belongs large excess buying or large excess selling. Panel A shows the logistic regression result for cut point γ to classify trading behaviors being 25%. Panel B shows the result for cut point to classify trading behaviors being 50%. The results of Panel A and Panel B are both obtained when trading imbalance measured by Dratio. Logistic regressions model are applied as following.

$$\log \frac{\Pr(\text{individual large excess trading})}{\Pr(\text{insdividual moderate trading})} = \alpha + \beta_1 MktCap + \beta_2 EPS + \beta_3 Dividend + \beta_4 B/M + \beta_5 Var + \beta_6 lag\_Return + \beta_7 RM + \beta_8 MktVol$$

To facilitate interpretation, all variables are standardized prior to estimation. In this table, the first is the average value of these coefficients. The second and the third rows show the percentage of models with positive and negative coefficients that are significantly different from 0 at 5% confidence level (%pos.sig., %neg.sig.).

Individual trading imbalance based on Dratio						
	Panel A: Large excess trading (25%) versus moderate trading			Panel B: Large excess trading (50%) Versus moderate trading		
	Coefficients	%pos.sig	%neg.sig	Coefficients	%pos.sig	%neg.sig
α	-0.87	0	100	0.52	0	67.5
MktCap	0.31	79.4	0	0.4	80.2	0
EPS	0.66	94.4	0	0.57	98.4	0
Dividend	0.11	42.3	0	0.11	47.2	0
B/M	-0.11	0	46.3	-0.08	2.8	27.6
Variance	-0.12	0	23.1	-0.06	0	16.7
lag_Return	0	1.2	3.4	0.01	3.3	0
RM	-0.01	0	0	-0.01	0.2	0
MktVol	0.04	4.5	0	0.02	7.1	0

Table 9 Logistic regression for institutional large excess trading versus individual large excess trading

This table reports maximum likelihood regression coefficients and t statistics for logit regressions on the sample of "institutional excess buying versus individual excess buying" and "institutional excess selling versus individual excess selling". Panel A reports the result of sample "institutional excess buying versus individual excess buying. Panel B shows the result of sample "institutional excess selling versus individual excess selling". Logistic regressions model are applied as following.

$$\log\frac{\Pr(\text{institutional large excess buying})}{\Pr(\text{individual large excess buying})} = \alpha + \beta_1 MktCap + \beta_2 EPS + \beta_3 Dividend + \beta_4 B/M + \beta_5 Var + \beta_6 lag\_Return + \beta_7 MktIndex + \beta_8 MktVol$$

and

$$\log\frac{\Pr(\text{institutional large excess selling})}{\Pr(\text{individual large excess selling})} = \alpha + \beta_1 MktCap + \beta_2 EPS + \beta_3 Dividend + \beta_4 B/M + \beta_5 Var + \beta_6 lag\_Return + \beta_7 MktIndex + \beta_8 MktVol$$

To facilitate interpretation, all variables are standardized prior to estimation. In this table, the first row is the average value of these coefficients. The second and the third rows show the percentage of models with positive and negative coefficients that are significantly different from 0 at 5% confidence level (%pos.sig., %neg.sig.).

Institution large excess trading versus Individual large excess trading						
	Panel A: Institutional large excess buying Versus individual large excess buying			Panel B: Institutional large excess selling Versus individual large excess selling		
	Coefficients	%pos.sig	%neg.sig	Coefficients	%pos.sig	%neg.sig
α	-0.25	9	40.5	-1.04	0	82
MktCap	-2.19	0	80.2	-4.61	0	91.9
EPS	0.05	9.5	0	-0.96	0	85.6
Dividend	0.04	9	0	-0.28	0	39.6
B/M	0	11.7	17.1	0.07	19.8	11.7
Variance	-0.04	8.1	6.3	-0.02	5.4	1.8
lag_Return	0.34	61.3	0	-0.6	0	76.6
RM	0.03	4.5	7.2	-0.05	5.4	9
MktVol	-0.16	0	19.8	0.25	24.3	0