

Investor Sentiment, Institutional Investors and the Accrual Anomaly: An Empirical Analysis of China's Listed Companies

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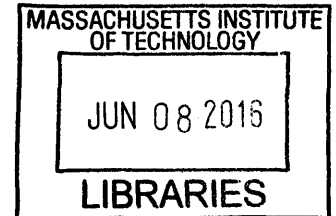
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ABSTRACT

The accrual anomaly is a phenomenon that investors gain future abnormal returns through accruals-based hedge portfolios. This paper first shows that China's institutional investors have a better understanding of the persistence of accounting accruals and they more accurately assess stock prices, and that an accrual-based hedge portfolio yields smaller future abnormal returns for firms with high institutional ownership. The results suggest that in China's stock market, the accrual anomaly can be weakened by the activities of institutional investors. Second, with the cross-section data of listed companies from 2001 to 2013, this paper uses empirical analysis of the classified samples to examine how the stock prices react to accruals with the level of investor sentiment. The results suggest stock prices of companies with a small proportion of institutional investors are more sensitive to the impact of investor sentiment on the accrual anomaly. Lastly, this paper examines the effect of investor sentiment on managers' accrual decisions. I find that accruals are higher in positive sentiment environments for companies with high proportion of individual investors, which suggests managers might be exploiting naive individual investor behavior.

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I. Introduction

Haugen (1999) divided the development of financial theory into three stages: the first stage is called "old finance", representative for the financial research which is mainly about accounting and financial report analysis before 1960s; the second stage is called "standard finance", the main theory of which is based on the rising financial economics from the mid-20th century, focusing on the pricing mechanism and financial markets efficiency under the hypothesis of rational man; the third stage is "new finance" and the research is subject to investors' bounded rationality and non-efficient market, among which behavioral finance studies became popular.

The most prominent representative of standard finance is Eugene Fama, who proposed the efficient market hypothesis in 1970, arguing that markets are efficient without arbitrage cost and risk. Therefore, once the stock price deviates from its intrinsic value, given the existence of arbitrage, it would quickly revert to its true level. No investment strategy gets more benefits than its risk premium. The efficient financial market hypothesis is no doubt one of the greatest contributions to the human society in the past few decades. It not only opens up new horizons in the study of the financial sector but also plays an important guiding role in economic resources allocation. As for accounting research, the studies on information content and value relevance are based on efficient market theory.

However, with the development of academic theory, more and more people are questioning the efficient market hypothesis. Grossman and Stiglitz (1980) brilliantly pointed out the paradox of effective capital market theory. If the stock price is equal to the intrinsic value of the stock at

any time, that is, prices at any time completely and unbiasedly reflect the information owned by investors, then investors would not have to engage in gathering and analyzing information, but derive all the information about the stock's intrinsic value directly from the market price. Since information collection and analysis are not free, all investors would not collect or analyze information, and ultimately, stock price cannot effectively reflect its value.

Moreover, an increasing number of market anomalies have been found since the early 1980s, officially opening the door to the academic questioning and challenging of the efficient market hypothesis. These include the size anomaly (Banz, 1981), p/e anomaly (Basu, 1983), overreaction anomaly (DeBondt and Thaler, 1985), momentum anomaly (Jegadeesh and Titman, 1993), post earnings announcement drift anomaly (Bernard and Thomas, 1990), accrual anomaly (Sloan, 1996), accounting conservatism anomaly (Penman and Zhang, 2002) and closed-end fund discount puzzle.

The role of earnings in stock pricing is a fundamental and important issue in accounting studies (Ball and Brown [1968], Watts and Zimmerman [1986], Beaver [1998]). Previous studies have found that accruals have an important position in terms of stock pricing (Dechow [1994], Subramanyam [1996]). Sloan, in 1996, takes a step further in this area by distinguishing the information content between the cash flow and accruals. Sloan (1996) finds that, in terms of the ability to predict the company's future earnings, the persistence of accruals is significantly lower than that of cash flows, and that investors only functionally fixate on total earnings and cannot distinguish the difference between them. Specifically, investors overestimate the future

earnings of the companies with a high proportion of accruals in current periods, and thus overestimate the corporate value. On the other hand, investors underestimate the value of companies with a low proportion of accruals, and thus underestimate the corporate value. Therefore, a trading strategy based on accruals (taking a long position in shares with a lower percentage of accruals and a short position in shares with a higher percentage of accruals) can earn excess returns of around 10% in the subsequent year. This indicates that investors misunderstand the value of accruals in the current accounting period.

Why do investors misunderstand the value of accounting accruals? How does mispricing occur? Behavioral finance theory, rising in the 1980s, explains this anomaly quite well. From the view of psychology, Hirshleifer and Teoh (2006) find that investors have a functional fixation on reporting earnings because of a psychological constraint, called "limited attention". As understanding the value of information takes time and energy, some investors with limited resources only price the stock based on publicly available information. To be specific, a company may disclose the total earnings and cash flows, but investors with limited attention may only choose one indicator that better reflects the corporate value for pricing. That's why they choose accounting earnings. Less concerns on accruals and cash flows result in investors' misvaluation. In addition, smart-money investors may be concerned about the difference between accounting accruals and cash flows in predicting the persistence of future earnings. However, investors are risk-averse. Given the existence of arbitrage risk (Shleifer and Vishny [1997], Mullainathan and Thaler [2000]), even smart-money investors may not take full advantage of this mispricing to arbitrage. Therefore, mispricing exists for a period, or perhaps

even a long time.

Behavioral finance believes that investors are not entirely rational. When evaluating stock prices, investors are affected by psychology, emotion and other factors. Some of the time with high investor sentiment, they are overly optimistic, and overestimate the value of the stock. But at other time when investor sentiment sours, they underestimate the value of the stock (Shiller [1984]). The general conclusion is that investment returns are higher following depressing investor sentiment, and vice versa (Brown and Cliff [2005], Baker and Wurgler [2006, 2007], Lemmon and Portniaguina [2006]).

Furthermore, studies with regard to institutional investors' behavior and its impact on the stock market are also a main point of academic research in accounting and finance. Collins, Gong and Hribar (2003) find that institutional investors can more accurately identify persistence of accruals, and thus their valuation of stocks is more accurate. Obviously, as opposed to individual investors, the investment behavior of institutional investors is more rational, less affected by emotions.

Based on the above, I propose a question: does accrual anomaly exist in China's stock market? As China's capital market is still far away from perfect, there are lots of bubbles and speculative factors. Does investor sentiment in the market affect arbitrage returns based on accruals? In addition, do rational managers take advantage of investor irrationality for earnings management?

This paper enriches the study perspective of the accrual anomaly in China. Behavioral finance is an emerging area in China with less research in this area. This paper supports bounded rationality in behavioral finance and non-efficient market theory using a Mishkin test and an arbitrage portfolio model of excess returns. In addition, this paper introduces managers catering theory (Baker and Wurgler [2004]) from the perspective of investor sentiment with a theoretical innovation.

This paper also has its practical value. First, the conclusions of this research provide guidance to investors on taking a favorable investment opportunity and building an effective investment strategy. Second, it will help investors properly understand the Chinese capital market, pricing mechanisms and the rational allocation of resources, so as to promote a sound and efficient development of the economy.

The next section discusses the relevant prior literature. The third section explains the sample and variable construction. The fourth section presents empirical results and the final section concludes.

II. Literature Review and Predictions

1. Accrual anomaly

Sloan (1996) makes a contribution to literature in the area of accounting information by distinguishing the information content between cash flows and accruals. The paper is one of the classic investment strategy studies based on accounting information. Sloan finds that future

earnings will systemically decrease for companies with a high proportion of accruals. Investors cannot completely understand the difference between accruals and cash flows on their capacities of forecasting future returns; they just functionally fixate on the total number of accounting earnings, thus overestimating the value of companies with a high proportion of accruals and underestimating the value of companies with a high proportion of cash flows. A 10% excess return on investment can be earned in the subsequent year by going long shares of high cash flow proportion firms and short shares of high accrual proportion firms. This phenomenon is called the accrual anomaly.

A large number of empirical studies extend and expand the research on the accruals anomaly (Barth et al. [2001], Pincus, Rajgopal and Venkatachalam [2007]). One of the important findings is the negative correlation of accruals and cash flows. This negative correlation resulted in general conclusions that the arbitrage strategies based on these two components should be correlated, which can generate similar results on returns in the future.

However, some later studies question this conclusion. Kraft et al. (2004, 2006) find that the arbitrage based on accruals is sensitive to extreme companies. After these companies are eliminated, this excess return is gone. Meanwhile, they further point out that companies with low cash flow are likely to have either high accruals or low accruals. Reasons are provided for these two possibilities. On one side, companies with low cash flow may invest more in corporate operations to guarantee continuous growth, which leads to positive accruals; on the other side, low cash flows may indicate companies in financial distress, and use operating

capital in exchange for the need of cash flows, which leads to negative accruals. I find it interesting that, in the second circumstance most companies with negative cash flows have poor operating performance in reality, and no company is willing to maintain high growth while holding low cash flows.

Desai et al. (2004) find that the predictive power of accruals is included in cash flows. The high correlation eliminates the predictive effect that accruals have on future returns. Yu (2005) has conclusions consistent with Desai et al. (2004) that the negative correlation between accruals and future returns disappears after cash flows are controlled. Livnat and Santicchia (2006) also find that the correlation between cash flow and future returns is stronger than between accruals and future returns. Livnat and Lopez-Espinosa (2008) have similar conclusions using quarterly data.

The query above shows that, despite the negative correlation between accruals and cash flows, the relationship of these two components is not perfect. Thus, the trading strategies based on the two components may have different results.

2. Institutional Investors

Previous studies have looked at the implications of the naïve-investor hypothesis and examined whether sophisticated investors have a better understanding of accruals information than naïve investors. However, Ali, et al. (2000) find that companies with a high proportion of institutional holdings have better predictive capacities of accruals than those with a small percentage of

institutional holding. Some studies (Bradshaw et al. [2001], Barth and Hutton [2004]) find that sophisticated investors fixate more strongly on earnings and seem to be unable to consistently differentiate the persistence of accruals for future earnings.

On the other hand, a number of studies have suggested that sophisticated investors are able to understand the differential persistence of accruals more properly than unsophisticated investors. There is a negative correlation of the level of accruals and institutional ownership (Collins et al. [2003], Lev and Nissim [2008]).

3. Investment Sentiment

Investor sentiment is broadly defined as the degree of optimism and pessimism for the stock market. It is not based on the judgement of basic information (ie. the discounted future cash flows), and has a speculative tendency (Baker and Wurgler [2006]).

Behavioral finance theory suggests that stock prices often deviate from the intrinsic value in the market, the phenomenon known as anomalies. They cannot be explained by existing pricing models, because investor psychology has cognitive and judgement biases in investment decision-making process (Lee, Shleifer and Thaler [1991]). This leads to the result that investors' decision-making process is filled with uncertainty. The investment decisions are often subject to investor psychology and emotional impact instead of following the utility maximization principle. The market is not as efficient as what theory has expected because of this decision-making bias. And prices may have continuous, systematic and long-term deviations (Brown and

Cliff [2005], Baker and Wurgler [2006], Lemmon and Portniaguina [2006]).

There are two categories of investors according to behavioral finance: one is arbitragers, who have rational expectations on returns on assets; the other is noise traders, who consider noise as useful information (Shiller [1984]). This noise doesn't actually contain any content about the fundamentals of listed companies, but noise traders think they acquire some useful information and make transactions based on their own analysis of the noise. Noise traders' expectations of returns on assets are affected by their psychology and emotion. In some cases, when investor sentiment is high, they are overly optimistic (Baker and Stain [2004], Liu [2006], Karlsson, Lowenstein, and Seppi [2005]), thus overestimating the future value of the stock (Lee, Shleifer and Thaler [1991]); but in other cases, when investor sentiment is low, they are so depressed that they underestimate the future value of the stock (Shiller [1984], DeLong, Shleifer, Summers and Waldmann [1990]).

Livnat and Petrovits (2008) argue that investors' overreaction leads to the mispricing of accruals for the current period. When investors are faced with new information, they update their thoughts in different ways. Such differences lead to different decisions. Ali and Gurun (2008) believe that investors' limited concern is the cause of different levels of accounting accrual mispricing during different investor sentiment periods. Some studies also test the effects of investor sentiment on the stock price (Brown and Cliff [2005], Baker and Wurgler [2006, 2007], Lemmon and Portniaguina [2006]). The general conclusion is that investment returns will be higher after depressing investor sentiment periods, and vice versa.

In addition, Baker and Wurgler (2006,2007) find that investor sentiment may affect stocks with more subjective valuation. The characteristics of these companies include negative net profits, high growth opportunities, a shorter listed time, no dividends payment, insolvency, and financial tensions. The stocks of these small companies are typically held by individual investors (Lee, Shleifer and Thaler [1991]).

4. Accrual Studies in China

Studies in China follow Sloan's (1996) method to analyze the accrual anomaly from the perspective of persistence. Liu Yunzhong (2003) finds the persistence of accruals is lower than that of cash flows by examining data from 1998 to 2000. But the excess return on average is only about 3.1% using Sloan's trading strategy. Wang Qingwen (2005) finds that excess returns of that trading strategy in the subsequent year is 7.9% after eliminating ST (Special Treatment)¹ companies. Li Yuanpeng, Niu Jianjun (2007) study the delisting supervisory system and accrual anomaly in China's stock market and suggest that the accruals anomaly does not exist in China's stock market. This is not because the market correctly prices accruals, but because the ST¹ companies take advantage of delisting regulation by generating loss (big bath). After such factors are controlled, excess returns of the hedge strategy are significantly improved. They point out that studying the effectiveness of China's stock market should consider not only the behavior of investors, but also the financial institutional background.

¹ Shares carrying ST (special treatment) tags are listed companies that suffer losses for two consecutive years or more under regulations of Shenzhen Stock Exchange and Shanghai Stock Exchange in China. The ST will be removed when the abnormal conditions which may endanger the interests of investors return to normal conditions.

Samples of the above studies, however, cover periods prior to 2002, of which the results are subject to the impact of China's capital market development, regulatory framework, accounting standard maturity level, the number of institutional investors, corporate governance, and information disclosure system. In a rapidly developing capital market, these factors are constantly changing, and the pricing characteristics of accounting information in the Chinese capital market may also change greatly. Thus samples need to be updated for further studies.

5. Predictions

Relative to other investors, institutional investors have more rational investment behaviors in the capital market. Studies show that institutional investors can reduce management manipulation corresponding to accrual items (Bushee [1998]). Compared to companies with a low percentage of institutional investor holdings, companies with high institutional holdings have a stronger persistence on accruals. I assume that in China's stock market, institutional investors can more accurately identify the consistency differentiation between accruals and cash flows. A more reasonable estimation of the persistence of accruals and cash flows means that institutional investors value share prices more accurately. Thus, I assume that Sloan's arbitrage strategies can generate higher excess returns with investment portfolios of low institutional holdings, compared with portfolios with high institutional holdings.

H1: China's institutional investors are able to identify the persistence of accruals more accurately. The excess return of the arbitrage portfolio is smaller for companies with a high proportion of institutional holdings in China's stock market.

Investor sentiment may result in periods where stock prices deviate from fundamental values. Stocks in companies with a small proportion of institutional investors are potentially more sensitive to the impact of investor sentiment because these stocks are more likely to be followed by individual investors, who tend to have limited attention. This leads to my second hypothesis.

H2: Investor sentiment has more effect on accrual anomaly for low institutional holding companies.

If in high sentiment periods individual investors pay less attention towards understanding the accruals and cash flow components of earnings, management of companies may transfer accruals to periods in high investment sentiment to take advantage of unsophisticated investors' overvaluation of accruals. This leads to my hypothesis.

H3: The association between sentiment and accruals is stronger for companies with high individual investor ownership.

III. Sample and Descriptive Statistics

1. Sample

I collect data from the CCER economic and financial database². The sample covers the period from 2001 to 2013 and is selected according to the following principles: (1) excluding IPO companies, (2) excluding ST companies of the year; (3) excluding financial companies; (4)

² China Center for Economic Research (CCER) database offers the following data in the Chinese capital market: prices, returns, dividends and market Indices, financial statements, company financial operation data, mutual funds, macro-economic time series, etc.

excluding samples with missing data. ST companies are excluded due to the special delisting regulation in China's stock market which distorts the behavior of unprofitable companies and affects the quality of accounting information. IPO companies are excluded because China's IPO pricing system leads to a big difference in market performance between IPO companies and other companies.

All the samples are sorted by size of institutional investor holdings by year and then divided into four groups. The top one-fourth are defined as companies with high institutional holdings (HIH), the bottom one fourth are companies with low institutional holdings (LIH). After mixing the samples from all the years and eliminating observations with missing data, I get 2486 HIH firms and 2793 LIH firms.

2. Variables and Descriptive Statistics

There are two methods for the measurement of accruals. One method is based on the balance sheet (Sloan [1996]). $Accruals = (\Delta CA - \Delta Cash) - (\Delta CL - \Delta STD - \Delta TP) - DEPEXP$. The other is based on the cash flow statement (Collins and Hribar [2002]). $Accruals = Earnings - Cash Flows$. I use the second method in this paper. $ACC = Earnings - CFO$. ACC represents for operating accruals in the current period; Earnings for the current year's net profits; CFO for net cash flow from operating activities in the period. The accounting earnings and components in this paper are standardized by total assets at the beginning of the year.

According to table 1, HIH companies have better profitability and higher cash flows than LIH

companies. For accounting accruals, LIH companies have a slightly smaller mean value (-0.014) than HIH (-0.012). The mean of risk factor Beta for HIH and LIH is 1.095 and 1.164, respectively. As for Size, the difference of the mean value is 0.32 (21.87 for HIH and 21.55 for LIH). HIH and LIH have a similar mean value for BM (0.418 and 0.477, respectively). In order to control the impact of these risk factors, I use size-adjusted returns in the following sections.

IV. Empirical Analyses

1. Investors Sophistication

1.1 Mishkin test

I use the Mishkin (1983) test to see whether institutional investors can identify the persistence of accruals more accurately. Mishkin (1983) tests the following two equations using an OLS regression, in order to compare the estimated values of persistence and market pricing indicators of accruals and cash flows.

$$\text{Earn}_{t+1} = \gamma_0 + \gamma_1 \text{Accrual}_{st} + \gamma_2 \text{CashFlow}_{st} + v_t \quad (1)$$

$$R_{t+1} = \delta_0 + \delta_1 [\text{Earn}_{t+1} - \gamma_0 - \gamma_1^* \text{Accrual}_{st} - \gamma_2^* \text{CashFlow}_{st}] + u_{t+1} \quad (2)$$

Model (1) is the persistence model where γ_1 and γ_2 are the indicators to forecast the persistence of accruals and cash flows in the next year. Model (2) is the market pricing model, which can indicate the market estimation on the persistence of accruals and cash flows where γ_1^* and γ_2^* are the indicators for market estimates. Rational expectation implies that the difference between accounting accrual forecasting and market estimation should be small. According to my hypothesis, I should get the following expression.

$$\gamma_1 / \gamma_1^*(LIH) < \gamma_1 / \gamma_1^*(HIH) < 1$$

In table 2, estimated accruals for HIH is 0.682 while the market estimation is 0.842, the difference of which is small, $\gamma_1 / \gamma_1^*(HIH) = 0.810$. For LIH, the estimated value of accruals is 0.520 while the market price is 0.933; this difference is obvious. It is clear that in China's capital market, the persistence of accruals is overvalued to varying degrees. But the accrual persistence for HIH is not overvalued as much as LIH. I can infer that institutional investors can more accurately identify the persistence of accruals than other investors in China's capital market.

1.2 Arbitrage Portfolio

The Mishkin test shows that the accrual persistence is overestimated for both HIH and LIH companies, but institutional investors have a better understanding of accruals relative to other investors. Thus, prices of companies with a high proportion of institutional holdings will reflect the persistence of accounting accruals more accurately. To further examine the accrual anomaly in China's stock market, I build arbitrage portfolios following Sloan's method and test H1 by analyzing excess returns. When investment is made according to accrual strategy, buying HIH shares should earn less excess returns than buying LIH shares.

First, the samples are divided into ten groups by their size of accruals (samples are divided into 10 groups each year, and then mixed together). Then they are classified as HIH and LIH. I calculate the future returns for each group. Sloan's trading strategy is to take a long position of

stocks with the lowest accruals and a short position of stocks with the highest accruals so that abnormal return on investment can be earned in the subsequent year. I expect that the future returns of HIH samples will be smaller than LIH samples.

The future stock returns are measured by size adjusted returns. Size adjusted return = raw buy-and-hold return – return for the size decile. Raw buy-and-hold return is the buy and hold abnormal return in the fifth month of next year. P_{t+16} is the closing price by the end of the sixteenth month of current accounting year. P_{t+4} is the closing price by the end of the fourth month of current accounting year. $RET_{t+1} = (P_{t+16} - P_{t+4}) / P_{t+4}$. Return for the size decile is the average buy-and-hold return for the size decile to which the firm belongs by year-end total market value.

Table 3 shows abnormal returns by buying shares with the lowest accruals and selling shares with the highest accruals using Sloan's trading method. Group 1 stands for the excess returns of companies with the lowest accruals while group 10 for the highest accruals. The results are similar to many studies on market anomalies that excess returns in next year are not monotonic. The trading strategy for HIH companies generates 6.5% of excess returns while that reaches to 10.2% for LIH companies. The difference is significant. Consistent with hypothesis 1, the results prove that an accruals-based hedge portfolio earns smaller returns for companies with high institutional investor holdings. That is to say, institutional investors can better understand the accrual information, which leads to the possibility of a weakening accrual anomaly.

2. Investor Sentiment

I measure emotional indicators based on the composite sentiment index (Baker and [2006,2007]). The index of IPO number in China is not quite accurate due to the long time from issue date to listing date. And the dividend policies of listed companies have a great deal of randomness without any rules to follow. So I remove these two indicators in order to improve the quality of the composite index. Finally, I extract a common ingredient from the four indicators to get composite sentiment indicator. I use principal component analysis to isolate the common parts because each agent variable contains not only emotional factors, but also factors unrelated to sentiment. In this paper, the standardized (with mean 0 and variance 1) first principal component is defined as the sentiment index.

$$\text{Sentiment}_t = -0.538\text{CEFD}_t + 0.504\text{TURN}_{t-1} - 0.426\text{RIPO}_{t-1} + 0.525\text{S}_t$$

Results show that first principal components explain 80.53% changes of the four indicators (cumulative contribution of 80.53%). Table 4 shows the composite sentiment index and its indicators from 2001 to 2013. Diagram 1 displays intuitively the investor sentiment in different years.

In order to test whether there is a difference on investors' mispricing under different investor sentiment regimes, I establish the following model based on the Fama-French (1992, 1993) three-factor pricing model and the Sloan accruals model.

$$\text{Rawreturn}_{it+1} = \beta_0 + \beta_1\text{Accruals}_{it} + \beta_2\text{IS}_{it} + \beta_3\text{Accruals} \times \text{IS}_{it} + \beta_4\text{Size}_{it} + \beta_5\text{BM}_{it} + \beta_6\text{Beta}_{it} + \beta_7\text{EP}_{it} + \beta_8\text{Leverage}_{it} + \xi_{it+1}$$

In this model, accruals are corporate accounting accruals for the current period. As is proved previously in the Mishkin test that investors misprice accruals, it is predicted that high accruals will result in low future returns. Thus, β_1 will be negative. IS is a dummy variable of investor sentiment, 1 for positive sentiment and 0 for negative sentiment. According to Baker and Wurgler (2000), higher sentiment index results in lower future returns. Thus, β_2 will be negative. To measure the difference of excess returns in different sentiment periods, an interactive variable is introduced, namely $\text{Accruals} \times \text{IS}$.

In addition, I introduce some control variables following previous studies. Size is a company's year-end market value. Banz (1981) finds that after controlling market risk, future returns of small companies are systematically higher than that of large companies, which is called the size anomaly. I predict that β_4 is negative. Book-to-market is the ratio of book value to market value for shareholders' equity. Stattman (1980) and Basu (1983) find that this ratio can predict the future returns on investment. A higher ratio means greater future returns while smaller ratio means lower returns in the future. β_5 is predicted to be positive. Beta is a market risk factor. Sharp (1964), Lintner (1965) and Black (1972) suggest that the return on investment is a linear function of the Beta. Beta can explain the difference of the cross section of stock returns based on CAPM model. The greater beta leads to the higher future returns. Thus, β_6 will be positive. Sloan (1996) used earnings-to-price as one of the controlling factors in his regression model. If this ratio is high, it may indicate high current earnings which have a strong ability to predict future returns, but it may also indicate low stock prices because investors are not optimistic

about the future development of the stock. Leverage is companies' financial leverage. Bhandari (1988) finds leverage could explain stock returns. High leverage suggests that companies use financial leverage to improve earnings and future returns will be greater. Thus, β_8 will be positive. I also control for industry and year effects.

Next, I consider how the size of institutional investor holdings can affect accruals during different sentiment periods. Table 5 presents the regression results by the proportion of institutional investors. For LIH companies (column 2), the return of accruals is -0.561 and significant at the level of 1%, indicating that the size of institutional holdings has an impact on investors' pricing. Unsophisticated investors in LIH companies are more likely to misprice accruals which leads to negative future returns. For HIH companies, there are no significant coefficients of accruals on 1% or 5% levels, suggesting that institutional investors misprice accruals to a much lower degree. This also supports the theory that institutional investors are more rational and can estimate stock value more accurately.

Of even greater interest is the interactive variable, $\text{Accruals} \times \text{IS}$. In LIH group (Column 2), the coefficient is 0.416 and significant at the level of 10%. Adding 0.416 to -0.561, I get the marginal effect (-0.145) of IS on the accruals/return relationship, suggesting that for companies with high individual investors, almost all the negative association is lost between accruals and future returns when sentiment is high. LIH companies have a large proportion of unsophisticated investor holdings. Due to herd behavior theory, these investors sometimes are too optimistic, and overreact on information; sometimes they are too pessimistic, and fail to respond to

information. Thus, the mispricing is not corrected because individual investors are just herding or acting naively. However, there is no significant coefficient of $Accruals \times IS$ for HIH companies. As institutional investors have professional knowledge and more accurate analytic abilities, their investment decisions are more rational and reasonable (less affected by investor sentiment). Thus, investor sentiment doesn't have a significant impact on accruals/return relationship for companies with high institutional investors.

3. Accrual Management

The following model is designed to test the relationship between accruals and investor sentiment.

$$Accruals_{it} = \beta_0 + \beta_1 Sentiment_t + \beta_2 DIndividual_{it} + \beta_3 Sentiment_t \times DIndividual_{it} + \beta_4 Accruals_{it-1} + \beta_5 Leverage_{it} + \beta_6 BM_{it} + \beta_7 Loss_{it} + \beta_8 CFO_{it} + \beta_9 Industry_{it} + \xi_{it}$$

The model is similar to the Ashbaugh, LaFond and Mayhew (2003) model, but investor sentiment variables (Sentiment, $DIndividual$, and $Sentiment \times DIndividual$) are added to the model in this paper. $DIndividual$ is a dummy variable of company institutional holdings, 1 for LIH companies and 0 for HIH companies. Other variables (Leverage, BM, Loss and CFO) in this model are control factors for accruals. Regression results are shown in table 6.

The coefficient of $Sentiment \times DIndividual$ is positive and significant at the level of 1% (P-value = 0.004). This suggests that, for LIH companies, reported accruals are higher in positive sentiment periods than those in negative sentiment periods. One potential explanation is that

management of companies with more individual investors tends to cater to investors by increasing accruals when sentiment is high and they take a big bath that results in negative accruals when sentiment is low.

V. Conclusion

This paper documents the existence of the accrual anomaly in China's stock market using the Mishkin (1983) test. Also, I observe two different types of investors in the capital market—institutional and individual investors, and find that institutional investors make investment decisions more rationally. I find that the results of arbitrage strategies based on accruals are different following different investment sentiment periods. Share prices are also more likely to be influenced by investor sentiment for companies with high proportions of individual investor holdings. This is because individual investors' perspectives on returns are easily affected by their psychology. Sometimes, they become excessively optimistic and overvalue share prices, while sometimes they are excessively pessimistic and underestimate values. Irrationality on investment decisions further widens the gap of excess returns in different periods.

This paper is not restricted to the framework of irrational individual investors by introducing "catering theory", which further enriches the study of the accrual anomaly. I find that managers appear to transfer accruals to periods of high investment sentiment in order to make use of investors' overvaluation of accruals.

This study suggests that investment sentiment has an impact on excess returns of different

arbitrage strategies based on accruals. However, China's market economic system still needs improvements and the information disclosure supervision system of listed companies is not sound enough. In this special economic circumstances, therefore, the data is influenced by many factors and the conclusions based on such data have limitations. This deficiency can be reduced with the sound development of China's stock market.

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Table 1

Descriptive Statistic

Variable	Mean		Std.Dev.		Min		Max	
	HIH	LIH	HIH	LIH	HIH	LIH	HIH	LIH
Earnings	0.0394	0.0242	0.0515	0.0436	-0.156	-0.156	0.166	0.166
CFO	0.0502	0.0378	0.0734	0.0718	-0.181	-0.181	0.242	0.242
ACC	-0.0115	-0.0143	0.0722	0.0740	-0.235	-0.235	0.199	0.199
Beta	1.095	1.146	0.247	0.234	0.446	0.446	1.700	1.700
Size	21.87	21.55	0.770	0.659	20.12	20.12	23.56	23.56
BM	0.418	0.477	0.243	0.246	0.0817	0.0817	1.257	1.257
EP	0.0221	0.0156	0.0426	0.0412	-0.197	-0.197	0.120	0.120
Leverage	0.434	0.440	0.202	0.205	0.0454	0.0454	0.856	0.856

Notes:

1. The sample includes observations from 2001 to 2013 for HIH and LIH companies with the required data.
2. Earnings is net income scaled by average total assets.
3. CFO is net cash flows from operating activities, scaled by average total assets.
4. ACC = Earnings – CFO.
5. Beta is the market risk factor.
6. Size is the natural log of the market value of equity at fiscal year end.
7. BM is the equity ratio of book value to market value.
8. EP is the earnings-to-price ratio at fiscal year end.
9. Leverage is debt-to-asset ratio.

Table 2

Mishkin Test of Earnings Persistence and Market Returns

$$\text{Earn}_{t+1} = \gamma_0 + \gamma_1 \text{Accrual}_{st} + \gamma_2 \text{CashFlow}_{st} + v_t \quad \textcircled{1}$$

$$R_{t+1} = \delta_0 + \delta_1 [\text{Earn}_{t+1} - \gamma_0 - \gamma_1^* \text{Accrual}_{st} - \gamma_2^* \text{CashFlow}_{st}] + u_{t+1} \quad \textcircled{2}$$

	Coef.		Std. Err.	
	HIH	LIH	HIH	LIH
γ_1	0.682	0.520	0.032	0.094
γ_1^*	0.842	0.933	0.069	0.053

Notes:

1. Table 2 reports the result of the Mishkin test.
2. Earn is net income scaled by average total assets.
3. R is the one-year-ahead size-adjusted return, measured as the difference between a company's 12-month buy-and-hold returns and the buy-and-hold return for the same 12-month period on the market-capitalization-based portfolio decile to which the firm is assigned.
4. γ_1 and γ_2 are the indicators to forecast the persistence of accruals and cash flows in the next year.
5. γ_1^* and γ_2^* are the indicators for market estimations.

Table 3**Returns for Portfolio Based on Accruals Trading Strategy**

Portfolio	R	
	HIH	LIH
Lowest	0.061	0.070
2	0.003	0.044
3	-0.007	-0.022
4	0.032	0.006
5	-0.038	-0.009
6	-0.029	-0.046
7	0.027	0.004
8	-0.002	0.006
9	-0.012	-0.023
Highest	-0.004	-0.032
Hedge	0.065	0.102

Notes:

1. Table 3 presents mean abnormal returns by the level of institutional holdings.
2. The samples are divided into ten groups by their size of accruals.
3. R is the difference between stock's buy and hold return and the average return on a size-market-capitalization matched portfolio.
4. The trading strategy is to take a long position of stocks with the lowest accruals and a short position of stocks with the highest accruals.

Table 4**Yearly Level of Investor Sentiment**

$$\text{Sentiment}_t = -0.538\text{CEFD}_t + 0.504\text{TURN}_{t-1} - 0.426\text{RIPO}_{t-1} + 0.525S_t$$

Year	CEFD	TURN	RIPO	S	Sentiment
2001	0.62	-0.38	1.51	0.03	-1.15
2002	0.74	-0.79	0.00	-0.24	-0.92
2003	0.91	-1.20	-0.03	-0.43	-1.30
2004	1.13	-1.31	-0.54	-0.94	-1.53
2005	1.23	-1.45	0.26	-1.80	-2.45
2006	0.93	-0.86	2.44	-1.54	-2.78
2007	0.78	0.05	0.87	-0.34	-0.94
2008	-0.02	0.55	0.05	-0.21	0.16
2009	-0.66	1.18	-0.60	0.04	1.23
2010	-1.16	1.49	-1.02	1.00	2.33
2011	-1.04	1.20	-0.91	1.38	2.28
2012	-1.23	0.67	-0.89	1.30	2.06
2013	-1.28	0.55	-0.60	0.94	1.71

Notes:

1. Sentiment is the composite sentiment index (Baker and Wurgler [2006,2007]).
2. CEFD is the closed end fund discount of the year.
3. TURN is the share turnover of the current year.
4. RIPO is the first day returns of IPO companies.
5. S is equity share of new issues.

Table 5

Regressions of One-Year-Ahead Size-Adjusted Returns on Investor Sentiment, Accruals and Other Predictors of Returns

$$\text{Rawreturn}_{it+1} = \beta_0 + \beta_1 \text{Accruals}_{it} + \beta_2 \text{IS}_{it} + \beta_3 \text{Accruals} \times \text{IS}_{it} + \beta_4 \text{Size}_{it} + \beta_5 \text{BM}_{it} + \beta_6 \text{Beta}_{it} + \beta_7 \text{EP}_{it} + \beta_8 \text{Leverage}_{it} + \xi_{it+1}$$

	HIH (1)	LIH (2)
Accruals	-0.186	-0.561
	0.093	0.004
IS	-0.069	-0.048
	0.007	0.043
Accruals×IS	-0.018	0.416
	0.922	0.069
Size	0.421	0.433
	0.000	0.000
BM	0.138	0.059
	0.001	0.082
Beta	-0.441	-0.541
	0.000	0.000
EP	0.183	0.233
	0.430	0.247
Leverage	0.072	0.043
	0.091	0.262
Intercept	-9.130	-9.355
	0.000	0.000
Year and Industry	Yes	Yes
Adjusted R-squared	0.128	0.160

Notes:

1. Rawreturn is the difference between stock's buy and hold return and the average return on a size-market-capitalization matched portfolio.
2. Accruals = earnings – net operating cash flows.
3. IS is a dummy variable of investor sentiment, 1 for positive sentiment and 0 for negative sentiment.
4. Accruals×IS is cross-variables to measure the difference of excess returns in different sentiment periods.
5. Size is the natural log of the market value of equity at fiscal year end.
6. BM is the equity ratio of book value to market value.
7. Beta is a market risk factor.

8. EP is the earnings-to-price ratio at fiscal year end.
9. Leverage is debt-to-asset ratio.

Table 6**Regressions of Accruals on Investor Sentiment and Other Predictors**

$$\text{Accruals}_{it} = \beta_0 + \beta_1 \text{Sentiment}_t + \beta_2 \text{DIndividual}_{it} + \beta_3 \text{Sentiment}_t \times \text{DIndividual}_{it} + \beta_4 \text{Accruals}_{it-1} + \beta_5 \text{Leverage}_{it} + \beta_6 \text{BM}_{it} + \beta_7 \text{Loss}_{it} + \beta_8 \text{CFO}_{it} + \beta_9 \text{Industry}_{it} + \xi_{it}$$

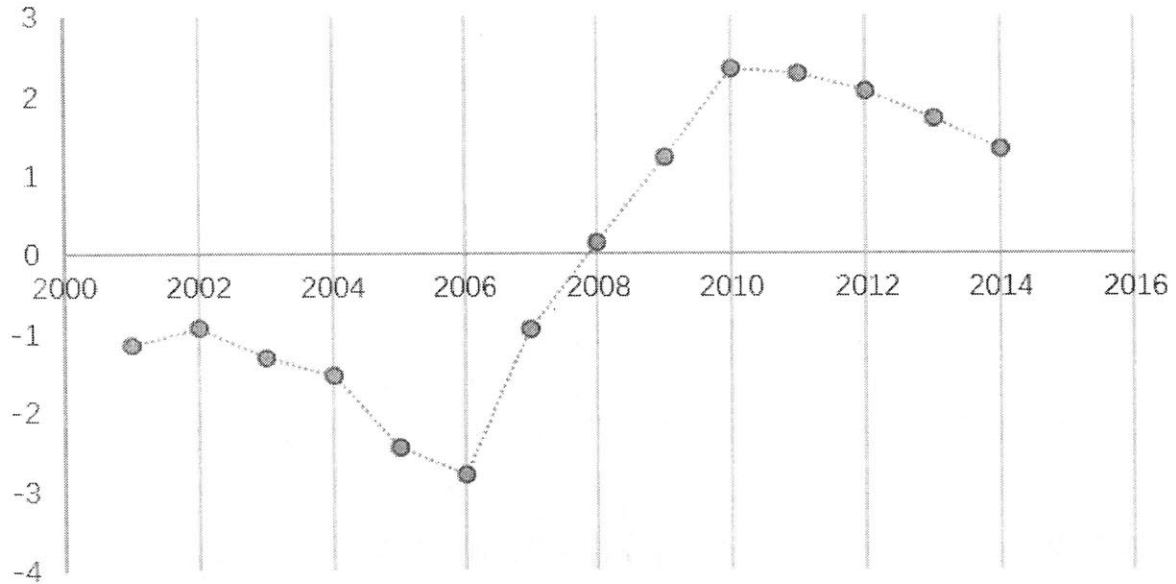
Variable	Coefficient	P-value
Sentiment	0.004	0.005
DIndividual	-0.013	0.000
Sentiment×DIndividual	0.004	0.004
Accruals	-0.001	0.856
Leverage	-0.134	0.000
BM	0.029	0.000
Loss	-0.104	0.000
CFO	-0.806	0.000
Industry	-0.004	0.000
Intercept	3.036	0.000
Adjusted R-squared	0.473	

Notes:

1. Accruals = earnings – net operating cash flows.
2. Sentiment is the composite sentiment index.
3. DIndividual is a dummy variable for institutional holdings, 1 for LIH companies and 0 for HIH companies.
4. Sentiment×DIndividual is a cross-variable to measure the accrual difference in different sentiment periods for small companies.
5. Leverage is debt-to-asset ratio.
6. BM is the equity ratio of book value to market value.
7. Loss is a dummy variable, 1 for profitable companies and 0 for unprofitable companies.
8. CFO is net operating cash flows.
9. Industry are dummies representing industry categories (high-tech firms, utilities, general services, etc.)

Diagram 1

Yearly Level of Investor Sentiment



This diagram shows the level of investor sentiment from 2001 through 2013. In this paper investor sentiment is a yearly composite index of four market characteristics, namely closed end fund discount, share turnover, IPO returns and equity share of new issues, based on the model developed by Baker and Wurgler (2006, 2007).