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THE INFORMATION CONTENT OF QUARTERLY FINANCIAL REPORTS: EVIDENCE FROM CHINA

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ABSTRACT

This study investigates the information content of listed companies' quarterly financial reports in China. The purpose of the study is two-fold. First, the study investigates whether the quarterly financial reports of listed companies in China have information content. Second, using the empirical results, the study further to define which market efficiency that China's stock market belongs to.

The sample includes 300 listed companies in Shanghai and Shenzhen Stock Exchange. The data consist of daily stock prices of the 300 listed companies in event window, daily stock indices in Shanghai and Shenzhen, quarterly EPS and ROE disclosed in the financial reports. The data period is from 2002 to 2008. The empirical findings indicate that: 1) The abnormal returns and cumulative average abnormal returns before and after the announcement of quarterly financial report change obviously, which mean that the quarterly earning reports have information content in Chinese A-share market. 2) By analyzing unexpected earnings which classify as favorable news and unfavorable news, the empirical results indicates that market may react to different accounting earnings information separately; meanwhile, the market's reaction to unfavorable news is stronger than favorable news. 3) At the annual inspection, earnings response coefficients enhances significantly, this proves that investors in A-share market pay more and more attention to accounting earning of listed companies. 4) The empirical results tend to indicate that the Chinese A-share market is basically under the state of semi-strong efficiency, or at least, under an effective process from weak efficiency to semi-strong form efficiency.

KEYWORDS: Information content, Effective market, Listed companies, Quarterly report

1. INTRODUCTION

The information disclosure system plays an important role in security market; the core content of information disclosure is accounting information. In recent years, with the increasing numbers of listed companies in China, the information disclosure system of listed companies standardizes progressively, meanwhile, the quarterly financial report gradually becomes an important composition of the information disclosure system. The quarterly report can provide investors timely management status of listed companies, investing decision information and the predicting information of next period's earnings. With the implementation of quarterly report disclosure policy, the analysis of quarterly report becomes more and more important to investors. Therefore, the market reaction to earnings information of quarterly financial report is worthy to study.

1.1. The Background of the Study

Since the Chinese security market was established in 1990, despite the considering short period of development, it has reached great achievement in constructing information disclosure system of listed companies. The system becomes more and more scientific and rational, and the actual legislation has been basically in line with international standards. However, sufficient information and disclosure norms are necessary condition of idealized securities market. The degree of rational market also affected by other factors, these factors is reflected in the investor's own investing principle, the degree of market's rationality increases as the number of rational investor increases. The so-called rational, with the corresponding speculative, means any decision making to maximize the benefits are wholly or mainly based on scientific theories and objective facts. For a rational investor, the target company's operating performance should be the focus of concern. Financial and accounting information, as the most intuitive operating performance of listed companies to reflect company's status, becomes an important reference for decision-making.

In 2001, China Securities Regulatory Commission formulated the rules about the contents and format of quarterly report. From the first quarter of 2002, all listed companies are compulsory to prepare and disclose quarterly reports. From the aspect of timeliness of accounting information, the quarterly reports, reflecting a listed company's business performance in a shorter period, is no doubt that provides the

most timely information to grasp the company's financial position and operating results for investors. Compare with annual reports and interim reports, quarterly reports speed up the frequency of information disclosure, stressed the importance of timeliness and flexibility, which makes quarterly reports more reliable than annual reports and interim reports in forecasting company's performance. Quarterly financial reports as an important element in stock market information disclosure system, not only provides information to management in decision-making in order to achieve rational resource allocation; but also provides information to investors in forecasting, comparing and evaluating the future profitability of enterprises. Further more, via the analysis of quarterly financial reports, investors may gain information related to company's development trend, competitiveness, thus to calculate the return on investment, evaluate the risk, and compare the risk and benefit with other companies and determine their own investment strategy.

1.2. The Purpose and Significance of the Study

Establishing at the beginning of 20th century, the regulation and supervision of accounting mainly focus on how to calculate assets, liabilities, equities and surplus accurately; this concept assumes that certainty is dominant in the real world; uncertainty is accidental, on the basis of that to measure economic gains. Further, the concept also supports that accounting information is not related to stock price fluctuation. While some scholars have expressed their doubts, but due to the defects of research methods, resulting at one time this view was dominating over the academic circles. Only until 1968, with convincing evidence, Ball and Brown were the first to prove that information content exists in the figures of accounting earnings from the aspect of market's reaction. Thus, the information content or information flow has become the main viewpoints of accounting research: the formation of stock price is based on the acknowledgment of certain characteristics of the stocks, and new added or special information may change such acknowledgment, thus to change the stock price.

Whether the announcement of accounting earnings has an impact on stock prices, in other words, whether information content exists in accounting figures has become a popular subject. Many scholars made large number of empirical studies on information content of annual reports to answer this question. The results show that the release of annual reports may cause the reaction of market, annual financial reports provides useful information in investment decision making. However, due to

the late start time of quarterly reports of China's listed companies, so the domestic literature research of quarterly report is very limited. Besides, the figures of quarterly reports have a prominent characteristic of that they depends on accounting estimates to a large extent. Accounting estimates, approximation of a financial statement element are often included in historical financial statements because some measurements or figures are uncertain pending outcome of future events. Due to the excessive use of estimate in preparing the quarterly reports and lacking of effective audit, (since quarterly report can skip the external audit) therefore, an analysis of quarterly report is particularly important to investors before using quarterly report as guidance in decision making. China's securities market as an new emerging market is in a rapid development stage, the accounting standard of listed companies continue to be refined, which has an enormous impact on the usefulness of disclosed information in quarterly report. To reveal the impact of disclosed information in China's listed companies' quarterly financial reports to stock prices and stock returns is the research problem of this paper.

Market efficiency is the foundation of relationship between disclosed information and stock returns. In an efficient stock market, stock prices reflect all relevant information timely. Before the announcement of earnings information, the listed companies' stock prices change with companies' operating performance, investors who focus on the companies' operating performance may benefit from the transaction; after the announcement of earnings information, the stock prices tends to be stable, any investors are impossible to use the announced information to obtain abnormal return in transaction. On the contrary, in a non-efficient stock market, stock prices are not able to reflect all relevant information. Therefore, before the announcement of earnings information, the changes of stock prices are not related to the companies' operating performance; after the announcement of earnings information, the stock prices fluctuate sharply; investors may use the announced earnings information to obtain abnormal return in the transaction.

To study the relationship between accounting earnings information and stock prices movement has great significance in regulating the stock market, analyzing investors' behavior. First of all, stock market efficiency is an important indicator to measure the level of openness and fairness of stock market, but also important to evaluate the efficiency in allocating funds. Secondly, the study of relationship between stock price movement and earnings information can reflect whether investors really care about the operating performance of listed companies, reflect the level of investors'

rationality. Third, regardless of whether stock market is efficient, the study of relationship between stock price movement and earnings information has practical significance in guiding investors' decision making.

1.3. Hypothesis

Hypothesis 1: If quarterly financial report has information content, then before and after the disclosure of the quarterly earnings information, the stock prices of listed companies would change also.

The Ball and Brown (1968) method is applied to ascertain the effect of stock price changes at the time of earnings announcements. It has been widely accepted that earnings announcements are significantly related to abnormal stock returns and abnormal variability of stock returns. Comparing the change of each individual stock's abnormal returns (obtained from daily return excluding average market return) before and after the disclosure of quarterly report in event period, it is possible to reflect the information content in the quarterly report. Moreover, the changes in the relationship between earnings disclosed in the quarterly report and the abnormal returns may also reflect the information content in the quarterly report. This research will use both methods to study the information content in the quarterly report, thus to evaluate the market efficiency of Chinese stock market.

To external information users and general investors, they may acquire information about assets mainly through the balance sheet in which they can have a basic understanding of preservation of capital, financial condition, property rights and solvency. Combining the income statement and cash flow statement, investors may obtain more information related to the profitability of assets, operational capacity of assets, further more, investors may also evaluate the management performance and value of companies, thus to make accurate investment decision.

However, the fact is that, the most concerned information to investors is about: 1) the information related to how are companies able to meet the set objectives; 2) the information of existing assets of companies that can be compared with the past and reveal the reasons for changes in the assets; 3) the information of the available resources for companies on corporate development plans and future development. It can be seen that, the most concerned information to investors is the core information

for the assets, value creation, the future growth to companies, as well as future long-term competitiveness, capacity of survival and future financial information. From the time length of disclosure, annual reports, semi-annual reports, quarterly reports and temporary reports, the willingness of listed companies is declining. From the content of disclosure, listed companies are not willing to disclose financial information related to future business risk and reward. Urgent need of investors and companies' attitude of "not willing to disclose" cause the imbalance between supply and demand of information.

Despite of the companies' attitude, information content of accounting earnings refers to a change of the distribution of stock returns; if the conditional distribution of stock returns under a group of information is different from the distribution without the group of information, then the group of information is thought to have information content. If the stock prices movements prove the information content of accounting earnings, then lager prices changes mean that accounting earnings have more usefulness.

Hypothesis 2: If China's security market is at the semi-strong form efficiency, analysis only based on known public information is not able to gain any superior returns. Since the available information have been absorbed, the current stock prices are accurate and proper, there is no link between future prices and current known public information; the change of prices is purely dependent on the new future information. So, without the undisclosed future information, the best predictive value about future prices is the current prices.

Further, technical analysis is not that convincing. From the market efficiency theory, the fluctuation of stock prices is matched with random walk model. Historical prices only including historical information; to the premise of technical analysis to set up that history is repeated, historical prices includes all information is an enormous challenge. While most empirical studies on technical analysis prove that, though technical analysis may bring superior returns to investors, the superior returns is under the circumstance of without taking trading cost into consideration. So, whether technical analysis can generate superior returns is questionable. Besides, to individual investor, the investment costs spent in a market with low efficiency are very high; the costs including all direct expenses on trading, information cost and opportunity cost.

Taking the costs into consideration, in a less efficient market, the actual return receives by investor is much less than the original expectation.

Hypothesis 3: If size effect occurs in China's security market, obvious difference can be seen through the comparison between Shanghai Stock Exchange and Shenzhen Stock Exchange, because that the average companies' size in Shanghai Stock Exchange is larger than companies from Shenzhen Stock Exchange.

Kothari and Ball (1991) investigated whether cross-sectional variation in announcement-period risks and return is a function of firm size, which is a proxy for the increase in information arrival during earnings announcement periods. The evidence reveals that, after controlling for risk increases, abnormal returns are positive and decreasing in firm size.

1.4. Previous Studies

With the rapid development of securities market in China, the listed companies' financial strength, and operating results are more and more reasonably reflected in the stock prices. So whether practical or theoretical circles have started to study the relationship between information disclosure of listed companies and stock prices changes; especially the relationship between accounting information and stock prices. Accounting information will play an increasingly important role in redistribution of social resources and funds. Ball and Brown (1968:160-161) indicated that if information is useful in forming capital asset prices, then the market will adjust asset prices to that information quickly and without leaving any opportunity for further abnormal gain. Further, if security prices do in fact adjust rapidly to new information as it becomes available, then changes in security prices will reflect the flow of information to the market. The implicit assumption in the statement is that the market is efficient and unbiased. In an efficient market, all historical information has been reflected in stock prices, so if earnings information do have information content (new information), it will lead to adjustments of investors' expectation in stock returns in the future; and the market will make unbiased rapid response. Ball and Brown's finding is the first systematic evidence of that accounting information does have information content since the establishment of equity market.

1.4.1. Reviews of International Researches

In the security market of developed countries, the theories and empirical studies of relationship between earnings information and stock price, and the efficient market has made significant progress. In theory, there exist two different assumptions. MacNeal (1939) claimed a “direct mechanical” relationship between accounting earnings and stock price. That is, if the announced earnings is positive, stock price will rise, conversely, stock price will fall. Ball and Brown (1968), Jones and Litzenberger (1970), in their empirical studies of the relationship between accounting earnings and stock price, the results indicated that the relationship is “synchronized” instead of “direct and mechanical”. That is, before the earnings announcement, the market has fully expected the operation of listed companies, so if the change of earnings is positive, the accumulated abnormal return is positive; if the change of earnings is negative, the accumulated abnormal return is negative. However, after the announcement of earnings information, the accumulated abnormal return has been stabilized unchanged. In other words, the change of abnormal return occurred before the announcement, rather than after. This conclusion is coincided with the market efficiency theory, thus to support the market efficiency theory. Beaver (1970), Brown and Kennelly (1972) used annual financial reports, half-year financial reports and quarterly financial reports to test the relationship between accounting earnings information and stock price, similar conclusions were made. This series of research findings is strong evidence of that the U.S. stock market can timely, rapidly and fully reflect the profitability information of the listed companies, and it had already reached the semi-strong form efficiency.

Since the 1960’s, the researches about the usefulness of accounting information of listed companies is in full swing. The study first launched by Ball and Brown, their research in 1968 was recognized as the pioneer in the field. They selected 261 listed companies in New York Stock Exchange; data period from 1957 to 1965. They made empirical research on the stock prices 12 months before and 6 months after the annual accounting earnings information was disclosed, using cumulative average abnormal return (CAAR) to reflect the impaction of accounting earnings and operating income (alternative indicator of cash flow) to stock prices. The results indicated that: 1) compared with the current accounting earnings, a lower correlation is between current cash flow and CAAR. 2) From 1957 to 1965, positive earnings is related to positive stock prices changes, the other hand, negative earnings is linked with negative stock prices changes. Favorable earnings news causes 7% of the stock prices rise, while the

unfavorable news is linked to 9% of decline in stock prices. 3) Most of the accounting earnings information in the annual reports has been expected by the market before the disclosure of information, and the expectation is so accurate that abnormal performance index (API) does not fluctuate in the disclosure month. Later in 1970, Brown replaced the data sample from U.S. to Australia's listed companies by applying the same method, similar result was conducted with Ball and Brown (1968).

Beaver (1968) examined 506 events of the changes of stock prices and trading volumes 8 weeks before and after the disclosure of accounting earnings. The conclusions are: 1) in the disclosure week of annual reports (week 0), the volatility of stock prices is 67% higher than non-disclosure period, which means that the accounting earnings announcements is indeed transmitted useful information to the market; 2) the abnormal return in disclosure week is 0.5%, which is 4 times of non-disclosure period (0.125%). That is, the information content of accounting earnings can change the estimated probability distribution of investors' expectation about companies' future earnings and dividend paying capacity, thus leading to the changes of stock prices; 3) in disclosure week, the trading volume is 33% higher than non-disclosure period, which means that the disclosed information affected the investors' strategy, thus to affect the trading volumes.

Beaver, Clarke and Wright (1979) extended the research of Ball and Brown (1968). They selected the annual data of 276 listed companies from 1965 to 1974 and created 25 portfolios in accordance with the size of accounting earnings to exam the relationship between accounting earnings and stock prices. The findings are significant. There is significant positive correlation between percentage change of earnings and percentage change of stock prices; the annual average correlation coefficient equals to 0.74 and statistical significantly differs from zero. Further, the changes of stock returns are from -17.5% to 29.2%, the rate and scale are much larger and wider than Ball and Brown's finding (-9% to 7%) in 1968. It is reasonable to convince that there is an internal ratio relationship between the changes of accounting earnings and changes of stock prices.

Foster (1977) studied the usefulness of quarterly earnings. Foster first used time series analysis to establish quarterly earnings forecast model, and then studied the relationship between unexpected earnings and cumulative average abnormal return. He found out that, from 1963 to 1974, 60 trading days before the earnings

announcement (including the disclosure day), the changes of unexpected earnings is significant correlated to the changes of average abnormal return.

Entering 1980's, researchers made more use of regression analysis to study the relationship between stock returns and unexpected earnings by adopting earnings reaction coefficient to evaluate the information content of accounting earnings. Kross and Schroeder (1984) studied the relationship between release time of quarterly reports (early release or late release) and types of information (favorable news or unfavorable news), as well as the relationship between releasing time of quarterly earnings and stock returns. They found out that, earlier (later) released quarterly reports have higher (lower) outstanding characteristics of unexpected earnings. Following, they took the companies' size into consideration and concluded that, timing effect makes no difference in big or small companies. To sum up their conclusions: 1) early released quarterly earnings reports comprise favorable news; 2) comparing with late released quarterly earnings reports, early released quarterly reports have higher superior returns. No matter large companies or small companies, the earnings forecast error is positive or negative; the above conclusion is always stands.

Beaver and Dukes (1972) improved the accuracy of cash flow, using the approximation of cash flow (net profit + depreciation + amortization + deferred taxes) to study the market response to financial information; similar result was found with Ball and Brown. Another common conclusion of these two pioneering and classic study is that: comparing with current cash flow, current earnings have more predictive capability than future cash flow.

Beaver, Lambert and Morse (1980) indicated that the earnings forecasting model based on stock prices has better forecast capability than the random walk model based on the past and current earnings due to lower average errors. Further, in higher returns portfolio, the model has more forecasting advantages based on stock prices. Beaver, Lambert and Ryan (1987), Collins, Kothari, Shanken and Sloan (1994) conclude that: some factors reflected in prices are not included in accounting earnings; the relationship between present stock prices, the stock prices of previous year and future accounting earnings is very significant. Beaver, McAnally and Stinson (1997) used present stock prices and present earnings to forecast future accounting earnings at the same time, and found out that both forecast does not substitutes for each other.

Patell and Kaplan (1977) used “total operating capital” replacing “operational cash flow” to test whether “operational cash flow” has incremental information besides annual accounting earnings. The result showed that “operational cash flow” does not have incremental information at all.

Dechow, Kothari and Watts (1998) theoretically discussed the relationship between earnings and cash flow, and selected the financial data of 1337 listed companies in United States from 1963 to 1992 to conduct empirical research. The conclusion indicates that, comparing with the operational cash flow of present period, accounting earnings may forecast future operational cash flow better.

Beaver (1998) divided the mechanism of accounting earnings into three interrelated process (using stock as an example): 1) the relationship between stock prices and future dividends is that, stock prices is the discounted value of future dividends; 2) the relationship between future dividends and future earnings is that, the future earnings is considered to show the future dividends payment ability of stock. Empirical results have shown that changes in accounting earnings and dividend changes are correlated; 3) the relationship between future earnings and present earnings is that, accounting earnings can be divided into permanent and transitory, a permanent part is the expectation of future earnings.

Hazem, Utpal, Brian and Carl-Heinrich (1999) found out that shares trading in the Bolsa Mexicana de Valores do not seem to react to company news, using a sample of corporate news announcements from 1994 to 1997. They concluded that there is nothing unusual about returns, volatility of returns, trading volume or bid-ask spread in the event window. Evidence suggests that unrestricted insider trading causes prices to fully incorporate the information before its public release. Thus, the paper points toward a methodology for ranking emerging stock markets in terms of their market integrity, an approach that can be used with the limited data available in such markets.

Jeffrey L. (2004) developed and extended the Ball and Brown (1968) and Beaver (1968) measures of the information content of earnings, applying the asset pricing model of Vuolteenaho (2002). These measures of information content are further generalized to two broad cases: (1) the time series of earnings and expected future discount rates are ARMA (p,q) processes; and (2) the time series of earnings and

expected future discount rates follow a log-linear Vector Autoregressive (VAR) process.

Emanuele (2005) investigated the role of abnormal trading volumes on the Italian stock market. Abnormal volumes can be considered as a signal for informed traders operating on the stock and, as a consequence, it might lead to future extra returns. The result shows that abnormal trading volumes, associated with no new announcements, tends to predict future abnormal returns and anticipates a new information release on stock market.

Gjerde, Knivsflå and Sættem (2005) focused on the value relevance of financial statement in Norway over the 40 years period from 1964 to 2003. They provided empirical evidence on the value relevance of earnings-oriented conceptual frameworks. Their finding is that the value relevance of financial reporting for investors trading o the Oslo Stock Exchange has increased significantly over the past four decades. A significant time trend is consistent with the view that Norwegian accounting regulators and standard setters has been successful in achieving more value relevant financial statement over time.

Carlos and F. Teixeira (2008) investigated the incremental information content of a sample of 1751 quarterly financial reports, issued in Portugal between 1994 and 2004. They examined prices and volumes reactions to financial reports issued in (1) the first and third quarters, which are unaudited; (2) the second quarter, which is subject to limited audit; and (3) the fourth quarter (the annual report) which is subject to a full audit. The conclusion indicated that, the unaudited first and third quarter financial reports that include condensed income statements and balance sheets convey enough new information to the market to spur significant price and trading reactions. The conclusion holds before and after the first and third quarter reports were made mandatory in 1999. Further, the incremental information content of the second quarter report dropped after 1999, presumably because part of its information content was usurped by the newly required first quarter reports. Finally, evidence shows that mandatory audited reports announcements spur more significant price reactions than mandatory unaudited financial reports. Besides, in contrast to evidence from other countries, they found that smaller firms' disclosures do not generate a larger reaction than large firms' disclosure.

1.4.2. Review of China's Researches

Because the China's stock market is an emerging market, in the initial stage, the literature of market operating efficiency is very limited. In recent years, with reference to foreign researches on market efficiency, combining with the development of China's stock market, many scholars made researches in relevant field. Wu Shi Nong (1996) systematically expounded the efficiency theory of securities market and research methodology first time in China. He citing West's method to classify efficiency of securities market; divided the securities market into two categories: external and internal efficiency. He also classified small companies' effect into semi-strong form efficiency. But some scholars argued that the size effect is one of the anomalies, it should be included in the studies of earnings forecast. Because the company size is one of the characteristics of the company, compared with earnings, it has less direct impact to company's value, it is auxiliary factor.

Later literatures are mainly focus on the perspective of price changes to reveal the reaction of securities market to accounting information. Wu Shi Nong and Huang Zhi Gong (1997) applied Ball and Brown's (1968) model, adapting event study method to study the information content in annual earnings information of 1995. They selected 15 profit-making enterprises (EPS greater than 0.1) and 15 loss-making enterprises (EPS less than 0.1) from Shanghai Stock Exchange as research sample. The empirical results showed that, 3 to 5 trading days before the announcement of annual earnings information, cumulative abnormal returns of profit-making group began to soar, while the cumulative abnormal returns of loss-making group observed to fall sharply. After the announcement, cumulative abnormal returns still had significant changes. It can be concluded that the annual earnings information has significant information content, but it also indicates that China's stock market have not yet reached the semi-strong form efficiency. Further conclusions may be drawn that: investors do not concern the operating performance of listed companies; speculation is obvious, as well as potential information leakage is possible.

Zhao Yu Long (1998) used market model to measure expected accounting earnings and normal return of stock market. He adopted 123 sample companies from Shanghai Stock Exchange, data period from 1994 to 1996, totally 369 disclosure dates. He made empirical test on the correlation between abnormal return of stocks and unexpected accounting earnings 8 weeks before and after the disclosure date, the results confirmed that disclosed accounting earnings have information content. The

conclusion indicated that: 1) the disclosure of accounting earnings information does have impact to investors' decision making and trading activities. It is most obvious in the released week (week 0); 2) using earnings per share and return on equity as substitute variables for accounting earnings may have similar results; 3) after the disclosure of earnings information, the market still have following response. So abnormal excessive return is possible to gain, which means that, China's stock market is not in line with the semi-strong form efficiency; 4) the market over react to good news, while inadequate response to bad news. Later in 2000, he drew the similar conclusion by using regression model of CAR and different event window to study the value relevance of accounting earnings and information content. The value relevance of accounting earnings and information content increased progressively in 1994 and 1995; reached peak in 1996 and began to fall in 1997 and 1998. Further, he also took region into consideration. He found out that there are difference in value relevance of accounting information among listed companies in Shanghai and Shenzhen Stock Exchange.

Chen Xiao, Chen Xiao Rui and Liu Zhao (1999) tested the usefulness of companies' earnings figures based on the changes of trading volumes. The empirical results show that obvious increase of daily trading volumes may be observed before and after the disclosure day of companies' earnings. Near the disclosure day, the daily trading volumes is 1.5 to 1.7 times of annual average volumes. The conclusion indicated that: new information does enter market before and after the disclosure of earnings information, thus to cause the changes of trading volumes. This finding is similar with foreign researches which mean that China's stock market also has foreshadowed effect. Two weeks before the disclosure of earnings, trading volumes begins to climb, reaching the peak on disclosure day and starts to fall progressively, and back to annual average level 8 weeks after the disclosure. In the regression analysis of earnings announcement, using the abnormal return 20 days before and after the announcement date as research subjects to exam their reaction to unexpected annual earnings. The regression results indicate the foreshadowed effect, and existence of information effects. Further, they also study the usefulness of earnings report from the aspects of trading volume and stock price in China's A shares market. They confirm that in such an emerging capital market of China's A shares market; the earnings figure has a strong information content.

Meng Wei Dong and Lu Jing (2000) using regression model, large scale sample and multiple statistical testing methods to study the characteristics of annual financial and

accounting information of listed companies from the aspects of timing of disclosure, abnormal returns during the disclosure period, cumulative average abnormal returns and earnings response coefficient. They concluded that: 1) the annual reports of listed companies is effective to convey the relevant information on the status of earnings, the companies with favorable earnings figures tend to publish annual reports earlier, on the contrary, to postpone publication of annual reports. This finding is similar with foreign researches; 2) the understanding of earnings indicator stays in a low level, most investors treat nominal earning per share without equity adjustment as real earning per share, indicating that these investors are not sophisticated; while, institutional investors, even though able to distinguish the two types of earning per share, but in order to mislead individual investors and grasp the speculation opportunity, they can only pass the matter without any declarations; 3) the earnings response coefficients before and after the disclosure of annual reports indicates that there is strong market speculation, institutional investors using insider information to manipulate the market can be suspected.

Wu Shi Nong, Li Chang Qing and Chen Bi Hua (2001) selected 327 listed companies in Shanghai Stock Exchange which are listed before 1997, used relevant accounting information in 1998 and statistical methods to make an empirical research in the market reaction before and after the disclosure of accounting earnings and cash flow. Further, whether cash flow can provide incremental information in the accounting earnings based is being analyzed. The results indicate that: 1) before the disclosure of annual financial reports, the market reacts to earning per share (EPS) significantly; 2) after the disclosure of annual financial reports, the market reacts to the difference between operating cash flow per share and earning per share (OCFPS-EPS) significantly, but not react to the ratio between them (OCFPS/EPS); 3) after the multiple linear regression analysis, before the disclosure of annual financial reports, the market reacts to earning per share (EPS) significantly; after the disclosure of annual financial reports, the market reacts to the difference between operating cash flow per share and earning per share (OCFPS-EPS) significantly.

Sun Ai Jun and Chen Xiao Yue (2002) used the data of listed companies in Shanghai and Shenzhen from 1992 to 1998 to test the information content in annual reports issuing from 1993 to 1997. Differ from other researches; they used annual abnormal return as indicator to reveal the relationship between stock return and accounting earnings in a longer term. Through the regression analysis of abnormal returns and

unexpected earnings, they conclude that in China's stock market, accounting earnings impacts the stock returns significantly and significant levels continue to increase.

Lu Jing, Meng Wei Dong and Liao Gang (2002) made empirical study on 253 sample companies listed in Shanghai and Shenzhen from 1998 to 2000 The study made comparison of accounting earnings' and cash flow's impact on stock price, confirms the information content of accounting earnings. The results indicate that comparing with cash flow; earning per share can more precisely explain stock price, it has the largest correlation coefficient with stock price and is statistically significant. Investors' assessing the value of listed companies is also often limited on earnings per share; other financial indicators, such as net assets and cash flows are not in better use. However, when the market is full of political news, companies' performance and stock prices are often disjointed.

Zhang Qing Cui (2004) studied the market's response about the disclosure of periodical reports. The conclusion is drawn from the market's response in shorter period of disclosure and a longer term of disclosure: 1) the release of accounting information can cause significant reaction of trading volume, unexpected earnings and abnormal trading volume have significantly positive correlation, which support the assumption of that the disclosure of accounting earnings has significant information content. Further, comparing with semi-annual reports, investors pay much more attention in the disclosure of annual report; 2) in China's stock market, there is a significant phenomenon of ongoing adjustment after the announcement, and this phenomenon is not related to the indicators of unexpected returns.

Cheng Xiao Ke, Wang Hua Cheng and Liu Xue Hui (2005) randomly selected 100 sample companies from Shanghai Stock Exchange, making empirical study on the timing rules of disclosure; types of earnings information and timeliness of disclosure and market's response of annual earnings. The empirical results indicate that: 1) disclosed time of annual report of listed companies is trend to shorten year by year, and larger listed companies tend to disclose annual report later; 2) timeliness of annual reports' disclosure and types of earning news (favorable or unfavorable) is closely related; 3) timeliness of earnings disclosure impacts the market's response coefficient significantly.

Ning Yu (2006) made empirical study on the information content of semiannual accounting announcement, tried to reveal the market's response to semiannual earnings information and cash flow. The conclusions are that: 1) semiannual earnings have information content, and cash flow has little impact on stock price; 2) although the semiannual report may cause abnormal stock price fluctuations, but in the long term, the market reacts strongly to favorable news than unfavorable news.

Liang Jin Ping (2007) made an empirical study on information content of earnings, cash flows about Chinese listed companies. The results indicate that: 1) the accounting earnings disclosed by listed companies have important decision-making information to investors; accounting earnings of listed companies that are making profit have stronger information content, while accounting earnings of the companies with deficit basically do not have information content; 2) operating cash flow activities, investment activities and fund-raising activities in the cash flow statement may reflect certain decision-making information to investors, but under the accrual basis of accounting, the earnings indicators have certain lag, there may be operated.

1.5. Construction of the Study

1.5.1. Research Idea

The key process of the study is a two-steps procedure. First is to observe the changes of abnormal stocks returns of listed companies 15 trading days before and after the disclosure date of quarterly financial reports, which aims to reveal whether quarterly financial reports carry information content; second is to establish empirical analysis of earnings response coefficient (ERC) generated by regression analysis of unexpected earnings and abnormal returns, which aims to define the market efficiency of China's security market.

1.5.2. Structure of the Study

This thesis is divided in three parts, consisting of five chapters. The first part includes chapter one and chapter two. Chapter one is introduction of the paper, including background, purpose and significance of the study, international and Chinese

literatures reviews and research hypotheses. Chapter two supplies the theoretical foundation; including securities market efficiency, accounting earnings information and event study method. The second part which is also the core part of the paper includes chapter three and chapter four. Chapter three introduces the methodology and variables, including principles of data selection and data description, addressing the resources of data. Chapter four is empirical results of market response before and after the disclosure of quarterly financial reports; market response to different changes of earnings and regression analysis of earnings announcement effect. The third part is chapter five which draws the conclusions and research limitations for the paper.

2. THERORY BACKGROUND

2.1. Security Market Efficiency

The efficiency of the securities market generally refers to securities market regulation and the efficiency of allocating funds, that is, whether the stock market can allocate the funds to the enterprises that may use the funds efficiently. West (1975) broke allocative efficiency down into two more manageable concepts: external efficiency, that is, how well stock prices reflect information; and internal efficiency, how costly it is to operate the market.

2.1.1. External Efficiency

A market is externally efficient, if prices of securities reflect relevant information, and if they react quickly to reflect the effects of new information about the firm's products, its costs, its management, its dividend policy etc, thus, prices act as valid signals for resource allocation, both to investors investing in securities and to corporate managers engaged in capital formation. If the securities prices do not reflect information well, it is considered as a security market with poor external efficiency. External efficiency is also variously known as market efficiency, informational efficiency, and pricing efficiency.

In fact, there are two direct signs to evaluate whether the securities market has the external efficiency. One is that whether the price is free to vary in accordance with the relevant information; the other is that whether the securities-related information can fully and evenly distributed so that each investor may get the same qualitative information at the same time. Clearly, how the prices change, integrity and timeliness of information influence the regulation and allocative efficiency of the securities market. If securities prices are artificially manipulated and controlled, or securities-related information do not adequately disclose and evenly distributed, or both, it would be misleading the stock market capital flows and impede capital flow in the enterprises that may most effective use the funds.

2.1.2. Internal Efficiency

A market is said to be internally efficient if the costs of effecting transaction are minimized in the shortest time. Costs are defined here to include the resources spent on acquiring and processing information (time and money), as well as the obvious costs of trading. Internal efficiency reflects the efficiency of organizing and servicing function in the securities market. In a securities market with high internal efficiency, two parties of trading may accomplish the trade in possible shortest time and pay lowest trading fees as well. On the other hand, the securities market is with low internal efficiency. This concept of efficiency is also known as operating or transactional efficiency.

Also, there are two direct signs to evaluate whether the securities market has the internal efficiency. One is that the time required for each transaction. The other is the fee requited for each transaction. Obviously, time and money determine the market liquidity. If the transaction lasts too long or costs too high, or both, the securities liquidity (trading frequency, volume and speed) will be blocked, thereby affecting the speed and capacity of investor to change the portfolio according to the new information and affecting the external efficiency.

The stock market consists of two components: the primary market, where new share capital is raised, and the secondary market, where the shares subsequently trade. To attract listings, stock markets must be more concerned than ever with internal efficiency, in both primary and secondary markets, or companies will take their business elsewhere. Internal efficiency refers to the costs of performing transactions. Other things equal, companies will issue shares and investors will trade them in the market offering the best price.

To sum up, external and internal efficiency are linked, for intuitively, a market is more likely to be price efficient if it is well functioning on the operating level. Fama (1970: 387-388) expressed this notion more formally. “All markets would be externally efficient if information and transactions costs were zero and all participants held common beliefs on the implications of information.” More realistically, markets are defined as being efficient if market transactions take account of all available information (no matter how high the transactions costs may be). A “sufficient”

number of investors must have access to information, and no investor can consistently make better evaluations of the information. Efficiency is essential for capital formation; that is, the economy will not grows as quickly if the market is not efficient. Investors will be more willing to provide their funds to the market if they have confidence that their funds will invested productively. External efficiency is present if the prices paid for stocks truly reflect the underlying value and risk exposure. Internal efficiency is achieved when market frictions are minimal, so that the maximum volume of investors' funds reaches the best investment opportunity.

2.2. Fama's Three Forms of Efficiency

Fama (1965) published the paper "The Behavior of Stock Market Prices". He raised two core questions related to securities market efficiency. One is the relationship between information and stock price, that is, how changes of information causes the changes of stock price; the other is types of information related to stock price, that is, different information influences stock price in different degrees.

First of all, in a security market, investors are always collecting information related to securities, including domestic and international political, economic dynamics, industry developments, the companies' operating and financial situation and development prospects and so on. Following, investors will quickly deal with relevant information by all means, thereby to determine the reasonable price of the securities, the returns and the degree of risk more accurately. Although investors may use different methods to do fundamental analysis, different opinions might come from the same information, which make different investment decisions. Some people overestimate the prices, some people underestimate the prices. However, nobody is able to control the market, so, if all investors are rational, the difference of their analyzing methods and investment opinions can not affect the developments trend of stock prices, but only caused random fluctuation of stock prices. Therefore, in an efficient market, information is equal to each investor, so any investors can not gain superior returns through information processing. Secondly, different information effects on prices varying from degrees, which reflects the level of securities market efficiency varies from different types of information. So, Fama (1965) divided the securities-related information into three categories: historical information, public information and internal information, thus to define three forms of market efficiency.

(1) Weak form efficiency (how well do past returns predict future returns)

It is the lowest level of Fama's efficient market hypothesis. If the historical securities information, such as prices, transaction volumes, etc. has no effect on changes of securities prices, then the market has been achieved the weak form efficiency. Otherwise, it is still under weak form efficiency. It is because of that: if the historical information is not relevant to explain the current and future securities prices or returns, it is convinced that the value of the historical information has been used by investors in the past, and the historical information has been fully disclosed, distributed and used. Technical analysis cannot be used to predict and beat the market. Further, any investors can not obtain the superior returns by analyzing the historical information in any methods. However, in a weak form efficiency market, it does not mean that investors may not gain certain profit, on average, any return acquired by the investment strategy of using the historical information can not be more than the return of "simply buy and hold" strategy.

(2) Semi-strong form efficiency (how quickly do security prices reflect public information announcements)

A middle class of EMH that implies all public information is calculated into a stock's current share price. If any public information (periodic reports, announcement of listed companies etc.) has no impact on the changes of securities prices, or, prices has already reflected all public information fully and timely, so the market is with semi-strong efficiency. Otherwise, if public information may still affect the securities prices, it shows that the public information is not reflected in the prices timely yet, and the market is not achieving semi-strong efficiency. In one completely free competition market, adjustment of prices is depended on changes of demand and supply. Before the new information is published, securities prices are basically in balance. Once the new information is released, prices will make self adjustment with new information. More even and quicker the information is released, securities prices adjust more rapidly; otherwise slower. If every investor simultaneously grasp and use public information to make investment decision, any investors can not gain any superior return by analyzing the public information in any methods. Or, neither fundamental nor technical analysis can be used to achieve superior gains.

(3) Strong form efficiency (do any investors have private information that is not fully reflected in market prices)

It is the strongest version of market efficiency. It states all information in a market, whether public or private, is accounted for in a stock price. No any kinds of information may affect the stock prices. Not even insider information could give an investor the advantage, profit that exceeding normal returns cannot be made, regardless of the amount of research or information investors have access to. In stock market, there always has a small number of people (top managers) have grasped unreleased information; if anyone may use this kind of unreleased information (insider information) to make profit in stock market, then the market is not achieving strong form efficiency.

(4) Rename of the three categories

Since the efficient market theory has been put forward, numerous empirical studies attempt to determine the valid efficiency of a particular market, as well as what the efficient level it belongs to. Although many studies show that some markets are effective at a certain extent, but opponents never stop arguing. Because a precondition for the strong version of the hypothesis is that information and trading costs, the costs of getting prices to reflect information, are always zero. (Grossman and Stiglitz, 1980) Further, since there are always truly positive information and trading costs, the strong version is destined to failure. However, the efficient market theory is about that how it improves the ability to describe the time-series and cross-section behavior of security returns. For a more accurate description of market efficiency theory, it is necessary to re-exam and describe the theoretical definition of effective market. Fama (1991) changed the traditional weak form, semi-strong form and strong form efficient market, the efficiency of three levels classification into three new categories: test for return predictability, event studies and private information. It can be seen from Fama's new description of market efficiency, he tried to avoid the definition of market efficiency, and focus on studying the stock market behavior patterns. If the return can be accurately forecast, no matter the information is the historical information, public information or internal information, as long as they can accurately predict in long lasting term, then this prediction model may arise from the discovery of effective market research. Therefore, research of effective market and research of market behavior patterns are almost identical. Put it in a simple way, it is more concerned about what the results of efficient market theory may produce. Research of validity of market efficiency should be the research of market behavior which includes the relevant historical, public and internal information, rather than limited to the test of validity on the market efficiency. Market behavior and information effect can be described and tested market efficiency already.

2.3. Information Content of Accounting Earnings

Earnings information indicates the company's operating performance, it is critical to investors who use earnings information to invest. In economic theory, the company's accounting earnings information is understood as information that can influence the resource allocation. Disclosure system of accounting information has been healthily developed in Chinese stock market, accounting earnings is directly linked to capital investment decision-making. In addition, because of the political guidance, such as the identification of company listing, the identification of shares placement eligible, special treatment and delisting, or other important issues are related with earnings. Since the last decades of the formation of capital markets, accounting earnings information, particular the usefulness of accounting earnings in decision-making become one of the most concerned information to investors gradually.

Information content of accounting earnings refers to a change of the securities returns' distribution; if the conditional distribution of securities prices under a group of information is different from the distribution without the group of information, then the group of information is considered to have information content. Ball and Brown (1968) pointed out that, the changes of stock prices can be observed after the release of earnings information prove that the information reflected in the earnings figures is useful. If the information in financial reports can lead to the possible distribution changes of variables concerned by information recipient, so certain messages have been delivered via the information. Such possible distribution changes will cause the information recipient to take action. Therefore, if any behavior (such as changes of stock prices or trading volumes) is creditable to the information, then such information can be defined with information content.

If the stock prices movements prove the information content of accounting earnings, then lager prices changes mean that accounting earnings have more usefulness. Therefore, it is possible to evaluate the usefulness of earnings via the relevance between stock returns (price changes) and accounting earnings. In other words, if earnings information is very important for investors, then, earnings information will have considerable explain to the price changes near the earnings announcement date.

In capital market, earnings information has always been the focus of investors; it can adjust the allocation of resources of capital market, so, earnings information is the

most fundamental, also the most important factor for investors who are investing in stock market. In securities market, if the companies' stock prices can timely response to the companies' earnings information, the prices will behave as: companies with favorable earnings information, their stock prices starts to rise before the release of earnings information, after the announcement date of annual reports, investors already can not obtain superior returns through purchase these companies' stocks; similar, companies with unfavorable earnings information, their stock prices starts to fall before the release of earnings information, after the announcement date of annual reports, investors could not obtain superior return by short selling these companies' stocks. But, the premise is that the market is an effective market.

2.4. Event Study Method

If securities prices reflect all currently known information, then the changes in the prices must reflect some new information. Event study, as an experienced financial research method, it enables observers to assess the influence of certain events or information to stock prices. It is an analysis about the specific behaviors of research subjects before and after an event has occurred over a period of time (window of time). In financial market, research subjects usually are returns of financial assets, through the inspection of changes of returns before and after the event to examine the market efficiency.

Event study is focus on the inspection of market reaction, rather than precisely measure the event itself. This method may solve the problem of that, the existing information in the test of market efficiency, as well as the effect of information are difficult to be precisely measured. That is, as long as the method can measure the market reaction, then the method is acceptable. For instance, in inspecting the market reaction of public information, abnormal returns may be calculated via different models. Although the results might different from each model, but as long as the difference is far less than the abnormal returns generated by the information itself, it will not have much impact on the investigation of market reaction of public information by using event study method.

Event study method has become a widely accepted tool that to measure the economic impact of a large number of events. The usual strategy is to estimate the abnormal return in the period during which new information of stock is released in the market,

and abnormal fluctuation of stocks prices attributed to new information. An issue that makes event study become complex is the information leakage. Under the circumstance of information leakage, stocks prices would start to rise days or weeks before the official announcement of the information (assume the information is favorable). So, the abnormal return at the period is a relatively rough indicator of the released information's effect. A better indicator is Cumulative Average Abnormal Returns-CAAR, that is, the sum of total abnormal returns during the event period. In this way, when market reacts to new information, CAAR covers all changes of specific stock during the period.

3. METHODOLOGY AND DATA

3.1. Methodology and Variables

3.1.1. Review of Methodology

Ball and Brown (1968) are the first scholars gave convincing evidences to prove that stock prices of listed companies will react to the information content in financial reports. In an effective capital market, reaction of market to information is immediate, unbiased, that is, once the information is disclosed, investors will achieve certain consensus, so the stock prices may quickly adjust to a new equilibrium level. If price fluctuations may be observed before the official announcement date, it suggests that investors concern on the performance of listed companies and make new expectation on the value of the shares. If stock prices still fluctuating after the announcement date, there are two possible explanations: one is that, some important information related to performance of listed companies are not disclosed in the announcement, but later, the undisclosed information are delivered into the market via other channels; the other situation is that the market's response has a certain lag, that is, the distribution of information among investors is uneven, or because of information distortion, investors are hesitant to the information disclosed.

There are many methods to study the reaction of stock prices to earnings announcements, but still, it can be concluded in three main methods:

1) Analysis of stock price volatility, like the research on reaction of stock trading volume to earnings announcements, this approach is simple and intuitive, there is no need to estimate the difference between actual and expected earnings—unexpected earnings. The square of abnormal returns during the announcement period divided by the variance of abnormal returns in non-announcement period to gain ratio R. If there is abnormal stock prices volatility during announcement period, so R should significantly higher than 1. Beaver (1968) used data of 143 listed companies in New York Stock Exchange, made empirical study of R in announcement period. The results indicate that, in announcement period (week 0), stock prices fluctuation is approximately 67% higher than average level of non-announcement period; two weeks (week 1 and 2)

after the announcement period, abnormal stock prices volatility can still be observed (5%-10% higher than average level of non-announcement period). It suggests that the announcement of accounting earnings is indeed transmitted decision-making related information to the market.

2) Analysis of Cumulative Average Abnormal Returns-CAAR. The principle of CAAR is: if earnings announcement carries information content, a significant increase of CAAR can be observed near the announcement date; if market's response to information is unbiased, CAAR should maintain in a certain level after announcement date. Applying market model, Ball and Brown (1968) used 261 listed companies in New York Stock Exchange as research subjects, data period from 1957-1965, to calculate the CAAR 12 months before announcement period (month 0) and 6 months after announcement period. They found out that there is a strong correlation between the sign of unexpected earnings and CAAR, thus to conclude the famous statement of that earnings figures have information contents.

3) Analysis of regression. The regression is done via Earnings Response Coefficient-ERC. ERC is the estimated relationship between equity returns and the unexpected portion of companies' earnings announcements. A portion of changes in a company's stock price is expected to result from changes in the relevant information available to the market. The ERC is an estimate of the change in a company's stock price due to the information provided in a company's earnings announcement. Lev Baruch (1989) summarized the similar researches using ERC in 80's. Although the samples period in the researches was varied from 50's to 80's and calculating method of expected earnings was different, the empirical results were similar. That is, these researches all support the hypothesis of earnings information is useful, but the explanation of unexpected earnings to abnormal returns is limited in low level, and even increasing explanatory variables would not improve the regression results. Entering 90's Ball and Kothari (1991) using CAAR and multiple regression analysis to find out that, given the changes of risk, abnormal returns is positive correlated with unexpected earnings and negative correlated with company size.

3.1.2 Introduction of Methodology and Variables

According to the above review, this study would adopt the last two methods to make empirical study of information contents in quarterly reports on China's stock market. In this study, announcement period is defined as 31 days, that is, the disclosed date of quarterly financial report is defined as day 0, then 15 days before and after the day 0. If disclosed date is not trading day, then the first trading day after disclosed date of quarterly financial report becomes day 0 automatically.

Abnormality of stock prices before and after the announcement of quarterly earnings report is used to test the information contents of earnings information. Market Model is used to calculate abnormal returns of stocks, while actual return of stocks can be obtained from daily stock prices, calculating formula is:

(1) $R_{i,t} = \ln(P_{i,t}) - \ln(P_{i,t-1})$

Where: $P_{i,t}$ is the closing price of stock i at day t; $P_{i,t-1}$ is the closing price of stock i at day t-1.

The theoretical basis of market model is that the return of any securities in the market is correlated with the return of market portfolio; the correlation is a linear relation. By observing the stocks prices before and after the disclosed date, market model is able to reveal whether any abnormal returns are due to certain events. Market model is able to exclude the market factors that can affect the stock prices, and show the companies' specific information effects in the residual item. Thus, market model is wildly accepted and used in studying the impaction of specific events to companies' stock prices. So, to any single stock in the market under the market model, there is:

(2) $R_{it} = a_i + \beta_i R_{mt} + u_{it}$

Where: R_{it} is the return of stock i in day t; R_{mt} is the return of market portfolio in day t; a_i is the intercept of linear relation, a constant value; β_i is the slope of linear

relation that measures the systematic risk of stock i (sensitivity of stock i to R_{mt});

u_{it} is the residual item, u_{it} ~N (0, S^2), S^2 measures the unique risk of stock i.

In practical applications, a general stock index is selected as the return for the market portfolio. Because of the huge price volatility in China's stock market, the stock returns series have the characteristics of excess kurtosis and heteroscedasticity, thus to cause the bad efficiency of parameter estimation based on market model. In order to improve the estimation, GARCH model is used to modeling on residuals series. That is:

(3) $$S_{it}^2 = w + au_{it-1}^2 + \beta S_{it-1}^2$$

Through equation (1) and (2), the conditional volatility which represents the time-varying heterogeneous volatility of stock i can be obtained. It measures the unique risk that is related to companies; while in event windows, if heterogeneous volatility varies in large scale, it is accepted that companies' event information cause impaction on heterogeneous volatility.

The difference between actual return and expected return is abnormal return (residual item). So, abnormal return of stock i in day t is calculated via:

(4) $$u_{it} = AR_{it} = R_{it} - (a_i + b_i R_{mt})$$

Average abnormal return of n stocks at day t is:

(5) $$AAR_t = \sum_{i=1}^{n} AR_{it} / n$$

CAAR of event window (t_1, t_2) from day t_1 to day t_2 is:

$$(6)\quad CAAR_{t_1 t_2} = \sum_{t=t_1}^{t_2} AAR_t$$

There are four common methods used in estimating expected earnings (time series model, index model, and random walk and analyst forecasts). Due to the late formation of China's stock market, time series sample data of quarterly earnings is less than five, thus it is not realistic to use time series model; the lack of generally accepted data and cases of analyst forecasts restricted the usage of forecast model. Further, analyst forecasts issued before earnings announcements are associated with new information to the market, but immediate post-announcement forecasts are not. On the other hand, when estimating the unexpected earnings, the effect of random walk is considerable, moreover, random walk has better results in estimating unprofitable news (minus sign of unexpected earnings) than index model. Thus, naive model of random walk is used to estimate expected earnings, where expected earnings are simply earnings for the corresponding quarter from the previous year; that is, using the actual quarterly earnings of pervious year as the expected quarterly earnings for the following year. Shown in equation would be:

$$(7)\quad E(Y_{i,t}) = Y_{i,t-1}$$

Where E is expectation, $Y_{i,t}$ is earnings of company i in year t; $Y_{i,t-1}$ is earnings of company i in year t-1.

Hereby, the unexpected earnings of company i in term t is the difference between earnings of current and previous term:

$$(8)\quad \Delta Y_{i,t} = Y_{i,t} - E(Y_{i,t}) = Y_{i,t} - Y_{i,t-1}$$

So the regression model can be built as follow:

(9) $AR_{it} = \alpha_i + \beta_i \Delta Y_{it} + e_{it}$

Where: AR_{it} is the abnormal return of stock i in term t; α_i is constant value; β_i is coefficient of unexpected earnings, that is earnings response coefficient (ERC); ΔY_{it} is the unexpected earnings of stock i in term t; e_{it} is the random error term.

3.2. Resources and Selection of Data

At present, Shanghai-Shenzhen 300 Index contains more than 80% stocks of China's A-share market, so in this study, the 300 stocks belonging the index are used as research sample. Because China only started requiring all listed companies to disclose quarterly financial report in 2002, so the research subject is the disclosed quarterly financial reports of the 300 listed companies in seven fiscal year, from 2002 to 2008. In order to exclude other interfering factors beside quarterly accounting information, the following principles are taken into account in the selection of sample data:

1) Because the disclosure date of the first quarter's financial report might overlap with the disclosure date of annual report, the research results may be subject to the impact of the disclosure of the annual report, so the third quarter of quarterly financial report is selected.

2) Because of the ongoing split share structure reform whose main purpose is to divide share equity and float non-tradable shares in China, the share reform program announced by the listed companies will have significant impact on the stock prices. Thus, the sample that announced the share reform program before and after the disclosure of the third quarter's financial report will be removed.

3) Under the regulation of information disclosure system, when the profit or loss figures in the financial report that is about to be published is more than $\pm 50\%$, a pre-disclosure is compulsory to made in advance. This kind of pre-disclosure of profit or loss will also have great impact on the stock prices of listed companies.

Thus, the sample that announced the pre-disclosure of profit or loss before the disclosure of the third quarter's financial report will be removed.

According to the three principles, finally, 234 samples are obtained in 2002, 242 samples in 2003, 246 samples in 2004, 180 samples in 2005, 210 samples in 2006, 223 samples in 2007 and 196 samples in 2008. Totally there are 1531 samples.

In selecting the indicators of unexpected earnings, earnings per share (EPS), return on equity (ROE), net profit, return on investment (ROI) and management forecast are quite typical indicators used in related literatures, while EPS is the most common one. In this study, EPS of listed companies and ROE are selected as the indicators of unexpected earnings. Selection of ROE is because: 1) In China, allotment shares, bonus shares are widely used; the treatment of state shares, institutional corporation shares, staff shares and public shares during delivery and allotment is different. The different treatment and operation makes that the EPS is more difficult to accurately adjust. While, choosing ROE may avoid the impact of diluting and changing shares ownership to earnings variables that are resulted from companies' behavior such as issuing new shares and allotment. Moreover, choosing ROE has direct comparability with the figure of previous year. 2) ROE is one of the main economic indicators to measure business performance under the national regulation; same with EPS, ROE is also one of the indicators that must be disclosed in financial report of listed companies. More, ROE is also one commonly used indicator by China's Securities Regulatory Commission. Thus, to investors, ROE is particular important as the representative indicator of corporate earnings in China. Through the comparative analysis between indicators is able to understand the usage preferences of investors in interpreting the earnings information of listed companies, as well as which indicator has more significant interpretation to abnormal return.

Shanghai Composite Index will be used to describe market return at the Shanghai Stock Exchange, while Shenzhen Component Index will be used to describe market return at Shenzhen Stock Exchange instead. Stock prices and indices are from website database of http://finance.sina.com.cn/. The disclosure date of the third quarter's financial report is the earliest possible date published on the newspapers that specified by China Securities Regulatory Commission. The third quarter's financial report of individual listed company including its own EPS and ROE is from database of

Shanghai and Shenzhen stock exchange. http://www.sse.com.cn/ and http://www.szse.cn/

4. EMPIRICAL RESEARCH

4.1. Market Reaction Before and After the Disclosure of Quarterly Financial Report

Through the event study method, this study tests the market reaction before and after the disclosure of quarterly financial report. Figure 1, Figure 2 and Figure 3 respectively express the average abnormal returns (AAR), cumulative average abnormal returns (CAAR) and heterogeneous volatility (S_t^2) of sample companies' stocks before and after the disclosure of quarterly financial reports.

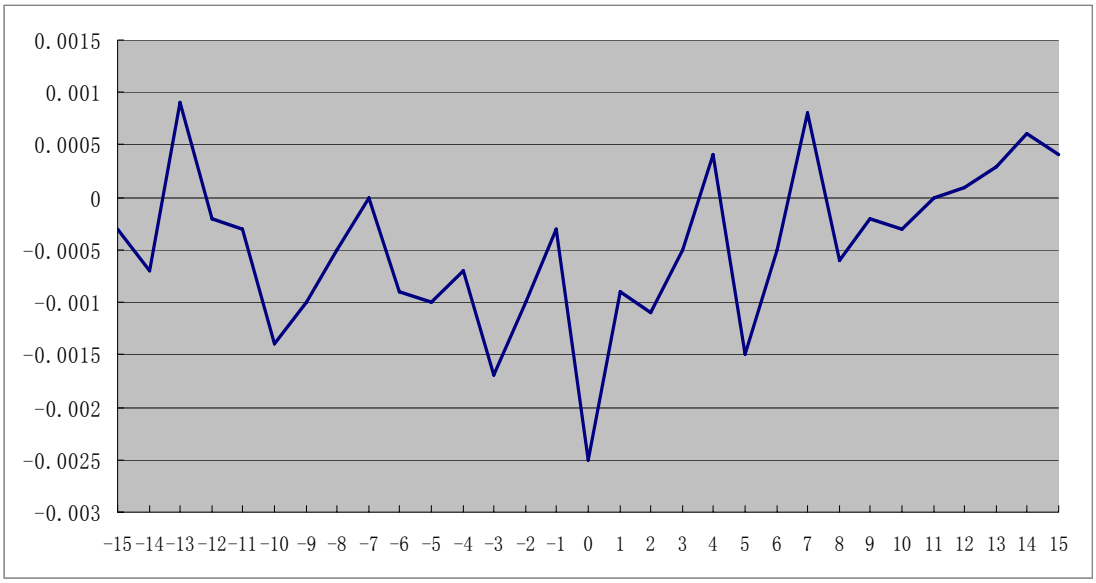

Figure 1. Changes of Average Abnormal Returns (AAR) before and after the disclosure of quarterly financial report.

From Figure 1, it can be observed that, the average abnormal return begins to decline rapidly 13 trading days before the disclosure of quarterly financial report, and then trends to fluctuate downward and reaches the lowest point on the disclosure date of quarterly financial report, finally returns near to zero level and fluctuates.

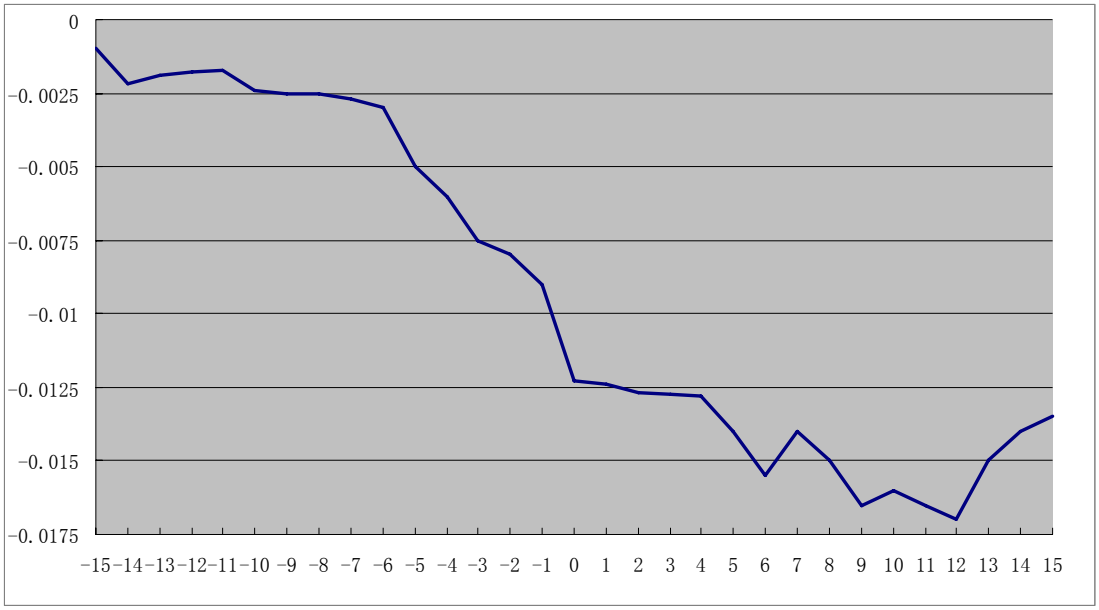

Figure 2. Changes of Cumulative Average Abnormal Return (CAAR) before and after the disclosure of quarterly financial report.

From Figure 2, it can be observed that, the CAAR begins to decrease significantly 10 trading days before the disclosure of quarterly financial report, and then start declining rapidly and reaches the lowest point 12 trading days after the disclosure date of quarterly financial report; finally increase in small scale can be seen.

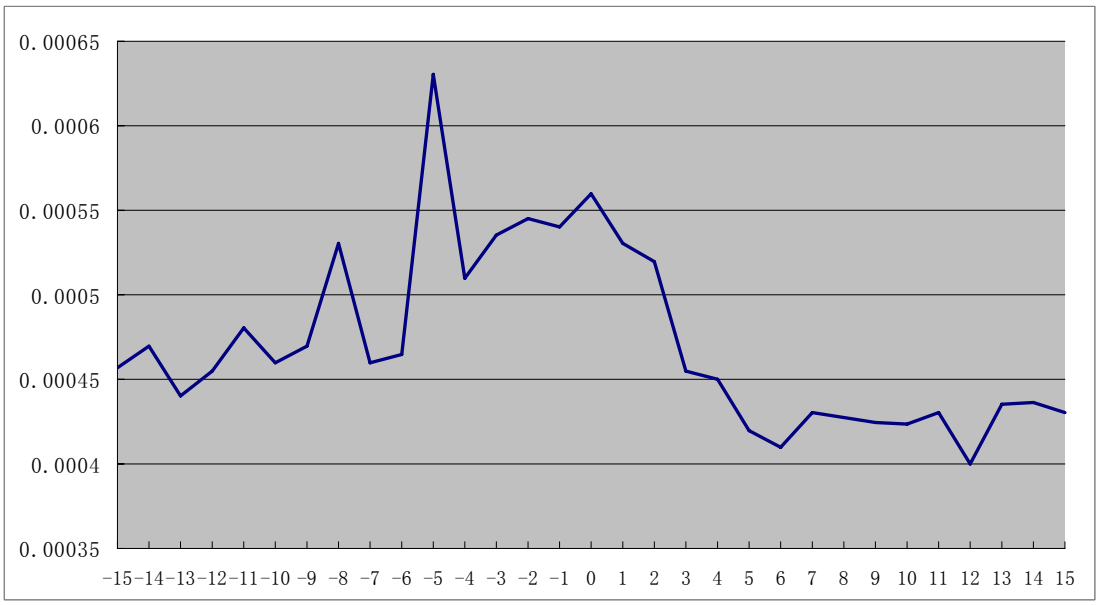

Figure 3. Changes of heterogeneous volatility (S_t^2) before and after the disclosure of quarterly financial report.

From Figure 3, it can be observed that, heterogeneous volatility (S_t^2) begins to rise slowly 12 trading days before the disclosure of quarterly financial report, 5 trading days before the disclosure date, there is a substantial increase; and then begins to drop. A small rise on the disclosure date and occurred a sharp decline after the disclosure of quarterly financial report.

Sum up the changes of average abnormal returns, cumulative average abnormal returns and S_t^2 before and after the disclosure of quarterly financial reports of listed companies, it is able to see that, the average abnormal returns change significantly, and causes the change of cumulative average abnormal returns. It estimates that market has a clear response to the information disclosed in the quarterly financial reports.

Through the T statistic to test the significance of the intuitive response observed in Figure 1, Figure 2 and Figure 3. Table 1 is the T test results on average abnormal returns and cumulative average abnormal returns. The results can show that whether the AAR and CAAR are significantly different from zero.

Table 1. T test result of overall samples' AAR and CAAR.

Time	AAR	CAAR
-15	-0.000317	-0.000317
-14	-0.000686	-0.001003
-13	0.000915	-0.000088
-12	-0.000168	-0.000256
-11	-0.000198	-0.000454
-10	-0.001420*	-0.001874
-9	-0.000671	-0.002545
-8	-0.000011	-0.002556
-7	-0.000901	-0.003457
-6	-0.001067*	-0.004524*

-5	-0.000939	-0.005464*
-4	-0.000721	-0.006185**
-3	-0.001719**	-0.007904**
-2	-0.001018*	-0.008922***
-1	-0.000363	-0.009285***
0	-0.002430***	-0.011715***
1	-0.000954*	-0.012669***
2	-0.001076*	-0.013745***
3	-0.000301	-0.014045***
4	0.000346	-0.013699***
5	-0.001547**	-0.015246***
6	-0.000634	-0.015881***
7	0.000811	-0.015070***
8	-0.000624	-0.015649***
9	-0.000109	-0.015803***
10	-0.000294	-0.016097***
11	-0.000082	-0.016179***
12	0.000077	-0.016102***
13	0.000406	-0.015695***
14	0.000567	-0.015129***
15	0.000402	-0.014727***

* Significant at the 10% level.

** Significant at the 5% level.

*** Significant at the 1% level.

From Table 1, from 6 trading days before to 2 trading days after the announcement of quarterly financial reports, AAR have the statistical significance; from 6 trading days before to 15 trading days after the announcement of quarterly financial reports, CAAR have the statistical significance. The results of T test further prove that AAR and CAAR react to the information disclosed in the quarterly financial reports before the disclosure.

4.2. Market Reaction of Different Changes of Earnings

First of all, classify the samples according to the sign of earnings changes. The principle of classification is that, if current term's earnings per share are higher than the earnings per share of the same term in previous year, it is considered as favorable, on the contrary, it is considered as unfavorable. After excluding the samples has same earnings per share figure with previous year, there are 1038 consecutive and comparable samples of earnings per share. Among them, 602 samples are favorable and 436 samples are unfavorable.

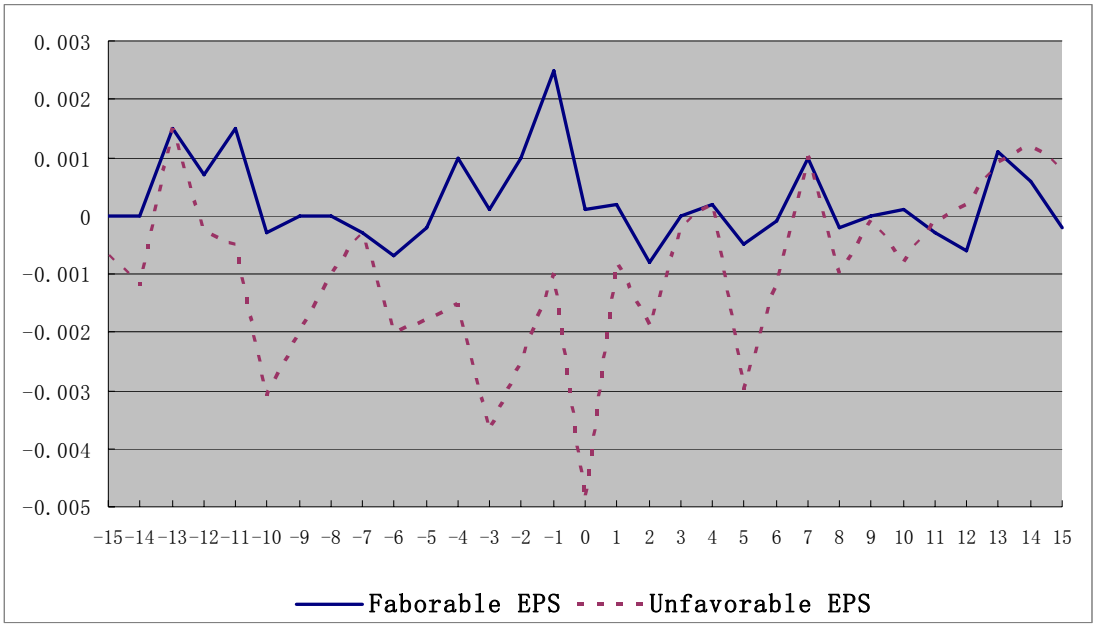

Figure 4. Comparison of AAR under different earnings changes.

As can be seen from Figure 4, to favorable EPS, there is a visible rise of AAR 14 trading days before the disclosed date, then AAR begins to drop till 6 trading days

before the disclosed date. After rising sharply, AAR reaches the peak 1 trading day before the disclosed date. After the disclosed date of quarterly financial reports, AAR returns to near zero rapidly and keeps fluctuating. While the market reacts to unfavorable EPS more dramatic than favorable EPS. 12 trading days before the disclosed date, AAR already starts to drop, and then after a slight rebound from 10 trading days till 6 trading days before the disclosed date; after a rapid decline, on the disclosed date, AAR reaches the lowest value. After the disclosed date, AAR of unfavorable EPS samples also returns to near zero rapidly and fluctuating. In an overall trend, the abnormal return of portfolio with favorable unexpected earnings is positive, while the abnormal return of portfolio with unfavorable unexpected earnings is negative. This shows that the market can distinguish between different types of accounting earnings information, or, accounting earnings can transfer decision-making related useful information to investors. If investors can predict the earnings changes 15 trading days before the disclosed date, so investors can buy the stocks whose EPS increase over the same period than pervious year, while short selling the stocks whose EPS reduce; on the disclosed date, investors may take close position to gain superior returns.

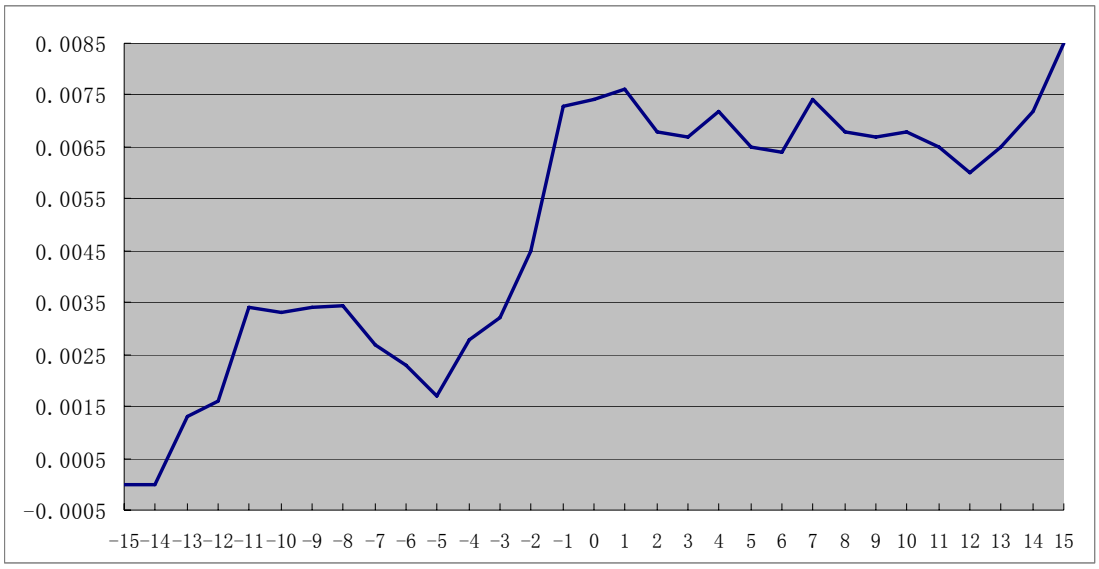

Figure 5. Changes of CAAR under favorable EPS.

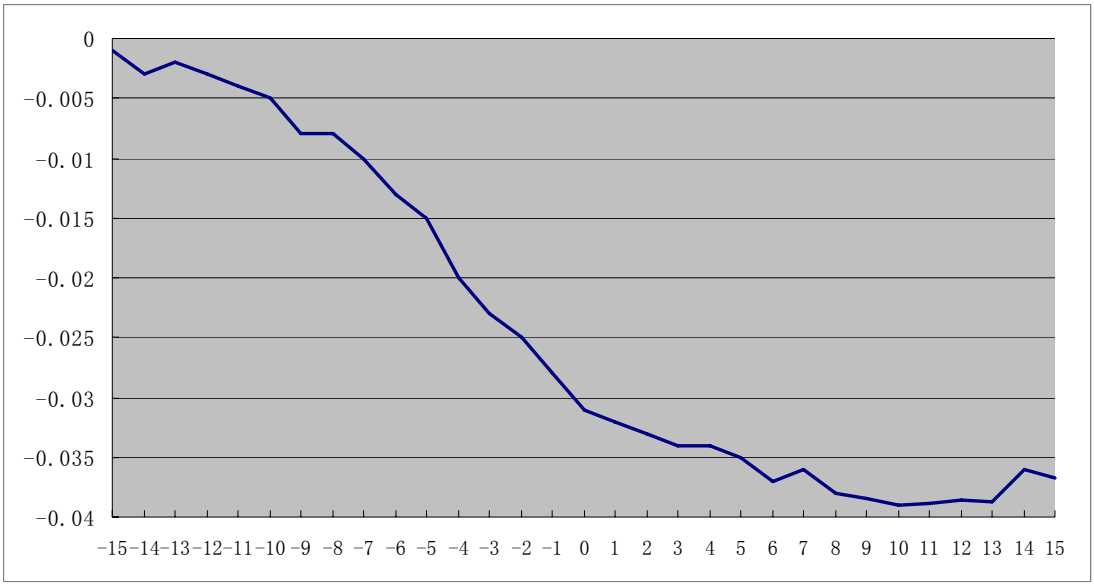

Figure 6. Changes of CAAR under unfavorable EPS.

From Figure 5 and Figure 6 can be seen that, the portfolio with favorable EPS, CAAR begins to rise continually at some time before the disclosed date, resulting in significant positive CAAR; while to the portfolio with unfavorable EPS, CAAR will notice the "bad news" at a certain period of time before the disclosed date and continuing a downward adjustment, resulting in significant negative CAAR. Compare Figure 5 and Figure 6 also can be seen that, the CAAR change of samples portfolio with favorable EPS is far smaller than the change of samples portfolio with unfavorable EPS. It is convinced that the market's reaction to unfavorable news is stronger than reaction to favorable news.

To test if Figure 4, Figure 5 and Figure 6 are statistic significance, T test of samples portfolio with favorable and unfavorable EPS is made.

Table 2. T test result of overall samples portfolios.

Time	AAR		CAAR	
	FAVORABLE EPS	UNFAVORABLE EPS	FAVORABLE EPS	UNFAVORABLE EPS
-15	-0.000034	-0.000600	-0.000034	-0.000600

-14	0.000011	-0.001383	-0.000023	-0.001983
-13	0.001168*	-0.000662	0.001145	-0.001321
-12	0.000567	-0.000903	0.001712	-0.002224
-11	0.001475**	-0.001872**	0.003187	-0.004096
-10	-0.000108	-0.002732***	0.003080	-0.006828**
-9	0.000100	-0.001442**	0.003179	-0.008269***
-8	0.000067	-0.000089	0.003246	-0.008358***
-7	-0.000432	-0.001371*	0.002814	-0.009729***
-6	-0.000677	-0.001457**	0.002137	-0.011186***
-5	-0.000317	-0.001561**	0.001820	-0.012748***
-4	0.001006*	-0.002448***	0.002826	-0.015196***
-3	0.000203	-0.003641***	0.003029	-0.0188373***
-2	0.001410**	-0.003445***	-0.004439*	-0.022283***
-1	0.002743***	-0.003469***	-0.007181**	-0.025752***
0	0.000133	-0.004992***	0.007314**	-0.030744***
1	0.000337	-0.001044**	-0.007651**	-0.031988***
2	-0.000751	-0.001201*	0.006900**	-0.033089***
3	-0.000127	-0.000475	-0.006773**	-0.033564***
4	0.000357	0.000335	0.007131**	-0.033229***
5	-0.000582	-0.002512***	0.006549**	-0.035742***
6	-0.000250	-0.001019*	0.006299**	-0.036761***
7	0.001023*	0.000599	-0.007322**	-0.036162***
8	-0.000424	-0.000825	0.006897**	-0.036986***
9	-0.000047	-0.000170	-0.006850**	-0.037156***
10	0.000187	-0.000775	0.007037**	-0.037931***

11	-0.000448	0.000285	0.006589**	-0.037646***
12	-0.000632	0.000786	0.005957*	-0.036860***
13	0.001115*	-0.000303	0.007072**	-0.037163***
14	0.000587	0.000546	0.007659**	-0.036616***
15	0.001002*	-0.000199	0.008661***	-0.036815***

* Significant at the 10% level.

** Significant at the 5% level.

*** Significant at the 1% level.

Table 2 is T test results of AAR and CAAR of samples portfolio with favorable and unfavorable EPS. As can be seen from the table, the AAR of samples portfolio with favorable EPS is significantly different from zero only 2 trading days before the disclosed date, while the AAR of samples portfolio with unfavorable EPS is significantly different from zero 11 trading days before disclosed date. It indicates that the reaction of market to unfavorable news is earlier and stronger, while to favorable news is later and weaker.

From Figure 4, on the disclosed date of quarterly financial reports, market reaction of samples portfolio with favorable EPS has been discontinued, and market reaction of samples portfolio with unfavorable EPS has been weakened. From Table 2, on the disclosed date of quarterly financial reports, the AAR of samples portfolio with favorable EPS is not significantly different from zero, significance of the samples portfolio with unfavorable EPS also decline rapidly in the two following trading days. In other words, after the disclosure of quarterly financial reports, the market reaction to accounting information is no longer continued. In terms of statistic sense, if investors buy in stocks with disclosed favorable EPS, and short selling stocks with disclosed unfavorable EPS on the disclosure date of quarterly financial reports, and close out 15 trading days after the disclosure date. Using such strategy, no superior returns are able to gain. That is, according to all available disclosed information in the market, investors are unable to gain superior returns. This is consistent with the Efficient Market Hypothesis, which indicates that china’s securities market is basically reached semi-strong form efficiency.

The analysis is based on the definition of:

$$(6)\quad CAAR_{t_1 t_2} = \sum_{t=t_1}^{t_2} AAR_t$$

That is, the daily numerical value of CAAR is summation of AAR from t=-15 to current day. Then, the trading days further from the disclosed date of quarterly financial reports, the CAAR values have greater possibility to interfere by other factors. Therefore, gradually enlarged time windows are used to study the CAAR situation in various windows. That is, to study CAAR in window [-1, 1], [-2, 2]..... and [-15, 15].

Table 3. T test result of CAAR in various time windows.

Time Window	CAAR	
	FAVORABLE EPS	UNFAVORABLE EPS
[-1, 1]	0.003212***	-0.00971***
[-2, 2]	0.003871***	-0.01425***
[-3, 3]	0.003948***	-0.01837***
[-4, 4]	0.005311***	-0.02048***
[-5, 5]	0.004411***	-0.02456***
[-6, 6]	0.003485***	-0.02703***
[-7, 7]	0.004076***	-0.0278***
[-8, 8]	0.003718***	-0.02872***
[-9, 9]	0.00377***	-0.03933***
[-10, 10]	0.00385***	-0.03384***
[-11, 11]	0.004877***	-0.03542***
[-12, 12]	0.004812***	-0.03554***
[-13, 13]	0.007095***	-0.03518***

[-14, 14]	0.007692***	-0.03602***
[-15, 15]	-0.008661***	-0.03682***

* Significant at the 10% level.

** Significant at the 5% level.

*** Significant at the 1% level.

From Table 3 can be seen that, no matter samples portfolio with favorable or unfavorable EPS, the CAAR is significantly different from zero. It indicates that on the disclosed date of quarterly financial reports, there is clear volatility of stock prices, and volatility of samples portfolio with unfavorable EPS is significantly larger than the volatility of samples portfolio with favorable EPS.

4.3. Regression Analysis of Earnings Announcement

4.3.1. Earnings Response Coefficient (ERC)

The regression analysis of earnings announcement is mainly through the correlation between unexpected earnings and abnormal returns around disclosed date to study the market's reaction to unexpected earnings. The equation of regression model is:

$$(9)\quad AR_{it} = \alpha_i + \beta_i \Delta Y_{it} + e_{it}$$

In the specific regression analysis, abnormal returns 15 trading days before and after the disclosed date is the research object to respectively exam the reaction of unexpected earnings. EPS and ROE are selected as indicators to measure unexpected earnings.

Table 4. Regression analysis result of using EPS as indicator to measure unexpected earnings.

Time	ERC	T-Statistic	F	Sig.	R Square
-15	-8.34E-05	-0.567894	0.322503	0.570231	0.000312

-14	-8.71E-05	-0.534785	0.539910	0.462637	0.000522
-13	-6.29E-05	-0.357122	0.024687	0.875179	0.000024
-12	6.83E-05	0.390099	0.025632	0.872834	0.000025
-11	-0.000120	-1.261822	1.592194	0.207298	0.001539
-10	0.000161	1.934922*	3.743925	0.053273	0.003611
-9	-0.000118	-1.106945	1.348949	0.298464	0.001501
-8	-5.37E-05	-0.299247	0.089549	0.764812	0.000087
-7	-0.000138	-1.734751*	3.009360	0.083083	0.002905
-6	5.15E-05	0.294930	0.086983	0.768107	0.000084
-5	-0.000150	-1.880726*	3.537131	0.060290	0.003412
-4	-3.36E-05	-0.268605	0.072149	0.788287	0.000070
-3	-0.000264	-2.218676**	4.922523	0.026726	0.006743
-2	-2.61E-05	-0.170155	0.593139	0.441384	0.000574
-1	-4.13E-05	-0.252412	0.023229	0.878892	0.000022
0	-0.000411	-2.578621***	6.649286	0.010055	0.021635
1	-3.12E-05	-0.559561	0.313108	0.575900	0.000303
2	7.98E-05	0.543727	0.295639	0.586747	0.000286
3	-0.000109	-0.829013	0.184053	0.668003	0.000178
4	6.68E-06	0.191566	0.626577	0.428795	0.000606
5	0.000168	1.818461*	3.269879	0.073282	0.003148
6	-2.84E-06	-0.107294	0.500265	0.479543	0.000484
7	7.58E-05	0.561477	0.068370	0.793777	0.000066
8	-4.40E-06	-0.101548	0.010312	0.919135	0.000010
9	8.79E-05	0.958276	0.918292	0.338148	0.000888
10	2.31E-05	0.135008	2.356249	0.125088	0.002276

11	9.64E-05	0.417928	0.174664	0.676087	0.000169
12	-1.55E-05	-0.456088	0.208017	0.648422	0.000201
13	2.88E-05	0.223751	0.853315	0.355832	0.000825
14	5.65E-05	0.502030	0.643252	0.422720	0.000622
15	2.67E-05	0.317140	0.100578	0.751201	0.000097

* Significant at the 10% level.

** Significant at the 5% level.

*** Significant at the 1% level.

Table 5. Regression analysis result of using ROE as indicator to measure unexpected earnings.

Time	ERC	T-Statistic	F	Sig.	R Square
-15	-0.000632	0.640252	0.409922	0.522149	0.000392
-14	-0.000618	-0.679712	0.462008	0.496837	0.000442
-13	-0.000288	0.479663	0.230077	0.631567	0.000220
-12	0.000342	0.448745	0.201372	0.653709	0.000193
-11	-0.001510	-1.261822	1.658085	0.198147	0.004584
-10	0.002744	1.651946*	2.803153	0.092004	0.007427
-9	-0.001371	-1.155056	1.334155	0.248331	0.002275
-8	-0.000474	-0.475252	0.225864	0.634707	0.000216
-7	0.002036	1.313788	1.726039	0.189206	0.005649
-6	0.000413	-0.488879	0.239003	0.625030	0.000229
-5	-0.002838	1.687683*	2.850737	0.082661	0.008406
-4	-0.000407	0.311549	0.097063	0.755446	0.000093
-3	-0.003333	2.272813*	5.165678	0.02324	0.028109
-2	-0.000393	-0.233847	0.054684	0.815150	0.000052

-1	-0.000449	0.383386	0.146985	0.701512	0.000141
0	-0.004594	-3.410661***	12.16864	0.000581	0.032363
1	-0.001041	-0.934467	0.054975	0.814668	0.000053
2	0.000854	-0.713831	0.509554	0.475491	0.000487
3	-0.000659	-0.698580	0.997161	0.318230	0.001053
4	0.001383	-1.203509	0.002863	0.957336	0.000003
5	0.003016	1.830307*	3.292056	0.070640	0.009088
6	-0.000959	-0.890234	0.000855	0.976683	0.000001
7	-0.000854	-0.782915	0.612956	0.433854	0.000586
8	0.000146	0.042628	0.001817	0.966006	0.000002
9	0.000758	0.660574	0.436358	0.509031	0.000417
10	0.000252	0.219230	0.048062	0.826514	0.000046
11	0.000589	0.956978	0.915806	0.338800	0.000876
12	-0.000294	-0.165967	0.027545	0.868215	0.000026
13	0.000497	0.286180	0.081899	0.774797	0.000078
14	0.000562	0.545870	0.297975	0.585272	0.000285
15	0.000431	0.276312	0.076348	0.782363	0.000073

* Significant at the 10% level.

** Significant at the 5% level.

*** Significant at the 1% level.

Table 4 and Table 5 are the regression results of abnormal returns using EPS and ROE as indicators to measure unexpected earnings separately. From the tables can be seen that:

1) The regression results show that the market reacts to the earnings significantly. Especially on the disclosed date, coefficient of unexpected earnings (ERC), T-test value of coefficient, significance and model goodness of fit (R^2) all reach the

maximum value in research time window [-15, 15]. It indicates that systematic announcement effect exists on the disclosed date.

2) The market has indicating effects to earnings announcement. 15 trading days before the disclosed date, in the regression result of EPS as indicator to measure unexpected earnings, there are 4 trading days that unexpected earnings have significant impact to abnormal returns and in the regression result of ROE as indicator to measure unexpected earnings, there are 3 trading days that unexpected earnings have significant impact to abnormal returns. While 15 trading days after the disclosed date, there is 1 trading day that unexpected earnings have significant impact to abnormal returns both in the regression results of EPS and ROE as indicators. This suggests a lagging effect of earnings announcement, but the lagging effect is relatively weak.

3) The regression has low R^2 . Using EPS as measuring indicator, R^2 = 2.16%, using ROE as measuring indicator, R^2 = 3.24%. The figure is basically matched with research result based on foreign market, that is, R^2 is floating from 2% to 10%.

4) Through the comparison of Table 4 and Table 5, on the disclosed date, the ERC=-0.004594 (T=-3.41) using ROE as indicator to measure unexpected earnings and ERC=-0.000411 (T=-2.58) using EPS as indicator to measure unexpected earnings. The significance of regression result using ROE as indicator is lager than significance of regression result using EPS as indicator. This reflects the fact that in China's securities market, investors may be more preferred to use ROE as indicator to interpret earnings information of listed companies in some extent.

Using EPS and ROE as measuring indicators, same regression analysis is done aiming at Shanghai and Shenzhen Stock Exchange. From Table 6 and Table 7 can be seen that, in the regression analysis, the significance of Shenzhen Stock Exchange is obviously stronger than Shanghai Stock Exchange. The difference might comprise the finding of size effect, that is, given the changes of risk, abnormal returns are negative correlated with company size. In other words, the difference probably because that the average companies size of samples companies from Shanghai Stock Exchange is larger than the samples companies from Shenzhen Stock Exchange.

Table 6. Regression analysis result of using EPS as indicator to measure unexpected earnings aiming at Shanghai and Shenzhen stock market.

Market	Sample	ERC	T-Statistic	F	Sig.	R Square
Shanghai	681	-0.000562	-3.323902***	11.943939	0.000881	0.020542
Shenzhen	357	0.000609	3.695608***	13.672663	0.000265	0.030061
TOTAL	1038	-0.000411	-2.578621***	6.649286	0.010055	0.021635

* Significant at the 10% level.

** Significant at the 5% level.

*** Significant at the 1% level.

Table 7. Regression analysis result of using ROE as indicator to measure unexpected earnings aiming at Shanghai and Shenzhen stock market.

Market	Sample	ERC	T-Statistic	F	Sig.	R Square
Shanghai	686	-0.002410	-1.688527*	2.880737	0.777008	0.024117
Shenzhen	361	0.004948	3.733034***	13.93554	0.000203	0.038420
TOTAL	1047	-0.004594	-3.410661***	12.16864	0.000581	0.032363

* Significant at the 10% level.

** Significant at the 5% level.

*** Significant at the 1% level.

4.3.2. Test of Sample Data in Annually

In recent years, China's securities market has entered a rapid development stage, no matter market supervision, quality of listed companies, information disclosure system, or quality of investors, all are gradually moving from non-standard immature to more mature and fairly standard. The improving changes must reflect in the investors' usage of accounting information of listed companies'. To confirm the inference, the

regression analysis of annual data is made to study the changes in usage of accounting information in China's securities market. Again, EPS and ROE are selected as indicators to measure unexpected earnings and made regression analysis to abnormal returns separately.

Table 8. ERC annually test of using EPS as indicator to measure unexpected earnings.

Time	2003	2004	2005	2006	2007	2008
-15	1.80E-05	-0.000149	0.000307	7.38E-05	0.000295	0.000328
-14	-0.000109	0.000181	4.25E-05	2.93E-05	-0.000131	-0.002743
-13	7.28E-05	0.000201	-0.000180	-0.000107	0.000323	3.29E-05
-12	1.90E-05	4.42E-05	0.000321	0.000157	-8.38E-05	-0.000275*
-11	1.40E-05	0.000321	4.97E-05	1.61E-05	-1.57E-05	0.000379
-10	-0.000253*	0.000214*	0.000303	-0.000283*	0.000609	0.002158
-9	1.17E-05	0.000374	-0.000140	-7.23E-05	-0.000507	-0.000293
-8	-8.48E-05	0.000374	-0.000140	-7.23E-05	-0.000507	-4.37E-05
-7	8.40E-05	-0.000133	0.000198	-1.66E-05	0.000634	0.004856
-6	0.000525*	0.000241*	-0.000408**	-3.09E-05	0.000423	-0.000177*
-5	0.000118	-1.06E-05	-0.000192	5.11E-05	-0.000252	0.000329
-4	7.60E-05	-0.000117	0.000216	3.61E-05	-0.000332	-0.000134
-3	0.000331*	0.000322**	0.000473**	1.12E-05	-0.000633*	2.23E-05
-2	-0.000119	7.06E-05	-0.000333	0.000212	-0.000109	-0.001910
-1	-5.72E-05	0.000174	4.06E-05	5.88E-05	0.000538	0.000972
0	-0.000351*	0.000398*	0.000449**	-0.000796**	0.001066**	-0.000677**
1	0.000142	-2.85E-05	-0.000371	6.48E-05	-0.000399	-0.000213
2	-1.37E-05	-7.51E-05	1.04E-05	2.36E-05	-0.000482	-0.000391
3	-5.48E-05	-0.000166	0.000191	-6.65E-05	-0.000587	-7.71E-05

4	0.000168	8.32E-05	0.000189	-0.000190	0.000556	0.000239
5	0.000259*	0.000209*	0.000378*	4.92E-05	0.000109	0.000496
6	0.000144	-1.31E-05	-0.000208	-3.66E-05	-2.07E-05	-0.000317
7	-0.000182	-0.000203	-4.15E-05	-0.000167	0.000285	0.000208
8	0.000197	-0.000296	0.000135	0.000177	-0.000393	0.000504
9	-0.000242	0.000377	0.000192	0.000112	-0.000304	0.000770
10	-4.35E-05	0.000244	-0.000384	2.44E-05	0.000135	-0.002156
11	0.000324*	-0.000237	-0.000493	-0.000111	0.000107	-0.000223
12	-0.000102	7.85E-05	-0.000145	-8.20E-05	-0.000210	-7.83E-05
13	-6.58E-06	0.000124	0.000102	-0.000216	0.000158	-0.000355
14	-0.000120	-0.000189	-2.21E-05	0.000185	0.000447	0.000234
15	-6.00E-05	-0.000153	-3.03E-05	0.000145	0.000189	0.000179

* Significant at the 10% level.

** Significant at the 5% level.

*** Significant at the 1% level.

Table 9. ERC annually test of using ROE as indicator to measure unexpected earnings.

Time	2003	2004	2005	2006	2007	2008
-15	0.000671	-0.001240	0.004708	-0.001604	-0.002505	-0.003173
-14	-0.001482	-0.000210	0.011017	0.003371	0.004765	0.022310
-13	0.001158	0.000442	-0.006798	0.000621	-0.000675	-0.000795
-12	-0.000138	0.001779	-0.006314	0.007833	-0.005803	0.008447
-11	0.000525	-0.001996	-0.007504	-0.005375	-0.009564	-0.006934
-10	-0.003048*	-0.003910*	0.005018	0.003115	0.006246	0.004728
-9	0.000559	-0.002121	0.002483	-0.005205	-0.003773	-0.003128

-8	-0.000637	0.000119	-0.000978	-0.009437	0.003037	0.005476
-7	0.000616	0.003139	0.011433	0.002895	0.007582	0.000957
-6	-0.003226*	0.002953*	-0.004747	-0.011350*	0.005046	-0.007384
-5	0.000377	-3.70E-05	0.014947*	0.004533	0.010396**	0.030819*
-4	0.000426	0.001152	0.005263	0.003934	-0.006051	0.007726
-3	0.003243**	-0.005556**	0.011876*	-0.004217	-0.006523	-0.004041
-2	0.000555	-0.000453	-0.010892	0.008172	-0.002923	0.010637
-1	0.000916	0.000154	0.004359	-0.001496	-0.004841	-0.005102
0	0.003177*	-0.004356**	0.016541**	-0.021659***	-0.011304**	-0.021075*
1	0.001633	-0.002543	-0.018797	-0.006576	0.001936	-0.003174
2	0.000466	0.002884	-0.001008	-0.000832	0.000296	0.000826
3	0.001229	-0.001680	0.004508	-0.007706	-0.003308	-0.007115
4	0.001009	0.000645	-0.000841	-0.002003	0.003457	-0.003025
5	-0.003439**	0.003751*	-0.005590	-0.000227	0.001318	-0.000334
6	0.000382	-0.000475	-0.002947	0.000998	0.001073	0.002103
7	-0.000164	0.000234	0.003455	-0.003902	0.001019	0.002891
8	0.000726	-6.37E-05	0.000182	0.004733	-0.003671	0.000408
9	-0.000865	-0.000401	-0.002717	0.005286	0.001093	-0.003109
10	0.001260	-3.81E-06	-0.013565*	0.011187	0.001412	0.002078
11	-0.002938*	-0.000165	0.009930	0.000487	0.002748	0.000342
12	9.34E-05	-0.001428	-0.001873	-0.008538	0.001053	-0.008298
13	0.001296	0.000693	0.000198	0.003740	0.002867	0.005163
14	-0.000542	-0.001769	-0.007927	0.006441	-0.002259	-0.008024
15	-0.001289	-0.000822	0.000276	0.007224	0.003150	0.000528

* Significant at the 10% level.

** Significant at the 5% level.

*** Significant at the 1% level.

From the regression results in Table 8 and Table 9, it can be concluded that:

1) Significance of ERC is keep increasing from 2003 to 2008. It indicates that investors pay more and more attention to the announcement of accounting earnings. Investors' strategies is changing from irrational behaviors, such as following the trend of operation, chasing the stocks with increasing prices and liquidation blindly etc. to rational behaviors, such as fundamental analysis of listed companies. In addition, it is also possible because that the regulatory commission introduced institutional investors in large scale in recent years. Since the institutional investors trend to invest more prudent and rational, also willing to pay more attention in fundamental analysis.

2) From the comparison of Table 8 and Table 9, similar as the overall regression analysis, the significance of regression result using ROE is lager than significance of regression result using EPS. It is further convinced and reflected that investors in China's securities market pay greater attention in ROE of listed companies rather than EPS.

3) In 2003, obviously indicating effect and lagging effect can be observed. 15 days before the disclosed date, unexpected earnings in 3 trading days have significant impact on abnormal returns, while 15 days after the disclosed date, unexpected earnings in 2 trading days have significant impact on abnormal returns. Indicating effect probably suggests the information leakage. Certain investors already obtained the accounting earnings information earlier than the information is disclosed publicly through internal channels or insider. Lagging effect suggests that the market's reaction to information has a timing lag; the market requires a considerable period of time to absorb the information.

From the over trend, indicating effect and lagging effect are weaken year by year, but the weaken velocity of indicating effect is obviously slower than lagging effect. Taking Table 9 as example, 15 trading days before disclosed date, numbers of trading

days that unexpected earnings have significant impact on abnormal returns; there are 3 trading days in 2003 and 2004, 2 trading days in 2005 and 1 trading days in 2006, 2007 and 2008. While 15 days after the disclosed date, there are 2 trading days in 2003, 1 trading days in 2004 and 2005; lagging effect is ceased from 2006. It can be concluded that, there is continuity of market's reaction to information and dissemination of information in the market is relatively slow; but the efficiency of market is in continuous improvement.

5. RESEARCH CONCLUSION AND LIMITATION

5.1. Research Conclusions

Through the analysis of cumulative average abnormal returns and earnings response coefficient, empirical study of the information content of quarterly financial reports is made. The conclusions are as follow:

1) The abnormal return and cumulative average abnormal return change significantly before and after the announcement date of quarterly financial report, the most intense change occurs on the exact announcement date. Further, through T test to indicate that this change has strong significance in the statistical sense. It is convinced that China's A-share market responses to the disclosure of quarterly earnings obviously and actively. It also proves that the quarterly financial reports do have information content, that is, quarterly financial reports deliver valuable and useful information to investors.

2) The abnormal return of portfolio with favorable unexpected earnings is positive, while the abnormal return of portfolio with unfavorable unexpected earnings is negative. This shows that the market can distinguish between different types of accounting earnings information, or, accounting earnings can transfer decision-making related useful information to investors. Even though there are obvious fluctuations in stock prices on the disclosure date of quarterly financial report, but in the long term, the reaction of market to unfavorable news is stronger than favorable news.

3) In the regression analysis of unexpected earnings and abnormal return, a significant response of market to earnings announcement can be observed, further indicating that the information disclosed in the quarterly financial reports is useful to investors. It confirms that in China's A-share market, earnings figures also have strong information content. Like other developed capital markets, though investors may know companies' operating performance through other sources, the earnings figures still plays an irreplaceable role to them. That is, the usefulness of earnings figure will not fail because of the different accounting standards, stock market regulation between China and developed countries.

4) In the annual tests, it can be seen that earnings response coefficients is enhanced constantly and significantly to prove that in China's A-share market, investors start to attach more and more attention to the accounting earnings of listed companies. Even though the history of China's stock market is relatively short, accounting standard is still not perfect, the quality of accounting professionals to be improved and manipulation and fraud of financial reports have occurred occasionally, which may lead some scholars hold negative attitude to the usefulness of accounting figures that including the earnings information. However, via empirical analysis, it can be seen that, with the development of China's A-share market, accounting earnings information is able to provide useful and efficient decision-making information to investors and these information are tested to be valuable.

5) No matter the analysis of average abnormal return (AAR) and cumulative average abnormal residuals (CAAR) before and after the announcement date of quarterly financial reports, or grouping analysis of earnings by favorable and unfavorable EPS, as well as the analysis of earnings response coefficient (ERC), all results tend to confirm that China's A-share market is basically at the semi-strong form efficiency, that is, investors cannot defeat the market and obtain superior return by using public information. From the results of annual test, at least China's A-share market is under the transferring process from weak form efficiency to semi-strong form efficiency.

5.2. Research Limitations

Because China's securities market is emerging market, the development period is relatively short; there are some inevitable limitations in the study:

1) Limitation of sampl selection and sample size

With the late start and short time span of China's securities market, sample size is also very limited; the conclusions might be affected by the restricted sample size during the regression analysis. This problem can only be solved until China's securities market continues to develop and mature.

2) Limitation of indices

In China's stock exchange, stocks of listed companies are divided into tradable shares and non-tradable shares, such as state shares, institutional corporation shares etc. two major categories. The only difference between tradable shares and non-tradable shares is the right of circulation; all other rights and duties are exactly the same. While in the calculation of stock index, stock exchange usually uses total number of shares multiplied by the share price to get the total market value. This will cause systematic deviation between change of index and change of market. Thus, one question will be raised that, whether it is appropriate to put Shanghai Composite Index and Shenzhen Component Index as indicators to measure the return of market portfolio.

3) Limitation of creditability of EPS and ROE

Because of the flexibility of accounting, this provides an opportunity for companies to manipulate profit by using such flexibility. In addition, according to the regulation of China's Securities Regulatory Commission, the suspension standard of shares listed is that, if the listed company is recorded to have consecutive three year's losses. This standard provides the strongest motive for listed companies to manipulate the profits or cover the losses. Thus, in this way, the creditability of EPS and ROE as indicators to measure earnings is questionable. However, the selected listed companies belonging to Shanghai and Shenzhen 300 Index are the companies that with larger size and profitable performance, therefore, the possibility of profit manipulation is relatively small.

4) Limitation in regression analysis

In the regression analysis, R^2 is relatively low in the result. This is mainly because of the quantity of the independent variables is small, while there are a lot of factors to cause the changes of abnormal return. To use one indicator—unexpected earnings as independent variable will inevitably lead to lower R^2. But the lower R^2 does not affect the reliability of the conclusions of the study. Since the regression coefficient of the variable in the regression equation is very significant, and the significant coefficient is the first concerned of the study, rather than the fitting effect of the regression model.

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APPENDIX

Data Sample Selected in This Research

Shen Zhen Stock Market (97 Companies)

Stock Code	Company Name
000001	SHENZHEN DEVELOPMENT BANK CO., LTD.
000002	CHINA VANKE CO., LTD.
000009	CHINA BAOAN GROUP CO.,LTD.
000012	CSG HOLDING CO., LTD.
000021	SHENZHEN GREAT WALL KAIFA TECHNOLOGY CO., LTD.
000024	CHINA MERCHANTS PROPERTY DEVELOPMENT CO., LTD.
000027	SHENZHEN ENERGY INVESTMENT CO., LTD.
000031	COFCO PROPERTY (GROUP) CO.，LTD.
000036	CHINA UNION HOLDINGS LTD.
000039	CHINA INTERNATIONAL MARINE CONTAINERS (GROUP) CO., LTD.
000046	OCEANWIDE CONSTRUCTION GROUP CO.，LTD.
000059	LIAONI HUAJIN TONGDA CHEMICALS CO., LTD.
000060	SHENZHEN ZHONGJIN LINGNAN NONFEMET CO., LTD.
000061	SHENZHEN AGRICULTURAL PRODUCTS CO., LTD
000063	ZTE CORPORATION
000069	SHENZHEN OVERSEAS CHINESE TOWN HOLDING CO.,LTD
000088	SHENZHEN YAN TIAN PORT HOLDINGS CO., LTD.
000089	SHENZHEN AIRPORT CO., LTD.
000157	CHANGSHA ZOOMLION HEAVY INDUSTRY SCIENCE AND TECHNOLOGY DEVELOPMENT CO., LTD.
000301	JIANGSU WUJIANG CHINA EASTERN SILK MARKET CO.,LTD.
00338	WEICHAI POWER CO., LTD.
000401	TANGSHAN JIDONG CEMENT CO., LTD.
000402	FINANCIAL STREET HOLDING CO., LTD.
000410	SHENYANG MACHINE TOOL CO., LTD.
000422	HUBEI YIHUA CHEMICAL INDUSTRY CO., LTD.
000423	SHAN DONG DONG-E E-JIAO CO., LTD
000425	XUGONG SCIENCE & TECHNOLOGY CO., LTD
000488	SHANDONG CHENMING PAPER HOLDINGS CO., LTD.
000503	SEARAINBOW HOLDING CO.,LTD
000527	GUANGDONG MIDEA ELECTRIC APPLIANCES CO., LTD.

000528	GUANGXI LIUGONG MACHINERY CO., LTD.
000538	YUNNAN BAIYAO GROUP CO., LTD.
000539	GUANGDONG ELECTRIC POWER DEVELOPMENT CO., LTD.
000541	FOSHAN ELECTRICAL AND LIGHTING CO., LTD.
000543	AN HUI WENERGY CO.,LTD
000559	WANXIANG QIANCHAO CO., LTD.
000562	HONG YUAN SECURITIES CO.,LTD
000568	LUZHOU LAO JIAO CO.,LTD
000572	HAIMA INVESTMENT GROUP CO.,LTD
000581	WEIFU HIGH-TECHNOLOGY CO.,LTD
000612	JIAOZUO WANFANG ALUMINUM MANUFACTURING CO., LTD
000625	CHONGQING CHANGAN AUTOMOBILE COMPANY LIMITED
000629	PANZHIHUA NEW STEEL & VANADIUM CO., LTD.
000630	ANHUI TONGDU COPPER STOCK CO., LTD.
000636	FENGHUA ADVANCED TECHNOLOGY (HOLDING) CO., LTD
000651	GREE ELECTRIC APPLIANCES, INC.OF ZHUHAI CO., LTD.
000652	TIANJIN ECONOMIC-TECHNOLOGICAL DEVELOPMENT CO., LTD
000667	CELEBRITIES REAL ESTATE DEVELOPMENT GROUP CO.,LTD
000680	SHANTUI CONSTRUCTION MACHINERY CO., LTD.
000686	NORTHEAST SECURITIES CO.,LTD.
000708	DAYE SPECIAL STEEL CO., LTD.
000709	TANGSHAN IRON AND STEEL CO., LTD.
000717	SGIS SONGSHAN CO., LTD.
000718	SUNING UNIVERSAL CO.,LTD
000728	GUOYUAN SECURITIES COMPANY LIMITED
000729	BEIJING YANJING BREWERY CO., LTD.
000751	HULUDAO ZINC INDUSTRY CO.,LTD
000755	SHANXI SANWEI GROUP CO.,LTD
000758	CHINA NONFERROUS METAL INDUSTRY'S FOREIGN ENGINEERING AND CONSTRUCTION CO., LTD.
000761	BENGANG STEEL PLATES CO.,LTD
000767	SHANXI ZHANGZE ELECTRIC POWER CO., LTD.
000768	XI"AN AIRCRAFT INTERNATIONAL CORPORATION
000778	XINXING DUCTILE IRON PIPES CO., LTD.
000783	CHANGJIANG SECURITIES CO., LTD.
000792	QINGHAI SALT LAKE POTASH CO., LTD.
000793	HUAWEN MEDIA INVESTMENT CORPORATION
000800	FAW CAR CO., LTD.

000807	YUNNAN ALUMINIUM CO., LTD.
000822	SHANDONG HAIHUA CO., LTD.
000825	SHANXI TAIGANG STAINLESS STEEL CO., LTD.
000828	DONGGUAN DEVELOPMENT (HOLDINGS) CO., LTD.
000829	TELLING TELECOMMUNICATION HOLDING CO.,LTD.
000839	CITIC GUOAN INFORMATION INDUSTRY CO., LTD.
000858	WULIANGYE YIBIN CO.,LTD
000876	SICHUAN NEW HOPE AGRIBUSINESS CO., LTD.
000878	YUNNAN COPPER INDUSTRY CO., LTD.
000895	HENAN SHUANGHUI INVESTMENT & DEVELOPMENT CO.,LTD
000897	TIANJIN JINBIN DEVELOPMENT CO., LTD
000898	ANGANG STEEL COMPANY LIMITED
000900	XIANDAI INVESTMENT CO., LTD.
000912	SICHUAN LUTIANHUA CO., LTD.
000917	HUNAN TV&BROADCAST INTERMEDIARY CO., LTD
000927	TIANJIN FAW XIALI AUTOMOBILE CO.,LTD
000932	HUNAN VALIN STEEL TUBE & WIRE CO., LTD.
000933	HENAN SHEN HUO COAL INDUSTRY AND ELECTRICITY POWER CO., LTD.
000937	HEBEI JINNIU ENERGY RESOURCES CO. , LTD.
000951	CNHTC JINAN TRUCK CO., LTD.
000959	BEIJING SHOUGANG CO., LTD.
000960	YUNAN TIN CO., LTD.
000969	ADVANCED TECHNOLOGY & MATERIALS CO., LTD.
000983	SHANXI XISHAN COAL AND ELECTRICITY POWER CO., LTD.
002024	SUNING APPLICANCE CO., LTD.
002097	HUNAN SUNWARD INTELLIGENT MACHINERY CO.,LTD.
002128	HUOLINHE OPENCUT COAL INDUSTRY CORPORATION LIMITED OFINNERMONGOLIA
002142	BANK OF NINGBO CO., LTD
002146	RISESUN REAL ESTATE DEVELPOMENT CO.,LTD
002155	CHENZHOU MINING GROUP CO., LTD.
002202	XINJIANG GOLDWIND SCIENCE&TECHNOLOGY CO.,LTD

Shanghai Stock Market (203 Companies)

Stock Code	Company Name
600000	SHANGHAI PUDONG DEVELOPMENT BANK CO., LTD.
600001	HANDAN IRON & STEEL CO., LTD.
600004	GUANGZHOU BAIYUN INTERNATIONAL AIRPORT CO., LTD.
600005	WUHAN IRON AND STEEL COMPANY LIMITED
600006	DONGFENG AUTOMOBILE CO., LTD.
600007	CHINA WORLD TRADE CENTER CO., LTD.
600008	BEIJING CAPITAL CO.,LTD
600009	SHANGHAI INTERNATIONAL AIRPORT CO., LTD.
600010	INNER MONGOLIAN BAOTOU STEEL UNION CO., LTD.
600011	HUANENG POWER INTERNATIONAL CO., LTD.
600012	ANHUI EXPRESSWAY CO., LTD.
600015	HUA XIA BANK CO., LTD.
600016	CHINA MINSHENG BANKING CORP., LTD.
600017	RIZHAO PORT CO., LTD.
600018	SHANGHAI INTERNATIONAL PORT (GROUP) CO., LTD.
600019	BAOSHAN IRON & STEEL CO., LTD.
600020	HENAN ZHONGYUAN EXPRESSWAY CO., LTD.
600021	SHANGHAI ELECTRIC POWER CO., LTD.
600022	JINAN IRON AND STEEL CO., LTD.
600026	CHINA SHIPPING DEVELOPMENT CO., LTD.
600027	HUADIAN POWER INTERNATIONAL CORPORATION LIMITED
600028	CHINA PETROLEUM & CHEMICAL CO., LTD.
600029	CHINA SOUTHEN AIRLINES COMPANY LIMITED
600030	CITIC SECURITIES CO., LTD.
600031	SANY HEAVY INDUSTRY CO.,LTD
600033	FUJIAN EXPRESSWAY DEVELOMENT CO., LTD.
600036	CHINA MERCHANTS BANK CO., LTD.
600037	BEIJING GEHUA CATV NETWORK CO., LTD.
600048	POLY REAL ESTATE GROUP CO.,LTD
600050	CHINA UNITED TELECOMMUNICATIONS CO., LTD.
600058	MINMETAL SDEVELOPMENT CO., LTD.
600066	ZHENGZHOU YUTONG BUS CO., LTD.
600068	CHINA GEZHOUBA GROUP COMPANY LIMITED
600085	BEIJING TONGRENTANG CO., LTD.
600087	NANJING TANKER CORPORATION

600089	TBEA CO.,LTD
600096	YUNNAN YUNTIANHUA CO., LTD.
600098	GUANGZHOU DEVELOPMENT INDUSTRY (HOLDINGS) CO., LTD.
600100	TSINGHUA TONGFANG CO., LTD
600102	LAIWU STEEL CO., LTD.
600104	SAIC MOTOR CORPORATION LIMITED
600108	GANSU YASHENG INDUSTRIAL（GROUP）CO.,LTD
600109	SINOLINK SECURITIES CO., LTD.
600110	CHINA—KINWA HIGH TECHNOLOGY CO., LTD
600111	INNER MONGOLIA BAOTOU STEEL RARE-EARTH CO., LTD.
600115	CHINA EASTERN AIRLINES CORPORATION LIMITED
600117	XINING SPECIAL STEEL CO., LTD.
600118	CHINA SPACESAT CO.,LTD
600123	SHANXI LANHUA SCI-TECH VENTURE CO., LTD.
600125	CHINA RAILWAY TIELONG CONTAINER LOGISTICS CO., LTD.
600132	CHONGQING BREWERY CO. , LTD.
600143	GUANGZHOU KINGFA SCI. &TEC. CO., LTD.
600150	CHINA CSSC HOLDINGS LIMITED
600151	SHANGHAI AEROSPACE AUTOMOBILE ELECTROMECHANICAL CO., LTD.
600153	XIAMEN C&D INC.
600158	CHINA SPORTS INDUSTR GROUP CO., LTD.
600169	TAIYUAN HEAVY INDUSTRY CO.,LTD.
600170	SHANGHAI CONSTRUCTION CO. , LTD.
600177	YOUNGOR GROUP CO., LTD.
600183	GUANGDONG SHENGYI SCI.TECH CO., LTD.
600188	YANZHOU COAL MINING CO., LTD.
600196	SHANGHAI FOSUN PHARMACEUTICAL (GROUP) CO., LTD.
600208	XINHU ZHONGBAO CO,.LTD
600210	SHANGHAI ZIJIANG ENTERPRISE GROUP CO., LTD.
600219	SHANDONG NANSHAN ALUMIUM CO.,LTD
600220	JIANGSU SUNSHINE CO.,LTD
600221	HAINAN AIRLINES COMPANY LIMITED
600236	GUANGXI GUIGUAN ELECTRIC POWER CO., LTD.
600256	XINJIANG GUANGHUI INDUSTRY CO., LTD.
600266	BEIJING URBAN CONSTRUCTION INVESTMENT & DEVELOPMENT CO.,LTD
600269	JIANGXI GANYUE EXPRESSWAY CO., LTD.

600270	SINOTRANS AIR TRANSPORTATION DEVELOPMENT CO., LTD.
600271	AEROSPACE INFORMATION CO., LTD.
600282	NANJING IRON & STEEL CO., LTD.
600307	GANSU JIU STEEL GROUP HONGXING IRON & STEEL CO, LTD.
600308	SHANDONG HUATAI PAPER CO., LTD.
600309	YANTAI WANHUA POLYURETHANE CO., LTD.
600316	JIANGXI HONGDU AVIATION INDUSTRY CO.,LTD
600320	SHANGHAI ZHENHUA PORT MACHINERY CO., LTD.
600325	HUAFA INDUSTRIAL CO.,LTD.ZHUHAI
600331	SICHUAN HONGDA CHEMICAL INDUSTRY CO., LTD.
600348	SHANXI GUOYANG NEW ENERGY CO., LTD.
600350	SHANDONG INFRASTRUCTURE CO., LTD.
600357	CHENGDE XINXIN VANADIUM AND TITANIUM CO., LTD.
600362	JIANGXI COPPER CO., LTD.
600376	BEIJING CAPITAI DEVELOPMENT CO.,LTD
600377	JIANGSU EXPRESSWAY COMPANY LIMITED
600380	JOINCARE PHARMACEUTICAL GROUP INDUSTRY CO.,LTD
600383	GEMDALE CORPORATION
600415	ZHEJIANG CHINA COMMODITIES CITY GROUP CO., LTD.
600418	ANHUI JIANGHUAI AUTOMOBILE CO., LTD.
600428	COSCO SHIPPING CO., LTD.
600432	JILIN JIEN NICKEL INDUSTRY CO.,LTD
600456	BAOJI TITANIUM INDUSTRY CO., LTD.
600489	ZHONGJIN GOLD DORPORATION LIMITED
600497	YUNAN CHIHONG ZINC&GERMANIUM CO., LTD.
600500	SINOCHEM INTERNATIONAL CORPORATION
600508	SHANGHAI DATUN ENERGY RESOURCES CO., LTD.
600519	KWEICHOU MOUTAI CO.,LTD
600528	CHINA RAILWAY ERJU CO.,LTD
600535	TIANJIN TASLY PHARMACEUTICAL CO., LTD.
600547	SHANDONG GOLD MINING CO.,LTD
600548	SHENZHEN EXPRESSWAY CO.,LTD
600549	XIAMEN TUNGSTEN CO., LTD.
600550	BAODING TIANWEN BAOBIAN ELECTRIC CO.,LTD.
600569	ANYANG IRON& STEEL INC.
600583	OFFSHORE OIL ENGINEERING CO., LTD.
600585	ANHUI CONCH CEMENT CO., LTD.
600591	SHANGHAI AIRLINES CO.,LTD

600595	HENAN ZHONGFU INDUSTRY CO.,LTD
600596	ZHE JIANG XINAN CHEMICAL INDUSTRIAL GROUP CO., LTD.
600597	BRIGHT DAIRY & FOOD CO., LTD.
600598	HEILONGJIANG AGRICULTURE CO., LTD.
600600	TSINGTAO BREWERY COMPANY LIMITED
600601	FOUNDER TECHNOLOGY GROUP CO., LTD.
600611	DAZHONG TRANSPORTATION GROUP CO.,LTD.
600616	SHANGHAI FIRST PROVISIONS STORE CO., LTD.
600628	SHANGHAI NEW WORLD CO., LTD.
600631	SHANGHAI BAILIAN GROUP CO., LTD.
600635	SHANGHAI DAZHONG PUBLIC UTILITIES GROUP CO., LTD.
600638	SHANGHAI NEW HUANGPU REAL ESTATE CO.,LTD.
600639	SHANGHAI JINQIAO EXPORT PROCESSING ZONE DEVELOPMENT CO., LTD.
600642	SHENERGY CO., LTD.
600643	SHANGHAI AJ CORPORATION
600649	SHANGHAI CHENGTOU HOLDING CO., LTD.
600653	SHANGHAI SHENHUA HOLDINGS CO.,LTD
600655	SHANGHAI YUYUAN TOURIST MART CO.,LTD
600660	FUYAO GROUP GLASS INDUSTRIES CO., LTD.
600663	SHANGHAI LUJIAZUI FINANCE & TRADE ZONE DEVELOPMENT CO., LTD.
600675	CHINA ENTERPRISE CO., LTD.
600685	GUANGZHOU SHIPYARD INTERNATIONAL COMPANY LIMITED
600688	SHANGHAI PETROCHEMICAL CO.,LTD
600690	QINGDAO HAIER CO., LTD.
600694	DASHANG GROUP CO., LTD.
600717	TIANJIN PORT CO., LTD.
600718	NEUSOFT CORPORATION
600739	LIAONING CHENGDA CO.,LTD.
600741	SHANGHAI BASHI INDUSTRIAL (GROUP) CO., LTD.
600747	DALIAN DAXIAN CO., LTD.
600748	SHANGHAI INDUSTRIAL DEVELOPMENT CO.,LTD.
600761	ANHUI HELI CO., LTD.
600770	JIANGSU ZONGYI CO.,LTD
600779	SICHUAN SWELLFUN CO.,LTD.
600780	TOP ENERGY COMPANY LTD. SHANXI
600787	ZHONGCHU DEVELOPMENT STOCK CO.,LTD.

600795	GD POWER DEVELOPMENT CO., LTD.
600797	INSIGMA TECHNOLOGY CO., LTD.
600804	CHENGDU DR.PENG TELDCOM & MEDIA GROUP CO.,LTD
600808	MAANSHAN IRON & STEEL CO., LTD.
600809	SHANXI XINGHUACUN FEN WINE FACTORY CO.,LTD
600811	ORIENT GROUP INCORPORATION
600812	NORTH CHINA PHARMACEUTICAL COMPANY.LTD
600820	SHANGHAI TUNNEL ENGINEERING CO., LTD.
600832	SHANGHAI ORIENTAL PEARL CO., LTD.
600835	SHANGHAI MECHANICAL ＆ELECTRICAL INDUSTRY CO., LTD.
600837	HAITONG SECURITIES COMPANY LIMITED
600839	SICHUAN CHANGHONG ELECTRIC CO., LTD.
600851	SHANGHAI HAIXIN GROUP CO., LTD.
600859	BEIJING WANGFUJING DEPARTMENT STORE GROUP CO.,LTD
600863	INNER MONGOLIA MENGDIAN HUANENG THERMAL POWER CO., LTD.
600874	TIANJIN CAPITAL ENVIRONMENTAL PROTECTION COMPANY LIMITED
600875	DONGFANG ELECTRIC CORPORATION LIMITED
600879	LONG MARCH LAUNCH VEHICLE TECHNOLOGY CO., LTD.
600881	JILIN YATAI GROUP CO.,LTD
600886	SDIC HUAJING POWER HOLDINGS CO., LTD.
600887	INNER MONGOLIA YILI INDUSTRIAL GROUP CO., LTD.
600895	SHANGHAI ZHANGJIANG HI-TECH PARK DEVELOPMENT CO., LTD.
600900	CHINA YANGTZE POWER CO., LTD.
600961	HUNAN ZHUYE TORCH METALS CO., LTD.
600978	GUANGDONG YIHUA TIMBER INDUSTRY CO.,LTD
600997	KAILUAN CLEAN COAL CO., LTD.
601001	DATONG COAL INDUSTRY CO., LTD.
601003	LIUZHOU IRON & STEEL CO.,LCD
601005	CHONGQING IRON &STEEL COMPANY LIMITED
601006	DAQIN RAILWAY CO.,LTD
601009	BANK OF NANJING CO.,LTD
601088	CHINA SHENHUA ENERGY COMPANY LIMITED
601111	AIR CHINA LIMITED
601166	INDUSTRIAL BANK CO.,LTD
601168	WESTERN MINING CO.,LTD
601169	BANK OF BEIJING CO.,LTD

601318	PING AN INSURANCE GROUP COMPANY OF CHINA, LID.
601328	BANK OF COMMUNICATIONS CO., LTD.
601333	GUANGSHEN RAILWAY COMPANY LIMITED
601390	CHINA RAILWAY GROUP LIMITED
601398	INDUSTRIAL AND COMMENCIAL BANK OF CHINA LIMITED
601588	BEIJING NORTH STAR COMPANY LIMITED
601600	ALUMINUM CORPORATION OF CHINA LIMITED
601601	CHINA PACIFIC INSURANCE GROUP CO.,LTD
601628	CHINA LIFE INSURANCE COMPANY LIMITED
601666	PINGDINGSHAN TIANAN COAL MIMING CO., LTD.
601699	SHANXI LU'AN ENVIRONMENTAL ENERGY DEVELOPEMT CO.,LTD
601808	PETRO CHINA COMPANY LIMITED
601866	CHINA SHIPPING CONTAINER LINES COMPANY LIMITED
601872	CHINA MERCHANTS ENERGY SHIPPING CO.,LTD
601898	CHINA COAL ENERGY COMPANY LIMITED
601918	SDIC XINJI ENERGY COMPANY LIMITED
601919	CHINA COSCO HOLDINGS COMPANY LIMITED
601939	CHINA CONSTRUCTION BANK CORPORATION
601988	BANK OF CHINA LIMITED
601991	DATABG UBTERBATUIBAK GENERATION CO.,LTD
601998	CHINA CITIC BANK CORPORATION LIMITED