The Comparative Studies on the Security Market Efficiency between Chinese and American Markets before and after the Crisis

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Abstract:

Since 1970s, domestic and foreign researches on securities market efficiency have mainly focused on testing and empirically studying the Efficient Market Hypothesis (EMH) and amended it, the study works out securities market efficiency in the aspects of the degree of the function and the connotation of efficiency in economic. The study redefines the meaning of securities market efficiency and systematic classification, proposing the principle of evaluating securities market efficiency. The ratio of cost and income of information processing, asset pricing, trading operations and market regulation of securities market resource embodies securities market efficiency. By logic reasoning and empirical analysis, this paper applies the value analysis for researching the relationship between yields and investment behaviors, based on analyzing the attributes and behavior characteristics of institutional investors.

Keywords: Stock Market, Efficiency, Investment Behaviors, EMH

□Introduction

Since 1970s, domestic and foreign researches on securities market efficiency have mainly focused on testing and empirically studying the Efficient Market Hypothesis (EMH) and amended it, the study works out securities market efficiency in the aspects of the degree of the function and the

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connotation of efficiency in economic. The Efficient Market Hypothesis was generally believed that securities markets were extremely efficient in reflecting information about individual stocks and about the stock market as a whole, when information arising, the news spreads very quickly and is incorporated into the prices of securities without delay. (Eugene Fama, 1970).

However, the investors can't get and understand all the related information about the individual stocks and about the stock market. Thus, the investors believe either technical analysis, which is the study of past stock prices in an attempt to predict future prices, or even fundamental analysis, which is the analysis of financial information such as company earnings and asset values to help investors select stocks, would enable the investor to achieve returns greater than those that could be obtained by holding a randomly selected or irrational portfolio of individual stocks.

The stock markets trade is based on information captured and assimilated by investors. The main role of stock markets is the allocation of resources according to the correlated information flow. Then according to the different means of understanding about information transmittal mechanism and reflection mechanism, the stock markets are divided into efficient markets and fractal markets. Fractal market hypothesis thinks the information will lead to the nonlinear accumulative reflection. The efficient market hypothesis thinks the information has the same function to all the investors. The reflection of the investors to the news is linear in the investment decisions process.

The ratio of cost and income of information processing, asset pricing, trading operations and market regulation of securities market resource affects securities market efficiency. Whether securities market efficiency is high or low manifests the degree of the function. So, securities market efficiency should include not only information efficiency as a core of securities market efficiency, but also financing efficiency and operating efficiency, and so on. In fact, according to different criteria, securities market efficiency can be classified as a sub efficiency system of correlations and interactions with each other. Furthermore, the different performance and the price volatility in the contrast market during the period pre-crisis and after the financial crisis can be analyzed to inspect and verify the distinct changing tendency of securities market efficiency.

According to more institutional investors play in China stock markets, their influences on the

markets are becoming significantly. Compared with individual investors, institutional investors have obvious capital and information advantages, which mean institutional investors may be powerful to decide the market price, collect money, or lead price deviates value and encourage the stock market foam.

The mainstream in academia believes that a mature stock market needs four essential conditions: 1) excellent public company; 2) rational investors; 3) independent mediator; and 4) perfect supervisory system. The efficient shareholder's supervisory system hasn't been set up completely in Chinese markets. According to the prior research, institutional investors can help avoiding cost internalization and profit externalization of individual investors in public companies. Institutional investors contribute to discover the value and improve validity of investment by using their information advantage. Therefore, the behaviors of institutional investors are representative in rational investing. Furthermore, the economic result of rational investing by institutional investors is the main evidence to reveal the degree of market efficiency.

The aim of this paper is to compare the difference of market efficiency between the Chinese market and the US market on the background of the current financial crisis, based on the analysis of investing behaviors, especially the relationship between the Chinese funds investing behavior and the listed companies' performance. Following this introduction, this paper will analyze the theoretical background and literature review about the influence of institutional investors controlling the shares of listed companies.

Ⅱ Theoretical Background and Literature Review about The Influence of Institutional Investors Controlling The Shares of Listed Companies

1. Institutional investors participate in corporate governance

Institutional investors are special stock ownership in public companies; they have some characteristics such as: (1) Holding huge capital, can not quit easily. (2) Professional investment management. (3) Information advantage. Under the stock ownership concentration, there are

controlling shareholders in public companies. Controlling shareholders have strong capital capacity so that they have the motivation and capability to supervise the company. But institutional investors are different from controlling shareholders: 1) institutional investors can not participate with business policy-making. For the legal limitation, institutional investors can not participate with business policy-making directly or have representatives in the board of directors. In United States, institutional investors did not have the right to nominate board members until 2003. Institutional investors are external investors to public companies. 2) Institutional investors always try to invest diversely for avoiding risk. But they don't always have enough business knowledge to decide company's strategies or innovation directions. 3) The diverse investment reduce investment risk while also reduce the supervisory motivation of institutional investors.

Institutional investors are different from controlling shareholders and small shareholders. Actually, institutional investors are in the middle. So according to their unique characteristics, they can be strong power in corporate governance without stock ownership over-concentration or over-decentralization. So institutional investors participate corporate governance is the consequence of the competition between isolated holdings and centralized holdings. This competition will improve the market efficiency.

2. The second type of agency by agreement

The tunneling effect is the phenomenon of transferring the assets and profits out of firms for the benefit of their controlling shareholders (Johnson, 2000). For comparing with the issues between managers and investors, the conflicts between investors are defined as the second type of agency by agreement (Zheng, 2004; Feng, 2004). Because of the expensive supervisory cost, public investors would like to give up their governing power so that causes factual agency by agreement to controlling shareholders. China stock markets are divided into two parts: tradable part and non-trading part. And in these two parts, public investors and institutional investors hold tradable shares while controlling shareholders have non-trading shares. Based on the common benefit, public investors can also hand their governing power to institutional investors which mean institutional investors can enhance their voting power by collecting agency agreements.

As mentioned before those institutional investors are more powerful to the stock market price, they are more motivated in participating corporate governance from inside. Companies' managers also would like to collaborate with institutional investors because they are helpful for making wealth and financing.

Institutional investors protect their own shareholding may influence corporation performance and company stock market price deeply. In addition, institutional investors can also improve stock price by buying (or selling) large scale stocks. They can even participate in corporate governance by taking or changing managers. Therefore, institutional investors are external crucial part to solve the second type of agency by agreement issues, which will affect the market efficiency positively.

3. Prior research

Some researchers focus on the role of institutional investors in corporate governance, business decision-making and operations:

(1)The role in corporate governance

Black and Coffee (1994) argue that institutional investors should play as large shareholders. Comparing shareholding centralization and shareholding decentralization, the best company performance is from the companies which have controlling shareholders, other large shareholders and centralized at some level. Stuart and Laura (2000) also believe institutional investors can supervise company operation and management as long-term large shareholders. Their influence become significantly after they become active shareholders especially.

(2)The role in business decision-making

Wahal and McConnell (2000) found those institutional investors' shareholding percentage positive correlates with investment capital cost and innovation cost. Short et al. (2004) found risk agency's investors can influence company's dividend policy. Davis (2002) believes life insurance and pension fund have the best influence to company's dividend, reduce fixed investment and increase production capability.

(3)The role in operation

Karloff et al. (1996) found no improvement of target company stock price and performance in the

first three years after shareholders' proposal. Smith (1996) found internal ownership; market value and face value were not important factors for institutional investors to choose targets. It was proved by Associate (2000) that institutional shareholders positivism caused the growth of the invested stock market value.

Institutional shareholders positivism can improve corporate governance is also proved by empirical research: McConnell and Servaes (2003) believe that institutional shareholding positively correlates with PB. Chaganti and Damanpour (1997) found that institutional shareholding has significant positive relation with ROE.

In China, most research focus on institutional investors' market effect (Wang, 2000; Zhang, 2000; Yang, 2001); institutional investors' market activities (Shi, 2001; Yuan and Chen, 2003); the shareholding policy of institutional investors (Xiao and Wang, 2006; Gao etc, 2006). Fang etc. (2000) believe that institutional investors have positive influence to corporate governance and transaction policy. While Wan (2004) has no evidence of institutional investors improve company performance. Wei and Varela (2003) employed PB in their research but got mixed findings of the relationship between institutional investors and company performance: it was positive before 1995 while negative since 1996. There are limited researches about institution investors affect on the market efficiency.

In summary, if the institutional investors aim to rational investment, it will result in institutional shareholding positively correlated with PB and ROE. The consequence of the positive correlation, will improve the market efficiency.

Ⅲ The analysis of the funds investing behavior

The author believes all effects to the achievement of proper investing behaviors and business strategies from institutional investors will result as the effect to company value. Therefore, P/B and ROE are employed in this paper to measure the efficiency of institutional investors hold share.

The paper uses the stocks which are holding by funds and the holding ratios are larger than 20% in Chinese market, on the other hand, the sampling data of TOP 100 companies in US market is used.

The databases are including the GTA database, OSIRIS database.

By September 2007, there are 352 fund heavyweight stocks, 179 of them owned by institutional investors; 8 owned by 50-150 institutions; 53 owned by 11-50; 178 owned by 2-10; and 1 owned by 111.

Table 1 shows that Chinese fund investments are becoming mature. Most fund heavyweight stocks are large-cap stock, not high position and low risk. It is hard to find short-term conception stocks in fund investment groups, because fund managers pay more attention to medium and long-term value realization. Therefore, funds are typical representative of institutional investors in the current periods.

Table 1 The situation of stocks holding by funds in Chinese markets

Term \ Funds	1	2-10	11-50	51-100	101-150	151-200	above 201	sum
2006/6/30	121	158	45	7	1	0	0	332
2006/12/30	479	420	269	49	11	5	0	1233
2007/6/30	140	350	288	93	20	5	2	898
2007/9/30	111	178	53	5	3	2	0	352
2008/6/30	101	184	42	11	1	1	0	340

1 Descriptive Statistics

In 2007, from the Table 2, it can be seen that the mean of ROE is 16% in Chinese market. The median of ROE is 15%. The mean of ROE is 22.8% in US market, and median of ROE is 23.8%. The sampling firms in US market have better performance than those of Chinese market. After the financial crisis bursting out in the year of 2008, the mean and median of ROE in the markets are all decline, and the US market has declined in a larger scale than Chinese market.

Skewness of ROE in Chinese market is 1.57 >0, it means the distribution of ROE is right-skewed. Kurtosis of ROE is 4.65, which means the distribution a little sharper than normal distribution. Then in 2008, Skewness of ROE in Chinese market is 1.72, and Kurtosis of ROE is 6.16, which are larger than those in 2007. The distribution of ROE in 2008 appears the sharp Kurtosis and fat tails, which mean the earning abilities of different firms, are concentrated at different level of ROE.

Table 2 Descriptive Statistics

Chinese markets	2007		2008	
	ROE	PB	ROE	PB
Mean	0.16	2.88	0.15	3.05
Median	0.15	6.73	0.14	2.38
Mode	0.14	0.00 a	0.09	0.00 a
Std. Deviation	0.08	88.54	0.10	2.16
Skewness	1.57	-17.26	1.72	2.21
Std. Error of Skewness	0.14	0.14	0.14	0.14
Kurtosis	4.65	298.92	6.16	6.47
Std. Error of Kurtosis	0.28	0.28	0.28	0.28

US markets	2007		2008	
	ROE	PB	ROE	PB
Mean	0.228	3.220	0.245	2.418
Median	0.238	2.538	0.210	1.940
Mode	0.238	0.907 a	-1.063 a	-26.328 a
Std. Deviation	0.2556	1.947	0.394	4.415
Skewness	-3.490	1.172	0.736	-4.101
Std. Error of Skewness	0.271	0.283	0.276	0.302
Kurtosis	19.610	1.047	5.154	29.887
Std. Error of Kurtosis	0.535	0.559	0.545	0.595

a Multiple modes exist. The smallest value is shown

In 2007, Skewness of ROE in US market is -3.490<0, it means the distribution of ROE is left-skewed. Kurtosis of ROE is 19.61, which means the distribution a significant sharper than normal distribution. Then in 2008, Skewness of ROE in US market is 0.736, and Kurtosis of ROE is 5.154, which are little than those in 2007. The distribution of ROE in 2007 appears the sharp Kurtosis and fat tails, but similar to a normal distribution in 2008.

2. Statistics test between each pair of share holding ratio, 2006-ROE and 2006-PB

Some researchers believe that price-earnings (P/E) ratios are indicators of future investment performance of a stock. In this paper, the author wants to use the price-booking value per share (P/B) ratio to indicate the degree of price reflecting to intrinsic value (booking value of net assets per share).

From Table 3, it can be seen there are not significant linear correlations between share holding ratio and 2007-PB. But the relationship between 2007-ROE and share holding ratio is statistical significant at the 0.01 level (2-tailed). And it has the significant linear correlations between share holding ratio and 2008-PB, 2008-ROE. The evidences show that the institutional investors consider the companies' earning ability and the market performances when they do the decision making to pursue the rational investment. After the financial crisis bursting out in the year of 2008, the institutional investors begin to aim at the historical prices in Chinese stock market. This trend would lead to the market efficiency decline as the price is not a random walk.

From Table 4, it can be seen there are significant rank correlations between each pair of share holding ratio, ROE and PB at the 0.01 level (2-tailed). That means that the correlations between each pair are gradually significant according to the share holding ratio changing. This evidence can prove the institutional investors have rational investing characteristic, further. Based on the rational individuals and rational choice hypnosis, the investment behaviors would generate the market efficiency.

Table 3 Pearson test between each pair –Chinese markets

		share holding ratio	2007-ROE	2007-PB			share holding ratio	2008-ROE	2008-PB
share holding ratio	Pearson Correlation	1	.205(**)	.083	share holding ratio	Pearson Correlation	1	.290(**)	.235(**)
	Sig. (2-tailed)		.000	.153		Sig. (2-tailed)		.000	.000
	N	301	297	301		N	299	296	299
2007-ROE	Pearson Correlation	.205(**)	1	.522(**)	2008-ROE	Pearson Correlation	.290(**)	1	.412(**)
	Sig. (2-tailed)	.000		.000		Sig. (2-tailed)	.000		.000
	N	297	297	297		N	296	296	296
2007-PB	Pearson Correlation	.083	.522(**)	1	2008-PB	Pearson Correlation	.235(**)	.412(**)	1
	Sig. (2-tailed)	.153	.000			Sig. (2-tailed)	.000	.000	
	N	301	297	301		N	299	296	299

**. Correlation is significant at the 0.01 level (2-tailed).

Table 4 Spearman test between each pair–Chinese markets

			share holding ratio	2007-ROE	2007-PB				share holding ratio	2008-ROE	2008-PB
Spearman's rho	share holding ratio	Correlation Coefficient	1.000	.245(**)	.233(**)	Spearman's rho	share holding ratio	Correlation Coefficient	1.000	.284(**)	.194(**)
		Sig. (2-tailed)	.	.000	.000			Sig. (2-tailed)	.	.000	.001
		N	301	297	301			N	299	296	299
	2007-ROE	Correlation Coefficient	.245(**)	1.000	.526(**)		2008-ROE	Correlation Coefficient	.284(**)	1.000	.501(**)
		Sig. (2-tailed)	.000	.	.000			Sig. (2-tailed)	.000	.	.000
		N	297	297	297			N	296	296	296
	2007-PB	Correlation Coefficient	.233(**)	.526(**)	1.000		2008-PB	Correlation Coefficient	.194(**)	.501(**)	1.000
		Sig. (2-tailed)	.000	.000	.			Sig. (2-tailed)	.001	.000	.
		N	301	297	301			N	299	296	299

**. Correlation is significant at the 0.01 level (2-tailed).

Ⅳ Booking value, company performance and market efficiency

The fundamental importance of the Ohlson (1995) model is that the model incorporates conservative accounting information in the equity valuation process.

$$P_{i,t} = b_{0,t} + b_{1,t} BV_{i,t} / S_{i,t} + b_2 EPS_{i,t} + \varepsilon_{i,t}$$

Among the variables,

$P_{i,t}$ is the price of company i on the last trading day in April which is usually the accounting reporting periods;

$BV_{i,t}$ is the booking value of net assets of company i on the accounting reporting day;

$S_{i,t}$ is the amount of whole shares of company i on the accounting reporting day;

$EPS_{i,t}$ is the earnings per share of company i on the accounting reporting day;

The Ohlson model shows empirically that book values and long term earnings are determinants of firm value. Moreover, in an efficient security market, the stock prices fully and rapidly reflect the available information in an unbiased way. Then, it can be used to compare the security market efficiency between Chinese stock market and US stock market. The paper uses the stocks which are holding by funds and the holding ratios are larger than 20% in Chinese market, on the other hand, the sampling data of TOP 100 companies in US market is used. Those kinds of sample data will support the empirical evidence because the stocks which are holding by funds and the holding ratios are larger than 20% would improve the corporate governance and the institutional investors would have the rational investing behaviors. As well as, the TOP 100 companies in US market will have good corporate governance.

From table 5, it can be seen that the booking value of net assets per share is not significant correlate to the stock price in each market from the year 2007 to 2008. But, the earnings per share are significant correlate to the stock price in each market from the year 2007 to 2008. The difference of relationship with stock price between the booking value of net assets per share and the EPS show that the earnings information is more efficiency than the booking accounting

information.

The Adjusted-R^2 indicates the explanation ability of the Ohlson model. In Chinese market the Adjusted-R^2 declines from 46.4% to 31.7%, however, in US market the Adjusted-R2 rises from 53.9% to 69.6%. It can be clearly seen that the US market is more efficiency than Chinese stock market due to the accounting information can be reflected more significant in the stock price. Furthermore, facing the global financial crisis, the efficiency of Chinese stock market is declining and the efficiency of US stock market is rising. And on the comparison between the cross data from 2007 to 2008, the US market is more efficiency than Chinese stock market, which is almost reach to 2 times between the US market and the Chinese stock market (0.575 VS 0.283).

Table 5: The security market efficiency between Chinese stock market and US stock market

		b1(BV/S)	b2(EPS)	F-value	Adjusted-R^2
Chinese markets	2007 YEAR	-0.001	0.690	42.103	0.464
		(0.989)	(0.000) ***	(0.000) ***	
	2008 YEAR	0.147	0.487	25.348	0.317
		(0.117)	(0.000) ***	(0.000) ***	
	2007-2008	0.068	0.497	40.578	0.283
		(0.348)	(0.000) ***	(0.000) ***	
		b1(BV/S)	b2(EPS)	F-value	Adjusted-R^2
US markets	2007 YEAR	0.045	0.716	39.596	0.539
		(0.670)	(0.000) ***	(0.000) ***	
	2008 YEAR	0.119	0.807	68.573	0.696
		(0.112)	(0.000) ***	(0.000) ***	
	2007-2008	0.097	0.719	86.384	0.575
		(0.126)	(0.000) ***	(0.000) ***	

Ⅴ Conclusions

In summary, institutional investors shareholding is related with listed company's performance. It also reflects the market efficiency is in the weak form in China during the testing period. It can be clearly seen that the US market is more efficiency than Chinese stock market. The US market appears developed market characteristic. Furthermore, after the global financial crisis, the efficiency of Chinese stock market is declining and the efficiency of US stock market is rising. The reasons behind the appearance might be the investors change to aim the new policies released

by government in Chinese market ignoring the accounting information after the financial crisis. The decision making of investors usually is influenced by the government policies significantly in Chinese market, so the Chinese market is so called policy market by some researchers. However, the investors of US market are more rational to choose the stocks whose expected earnings are noticeable after the financial crisis.

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