ISSN 2616-7433 Vol. 2, Issue 5: 64-69, DOI: 10.25236/FSST.2020.020516

Analysis of Investor Behavior and Stock Market Reporting Volatility Based on Asset Pricing Model

Huizhen Long

College of Arts and Sciences, Columbia University, New York 10025, NY

ABSTRACT. Under the assumption of rational economic man, traditional financial theory constructs a perfect theoretical system through general equilibrium analysis and arbitrage-free equilibrium analysis. Generally speaking, when the investor's mood is high, the subsequent market yield will decrease, whereas when the mood is low, the market yield will increase. As far as the option model is concerned, the option pricing model gives the option price and five basic parameters. As investors cannot obtain all the information, it is impossible to analyze all the information and cannot handle complicated judgments. Based on this article, this paper analyzes investor behavior and stock market reporting volatility based on asset pricing model.

KEYWORDS: Asset pricing model, Investor behavior, Stock market fluctuation

1. Introduction

Asset pricing theory has always been at the core of finance [1]. China's stock market has developed rapidly in recent years, but it has also accumulated many problems. As an emerging market, it has all kinds of abnormal phenomena that can occur in mature stock markets. Since investments are assumed to be completely rational, they will reasonably evaluate the value of securities [2]. People make judgments about buying and selling goods or services according to Bayesian rules, and this decision will be consistent with the traditional expected utility theory. The evolution and development of asset pricing theories and models have irrevocably affected the operation and decision-making of macro-economy, as well as the investment strategies of investors and the operation of capital markets. Therefore, the passive investment strategy will be the best investment strategy, and investors are best to obtain the income from economic growth by investing in an index combination consisting of a basket of stocks [3]. The price determination of risky assets is the primary question that any financial theory must answer. Secondly, the fluctuation of asset price is closely related to the return of investors. Generally speaking, when investor sentiment is high, the subsequent market yield will decline, whereas when sentiment falls, the market yield will rise. Scholars began to study the impact of investors' attention on the performance and volatility of the stock market. This provides a powerful tool for explaining financial anomalies.

2. The Influence of Investor Behavior on Stock Price Fluctuation and Its Causes

2.1 The Influence of Investors on Stock Market Price Fluctuation during Bull Market

According to the classification of investors in document [4], investors are divided into information traders and non-information traders, and it is assumed that information investors are risk neutral and non-information investors are risk averse. When investors invest in mutual funds in unfamiliar foreign markets, the amygdala in the brain will become active and produce negative emotions. To some extent, it has aggravated the fluctuation of stock price. When the stock price rises and the market rises, retail investors' subscription to the fund increases and the fund's assets increase. Momentum trading is a good explanation for the heavy tail and overreaction, and we suspect that the excessive fluctuation of the stock market on the reduction of state-owned shares is also closely related to momentum trading. Just because investors' attention is limited, listed companies must be able to catch investors' attention quickly in order to publicize themselves more effectively [5]. When investors make profits from their investments, they are risk averse for fear of returning to zero. Investors only care about expected returns and risks, and expect to maximize and minimize risks. As an emerging market, China's stock market is very different from the mature markets of many developed countries. From the point of view of the value of risk assets, find out the causes of price fluctuations and countermeasures, and then standardize the operation of the stock market.

Under the assumption of rational economic man, traditional financial theory constructs a perfect theoretical

ISSN 2616-7433 Vol. 2, Issue 5: 64-69, DOI: 10.25236/FSST.2020.020516

system through general equilibrium analysis and arbitrage-free equilibrium analysis. Because the opposite change in asset returns is caused by the change in mood, in addition, market psychology and consumption risk are countercyclical systemic factors, and rising emotional expectations lead to an increase in demand for assets [6]. Because the Internet has become the main source of information for investors. In the process of falling, investors will often regret not stopping losses in time, or some profits will not be settled in time, and then they will regret being locked up. Therefore, when the market is balanced, all investors hold a certain amount of risky securities, and the price of each kind of securities in the market makes its supply and demand equal. Non-systematic risks can be eliminated through decentralized investment, and systematic risks need risk compensation. The higher the systematic risk of an asset, the greater its expected return [7]. Some institutions or individuals know more policy information than others, or some institutions or individuals know policy information earlier than others. The change of risk avoidance degree is finally reflected in the price change of assets by influencing the discount rate, thus the rate of return on assets in the model shows greater volatility than the dividend growth rate.

3. The Relationship between Investor Attention and Stock Market Volatility

3.1 The Relationship between Investors' Attention and Stock Market Liquidity

China's stock market is a market composed of 97% individual investors, and the maturity of investors varies [8]. In this combination, the proportion of investors investing in each security is equal to the relative market value of that security, that is, the ratio of the total market value of this security to the total market value of all securities. No matter how many factors are used in the model, the multi-factor model itself cannot escape the category of linear model, that is, the effect of multiple factors on the model is equivalent to the linear combination of the effect of a single factor. The regression between investor behavior and the increase of the Shanghai 50 index shows that the investment behavior of individual investors has a more significant impact on the trend of the Shanghai 50 index, and the disposition effect of individual investors is more prominent in the Shanghai 50 index. With other factors unchanged, each additional unit of investment by individual investors will bring a 2.4% increase to the Shanghai 50 index. Using the regression analysis between the investment heat of individual investors and the growth enterprise market index, the results are shown in Table 1.

Table 1 Regression Analysis Results of Individual Investor Behavior and Growth Enterprise Market Index Increase

Variable	R	R^2	After adjustment R^2	Independent variable x	Variance ratio	T value
Statistical value	0.223	0.044	0.017	0.005	2.362	1.204

No matter whether the game is a finite number of repeated games or an infinite number of repeated games, there is only the above-mentioned unique solution. Compared with foreign stock markets, China's stock market fluctuates greatly and frequently [9]. As investors cannot obtain all the information, it is impossible to analyze all the information and cannot handle complicated judgments. Because the relevant laws and regulations in our country are not perfect enough, the behavior characteristics of institutional investors have been distorted to some extent, which has also aggravated the volatility of the market to some extent. Subsequently, the further manifestation of the public signal makes the expected price of the asset closer to the rational price expectation, thus leading to a decline in the yield of long-term assets. As a result, the market sentiment has further developed towards optimism, and the influx of small and medium-sized investors and their incremental funds into the stock market has further accelerated, thus driving the market volatility to further increase.

3.2 The Impact of Investor Attention on Stock Market Volatility

Investors' expectations are always affected by current price changes and adjustments to new information are insufficient. The development experience of mature capital market and the development practice of China's capital market show that the healthy and stable development of capital market must have a strong and diversified team of institutional investors. This shows that the existence of emotional traders will lead to greater volatility of short-term asset prices, and the more serious the emotions of investors with information, the greater the volatility of asset prices. With the rapid increase of market volatility, the index rose rapidly. As far as the option model is concerned, the option pricing model gives the option price and five basic parameters. They are the quantitative relationships between the target price, the execution price, the interest rate, the maturity time and the volatility. The transmission of information within a group mainly relies on social cognition and analysis of conversation. However, due to a lot of daily communication among investors, the analysis of a certain stock or certain investment decisions are easy to spread among groups. The reason is that each investor's effective set consists of a part of market portfolio's investment and a part of loans with risk-free interest rates. Therefore, the multi-factor model can only be regarded as a rough approximation model. To model the Chinese stock market, it is better to have a non-linear model to jump out of the shackles of traditional financial models.

4. An Analysis of Supply and Demand Factors of China's Stock Market Price Formation

How is the value of the commodity determined? “It is only the socially necessary labor time, or the socially necessary labor time that produces the use value, determines the value of the use value. Here, a single commodity is regarded as the average sample of that kind of commodity. Therefore, contains Equal amount of labor or commodities that can be produced in the same labor time have the same amount of value. The ratio of the value of a commodity to the value of any other commodity is the necessary labor time to produce the former and the necessary labor to produce the latter The proportion of time.”"What kind of change law is the exchange price of a commodity?”Price is the currency name of labor materialized in the commodity. Therefore, the commodity is equivalent to the amount of money called its price. “,”As the quantity of value is converted into price, this inevitable relationship is expressed as the exchange ratio of commodities to currency commodities that exist outside of it. This exchange ratio can express the value of the commodity, or it can be greater than it. A small amount, under certain conditions, commodities are transferred according to this larger or smaller amount.” That is why, the price of commodities shows a characteristic of fluctuations around value.

On the one hand, from the perspective of the value characteristics of securities products, the value of the exchange value of securities products is not only reflected in the actual capital it represents, but also in the level of its investment value, that is, what it has The ability to bring benefits to investors, that is, the true value of any asset is the cash flow that the owner or investor of the asset can receive while holding the asset. This determines the value uncertainty, fictitiousness, value expectation, price information decisiveness and externality of securities products. On the other hand, from the perspective of the demand characteristics of securities products, the securities products provide buyers with not the current utility but the expected utility, and as long as the buyer holds the securities product, the relationship between him and the original supplier It has always existed, and the effectiveness of securities products has always been related to the original providers of securities products. In addition, as far as demand is concerned, the total amount of purchases made by a buyer for a certain security product is not limited by the purchaser's physiological or physical potential in consumption. The particularity of the security product's utility, coupled with the virtuality of the security product and the specificity of the security product's value determination, will obviously affect the security product's demand, which in turn will affect the security product's special price volatility.

5. Analysis of Characteristics of China's Stock Market

To understand the positioning of the Chinese stock market, it is necessary to start with the positioning of the mainland financial system. Hu Jizhi divided the main historical financing systems into three categories, commercial credit financing, bank credit financing and stock market financing. For now, bank credit financing and stock market financing are still the two existing financing systems. Levine divides the financial system into a bank-based financial system and a securities market-oriented financial system according to different financial structures. The former is represented by Germany and Japan, while the latter is represented by the United Kingdom and the United States. The difference between the two systems mainly lies in the difference in information collection and supervision of enterprises. However, the difference between the two methods is not absolute. Germany and Japan are also emphasizing the interests of individual shareholders, accelerating the development of the securities market, and the relationship between banks and companies has begun to become loose. The United Kingdom and the United States are also in accordance with the needs of economic development and capital market innovation, such as pension funds and insurance funds are involved in the company's direct supervision and subsequent resource support. Judging from the comparison of bank loans and investment in fixed assets with the direct financing of the stock market, China's financial system is still based on banks (bnak seven stayed). Yu Changqiu also pointed out that indirect financing in my country has a more important position than direct financing. Obviously, the comparison of the data directly shows that at the macroeconomic level, the current role of China's banking system in economic development is far greater than the

ISSN 2616-7433 Vol. 2, Issue 5: 64-69, DOI: 10.25236/FSST.2020.020516

effect of the stock market on economic development; and the operation of micro-enterprises to prevent the increase of non-performing loans of banks is bound to restrict banks from further To investigate the economic activities of enterprises, banks do have the ability to inspect the operation of enterprises. But as far as the stock market is concerned, because of the one-sided division of tradable and non-tradable shares in the mainland stock market, and when non-tradable shares account for the absolute controlling share, how many secondary market investments may or may be able to investigate the business of the enterprise? Judging from the above classification and various indications, the mainland's financial system should still be based on banks.

It is worth noting that the Chinese legal system belongs to the civil law system similar to Germany and Japan, while the United Kingdom and the United States belong to the Anglo-American legal system. From the perspective of the American economist Goldsmith in his famous book “Financial Structure and Financial Development”, generally in the early stages of financial development, debt certificates are far ahead of equity certificates and dominate. Commercial banks are in financial institutions China occupies a prominent position. So far, the development of the mainland stock market has only been more than ten years, and it should be said that it is still in the initial stage of development. In fact, the development of the bank financing system only began in the early 1980s, and it only took more than 20 years. It is not an overstatement in the early stages of financial development. On February 1, 2004, the State Council issued “Several Opinions on Promoting the Reform and Opening-up and Stable Development of the Capital Market”, which clearly pointed out that “it is necessary to recognize the situation, seize opportunities, change ideas, vigorously develop the capital market, and increase the proportion of direct financing, Create and cultivate a good investment environment, give full play to the role of the capital market in promoting capital formation, optimizing resource allocation, promoting economic structural adjustment, and improving corporate governance structure, etc., and make new contributions to the sustained and rapid coordinated and healthy development of the national economy and the comprehensive construction of a well-off society Contribution”. From this perspective, in the future, China may be in the middle of a transition from a bank-based financial system to a securities market-oriented financial system. The role of the securities market, especially the stock market, will become more and more important. obvious.

The quotation mechanism includes two parts: the pricing mechanism and the commission method. The pricing mechanism in the secondary market can be divided into instruction-driven and quotation-driven. The former is the bidding system, that is, the opening price is formed by the collective bidding, and then the trading system sorts the continuously entering investor trading orders according to the principle of price priority and time priority, and matches the buying and selling orders with the bidding deal: the latter is the market maker system, It is characterized by the market maker's quotation to investors for the stocks he is responsible for. Investors trade directly or through brokers with the market maker, and the transaction is executed at the market price quoted by the market maker until the market maker changes the quotation. until. At present, many developed countries, such as the US stock market, implement the market maker system, but in my country, the electronic trading system is used to match the bidding mechanism. In contrast, due to the lack of market makers' control over stock prices, electronic trading systems are prone to sharp fluctuations in stock prices. For some stocks, once there is a lack of investor attention, the trading volume will be extremely cold.

First, the development of the stock market and changes in the trading system have an important impact on stock price fluctuations. In the early stage of the development of the stock market, the price formation mechanism has not fully played its role, and the stock price is bound to exhibit the irregular characteristics of large fluctuations. However, with the gradual improvement of the stock market and the increasing scale, stock prices are becoming more and more rational. Many scholars' research on the effectiveness of China's stock market in stages also illustrates this point. For example, Zhang Bing and Li Xiaoming proposed that the change in the effectiveness of China's stock market is a dynamic evolution process. At the same time, from the author's empirical point of view, it is not only that the electronic trading system's combination of exchanges may cause the stock market volatility in China's stock market to be much higher than that of other countries' stock market with the market maker system as the main body. Comes great. With the gradual implementation of the T+l system and the daily limit system, the fluctuations of stock prices at different stages show different characteristics. This point will be analyzed in detail in the empirical test on the relationship between volume and price in Chapter 8;

Second, the existence of non-tradable shares makes the pricing of the mainland stock market significantly higher than that of foreign stock markets. The biggest difference between the mainland stock market and other countries' stock markets is the existence of non-tradable shares. State-owned shares, legal person shares and other non-tradable shares account for more than 60% of the total share capital of listed companies, making the pricing mechanism of circulating shares not fully reflected. From the empirical results of some scholars, it also illustrates this point. For example, Zhu Wuxiang and Guo Zhijiang pointed out that if all non-tradable shares of a listed company are listed and circulated, the overall price level of the stock market will drop by 39.4%. There will be a decrease of between% and 26%. This shows that the existence of non-tradable stocks makes the stock

ISSN 2616-7433 Vol. 2, Issue 5: 64-69, DOI: 10.25236/FSST.2020.020516

market pricing may be high.

Third, the high price-earnings ratio is accompanied by a high turnover rate. The existence of non-tradable shares makes the shareholder's market pricing a bit high, and the price-earnings ratio is also relatively high. It is generally believed that the high price-earnings ratio of my country's stock market is also accompanied by a high turnover rate, indicating the speculative nature of my country's stock market. Although this high price-earnings ratio and high turnover rate have negative aspects, it should be seen that the formation of this phenomenon has certain institutional factors. In fact, if the market fails to protect the interests of investors, it is obviously impossible for investors to hold stocks steadily for a long period of time, and this situation can easily lead to a high stock turnover rate. In other words, this phenomenon may be related to institutional factors such as corporate governance. For example, the Japanese stock market's price-earnings ratio is completely different from that of the US stock market. The Japanese stock market's price-earnings ratio is even higher than that of the Chinese market. As what Chengying believes, the price-earnings ratio of emerging markets in developing countries cannot be simply compared with the price-earnings ratio of mature markets in developed countries, nor can it be simply compared with the price-earnings ratio of other emerging country markets. The open securities market cannot be compared with the closed securities market.

6. Macroeconomics, Policies and Stock Price Fluctuations

The risk reduction in the stock market is mainly reflected in liquidity risk and non-systemic risk. Liquidity risk mainly comes from the uncertainty generated when transferring assets from trading intermediaries. The capital market, while trading financial instruments, reduces this uncertainty. For example, in the stock market, shareholders can continually sell the shares they hold, and at the same time the company can get the capital invested by the original shareholders. That is why the stock market reduces liquidity risk in this way. And as transaction costs decrease, more and more capital will be invested in projects with poor liquidity and high expected returns in this way, which in turn will promote economic development. In the same way, different production technologies also have different life cycles. The long cycle may have a higher expected return, but the liquidity risk is greater due to the long cycle. Therefore, the stock secondary market allows production technology to be traded between different investors during the life cycle, thereby reducing liquidity risk. Of course, one thing is also worth considering, that is, the transaction cost is relatively low, otherwise it may affect the investor's decision and stop trading. On the other hand, investing in new technologies and new products is very risky, but investors can also hold different assets through the stock market. This diversified portfolio of innovative projects can obviously reduce non-systemic risks, thereby promoting investors to Invest more in growth investment projects.

Before the advent of the financial market, especially the stock market, it is very difficult to evaluate a company or a manager or the current market and industry conditions. In fact, for an ordinary bank depositor, it is impossible to have enough time, energy or methods to collect and analyze a large amount of information about the company, management and economic environment. It is also because of the lack of sufficient information that it is difficult to arouse people's investment desire. It is this cost of obtaining information that ultimately leads to the creation of a financial intermediary market. Under normal circumstances, it is necessary for external investors to obtain the exact project return information, and the insider may implement some projects that harm the interests of external investors. If the stock price of stocks traded in the stock market can effectively reflect the company's information, then investors can link management performance with stock prices, and management performance with stock prices can also prompt management to fully consider the interests of investors. At the same time, if the management is weak on the management of the company, it may be removed and lead to a new round of company reorganization. In this way, the stock market may promote the development of company management through the reorganization of companies with poor performance. And this pressure will also be a major material incentive for the company's management. Of course, the above is just an idealized state. In fact, internal investors have a better source of information than external investors, so there may be an urge to buy stocks when internal investors want to sell stocks, and this information asymmetry affects the effectiveness of the stock market.

One way to transform savings is to pool the funds of different depositors for investment; another way is to provide new small unit financial innovation varieties, so that ordinary households may also hold different investment varieties. Either way, the stock market is conducive to turning savings into investment, thereby promoting further economic development. In Ad Tianwei Smhit's theory of national wealth, he mentioned that the division of labor is the main factor promoting production activities. The financial system, including the stock market, can promote specialized division of labor. Smhit believes that because specialized division of labor requires more transactions, lower transaction costs will promote specialized division of labor. Generally

ISSN 2616-7433 Vol. 2, Issue 5: 64-69, DOI: 10.25236/FSST.2020.020516

speaking, more specialized division of labor requires more transactions, but transactions require costs, and financial systems such as the stock market can reduce transaction costs, which in turn promotes specialized division of labor. It is precisely because the stock market has such a functional structure that the stock market is inextricably linked to economic development and policy changes. Economic development and policy changes affect the development of the stock market, and the development of the stock market will play a certain role in promoting the economy. However, there are different research conclusions in reality. Judging from the current research results in China, on the one hand, there are few empirical studies and more theoretical analyses on the relationship between the stock market and economic growth. The current empirical studies also basically use quarterly and short-term and short-term data. Today, with more than ten years of development, it is necessary to conduct further analysis; on the other hand, although domestic views generally believe that the stock market does not match China's macroeconomic development, from the end of the Shanghai Stock Exchange Index to the performance in 2003, the overall However, there is an upward trend in Shanghai, and even the sharp decline since mid-2002 has not changed this pattern. This is why the author believes that further analysis of the relationship between the development of the mainland stock market and economic growth is necessary.

8. Conclusion

With the continuous innovation of financial instruments and the continuous progress of computer technology, more and more researchers in mathematics, physics and computer science have begun to engage in interdisciplinary research in finance. Considering China's emerging capital market, there is still room for improvement in the system construction, especially in the credit trading system represented by margin trading. The existence of emotional traders makes the return of assets (short-term or long-term) negatively correlated with the arrival of private signals, while the return of assets is positively correlated with the arrival of public signals. This is also a good explanation for the relatively small fluctuation trend of European and American stock markets in the long run. There is a strong correlation and movement consistency between investor attention and stock market volatility. In the comparison between high net worth investors and low net worth investors, the investment behavior of a small number of high net worth individual investors has a more significant impact on the index increase. In the long run, standardizing the behaviors of listed companies and investors in the stock market is the best way to solve these problems.

References

[1] Xu Yuandong. (2015). Investor’s Knight’s Uncertainty Emotion and Stock Market Fluctuations. Journal of Systems Engineering, vol. 030, no. 006, pp. 736-745.
[2] Shi Yongdong, Cheng Hang. (2019). Investor sentiment and vision of asset pricing. Systems Engineering Theory & Practice, vol. 39, no. 8, pp. 1907-1916.
[3] Li Ziran, Qiao Zhaorong, Wang Shouyang, et al. (2018). Analysis of Stock Market Cycle Fluctuations Based on Information Diffusion Model: International Experience and Domestic Application. Systems Engineering Theory and Practice, vol. 38, no. 10, pp. 2449-2465.
[4] Lin Weihao. (2017). Analysis on the Investment Proportion of Real Estate Market and Stock Market in China Based on CAPM Model. Shanxi Agricultural Economics, no. 13, pp. 109-109.
[5] Wang Shiling. (2016). Research on the Relationship between Consumption Risk and Equity Premium--Empirical Analysis from Chinese Stock Market. Caixun, no. 19, pp. 26-27.
[6] Huang Yanjing, Xu Xu. (2018). An empirical study of a four-factor model based on investor sentiment. Friends of Accounting, no. 1, pp. 57-61.
[7] Li Dan, Feng Yang. (2016). Empirical Research on the Factors Affecting IPO Pricing in China. China Market, no. 11, pp. 22-26.
[8] Luo Tianyong, Zeng Xiaoyu. (2017). Axiomatic Behavior of Stock Market Pricing Behavior--An Empirical Analysis Based on China's Stock Market Data. Zhifu Times, no. 6X, pp. 32-32.
[9] Wang Qifan. (2015). Applicability of Three-Factor Model in China and Its Relation to Macro Monetary Policy. Enterprise Herald, vol. 000, no. 019, pp. 1-4.
[10] Li Ziran, Zu Lei, Wang Shouyang. (2015). Formation Mechanism and Characterization of Asset Price Cycle: Literature Review and Prospects. Management Review, no. 7, pp. 15-22.