Multinomial Simulation of the Impact of Margin Trading on Stock Price Information Content and Return Distribution

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Abstract
The efficiency of the securities market has long been the focus of academic and practical circles, and the improvement of market efficiency is the key to the healthy, stable and sustainable development of China's securities market. Due to the dominance of price in the allocation of resources, the core of the securities market efficiency is the market pricing efficiency, it constitutes the basis of other financial theory, explains the changes in the financial market asset prices, is a key part of the market allocation of resources to play function. Margin trading, also known as securities credit transactions or margin trading, refers to the premise to provide corresponding guaranty to the securities companies in the investors, investors, securities companies to borrow money to buy and sell securities and securities borrowing transactions. Margin trading, as an important securities trading system, has been running for many years in Europe and America. By virtue of its trading margin leverage and short operating characteristics has gradually become an indispensable part in the mature stock market trading system, an important foundation become the basic function of securities market play a role. China, as an emerging market country, the development of the securities market is also relatively late, and there is a long term institutional constraints, is not conducive to the healthy development of the securities market. Until the Commission launched the margin trading pilot in April, the market began to ease the short selling constraints.

Key words: Margin trading; Stock price information content; Return distribution; Information efficiency; Double difference model.

1. INTRODUCTION

The essence of the research on the effect of the margin trading mechanism on the pricing efficiency of the securities market is the study of the microstructure of the specific market and the forming process of the price. The margin, also known as credit transactions, financial innovation as a useful attempt, provides a short selling transactions for investors to provide more perfect price discovery mechanism for the market, help the market price on the negative emotions of absorption, so that prices closer to the intrinsic value; on the other hand leveraged financing transactions, enlarge the stock market return of informed traders, investors involved in the transaction to collect information and generate positive incentives, improve the information content of stock price in providing liquidity at the same time (Lei and Zhang, 2017). The actual operation in the process of liberalization, financing constraints and short selling constraints, will help improve the efficiency of securities market pricing, to maintain the stability of the stock market, to understand in a given trading rules, trading in asset prices in the dynamic forming process has important significance (Pan and Zhu, 2015).

From the perspective of information economics, when the existence of investors 'heterogeneous beliefs under the condition of short selling mechanism contributes to the price for negative information absorption, make the price closer to the intrinsic value, which helps to improve the efficiency of the overall stock market pricing; financing transactions leverage magnified the stock market informed traders profit, and to collect information, investors involved in the transaction have positive incentives, improve the information content of stock price in providing liquidity at the same time (Zheng, Yan and Liu, 2015). Therefore, the practice of margin China securities market continued expansion based on the information from the perspective of validity, test the effects of margin of the stock market pricing efficiency and influence effects and mechanism of changes in the size of China's margin diagram as shown in Figure 1, many scholars in the two financial pilot before should be introduced on whether short selling the mechanism and transaction mode in the present stage, this paper study and credit transactions influence on stock pricing efficiency, but due to the practical process of the stock market in our country, only to the Taiwan or Hongkong stock exchange credit transaction data analysis, and put forward policy recommendations.
Figure 1 Schematic diagram of changes in the size of China's margin.

Today, from the credit trading mechanism of stock market in China has developed rapidly, the process to change the operating mechanism of the original investment model and market, and bring far-reaching influence to investors; on the other hand, in China's securities market in small investors accounted for relatively high, market speculation and volatility under the condition of large open, short selling and financing constraints, will help improve the efficiency of securities market pricing, to maintain the stability of the stock market, the academic and practical circles there is still controversy(Cheng and Chun, 2016). In this context, a good experimental environment by using China securities margin trading market continues to expand, the intrinsic mechanism and the conduction process of pricing efficiency, study of margin financing and securities market in China the margin effect of stock pricing efficiency, has important theoretical and practical significance for investors rational investment behavior in the open short and financing constraints (Fang and Liu, 2016). For a long time, the asset pricing efficiency is the core content of Finance concerned, research about the influence of the essence of margin financing mechanism of stock market pricing efficiency is the formation process of the specific research contents of market microstructure and price. When investors have heterogeneous beliefs, short selling mechanism can help the market to absorb the negative information on the stock price, so that the stock price tends to be more intrinsic value, which is conducive to the overall stability of the securities market. But because of the intrinsic value of the stock is difficult to be observed directly, from the theoretical analysis of the seemingly intuitive impact on the stock prices of short selling constraints, it is difficult to obtain evidence; even using relative value to test the effect of short selling restrictions, it is difficult to exclude individual stock risk, liquidity factors, interference factors such as noise traders them.

On the other hand, although short selling has been recognized as an important factor in the formation of asset prices, but the scholars in the pricing of the nature of the role and influence of the conclusions are not the same. Therefore, the lack of short selling mechanism will lead to overvalued securities prices (Yang, Cheng and Chen, 2016). Scholars hold the opposite view that the rational expectations did not obtain the information under the framework of rational traders considering the short sale constraints, setting the price aware of the negative concept may not be reflected in the trading, short selling constraint may lead to part of the information from the field of traders, the price of private information to adjust the speed, but no the direct cause of stock price is overvalued. In addition, the research on the credit transaction and the stability of stock market that release the restrictions on short selling may not improve the pricing efficiency, it can increase the volatility of the stock market, the stock market rose sharply. In this context, the intrinsic mechanism and the conduction process influence on pricing efficiency of stock pricing efficiency, this paper studies the financing margin and securities market in China from the margin of the information content of stock price and investor behavior decision-making point of view, as well as the influence. From the practical point of view, on the one hand, provides empirical evidence for the relationship between China market credit trading and stock market pricing efficiency, on the other hand, also improve the relevant regulatory policies for China's regulators, further provide a theoretical basis and empirical support and deepening of financial innovation, influence the information content of stock price and return rate distribution the characteristics of the diagram shown in Figure 2.
Due to the dominance of price in the allocation of resources, the core of the securities market efficiency is the pricing efficiency, it constitutes the basic assumptions of other financial theories, explains the changes in the financial market asset prices, is a key part of the market allocation of resources to play function. This paper studies the pricing efficiency of stock market refers to the price of financial products to reveal information, this definition includes two aspects, one is the validity of the price itself; two is the effectiveness of information transmission. From the perspective of information economics, when the existence of investors ‘heterogeneous beliefs under the condition of short selling mechanism contributes to the price for negative information absorption, make the price closer to the intrinsic value, which helps to improve the efficiency of securities market pricing; on the other hand, the leverage effect of margin trading on the stock market magnified the benefits of informed traders then, to collect information, investors involved in the transaction have positive incentives, improve the information content of stock price in providing liquidity at the same time.

Therefore, based on the practice of China’s securities market margin expansion, this paper attempts to examine the impact of margin on the pricing efficiency of the securities market, the degree of influence and the impact mechanism from the perspective of stock price information content. In the part of empirical research, this paper focuses on the influence of margin trading mechanism, the securities market pricing efficiency after the introduction of specific include: first, the overall margin of the stock market liquidity and volatility; second, margin of stock returns; third, the impact of margin trading on stock price the information content; fourth, effect mechanism of margin trading on the stock price information content. After the introduction of margin trading, the relationship between supply and demand of funds and securities in the securities market must be reflected in the market liquidity, volatility and stock price information content. Therefore, this article from the stock market volatility, liquidity and stock price information content, to study the impact of margin on the market pricing efficiency. In addition, this paper combined with the theory of behavioural finance, investment behavior through research limited rational investors in the financing constraints and the short release part, to further understand the mechanism and conduction path of the impact of margin trading on the securities market pricing efficiency, also contribute to the practice of Chinese market characteristic, clarify the mechanism selection argument (Tong and Meng,2015).

2. ANALYSIS OF RELATED THEORY AND KEY MODEL

2.1 Price formation and market microstructure theory

As the core of modern financial system, capital market plays an important role in optimizing the allocation of stock capital in the economy. In essence, the key role of the securities market to play the role of resource allocation lies in its pricing efficiency, and the core of the pricing efficiency lies in the ability to adjust the price. A mature and efficient capital market will be more effective allocation of resources, reduce and disperse risks while creating opportunities to enhance economic vitality. The essence of the research on the impact of the credit trading mechanism on the pricing efficiency of the securities market is the study of the microstructure of the specific market and the forming process of the price. Therefore, this paper first reviews the classic model of price formation and market microstructure theory, and explains the mechanism of price formation and discovery from a micro perspective. Secondly, in the framework of the theory of effective market, this paper reviews the efficiency of market pricing.
Finally, according to the deviation of empirical research and theoretical assumptions, the paper makes an analysis of the important theories from the perspective of investor behavior. In the classical theory model of market microstructure theory, spread model and inventory model focuses on the face of market maker system under market maker Uncertainty Impact on price formation, and the related research information model is mainly considered in the financial market information asymmetry influence on the transaction price of assets based on the determined, so this section mainly aims at the information model in detail, including the information model according to whether to consider the game behavior between informed traders and market makers and uninformed traders, can be divided into non-strategic trading model and strategy trading model.

Before the emergence of financial market microstructure theory, research on price decision economics mainly has the following two points: one is to consider only the financial market equilibrium price determination, without considering the formation process of equilibrium price; the other is to determine the market clearing price based on Walrasian auction principle. But in practice, many scholars have found more than two kinds of views are quite different from the formation of the real financial market equilibrium price, for example by Bayesian learning rules for investors in the transaction, or take some specific strategies to decide the price to play a more active role in the process of promoting the further, this view study on economic scholars on the financial market price decision process (Wu and Gu,2015).

Sequential transactions, each trader is a certain probability to be extracted for 1 unit of transactions, and then wait for the next time to be extracted for trading. That is to avoid the informed traders take advantage of information for an unlimited amount of transactions, and quickly to the market maker to reveal the transaction information; in addition, this assumption requires that each time by traders to trade the same extraction probability, so the market maker can probability and informed traders were calculated for each transaction. On the basis of the non-strategic model, the strategic trading model takes into consideration the game process between informed traders, uninformed traders and market makers.

According to whether the uninformed traders are involved in the transaction, the model can be further divided into non participation game model and participation game model. In the non-participation game model, the uninformed traders often passively assume the transaction losses. However, in the real financial market, because the price contains certain information, the uninformed traders still can adopt different trading strategies based on price changes, then uninformed trader's transaction and will affect the strategic behavior of informed traders. Therefore, the strategy of trading model, the Admati-Pfleiderer model includes uninformed traders involved in the game of this section is mainly about the strategy, transaction model diagram as shown in Figure 3, the pricing efficiency of the capital market as the core of the allocation of financial resources, efficient use of funds and effective mobilization of gold financial resources to play a decisive role, which determines the efficient market hypothesis in modern finance theory in the core position.

Figure 3. Schematic diagram of strategic trading model

The efficient market hypothesis is a simple description of the market benchmark, in the ideal state information should be effective, as the MM theorem and the Coase Theorem and the independence theorem become the reference real financial market operation. Compared with other financial theories, the key part of the efficient market hypothesis lies in the empirical research. Compared with other standard models of economics, the basic theory of efficient market is less. The test criteria of weak form efficient market can be used to predict the future price in the past, such as random walk test, run test and filtration test. In order to test whether to follow a sequence of random walk process method, correlation coefficient test is usually used to sample data as a time series, the method using the random process to test the random variables and lagged correlation coefficient value between.
2.2 Margin trading can improve pricing efficiency

Through the random walk to get the answer to the problem of market efficiency, some scholars have found that the stock price has some predictability, that is, market anomalies. The study of these market anomalies has become systematic after the efficient market hypothesis. It mainly includes kinetic energy effect, reversal effect, scale effect and calendar effect. With the empirical analysis of the theory of the vision of the market further, most scholars recognized the price there is a certain degree of predictability, but this does not constitute a weak form efficient market: first, most of the inspection counter market anomalies did not overcome the joint test problems, if the pricing model errors, market anomalies may be the choice of model the problem, rather than investors excess returns; secondly, statistically significant is not equal to the economic significance is significant, considering the transaction system and transaction costs, investors cannot obtain excess returns; finally, the market can achieve the dynamic equilibrium in the short term, such as the January effect, investors to arbitrage the vision the price quickly return to equilibrium, so in the process of asset management, the probability of market anomalies significantly reduced profit. The main way to test the semi strong efficient market is to examine the reaction speed of the stock price to the new information.

The pricing efficiency of securities market can be studied from two aspects: price discovery and information efficiency. Among them, the price discovery is reflected in the excess return of stocks, the efficiency of the performance of the stock price response to information. Inspection of excess returns. Excess income refers to the difference between the normal income estimates of the actual yield and pricing rate, this test method faces between asset pricing model and the accuracy of the market validity argument; on the other hand, in a typical incident to infer the market efficiency lack of persuasion. In the framework of effective market theory, rational traders called “arbitrage”, and irrational traders called “noise traders” in the market competition, rational traders through arbitrage to obtain risk-free arbitrage gains from the non-rational market behavior, thus speeding up the convergence to the rational market.

Therefore, the effective market theory admits the existence of irrational investors, but due to the above mechanism, arbitrage always drives asset prices return to base value, relative to the effective market theory to discuss the market pricing efficiency under the framework of the rational, behavioural finance based on bounded rationality hypothesis, this paper derived a set of different the pricing model and try to explain the market anomalies in reality (Yang, 2015). When considering the rational behavior and imperfect market conditions of non-market participants (such as information asymmetry, the lack of short selling mechanism or the existence of financing constraints) under the condition of research on short selling mechanism has also been some enlightening conclusions. Therefore, this section mainly deals with the cognitive biases and behavioural biases of investors related to the study of credit transactions. Investors are required to submit 100% of the deposit in the general securities trading that is, the purchase of securities shall be deposited in full amount of funds, and the sale of securities shall be held in full before the securities. While engaged in the margin trading is different, investors only need to pay a deposit, you can deposit a certain times of sale (buy short), rose and don't have enough money to be in stock price forecasting, can securities companies to borrow money to buy securities, and repay the loan in high sell securities; forecast the stock price will fall and have no stock, can securities companies to borrow securities to sell, and the return of buying low stock. When an investor is engaged in ordinary securities trading, he may freely buy and sell securities and may transfer the funds at will.

While engaged in the margin trading, such as the existence of open contracts, the need to ensure the margin account of the collateral is abundant, required to sign a contract margin and brokerage guarantee proportion, such as the guarantee ratio is too low, investors can stop the brokerage margin trading and collateral transactions, even partially or fully open the existing contract. On the other hand, investors need from the margin account transfer of funds or shares, also must maintain guaranty ratio exceeds 30%, the stock part can be extracted in the available margin balance of cash or offset margin, and the extraction after maintain guaranty ratio of not less than 30%. This may be the biggest difference between the two. Margin financing, the funds must be used for the purchase of listed securities, and enhance the liquidity of the securities market, under certain conditions, the value of the securities market. Stock pledge financing is different, cannot be used to finance the purchase of listed securities, of course, for the specific financing of the main body, the state of its funds will be used for a certain amount of funding requirements.

For example, securities companies through the stock pledge financing funds can only be used to make up for lack of liquidity, cannot be used for his. Thus, the margin financing and capital markets more closely linked to the stock pledge financing may involve both the capital market, but also directly related to the real economy. In addition, there is a similar concept with the stock pledge financing equity pledge financing, mainly refers to the equity of the non-listed company to provide security in order to finance the financing, the principles of behavioural finance schematic diagram shown in Figure 4. With respect to the effective market theory to discuss the market pricing efficiency under the framework of the rational, behavioural finance based on the assumption of limited rationality, this paper derived a set of different pricing model and try to explain the market anomalies in reality. When considering the rational behavior and imperfect market conditions of non-market participants (such as information asymmetry, the lack of short selling mechanism or the existence of financing constraints)
under the condition of research on short selling mechanism has also been some enlightening conclusions. Therefore, this section mainly deals with the cognitive biases and behavioural biases of investors related to the study of credit transactions. The concept of arbitrage plays an important role in the securities market. Because of the existence of the mechanism, the stock price is consistent with the basic mechanism, thus ensuring the effectiveness of the market. However, behavioural finance proved that, in an economy of rational and irrational behavior of mutual influence, arbitrage is a risky process, so irrational price will have a significant and long-term effect, the mispricing continues with the increase of $W$, as shown in Figure 4a and Figure 4b.

![Figure 4a](image1)

![Figure 4b](image2)

**Figure 4.** Schematic diagram of pricing efficiency
Rational investors to construct arbitrage portfolio (regardless of the whether to take the risk) will encounter problems due to the execution cost, short selling is usually used in the process of arbitrage strategy, short selling restrictions has become a typical execution cost. Secondly, rational investors in the construction of arbitrage portfolio will also bear the fundamental risk and noise trader risk. Fundamental risk refers to the rational investors through alternative securities arbitrage can be risk averse industry, but alternative securities are rarely able to fully hedge the underlying securities, so rational investors largely by individual company information, on the other hand, even if the alternative securities exist, it’s also possible mispricing. For savvy investors, if you want to make full use of false belief of noise traders, must bear higher price risk, so when the risk increases, savvy investors risk aversion will reduce the willingness to bear the price risk, the price difference to expand revenue? To sum up, the more holding effect and the space creation effect will enlarge the income difference between the noise trader and the shrewd investor, and the Freedman effect and the price pressure effect will reduce the difference between the two. The above four effects coexist, but none of them can hold the dominant position for a long time.

2.3 Overconfidence and investor sentiment analysis

Arbitrage restrictions show that irrational investors deviate from the basic value of the price, rational investors can not correct the mispricing through arbitrage. In order to explain the deviation structure in a more detailed way, behavioural finance models usually need to assume the concrete form of irrational behavior, that is, the systematic bias. Overconfidence and investor sentiment are the typical deviations in the process of formation. A large number of psychological studies show that people are overconfident about their own judgments. Overconfidence has two forms: first, the confidence interval of people on the set of variables is too narrow, as contained in the 98% confidence interval of the actual contains only really is worth 60% people estimated; second, to estimate the probability of occurrence is not accurate, as people think it will happen to determine the actual occurrence probability was 80%. And confirm the probability will not happen 20% events are happening.

Overconfident investors tend to overestimate their ability to obtain information and accuracy, thus more than other investors, the number of transactions, frequent trading reduces the expected utility of overconfidence of investors. Investor sentiment is a reflection of investors' willingness to invest or expected market sentiment index, which has a great impact on the operation and development of the securities market. It is also one of the main theoretical bases of behavioural finance to explain the market anomalies. Investor sentiment has different definition forms: from the point of view of psychology, investor sentiment refers to investors mistakenly used Bayes rule or contrary to the expected utility theory to form belief (Heifer), in which investors emotion judgment based on the expected investment income; from the point of view, investors expect with systematic bias in the future investment income this, with a systematic bias expected known as investor sentiment. This section discussed the behavior of investors will have a potential impact on asset prices, the psychological characteristics of investors jointly led to the systematic bias, overconfidence and make the most of the investors to make investment decisions based on the deviation, resulting in persistent mispricing.

One of the assumptions of the asset pricing model in neoclassical theory is that market participants can buy, sell, or sell securities without being local. However, in the specific practice, the behavior of short selling and buying and selling is different, which is limited by many laws and regulations and transaction costs. Although short selling has been recognized as an important factor in the formation of asset prices, but the scholars in the pricing of the nature of the role and influence of the conclusions are not the same (Li and Xu, 2016).

A common assumption is that the lack of short selling mechanism can lead to overvalued securities prices. The existence of investors ‘heterogeneous beliefs under the condition of securities but not pessimistic investors holding private information of the securities is not reflected in the stock price, due to the short, "bad news" published for the stock price will have a greater impact, leading to realized yield more negative bias (Negatively Skewed) overvalued. Zhu Hongjun, He Xianjie (2007) analyzed the influence of China stock market analysts following behavior on stock price synchronicity, information content, they found that China's securities analysts' information search activities to improve the information content of stock price, the stock price reflects not only the current period of not pre earnings increases, the current stock price reflects more future earnings information.

The results show that the analyst's activities make the stock price contain more information about the company's characteristics, and reduce the synchronization of the stock price. Chen Menggen (MAO) (2007) based on the sample of the listed companies in Shanghai and Shenzhen Stock Exchange from 2002 to 2004, the paper studies the relationship between the stock price information content and the degree of stock trading activity in. The empirical results show that the company China stock market price fluctuations in the fundamentals of the ratio of about 52%; when the information content of stock price is high, investor enthusiasm is high, active market trading; considering the risk factors the extent of impact on the market, the stock price information content is high, the sensitivity for stock investors the risk will be reduced. This conclusion provides theoretical and data support for the further reform and innovation of China's securities market. Chen Guojin and Zhang Yijun (2008) with heterogeneous beliefs model, examines the heterogeneous beliefs and China's stock market stocks plummeted between, they found that the greater the degree of investor heterogeneous beliefs, the
possibility of market collapse is greater, so reduce the probability of collapse of the proposed market through financing securities loan and stock index futures two-way trade means. Yuan Huayu (2009) an empirical study of the short selling restrictions on the stock market performance, it was found that when the cost is lower, the informed traders through the release of negative information they get short; if the restrictions are too large, informed traders choose not to sell, the bad news is hidden.

Therefore, under the premise of the same information distribution, short selling can promote the disclosure of the information of the market price to the informed traders. Yuan Zhizhu and Ju Xiaofeng (2009) based on the data of China's listed companies from 2000 to 2005. It is found that the effective governance mechanism can inspire investors to collect the information of the company level, and increase the information content of the stock price through the arbitrage activities, and finally achieve the purpose of improving the efficiency of market resource allocation. Gu Wenlin, Kong Xiangzhong (2010) investigated the introduction of margin trading short-term impact on capital mobility, the sample interval for the margin trading business in 30 trading days during the first day of May 13, 2010, empirical results show that the influences of margin trading on stock market liquidity is not significant, but the results may also be carried out early two financial scale small lead. Luo Liping and Rao Yulei (2011) use the modeling method of nonlinear system adaptive evolution, including the short selling mechanism of stock price dynamics model is established under the impact of information, the study found in the short selling restrictions under the conditions of the existence of overreaction of stock price impact positive information; in the introduction of short selling, the price of good and bad news of the same reaction the degree of symmetry, short selling mechanism can stabilize market volatility, enhance the efficiency of the stock market. Yang Deyong and Wu Qiong (2011) to the Shanghai stock exchange margin data as the sample, on the margin trading system affects market liquidity and volatility. The study shows that the short term, the margin to active market transactions, increase market liquidity, the market fluctuations also have certain stabilize. Xu Hongwei and Chen Xin (2012) using the double difference model of stock pricing efficiency and profit margin trading in China after the launch of the standard rate distribution was studied, the empirical results show that: the margin of the underlying stock's overall pricing efficiency has improved, but the impact on the distribution of the rate of return is not significant in general; financing mechanism launch help suppress the stock plummeted, but soaring to control stock limited. With Zhang Bing and Li Xindan, Wu (2014) based on investor sentiment, through the run test and variance ratio test studied the effect of margin trading on the market validity, empirical results show that although the margin is not to allow the market to achieve the semi strong efficiency, but significantly enhance the ability to respond to price information.

3. ANALYSIS OF THE CHARACTERISTICS AND FUNCTIONS OF MARGIN FINANCING

3.1 Analysis of the characteristics of margin trading

The essence of margin trading is a kind of securities commercial transaction, which is a kind of leveraged securities trading behavior from the perspective of time and space. Margin transaction in financing and short selling transactions is credit in third party organization under the support of the transaction process, and ultimately achieves the profit or loss. With the help of third party credit support, investors can choose the stock trading is no longer confined to the traditional securities trading by profit or loss "single mode, but the increase of funds" (Securities) into the (financial) 11 securities buy (sell) to sell tickets repayment (buy tickets also coupons) to settle transactions one by one to achieve a profit or loss "in the credit transaction. This transaction system innovation to the market to add new liquidity, expand the scale of market transactions. Specifically, margin trading has the following three characteristics: leveraged Trading: the introduction of margin trading system in margin trading, this system for its limited funds or find shorting opportunities but suffer from the hands of free coupons can sell investors with investment may participate in. Margin trading has expanded the scale of investors trading chips, investors can use the margin mechanism to mobilize more large-scale capital, so as to obtain higher profits, which is the embodiment of margin trading of financial leverage. However, at the same time, margin trading will inevitably enlarge the investment risk faced by investors. Liquidity: in order to promote the effective operation of the entire financial market, the capital market and money market, the two modern financial markets, the organic composition of capital flows between the markets needs to be maintained. The securities and financial institutions as the intermediary of margin trading, the market supply side is connected to the banks and other financial institutions as the representative, the other side is connected with the securities market individual or institutional investors and other market demand. With the help of margin trading, securities financial institutions can guide the orderly flow of funds and securities between the two markets to coordinate the supply and demand of the market and improve the efficiency of the financial market. Therefore, the margin financing with clear.

Double credit: in financing, financing by securities, investors only need to provide a certain proportion of the margin can buy securities. On the one hand, securities financing is the day after investors to servicing the premise; on the other hand, the brokerage provided financing sources, usually may include securities funds, bank lending or borrowing in the money market. In short selling transactions, securities may be provided by the
securities of the source may include securities and securities from other financial institutions. If the broker to provide customers with funds and securities are not from the broker's own assets, it is known as refinancing, including refinancing and refinancing. From the practice of mature securities market, the margin trading risk is higher, investors are more mature in the margin trading is often in the stock market, they have a better grasp of market opportunities, has a faster response to new information, to promote the new information quickly into the stock price to the accelerate both information transfer, prompted the securities prices quickly return to a reasonable price. Therefore, the margin trading mechanism can enhance the price discovery function of the securities market. From the theoretical analysis, the margin trading mechanism can reduce the occurrence of price spikes in a certain extent, and thus play a stabilizing role in the market. In the short sale of the market is completely prohibited, investors can only do more than one way to profit, resulting in the imbalance between the supply and demand of the market trading power. The specific performance is no bad news when the impact of the Bulls overwhelmingly stronger than the short, in the case of sudden bad will be short and will be more likely to be stronger than bulls, causing a serious imbalance in the market, the occurrence of sharp fall as shown in Figure 5.

![Figure 5. Influence of the characteristics of margin trading degree on the industrial cluster evolution](image)

But with a perfect credit trading mechanism of the market, the short selling mechanism is helpful to promote the market price to form the inner holder, when excessive speculation caused the stock price soared, investors can short selling operation of the stock, and the stock market by increasing supply and signal transmission to its value is overvalued the market, pushing the stock adjustment to a reasonable price; on the other hand, if an excessive stocks oversold, investors can make financing operation of the stock market, increase its demand and transfer its undervalued signal to the market, driving its price up to the intrinsic value. China's stock market has long been able to do more than unilateral and short selling, which allows investors to avoid the risk of falling stock prices. Margin trading is to provide investors with a risk management tool to avoid unilateral decline in the stock market. In general, short selling can be subdivided into speculative short selling and Hedging Short selling. The former is for the purpose of obtaining profits, while the latter is to avoid the risk of falling prices for the purpose of risk transfer behavior. When investors have held a security risk, but not willing to bear the price fluctuations, it can be integrated into the same securities to the broker and sell them, then if the stock price fell, the profit can cover short positions in the holdings of securities losses; if the stock price rose, the holdings of securities profit to cover short positions loss, so as to realize the purpose of hedging securities assets.

### 3.2 Analysis of the difference between margin trading and common stock exchange

Before the margin trading, investors need to set up a special credit securities account and capital account in credit qualification margin business of securities companies, and ordinary securities account credit securities account and credit capital account and investors cannot have transactions and transfer of assets. Margin trading is a trading model with leverage effect, which is different from ordinary securities trading. The application of margin trading, investors only need to provide a certain proportion to the securities accounts of the deposit, can be through the account of securities companies into the stock or capital transactions, and securities trading in ordinary investors can only use its own funds and securities transactions. Non-credit transaction model, investors need to fully assume the risk of falling stock prices. But in the margin trading, first of all due to its leverage effect, investors will face greater investment risk. At the same time, but also because of the existence of dual credit relationship, which in addition to the price difference of customer margin outside brokers need to advance, according to the usual practice, this part of the funds derived from its capital, customer deposits and bank loans or in the money market financing, if investors defaulted, securities companies will also assume certain risks. For margin trading, investors will face greater investment risk, securities companies will also bear
part of the credit default risk, so regulators to participate in margin trading and securities companies will set the customer participation threshold. For example, the United States has net asset requirements for securities companies, investors in the capital and procedures are limited. Similarly, China's first batch of margin trading pilot is only a few of the most powerful securities companies. From the experience of overseas markets, the market will mature in the practice of self-aggrandizement, and constantly repair loopholes in the system, standardize the behavior patterns of participants. Similarly, the mature credit system cannot do without the complete regulatory institutions and regulations, for investors and the underlying assets of the strict risk control, appropriate trading mechanism design, the special period of government intervention and flexible adjustment mechanism. The Second World War to defeat almost paralyzed the Japanese economy, in order to stimulate the real economy, promote the rapid recovery of the economy, financial institutions will be almost all of its funds into entities and utilities, which caused a shortage of funds in the capital market, securities companies due to funding deficiency, the margin trading business it is difficult to carry out.

As soon as possible in order to help securities companies to get rid of the predicament, Japan established the Japan Securities Finance Co (on deposit, for securities companies to provide funds and securities as the main business, so as to solve the financing company sponsored by brokerage no coupons available financing situation, but also facilitate the government supervision of the credit transaction in the market. Since then, with the rapid development of the bond market in Japan, the scale of financing in the bond market is also expanding, even more than the stock has become the largest in the financing transactions. With the continuous development of the margin trading business in Japan's securities market, the varieties of securities which can carry out margin trading are increasing. Japan's margin of business credit mode for the centralism mode, from credit level can be divided into two layers: the securities companies to provide investors with the margin trading and securities finance company to provide financing to securities companies.

On the one hand, as a result of the banking, insurance, mutual funds and other financial institutions can not directly carry out margin trading business, only by the securities companies to provide investors with financing business services, accepted the margin trading for investors, securities companies may be due to the number of own funds or securities cannot meet only to securities finance the company submitted collateral and apply for refinancing business funds or securities investors into the demand, but not directly to other financial institutions into the securities or funds. This system has given the securities companies in the margin trading business monopoly position, while the margin trading business as a hub, connecting with other financial institutions. On the other hand, investors are not able to obtain funds or securities directly from the securities finance companies, but only one of the securities companies into the capital or securities.

This kind of centralized credit mode, which is based on the securities finance company, is convenient for the market supervision authority to manage and control the margin trading business. Hongkong margin of business credit mode using a market model similar to the European market, to have the qualification of the securities company as a financial intermediary, to provide financing transactions directly to investors, and securities business by Central Clearing Corp responsible for brokered transactions. The Central Clearing Corp is responsible for the establishment of stock lending mechanism for lending to the asset pool based on securities companies to carry out the refinancing business, the securities company provides margin trading business to investors, all procedures are matched automatically by the system. This process is designed to help ensure the fairness and efficiency of Central Clearing Corp in the process of allocating credit securities. The market-oriented model of Central Clearing Corp not only improves the operation efficiency of the market, but also facilitates the supervision and control of the market risk by the regulators.

3.3 An empirical analysis of the impact of margin trading on stock market volatility and liquidity

Miller in his study, persistent low income and assets of the complete or partial short under the condition of optimistic investors together, put forward the existing heterogeneous beliefs in the short sale constraints and the absence of investors, stock price can only reflect the optimistic investors expected, resulting in the stock is overvalued, short selling restrictions on non-rational investors rational investor behavior is not sufficient. On the other hand, due to the investment in the stock price reaction to negative emotions and gradually accumulate in the bad news after the announcement will have a greater impact on stock prices, thereby increasing the volatility of the market, but on the margin and stock market volatility and liquidity research, scholars have yet to reach an agreement. Financing and margin trading can enliven the market, enhance market liquidity, but it has characteristics of high risk, investors through margin financing to buy and sell in the market at the same time, also want to suffer due to the volatility and high transaction costs of investment risk. In particular, the development of China's capital market is not yet mature, the market regulation has yet to be improved, and the study of the relationship between margin and market volatility, financial risk has important theoretical and practical significance.
Short selling mechanism plays an important role in asset pricing and portfolio selection theory. The neoclassical asset pricing model is based on the assumption that market participants can buy and sell securities without transaction costs. Over the past twenty years, a large number of studies have examined the impact of short selling and market frictions on capital markets. In summary, financing and securities transactions can enliven the market, enhance market liquidity, but it has characteristics of high risk, investors through margin financing to buy and sell in the market at the same time, would also be caused by volatility and high transaction costs of investment risk. Especially in the emerging and transitional stage in China's securities market, market regulation remains to be improved, the margin in the long term play stabilizer at the same time, the short term will exacerbate the volatility of the stock market, to the theoretical and empirical test. This chapter through time sequence test and rank sum test and empirical analysis of the effect of the implementation of the margin trading system on the overall market liquidity and volatility, and the same asset in the margin of the opening before and after the change of liquidity and volatility. In this chapter, we use the cointegration test of time series, Grainger causality test method and event study method to test the relationship between margin and stock market liquidity and volatility. In the second part, we use the method of nonparametric test to test whether there is a significant difference in the overall liquidity and volatility in different sample intervals. T hypothesis testing for the samples in the different range of liquidity and volatility index time series are the normal distribution, without considering the overall distribution type is known, is the non-parametric test, relevant because this section of the sample before and after the interval, this chapter uses two related samples Wilcoxon rank and test. The rank sum test first two interval sample as a single sample, sorted observations and unified rank. If the null hypothesis statistical test of two independent samples from the same general is true, then the rank should be evenly distributed in two samples; two if the sample is not derived from the same overall, then rank and two samples of the larger gap.

The credit model is defined by a specific, professional securities finance company for securities companies to provide refinancing business services, a model or directly by the securities financial companies to provide financing services for investors. According to the difference of the relationship between securities finance companies, securities companies and investors, the centralized credit mode can be further divided into single track system and dual track system. Among them, the single track securities finance companies can only operate...
on the refinancing of securities companies, investors can only be carried out through securities companies’ margin. Under the double track system, the securities finance company can provide the service for the securities companies to carry out the refinancing business and directly to the margin trading business of the investors. Japan, South Korea and China's Taiwan region as the main representative of centralized credit. Securities lending market model, and can be subdivided into exchange securities lending market model, clearing agency securities lending market model two. The former refers to the direct exchange of debit and credit by credit, investors in the exchange of standardized loan contract bidding for securities lending, and then through the background of the trading system of the registration and settlement of securities exchange, will monitor and manage the margin account, the main representative of Greece and Finland market. The latter refers to the securities clearing institutions as the main credit, investors in the stock lending market to allow securities within the scope of the settlement mechanism for the loan, the main representative of the Swiss, Singapore and other countries of the securities market.

4. AN EMPIRICAL ANALYSIS OF THE IMPACT OF MARGIN TRADING ON STOCK RETURNS

The above analysis of the Margin Policy after the launch, the impact of securities market overall volatility and liquidity, this chapter uses the method of event study and cross-sectional regression, from the micro level empirical analysis of the underlying securities margin transferred to the rate of change of stock returns before and after the event window, including the cumulative excess return rate of stock, the distribution rate of excess return rate and the change of income; secondly, the study of influencing factors of the reaction in the margin of the market, one of the classic assumptions of traditional finance theory is that the asset yields obey the normal distribution, changes in the underlying asset price obeys the lognormal distribution is options, futures and other financial derivatives pricing. But a large number of empirical studies show that the real financial market operation exists friction or limit is different from the perfect market hypothesis, asset prices closed the characteristic of peak and thick tail of interest rate distribution is considered as a typical feature of stock market.

At the same time with the margin trading characteristics of leverage and short selling mechanism, this mechanism introduced through a leveraged transaction for the stock market to provide sufficient liquidity, on the other hand, the market provides a new price discovery mechanism, therefore, from the perspective of the logical deduction of the trading mechanism will produce more or less important the impact on stock price returns. First of all, the leverage rate of trading effects on income distribution, most of the domestic scholars believe that the financing transaction have limited impact on the market, mainly based on the following two reasons: first, in March 2010 before the introduction of margin trading, China's securities market restrictions on short selling, but financing trading restrictions can be through a variety of ways to avoid. Such as personal loans and OTC stocks with capital; second, if a country's stock market participants sufficient, and will not be limited to financing transactions hindered stock investors' expectations reflect optimism. The empirical research has not reached a unanimous conclusion.

The traditional view is that the leverage will exacerbate the instability of the market, so after the previous stock market crash, regulatory policies tend to increase the ratio of margin to stabilize the speculative demand, maintain the normal operation of the securities market. In the rational expectations theory framework is proposed instead of assuming that he considered not obtained the information traders rationally considering the short sale constraints, setting the price aware of the negative concept may not be reflected in the transaction, thus prevented the short selling constraint reaction of stock price pessimistic expectations of investors, but did not lead to overvalued. It is not difficult to find out the research results of scholars at home and abroad, most of the existing studies focus on the impact of the short selling mechanism on the stock price, while ignoring the leverage effect of margin trading.

The research perspective is different from the existing literature, this chapter respectively from leverage and the mechanism of short angle, namely the distinction between "financing" and "borrowing" transactions, empirical analysis of the implementation of the system effects on price earnings. At the same time with the margin trading characteristics of leverage and short selling mechanism, two types of transactions are able to enhance the information content of stock price: leveraged financing transactions on the stock market informed traders enlarged income, and to collect information, investors involved in the transaction have positive incentives, in the information content of stock price increased by providing liquidity at the same time; the theory of short selling mechanism on the securities exchange provides negative expectations on the market can be reflected in the stock price in the short selling, thus increasing the absorption of negative information shares. Margin trading business of securities market in China started early, rapid growth in the scale of financing, the scale margin accounted for two of the proportion of long-term financial balance of less than 2.5%; on the other hand, due to the trading business rules and rates, power shortage of securities companies and investors to participate in short selling, showing the development trend of the two financial balance. Therefore, the impact of short selling mechanism on stock returns cannot fully represent the impact of the implementation of the policy. In addition, the premise of the event study is the effectiveness of the securities market, at least to ensure that the
weak form. According to the main test results of the current domestic market efficiency, most scholars believe that China's stock market has reached the weak form efficiency, but has not yet reached the semi strong form. Although due to differences in testing methods, sample selection, many scholars to test the effectiveness of China's securities market results have different views, but through the table analysis can be seen, most of the literature have paid attention to the structural changes in China's stock market appears in 1990s, recent studies also recognized most of China's securities market has already reached weak effective, but has not yet reached the semi strong effective conclusion, namely the stock price already contains historical information, a decisive influence on the stock price of the company's business performance through price long-term continuous change has been fully reflected, based on the above discussion, this chapter can be considered using the event study method to the basic premise of establishment.

Through the event study method, this paper makes an empirical test on the change of the margin of the underlying securities. The event study is the research method of financial econometrics in a more intuitive and practical, is widely used in financial research, commonly used in the analysis of an event occurs for the rate of return and volatility of financial variables such as the existence of a significant impact, and thus reveal the specific investment strategy. With the rapid development of financial market and the emergence of financial innovation, the function of financial system has been continuously enriched, and the traditional asset and risk management methods and thinking have been changed profoundly. As one of the most important financial innovations, margin trading is an indispensable part in the process of market pricing. For a long time, the basic system construction of China's securities market is still not perfect, the market speculation, which emerge in an endless stream with the rise and fall, such as market prices fall low efficiency phenomenon, regulators, academia and practice circles are considered one of the causes of these problems lies in the lack of short selling mechanism in China stock market.

5. CONCLUSION

Due to the characteristics of short selling mechanism and credit transaction, the academic and practical circles generally believe that it is of great significance to improve the securities trading mechanism and improve the efficiency of stock pricing. In this paper, starting from the real market, combined with the hypothesis test method, double difference model and grouping research methods, study the introduction of China's securities market financing business impact on the underlying stock price information content and yield distribution, in China's securities market, the launch of margin trading is not significant to improve the information content of stock price stock, stock prices plummeted in the relief did not play a significant role, is to reduce the stock price volatility. This may be due to the mechanism of the market in our country is still short running time, investors short selling thinking has not been able to build up. At the same time, may also range and targets, and high transaction cost limited abuse related. Through empirical research on the underlying stock is listed in Hongkong, while the size of market value and turnover rate low, low price earnings ratio, price level, the annual rate of return of the six different groups. The results showed that the structure of a significant influence of margin trading is the underlying stock.

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