The influence of margin trading on the pricing efficiency of the underlying stock

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Abstract: At the end of March 2010, margin trading mechanism has been introduced in domestic securities market, it realizes the transition from “unilateral market” to “bilateral market”.In order to investigate whether the introduction of the mechanism is progressive, the relevant data of the underlying stocks newly added in the fifth expansion event are studied, and the impact of margin and short selling mechanism on the pricing efficiency of the underlying stocks is analyzed by constructing a panel data regression model. The results show that margin trading mechanism can reduce the excess return index of individual stocks on the whole, and has a positive effect on the underlying pricing efficiency. Margin transaction and short selling transaction can push the underlying stock price closer to the base value respectively, but the short selling imbalance makes short selling transaction have less influence. Finally, based on the theoretical and empirical analysis results, reasonable suggestions are put forward for the existing imbalance phenomenon.

1. Introduction

Short selling constraint is the symbolic feature of China's past “unilateral market”, which restricts investors from directly shorting, thus forming a traditional investment concept of buy first and sell later. From the perspective of negative information, there is a negative correlation between short selling constraint and stock pricing efficiency [1-3]. On the one hand, in this environment, investors will give priority to good news, and lag or do not reflect bad news. On the other hand, the ban on short selling discourages the expression of investor pessimism, leading to inflated share prices and the risk of future price collapses. In addition, the existence of short selling constraint deepens the degree of information asymmetry between external investors and listed companies, which is not conducive to improving the pricing efficiency of the underlying stock [4-5].

Short selling liberalization is the margin mechanism to bring the Importance of the Chinese market change, and the problem that bad information is difficult to integrate into stock prices can also be alleviated. For example, there are empirical evidences that when the market falls, the information response degree and information response speed of the underlying stock are significantly improved after the introduction of the mechanism [6-7].

Market stability and individual stock liquidity can be regarded as two important transitional factors in the process of margin trading affecting pricing efficiency. From the perspective of market stability, the unilateral market environment in the past had crowding out effect on pessimistic investors, which caused the stock price bubble to flood and finally burst, and the stock market showed a rise and fall. The introduction of the two financing mechanism provides investors with two-way trading channels and leverage trading channels, which is not only conducive to the full reflection of information in the stock price[8], but also reduce the psychological bias of investors, so as to stabilize the volatility of the stock price has a positive impact[9]. Generally, the more liquid a stock is, the smaller the turnover cost will be to the arbitrageurs' earnings space, and the deeper the market price correction will be. The emergence of two-way trading has greatly increased the volume of trading in the market, thus pushing share prices closer to their true value [10].

Margin trading has the function of price discovery, which helps improve the pricing efficiency of target stocks. However, based on the existence of objective factors such as low maturity and imperfect

mechanism of China's stock market, whether margin lending and short selling system can achieve the desired effect still needs to be verified.

2. Hypothesis

Margin trading, as an innovative way of credit trading, brings two-way trading channels for market subjects, and influences the market supply and demand structure of the underlying stocks accordingly. Therefore, this paper believes that margin lending mechanism is related to the pricing efficiency of the underlying stock. In addition, in order to answer whether “the impact of margin trading on the pricing efficiency of underlying stocks” is caused by financing transactions or short selling, paper intends to further investigate the different impacts of margin trading and margin trading on stock pricing when margin trading and margin trading are launched together. The following three hypotheses are designed in this paper:

H1:Margin trading mechanism helps to improve the efficiency of the underlying pricing.

H2:Financing transactions help to improve the efficiency of the underlying pricing.

H3:Short selling transaction helps to improve the efficiency of the underlying pricing.

3. Variables and models

3.1 Stock pricing efficiency

According to CAPM model, the excess return index of individual stocks can be used as a measure of stock pricing efficiency, and there is a significant negative correlation between them. The calculation method is as follows:

$ER_{i,t}= R_{i,t} - [rf_{i,t}+\beta_{i,t} \times (Em_{i,t} - rf_{i,t})]$

$ER_{i,t}$ represents the excess return of class I stock in the t credit trading month. The higher the value of this index is, the greater the deviation degree between the current market price of the stock and the basic value is, that is, the higher the possibility of the stock being mispriced and the lower the pricing efficiency.

3.2 Margin financing and Securities lending

This paper selects the monthly margin trading balance, monthly financing transactions balance and monthly short selling trading balance of the underlying stocks as explanatory variables. In addition, these indicators are processed logarithmically in advance. The indicators after treatment are denoted as $RZRQ_{i,t}$, $RZ_{i,t}$, $RQ_{i,t}$.

3.3 Control variables

In order to avoid the interference of factors such as the liquidity, market value and profitability of individual stocks on the experimental results, this study set the monthly turnover rate($Turnover_{i,t}$), the natural logarithm of the monthly circulating market value($MV_{i,t}$), and the monthly price-book ratio($PB_{i,t}$) for the control variables.

3.4 Models

This paper designs the following three regression models:

$$ER_{i,t} = c+\alpha_1 RZRQ_{i,t}+\alpha_2 Turnover_{i,t}+\alpha_3 MV_{i,t}+\alpha_4 PB_{i,t}+\varepsilon_{i,t} \quad (1)$$

$$ER_{i,t} = c+\beta_1 RZ_{i,t}+\beta_2 Turnover_{i,t}+\beta_3 MV_{i,t}+\beta_4 PB_{i,t}+\theta_{i,t} \quad (2)$$

$$ER_{i,t} = c+\gamma_1 RQ_{i,t}+\gamma_2 Turnover_{i,t}+\gamma_3 MV_{i,t}+\gamma_4 PB_{i,t}+\delta_{i,t} \quad (3)$$

This paper examines the overall impact of margin financing and securities lending mechanism on stock pricing efficiency through model (1). And model (2) and model (3) are to further explore the main source of this effect. Specifically, it will be judged by the numerical value and positive or

negative of the regression coefficients of financing transaction variables and securities lending transaction variables on the excess returns of individual stocks.

4. Data

This article intercepts the newly added underlying stocks in the fifth expansion of Shanghai and Shenzhen markets (December 12, 2016), and excludes some stocks within the sample range that have been disqualified for margin financing and securities lending and whose data is largely missing. The time interval for sample selection is from January 2017 to March 2020, with a total of 37 underlying stocks trading data for 39 months. The data of the indicators come from the RESSET database and the CSMAR database.

This empirical analysis uses detailed monthly data as the preliminary material for panel regression, and the final result may appear spurious regression. Therefore, in this paper, all variables in the model are tested for stationarity in advance. The test method used in this paper is the unit root test. According to the results, except for the price-book ratio($PB_{i,t}$), all other variables passed the unit root test. Therefore, this paper will further take the first-order difference for the price-book ratio indicators, and the indicator passes the test under the first-order difference.

5. Analysis of experimental results

The empirical results in Table.1 show that margin trading on the whole has a significant negative impact on the excess return index of the underlying stock, which indicates that the introduction of margin trading mechanism can restrain the excessive deviation of the underlying market price from the underlying value, and help improve the efficiency of stock pricing. Therefore, this result can verify the correctness of the theoretical hypothesis of this study. In addition, a comparative analysis of the difference between financing transaction and securities lending transaction in pricing efficiency shows that in the current domestic margin trading structure, the former has a greater impact on stock prices, while the latter has a certain price discovery function but a small share of impact. This phenomenon can be attributed to China's long - term short - selling imbalance. On the one hand, the perfection of domestic A-share market lags behind that of developed countries, China's stock market has not fully lifted the restrictions on short selling trading, there is a shortage of securities brokers, and the listed trading of underlying stocks is subject to the restrictions on the rise and fall and T+1 trading and other market rules, which still exist, bringing huge short selling costs. On the other hand, investors in China's stock market are concentrated in retail investors, whose traditional investment philosophy of going long is strong, and the high cost of short selling weakens investors' enthusiasm for short selling.

The circulation market value, turnover rate and price-to-book ratio of individual stocks are significantly positively correlated with the excess return rate. This reflects a voting preference among Chinese investors. Compared with professional institutional investors, individual investors have a significant weakness in capturing information and technical processing. In order to guarantee the security of funds, individual investors show extra trust in high-performing stocks. In addition, under the influence of herd effect, individual investors will gather together or leave together in large numbers, leading to the price of high-quality stock market soaring or plummeting in a period of time, resulting in a serious deviation of stock price from the basic value.

In addition, according to the regression results, the constant term is significantly negative, so in addition to the model variable, there are other related variables have a negative effect on the change of the excess return rate of individual stocks. Such as non - tradable shares unbind policy, social economy trend and government attitude.

Table.1. Regression results of price discovery function of margin trading mechanism

	(1)	(2)	(3)
RZRQ	-1.55*** (-5.57)		
RZ		-1.37*** (-6.12)	
RQ			-0.18*** (-2.93)
Turnover	0.15*** (11.38)	0.13*** (12.01)	0.13*** (9.15)
MV	2.21*** (7.71)	2.23*** (7.72)	1.66*** (4.88)
PB	2.80*** (4.34)	2.80*** (4.34)	2.74*** (3.74)
C	-2.87*** (-3.14)	-2.79*** (-3.10)	-14.22*** (-6.02)
R^2	0.96	0.99	0.94

6. Conclusions

As an innovative trading mechanism, financing transaction and securities lending transaction have injected “live water” for short-selling transactions into A-share market, improving the market trading model, thereby helping to improve the pricing efficiency of underlying stocks. Both financing transactions and securities lending transactions have a positive impact on the pricing efficiency of the target, but subject to the current situation of domestic short-selling imbalances, the impact of securities lending transactions is relatively small. The emergence of the short-selling imbalance is attributable to the imperfection of the domestic market and investors' traditional long preference, which invisibly increases investors' short-selling costs and hinders the development of securities lending transactions. In this regard, this paper puts forward several relevant suggestions: First, my country's securities market supervision department can appropriately speed up the progress of legislation and regularly review the trading behavior of market entities, and create a comfortable trading environment for the healthy operation of the margin trading mechanism by consolidating the dual supervision from the law and itself; second, increase the cost of short-selling transactions and clarify the credit line, so as to limit the blind expansion of the scale of short-selling transactions and strengthen investors' sense of rational investment; third, continue to promote the development of refinancing business and increase the area of this business Pilot.

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