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THE IMPACT OF SHORTENING THE MATCHING TIME ON THE CANCELLATION OF ORDERS BY INVESTORS

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Abstract

This article mainly discusses the impact of the improvement of market transparency and liquidity on investor withdrawal behavior after the Taiwan Stock Exchange shortened the matching seconds from 10 seconds to 5 seconds. We use the intraday trading data of 5 months before and after December 2014 for actual measurement. We use the ratio of canceled orders as an indicator and use the paired sample T-test to examine whether there is a significant difference in the ratio of canceled orders between institutional investors and individual investors before and after the system change. The empirical results show that, except for the significant increase in the cancellation rate in Step 1 of legal persons and retail investors, all others have decreased significantly. Since the possibility of the cancellation in Step 1 being caused by manipulation is not high, it can be inferred that it is a purely wrong order, and the decrease in the ratio shows that the new system is helpful to the entire market, because investors have become more cautious when placing orders.

Keywords

Market transparency, Cancellation rate, Matching seconds

1. Introduction

In recent years, in order to increase the immediacy of transactions, the Taiwan Stock Exchange has been committed to promoting the three-stage shortening of the "call auction" matching seconds since 2008, and its ultimate goal is to implement "one-by-one continuous matching". Shortening the number of matching seconds will increase the transparency, liquidity and trading volume of the market, so that manipulators who want to place a large number of orders to speculate on the stock market will induce investors with weaker judgment to follow up, and then cancel the orders to make a lot of profits. It is even more difficult to manipulate, because the possibility of being traded will be greatly increased. After the risk of manipulation increases, they may be more cautious when placing orders, which will improve the quality of information for individual investors.

From February to May 2017, a trader team appeared in China stock market, using more than 300 stock accounts, more than 100 computers, and more than 10 traders to trade at the same time, using frequent reverse transactions, intraday pull Abnormal trading methods such as stock price and rapid diversification of holdings, speculation of multiple grades of new shares, suspected of market manipulation, and a total illegal income of 945 million yuan. It can be seen from this that the reason for investors to "cancel after placing an order" is probably not simply because they placed a wrong order or wanted to change their investment strategy. The Chinese stock market and the Taiwan stock market not only have similar trading systems, but also have similar investor structures. In view of this, this article mainly takes the Taiwan stock market as an example to explore whether there are significant differences in the cancellation behavior of investors before and after the system change.

2. Literature

Wang and Zhou (2018) pointed out that shortening the matching time of securities transactions can significantly reduce the bid-ask spread and increase market depth, but it cannot improve the quality of market transactions in

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terms of volatility. It only focuses on the quality of the market, and does not discuss the manipulation behavior of investors. Regarding market manipulation, the relevant literature is mostly theoretical, and the empirical literature is in the minority. Manipulation refers to the use of funds, information and other advantages or abuse of power for the purpose of obtaining profits or reducing losses, affecting securities market prices, creating false appearances in the securities market, inducing investors to make securities investment decisions without knowing the truth, and disrupting the securities market (Lin, (2009, 2012)).

In 1934, the American Stock Exchange Act divided market manipulation into two aspects, one of which is action manipulation and the other is information manipulation. Action-side manipulation is behavior that focuses on changing the real value of an asset (e.g. Bagnoli and Lipman (1996), Chakraborty and Yilmaz (2004)). Furthermore, information manipulation means that investors with more information have (or pretend to have) private information on the value of the stocks they trade. This is a typical situation of information asymmetry. They may use the disclosure of their trading positions to induce others to profit, or use the news media, analysts, or insiders to release misinformation or spread rumors in the market (e.g. Benabou and Laroque (1992), Fishman and Haggerty (1995), John and Narayanan (1997), Van Bommel (2003)). The trading surface manipulation proposed by Allen and Gale (1992) means that traders simply manipulate stock prices by buying and selling, and do not engage in any public actions to change asset values or spread false information (Mei, Wu and Zhou (2004)).

3. Methodology

This study mainly selects the intraday trading data of the Taiwan stock market from June to October 2014 (the stage before the system adjustment) and January to May 2015 (the stage after the system adjustment), and selects 500 stocks with more active transactions as the sample. After excluding incomplete samples, 499 samples of institutional investors were screened out regardless of size, middle order (90 orders > number of orders ≧ 30), small orders (30 orders > number of orders ≧ 5), 500 for individual investors, 397 samples for institutional investors with large orders (number of orders ≧ 90), and 400 for individual investors.

The cancellation ratio is calculated as follows, that is, the cancellation ratio of a sample on a trading day is the number of all canceled orders (pieces) divided by the total number of orders (pieces) on that day.

$$CanRate_{i,j} = \frac{Cancel_{i,j}}{Order_{i,j}} \qquad (1)$$

where $CanRate_{i,j}$ is the cancellation order rate of the i-th sample on day j, $Cancel_{i,j}$ is the total number of cancellation orders (pieces) of the i-th sample on day j, $Order_{i,j}$ is the the total number of entrusted pens (pieces) of the i sample on the j day. We divided the results into two study periods, June to October 2014, and January to May 2015.

4. Empirical Result

Regarding the paired sample T test, we divide the trading time 9:00-13:30 into T1~T9, and T1~T9 represent 9:00-13:30, every 30 minutes is an interval, for example, T1 means 9:00 -9:30, and so on. The interval of 30 minutes is to maintain the quality of the market microstructure. If it is too long, it will lose the essence of the intraday data. If it is too short, some data cannot be presented, because the trading activity of individual stocks is different. *, **, *** represent the significance levels of 10%, 5% and 1% respectively, rejecting the null hypothesis.

The empirical results show that, among the orders of institutional investors and individual investors, regardless of size, except for the significant increase in the cancellation rate in Step1, the others are almost very significantly decreased in T1-T9. It can be preliminarily judged that the cancellation rate has decreased. It may be that after the transparency is increased, investors will be less likely to place wrong orders, or it may be that manipulators have less chance, so manipulations are reduced.

From the large orders of individual investors, it can be seen that the cancellation rate of Step2 and Step3 has sporadic and significant declines; the step2 and Step3 of mid-orders are not significant at all; the T1-T9 of Step2 and Step3 of small orders are all very significant declines.

Table 1 Difference Tests in Cancel Orders Rate - individual investors									
2014.06-2014.10									
	T1	T2	T3	T4	T5	T6	T7	T8	T9
CanRate	13.84%	15.72%	16.89%	17.50%	18.36%	19.15%	19.75%	19.71%	9.62%
Step1	33.34%	33.96%	33.62%	33.76%	33.41%	33.16%	33.16%	33.35%	35.29%
Step2	5.57%	5.86%	5.74%	5.69%	5.80%	5.77%	5.76%	5.76%	4.22%
Step3	4.67%	4.81%	4.86%	4.75%	4.78%	4.85%	4.82%	4.76%	3.39%
Step4	4.05%	4.11%	4.11%	4.00%	4.19%	4.20%	4.05%	4.03%	2.94%
Step5	3.57%	3.69%	3.69%	3.61%	3.70%	3.76%	3.71%	3.61%	2.65%
Astep	48.81%	47.57%	47.97%	48.20%	48.13%	48.25%	48.50%	48.49%	51.51%
2015.01-2015.05									
	T1	T2	T3	T4	T5	T6	T7	T8	T9
CanRate	12.95%	15.51%	16.38%	17.13%	17.58%	18.36%	18.98%	19.26%	9.32%
Step1	34.27%	34.84%	34.82%	34.64%	34.81%	34.76%	34.21%	34.43%	35.64%
Step2	4.91%	5.09%	5.06%	5.06%	5.14%	5.14%	5.05%	5.13%	3.67%
Step3	4.49%	4.55%	4.45%	4.54%	4.51%	4.55%	4.47%	4.44%	3.21%
Step4	3.95%	4.09%	3.99%	4.03%	4.03%	3.98%	3.95%	3.97%	2.86%
Step5	3.63%	3.69%	3.65%	3.60%	3.69%	3.62%	3.63%	3.57%	2.60%
Astep	48.76%	47.73%	48.03%	48.13%	47.82%	47.95%	48.70%	48.46%	52.02%
Paired samples T-test									
	T1	T2	T3	T4	T5	T6	T7	T8	T9
CanRate	-0.88% ***	-0.21% *	-0.51% ***	-0.38% ***	-0.78% ***	-0.79% ***	-0.77% ***	-0.45% ***	-0.30% ***
Step1	0.94% ***	0.88% ***	1.20% ***	0.88% ***	1.40% ***	1.60% ***	1.05% ***	1.08% ***	0.35% ***
Step2	-0.67% ***	-0.77% ***	-0.68% ***	-0.62% ***	-0.66% ***	-0.63% ***	-0.71% ***	-0.63% ***	-0.55% ***
Step3	-0.18% *	-0.25% **	-0.42% ***	-0.21% *	-0.27% **	-0.29% ***	-0.35% ***	-0.32% ***	-0.18% ***
Step4	-0.10%	-0.02%	-0.13%	0.04%	-0.16% *	-0.22% **	-0.10%	-0.06%	-0.08%
Step5	0.06%	0.00%	-0.03%	-0.01%	-0.01%	-0.14%	-0.08%	-0.04%	-0.05%
Astep	-0.05%	0.16%	0.06%	-0.07%	-0.30%	-0.30%	0.19%	-0.03%	0.51% **

Table 2 Difference Tests in Cancel Orders Rate - institutional investors									
2014.06-2014.10									
	T1	T2	T3	T4	T5	T6	T7	T8	T9
CanRate	40.25%	41.54%	40.94%	40.20%	39.74%	39.66%	39.51%	39.41%	33.83%
Step1	38.09%	39.46%	40.34%	40.52%	40.85%	40.62%	41.19%	40.92%	41.08%
Step2	6.33%	6.66%	6.60%	6.63%	6.79%	6.83%	6.82%	6.79%	6.09%
Step3	6.09%	5.93%	5.71%	5.63%	5.60%	5.63%	5.61%	5.59%	5.23%
Step4	7.19%	6.95%	6.71%	6.53%	6.49%	6.57%	6.56%	6.48%	6.04%
Step5	5.39%	5.02%	4.84%	4.64%	4.70%	4.78%	4.71%	4.63%	4.43%
Astep	36.91%	35.98%	35.81%	36.05%	35.56%	35.56%	35.11%	35.59%	37.13%
2015.01-2015.05									
	T1	T2	T3	T4	T5	T6	T7	T8	T9
CanRate	38.87%	40.17%	39.92%	38.69%	38.59%	38.56%	38.28%	38.39%	33.13%
Step1	43.40%	43.90%	44.66%	44.82%	44.87%	44.74%	45.17%	44.66%	44.30%
Step2	6.74%	6.78%	6.55%	6.81%	6.71%	6.72%	6.63%	6.45%	6.00%
Step3	6.10%	5.92%	5.63%	5.66%	5.60%	5.58%	5.37%	5.52%	5.19%
Step4	5.82%	5.74%	5.50%	5.39%	5.42%	5.39%	5.33%	5.32%	5.09%
Step5	4.32%	4.24%	4.09%	4.00%	4.03%	4.00%	3.97%	4.04%	3.81%
Astep	33.62%	33.43%	33.58%	33.32%	33.37%	33.56%	33.53%	34.01%	35.61%
Paired samples T-test									
	T1	T2	T3	T4	T5	T6	T7	T8	T9
CanRate	-1.38% ***	-1.37% ***	-1.02% ***	-1.51% ***	-1.15% ***	-1.09% ***	-1.23% ***	-1.01% ***	-0.70% ***
Step1	5.31% ***	4.44% ***	4.32% ***	4.31% ***	4.02% ***	4.12% ***	3.98% ***	3.75% ***	3.22% ***
Step2	0.40% ***	0.12%	-0.05%	0.18%	-0.09%	-0.11%	-0.19%	-0.35% **	-0.10% *
Step3	0.01%	-0.01%	-0.08%	0.02%	0.00%	-0.05%	-0.24% *	-0.07%	-0.04%
Step4	-1.37% ***	-1.21% ***	-1.21% ***	-1.14% ***	-1.08% ***	-1.19% ***	-1.24% ***	-1.16% ***	-0.95% ***
Step5	-1.06% ***	-0.78% ***	-0.76% ***	-0.65% ***	-0.67% ***	-0.78% ***	-0.75% ***	-0.59% ***	-0.62% ***
Astep	-3.30% ***	-2.56% ***	-2.23% ***	-2.73% ***	-2.19% ***	-2.00% ***	-1.57% ***	-1.58% ***	-1.52% ***

5. Conclusion

Institutional investors and individual investors have a significant increase in the cancellation rate of Step 1 regardless of size, while others have a significant decrease. In addition, the middle order of individual investors has no significant results in Step2 and Step3, and there is a significant change in the small order. It is preliminarily inferred that the manipulators are some sporadic individual investors with malicious intentions deliberately trying

to disrupt the market. Institutional investors have more information and funds, and do not need to manipulate small orders to make profits.

Then analyze what factors affect the order cancellation ratio. It may be because the order price of investors is more active in Step 1, and the order cancellation behavior tends to change the price or implement other investment strategies. Because the transaction speed of the order in Step1 is fast, it is inferred that the possibility of manipulation is not high. For individual investors in small orders, because the number of single orders placed is not large enough to influence others' ideas of placing orders, the probability of manipulation is even lower. This result can indirectly prove that shortening the number of matching seconds is beneficial to investors. They will be more cautious.

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