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THE IMPACT OF TRADING HALTS ON LIQUIDITY OF THE TEHRAN STOCK EXCHANGE

Zahra Sarikhani¹ and *Abbas Talebbeydokhti²

¹Department of Management, Marvdasht Branch, Islamic Azad University, Marvdasht, Iran
Department of Management, Science and Research Branch, Islamic Azad University, Fars, Iran

²Department of Management, Marvdasht Branch, Islamic Azad University, Marvdasht, Iran
Department of Management, Science and Research Branch, Islamic Azad University, Fars, Iran

**Author for Correspondence*

ABSTRACT

This research examines the behavior of trading halt in liquidity of Tehran Stock Exchange. The statistical population of this study includes all of the companies listed in Tehran Stock Exchange. Using simple random sampling, 469 companies have been selected among the companies listed in the stock exchange and they were analyzed during the time period of 2009-2012. The collected data was analyzed using Wilcoxon test and Spss software version 19 and according to the results, there is a negative significant relationship between the indicators of liquidity (trading volume and price volatility and market depth) and trading halt. This means that these variables are reduced by applying trading halt. The Bid-Ask spread index is related negatively and directly to trading halt. This indicates that the value of this variable is increased by applying a trading halt. Therefore it can be concluded that trading halt is not an efficient mechanism in Tehran Stock Exchange.

Keywords: *Trading Halts Stop, Trading Volume, Prices Volatility, Bid-Ask Spread and the Market Depth*

INTRODUCTION

The most important task of stock exchange is establishment of an efficient and permanent market for securities so that Securities can be exchanged every time in the current price. Another important task is to establish the regular and transparent mechanism for exchange of supply and demand, to determine the price of financial assets (Ali, 2009). In stock exchange mechanisms have been designed to prevent fluctuations in prices and provide information required by investors to make decisions for the protection of investors and market transparency information that has always been of interest to regulators. One of such mechanisms is the trading halt that is used in Stock Exchange. The aim of trading halt is achieving maximum transparency of financial information and improving the liquidity of the securities. This study and its effects can be important for the stock exchange responsible and also useful in decision-making and investment strategies for investors. So a careful investigation and evaluation of effects of the Trading halt seems necessary.

Research Literature

Trading halt is a tool for coping with the potential and actual market disorders divided into two main categories: International Organization of Securities Commissions (IOSCO) has divided Trading halt into two categories: discretionary and automatic. Discretionary trading halt refers to the supervisory authorities' efforts or market responsible in order to stop transaction of one or a group of securities in the market or in the legal field. Discretionary trading halt include interruptions taken place due to non-compliance with standards of accepting by the publisher, fraud or manipulation of the market, and an imbalance in orders (Lecce, 2007). Automated Trading halt is based on predetermined parameters. When there are large fluctuations in the price of a stock or the overall market and market discipline is in the risk, automated Trading halt stops the transactions. The two main types of automated trading halt are price limitation and market halt.

Ms Bahrami (2012) examined the relative effectiveness of trading halt and price volatility in Tehran stock exchange. By studying 143 trading halts and 230 price volatility she achieved these results during the period 1387 to 1390: Trading activity increases after both mechanisms but the volatility reduces after both

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mechanisms. The liquidity increases after trading halt and it reduces after volatility. The results of this study show that the trading halt is more efficient than its volatility.

Jalal (2005), in a study of 267 cases of trading halt of 133 companies from 2001 to 2005 came to the conclusion that trading volume and volatility increase by applying trading halt and in Stock Exchange. According to his findings trading halt is an appropriate mechanism for achieving the objectives of the legislation and monitors of the Tehran Stock Exchange.

Frino *et al.*, (2010), by examining the behavior of market of trading halt in Australia Stock Exchange found that trading halt increases price volatility, trading volume and bid-ask spread and reduce market depth. The results of this study suggest that trading halt is prejudicial instead of being able to improve the quality of market.

Ghorbani (2011) conducted a study on the impact of a trading halt. The population of this research includes all listed companies in Tehran Stock Exchange during the period 2009_2011. This study results suggest that by applying a trading halt, trading volume, volatility of prices, Bid-Ask spread, the best market depth increases in sales.

Asgari (2011), by dealing with the effects of a temporary halt in trading in Tehran Stock Exchange around 496 of 152 companies during the period 2005_2009 concluded that turnover of stock and stock return volatility is increased by applying a trading halt and the process of price discovery occurs after applying the trading halt (Asgari, 2011).

Rashid and colleagues (2008) found that trading halt causes price positive reaction, increasing trading volume and volatility of stock prices.

Kim *et al.*, (2007), evaluate the performance of trading halt compared to the price volatility in Spain Stock Exchange. In the trading halt, bid-ask spread is reduced and trading depth is increased. But the opposite happens for price volatility.

Tan and Yeo (2003) have studied 470 cases of discretionary trading halt in the Singapore Stock Exchange (SSE) from the years 1995 to 1986 and found that in the periods before and after the trading halt that is relating to the information disclosure, trading volume increases. Research results show that trading halt increases the return volatility of securities after end of the halt.

Kryzanowski and Nemiroff (1998), with a review of the Montreal Stock Exchange (MSE) show as new information becomes mixed with the prices of securities, volatility and trading volume increases after a trading halt.

Kabir (1994), studied the effect of a temporary halt on the Brussels Stock Exchange and he found that after the end of the halt, trading volume show a remarkable increase and increasing price volatility because of trading halt was not confirmed in this study.

Research Hypotheses

- A) There is a significant difference between trading volume in the period before and the period after the trading halt.
- B) There is a significant difference between price volatility in the period before and the period after the trading halt.
- C) There is a significant difference between Bid-Ask spread in the period before and the period after the trading halt.
- D) There is a significant difference between market depth in the period before and the period after the trading halt.

MATERIALS AND METHODS

The present study of is an applied research in terms of nature and purpose. Research method is descriptive and correlation and research methodology is ... (through using the previous information). The population of this study includes all of the companies listed in Tehran Stock Exchange In the period 2009 to 2012 who have been operating in the stock market and using simple random sampling 469 companies have been selected from the companies listed in Tehran Stock Exchange. This study has considered data related to before and after periods of trading halt as 15 days periods.

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Due to the nature of the research variables, the required data is collected from sources such as company websites and Exchange Technology Management Co and Tehran Stock Exchange Company. In the statistical analysis, multivariate linear regression models and Wilcoxon Spss software have been used.

Variables Definitions

Trading Halt: Preventing an issue is for a limited period. The company's logo is closed and shareholders cannot trade shares of the company.

Price Volatility: Volatility of stock price depends on the highest traded price and the lowest traded price on that working day.

Volume: The volume is number of shares or contracts traded in a given time period, usually one day.

Bid-Ask spread: Is the difference between the prices they must pay for the purchase in the market, and the price is available for sale. The difference between the price offered for sale and the price offered for buying is called Bid-Ask spread.

Market Depth: The market depth is the ability for purchasing and sale of a large number of shares in the shortest time without a severe impact on the share price. Common indicator to measure the market depth of supply and demand is trading volume to the daily price changes of the asset.

RESULTS AND DISCUSSION

The First Sub Hypothesis

$$TVOL = f (TH)$$

H_0 = trading volume in the period after the trading halt equals trading volume in the period before the trading halt.

H_1 = trading volume in the period after the trading halt is significantly different from trading volume in the period before the trading halt.

Table 1: Test result of comparing trading volume in before and after periods

Means comparison test of two independent community						Research variable
SD difference	error	Mean Difference	Significance level	Freedom Degree	T statistics	
0.0009		0.00035	0.000	21356	4.312	Trading Volume
Descriptive indicators of the studied variable in two courses						
The mean of standard error	SD	Mean	Number of days in the period	period		Trading Volume
0.00009	0.00983	0.01023	15	Before period		
0.00005	0.00302	0.00109	15	after period		

Since the t-statistics calculated that is 4.312, is greater than the critical parameter, in other words, the calculated significance level is less than five hundredths, so the null hypothesis was rejected at the 95% confidence level and the opposed hypothesis is accepted as verifiable hypothesis. Since the mean of the previous period is larger, it is concluded that the trading volume in the before period is more than after period.

Descriptive Indicators of the Variable Studied in the Second Sub-hypothesis

$$PV = f (TH)$$

H_0 = stock price volatility in period after trading halt equals stock price volatility in period before trading halt.

H_1 = stock price volatility in period after trading halt is significantly different from stock price volatility in period before trading halt.

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Table 2: Test results of the comparison of return volatility variable in before and after periods

Means comparison test of two independent community						
SD difference	error	Mean Difference	Error level	Freedom Degree	T statistics	Research variable
0.00036		0.001351	0.010	22849	2.940	Price volatility
Descriptive indicators of the studied variable in two courses						
The mean of standard error	SD	Mean	Mean	Number of days in the period	period	Price volatility
0.000326	0.03569	0.00029		15	Before period	
0.000981	0.050548	-0.00145		15	after period	

Since the t-statistics calculated that is 2.940, is greater than the critical parameter, in other words, the calculated significance level is less than 5%, so the null hypothesis was rejected at 95% confidence level and the opposed hypothesis is accepted as verifiable hypothesis.

So there are significant differences between price volatility in before period and price volatility in after period.

Since the mean is larger in the previous period, it can be concluded that the price fluctuations during the before period is more than the price fluctuations during the after period.

Descriptive indicators of the studied variables of the third sub-hypothesis

✓ $B-A S = f(TH)$

H_0 = the difference of bid-ask spread in period after trading halt equals the difference of bid-ask spread in period after trading halt.

H_1 = the difference of bid-ask spread in period after trading halt is different from the difference of bid-ask spread in period after trading halt.

Table 3: Results of comparison test of excess return mean in before and after periods

Means comparison test of two independent community						
SD difference	error	Mean Difference	Significance level	Freedom Degree	T statistics	Research variable
0.07652		-0.04536	0.002	1043	3.232	before excess return
Descriptive indicators of the studied variable in two courses						
The mean of standard error	SD	Mean	Mean	days	period	before excess return
0.04589	0.5465	0.94823		15	before	
0.004642	0.1456	1.1744		15	after	

Since the t-statistics calculated that is 3.232, is greater than the critical parameter, in other words, the calculated significance level is less than 5%, so the null hypothesis was rejected at 95% confidence level and the opposed hypothesis is accepted as verifiable hypothesis.

So there are significant differences between bid -ask spread in before period and bid-ask spread in after period.

Since the mean is greater in next period, it is concluded that the bid-ask spread in the after period is more than the before period.

Descriptive Indicators of the Studied Variable of Fourth Sub-hypothesis

$MD = f(TH)$

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H_0 = the market depth in the period after trading halt is equal to the market depth in the period before trading halt.

H_1 = the market depth in the period after trading halt is different from the market depth in the period before trading halt.

Table 4: Results of comparison test of market depth variable mean in before and after periods

Means comparison test of two independent community					Research variable
SD difference	error	Mean Difference	Error level	Freedom Degree	T statistics
0.000326		0.001345	0.011	2543	2.676
Market depth					
Descriptive indicators of the studied variable in two courses					
The mean of standard error	SD	Mean	Number of days in the period	of period	Market depth
0.00343	0.04390	0.00046	13458	Before period	
0.000525	0.05768	-0.000345	28938	after period	

Since the t-statistics calculated that is 2.676, is greater than the critical parameter, in other words, the calculated significance level is less than 0.01, so the null hypothesis was rejected at 99% confidence level and the opposed hypothesis is accepted as verifiable hypothesis.

So there are significant differences between market depth in before period and market depth in after period.

Since the mean is greater in before period, it is concluded that the market depth in the before period is more than the after period.

Test of Normal Distribution of the Dependent Variable

Table 5: Normality test of the dependent variable (Kolmogorof -Asmironof)

Market depth	Bid-Ask spread	Price volatility	Trading volume	
469	469	469	469	Samples
1.2216	1.102	1.112	1.1489	
0.198	0.028	0.123	0.299	The Kolmogorof-Asmirnof statistic
Accepting H_0	Accepting H_1	Accepting H_0	Accepting H_0	Result

Linearity Test

Table 6: Studying the linearity relationship (significance) between the dependent variables and independent variables

Model	Non-standard coefficient	Standard coefficient				Linearity level	
	Beta Coefficient	SD	Beta	statistics t	Significance level	Tolerance	Variance inflation factor
Constant	0.261	0.069		1.775	0.000		
Trading volume	0.049	0.029	0.063	2.346	0.039	0.732	1.044
Price volatility	0.482	0.208	0.495	3.029	0.048	0.900	1.013
Bid-Ask spread	1.486	0.000	0.069	-1.994	0.046	0.506	1.078
Market depth	0.863	0.033	0.460	1.166	0.145	0.834	1.096

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Research Hypotheses Analysis

H_0 = there is no significant model.

H_1 = there is a significant model.

Table 7: Checking the normality of errors

The multiple correlation coefficient	The coefficient of determination	of Error rate	Durbin-Watson value
0.457	0.201	0.103	1.753

Table 8: Checking linear relationship (significance)

Model	Total coefficients	Freedom Degree	Mean	F statistics	Sig	result
at 95% confidence level	20.303	6	3.350	4.486	0.001	Accepting H_1
	54.926	74	0.738			
Total	74.299	80				

Cross-sectional Analysis of Data

Table 9: Comparison of test results 15 days before stopping Trading Symbol

Research results	Asymptotic significance level (two-sided)	Z value	day
Conforming H_0	0.034	-1.342	-15
Conforming H_0	0.678	-0.657	-14
Conforming H_0	0.248	-1.321	-13
Conforming H_0	0.132	-1.897	-12
Conforming H_0	0.823	-0.245	-11
Conforming H_0	0.287	-1.654	-10
Conforming H_0	0.897	-0.235	-9
Conforming H_0	0.345	-1.112	-8
Conforming H_0	0.987	-1.098	-7
Conforming H_0	0.843	-0.762	-6
Conforming H_0	0.342	-0.123	-5
Conforming H_0	0.574	-0.876	-4
Conforming H_0	0.596	-0.543	-3
Conforming H_0	0.624	-0.234	-2
Conforming H_0	0.783	-0.256	-1

It means trading halt in the days before the stopping hypothesis H_0 is confirmed and this means that liquidity of before period has been intensified more than after the hypothesis.

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Table 10: Results of comparison test 15 days after the trading halt

Research results	Asymptotic significance level (two-sided)	Z value	Day
Rejecting H_0	0.00	-4.732	1
Rejecting H_0	0.00	-4.522	2
Rejecting H_0	0.002	-2.244	3
Rejecting H_0	0.018	-2.543	4
Rejecting H_0	0.001	-3.654	5
Rejecting H_0	0.056	-1.101	6
Rejecting H_0	0.001	-3.879	7
Rejecting H_0	0.010	-2.651	8
Rejecting H_0	0.016	-2.935	9
Rejecting H_0	0.054	-1.283	10
Rejecting H_0	0.001	-3.303	11
Rejecting H_0	0.039	-1.287	12
Rejecting H_0	0.001	-3.821	13
Rejecting H_0	0.010	-2.431	14
Rejecting H_0	0.019	-2.984	15

Analysis of the Correlation Coefficient Results

H_0 = there is no significant relationship

H_1 = there is a significant relationship

Table 11: Pearson correlation

		Trading halts	Trading vole	Price volatility	Bid-Ask spread	Market depth
Trading halts	Pearson correlation coefficients	1	-0.032	-0.028	0.074	0.048
	Significance level	0	0.23	0.547	0.360	0.152
	Freedom degree		732	732	732	732
Trading vole	samples	469	469	469	469	469
	Pearson correlation coefficients	-0.032	1	0.028	0.008	0.046
	Significance level	0.048	0	0.547	0.863	0.318
Price volatility	samples	469	469	469	469	469
	Pearson correlation coefficients	-0.184	0.028	1	0.162	0.153
	Significance level	0.000	0.547	0	0.042	0.001
Bid-Ask spread	samples	469	469	469	469	469
	Pearson correlation coefficients	0.045	-0.008	0.162	1	0.684
	Significance level	0.033	0.863	0.023	0	0.432
	samples	469	469	469	469	469

Analysis of the Results of the Wilcoxon Test

H_0 : $\mu=0$ there is no significant relationship

H_1 : $\mu \neq 0$ there is a significant relationship

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Table 12: Analysis of the results of the Wilcoxon test

result	statistics Z	Overall rating	Rating average	Views Status	Research hypothesis
Rejecting H_0		932	76.22	Before period	
	0.042	524	62.60	After period	The first sub-hypothesis
Rejecting H_0		1200	43.90	Before period	The second sub-
	0.026	908	36.12	After period	hypothesis
Rejecting H_0		890	73.86	Before period	The second sub-
	0.129	752	73.86	After period	hypothesis
Rejecting H_0		540	97.06	Before period	The second sub-
	0.038	423	72.89	After period	hypothesis

Result Analysis of Paired Comparison Test

Table 13: Results of paired comparison of Wilcoxon test

Market depth		Bid-ask spread		Price volatility		Trading volume		variables
statistics t	rating average	statistics t	rating average	statistics t	rating average	statistics t	rating average	period
1.28	29.53	-1.52	42.83	3.26	67.39	0.69	22.74	(-30,-15)
(0.28)	18.09	(-1.05)	58.41	(0.12)	42.19	(0.27)	19.65	(-15,+15)
0.87	41.14	-1.32	32.24	1.04	84.81	1.72	88.76	(-30,-15)
(0.36)	31.87	(0.43)	49.06	(0.78)	69.84	(0.17)	45.60	(-15,-1)
1.99	29.83	-1.43	11.46	2.55	71.06	1.54	75.61	(-30,-15)
(0.72)	12.21	(0.05)	17.25	(0.18)	60.11	(0.43)	58.60	(1,15)
0.57	75.32	-1.52	22.38	2.17	38.42	2.87	51.73	(-15,-1)
(0.67)	41.29	0.57	27.69	(0.23)	22.09	(0.03)	32.32	(1,15)

Conclusion

The results of the research hypotheses are as follows:

The First Hypothesis

There is a significant difference between trading volume in the period before and after trading halt.

To compare the trading volume of before period and after period, mean comparison of two independent groups test is used, given that the significant level of 95% is calculated.

It is concluded that the trading volume in after period is more than before period. The findings of this research are not consistent with findings of Frino *et al.*, (2010), Rashid *et al.*, (2008), Tan and Yeo (2003), Kabir (1994). The second hypothesis: there is a significant relationship between price volatility period before and after trading halt. To compare the price fluctuations (volatility of stock price depends on the lowest and the highest price of the transaction on the business day) in the periods before and after the test, the means of two independent groups are used. Given the significant level is 95% it is concluded that the price volatility in the period before is more than the period after it. The findings of the research are consistent with findings of Kabir (1994), Frino *et al.*, (2010).

The Third Hypothesis

There is a significant relationship between bid-ask spread in period before and after trading halt. To study the bid-ask spread the average excess return of before and after trading halt is studied. Given the significant level is 95% it is concluded that the bid-ask spread in the period after is more than the period before it. The findings of the research are consistent with findings of Frino *et al.*, (2010) but they are inconsistent with findings of Kim *et al.*, (2007).

The Forth Hypothesis

There is a significant relationship between market depth in period before and after trading halt. To compare the market depth (The effect of high-volume transactions on the fluctuation of prices) in before

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and after periods test of mean comparison of two independent groups is used, Given the significant level is 95% it is concluded that the market depth in the period before is more than the period after it. The findings of the research are consistent with findings of Frino *et al.*, (2010) but they are inconsistent with findings of Kim *et al.*, (2007).

Suggestions

- 1- Given that the purpose of the trading halt is the protection of investors in the stock market, it is suggested that appropriate legislation be established at the time of the trading opening so that all investors be able to carry out their transactions.
- 2- One of the cases for further development of the market is to strengthen existing financial institutions and establishing new institutions such as ratings agencies in order to produce high-quality information. In this regard, robust and transparent accounting and auditing system should be strengthen that here the appropriate manpower training is very important.
- 3- The lack of effective regulatory mechanisms in some cases leads to exit the companies from market and impose losses on investors and lack of adequate transparency and market inefficiency caused unbalanced profits and losses by tip holders who do not have access to this information; unfortunately, in many cases that the companies have published transparency announcements in connection with the lack of change in corporate profits, there has been a change in their interest. By creating efficient regulatory system it can be avoided in these cases.
- 4- Long trading halt is one of the factors influencing long-term reducing of liquidity. So the exchange organization is so effective to attract investors by publishing reports faster by publishers and make information transparency.

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