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The Relationship between Stock Liquidity with Transaction Based Criteria and the Risk of Stock Price Crash in the Firms

Elnaz Aghari*, Zekvan Imani, Ali Homayoon,

Department of Accounting, Bandar Abbas Branch, Islamic Azad University, Bandar Abbas, Iran.

A B S T R A C T

The phenomenon of stock prices crash is important for investors because it is always helpful for stock portfolio and its risk management to know the specific features of a firm that can predict the sharp price fluctuations and especially the crash of stock price. The present study seeks to examine the relationship between stock liquidity with transaction-based criteria and risk of stock prices crash of listed firms in Tehran Stock Exchange. Transaction-based criteria include the volume of transactions, value of transactions, stock turnover, number of trading days, the percentage of free float stock, float stock cycle. For this purpose, a sample, consisting of 90 firms listed in Tehran Stock Exchange from 2010 to 2014, is selected. Multivariate logistic regression method is used to test the hypotheses. The results indicate that there is no significant correlation between the number of trading days, the percentage of free float stocks, the absolute gap between supply and demand, and the risk of stock prices crash.

Keywords: Stock Liquidity, Discretionary Accruals, Stock Prices Crash Risk.

INTRODUCTION:

Stock Liquidity is one of the most important factors considered by many investors in capital markets. One of the main functions of the stock exchange is the liquidity and investors are always calling for those stocks that can be traded by the lowest cost possible [1].

Liquidity can be defined as the likelihood of making a transaction with the price equal to the previous transaction price. Liquidity is an important criterion of the market. In markets with high stock liquidity, prices are moving slowly and the gap between bids and bought is close to zero.

Liquidity of shares of each firm and the capital market set is important from various aspects, among which we can mention the importance of liquidity in market growth and market development and as the main index of market development, the impact on capital costs, the factor of the improvement in the firm's performance and the overall economy, the guarantee for the success of public offerings of new shares, factor considered in the management of investment portfolio together with the risks and return, impact on the effectiveness of risk hedging instruments, the central role of market liquidity in the price formation, the success factor of public offerings of new shares and the decrease in the cost and risk of subscription and market making and stability of financial systems [2].

Managers usually hide their financial performance by delaying the disclosure of bad news and faster disclosure of good news, as well as better performance in the future. When the hidden accumulated bad news in the firm reaches its upper limit, preventing its issuance is not possible

*Corresponding Author: elnazaghari@yahoo.com

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for managers. The bad news is suddenly released and subsequently investors offer their shares to sell on the market that it would cause the collapse of the stock price in the market. Stock prices crash is a phenomenon where a firm's stock price suffers a severe, negative and suddenly adjustment. Regard to the risks of stock prices crash there are two main parts in accounting research: the first is management part and the second is accounting systems [3].

Regard to the role of stock liquidity in the more distribution of financial risk through reducing transaction and portfolio costs, creating more motivation in investors for trading decisions, as well as its important role in stock price discovery process, bridging the gap between bid and offer prices and therefore reducing the risk of stock prices crash, and due to main concerns of investors in the market about the phenomenon of stock prices crash and considering the fact that stock prices crash leads to a sudden and negative revision in investors' expectations about the stock of a firm, in this study we investigate the relationship between stock liquidity with transaction-based criteria and risk of stock prices crash in firms.

LITERATURE REVIEW

Stock Prices Crash:

Stock price crash is a phenomenon in which the stock price suffers a severe negative and sudden adjustment. In the studies carried out regard to the stock prices crash, two main components are known: first, the management of the firm that due to selfish motives (for self-interest) or benevolently (in line with the objectives of the organization) tries to overstate the firm's performance by delaying the issuance of bad news, as well as accelerating the release of good news (this process leads to creating bubbles in the stock prices of firms), and second, accounting system and its use in the direction of management actions, which allow the management to perform the above mentioned actions. Due to the importance of the issue for different groups of investors, capital market analysis, professional accounting associations and officials of the Stock Exchange, financial and accounting researchers have tried to find the answers to the three questions in this regard: First, what are the reasons for the occurrence of this phenomenon? Second, what strategies can prevent this phenomenon? And third, what warning signs are there to predict this phenomenon?

The studies carried out by theses researchers, in response to the first question, introduced shareholders' focus on the feedback effects of market volatility, investors' heterogeneous beliefs, earnings management, accounts irrigation, analysts unrealistic assessment of firm performance, lack of transparency of financial information, tax evasion, continuation of current negative valuable projects and managers' job fears as some of the reasons for this phenomenon. The researchers, in addition to the factors creating the phenomenon of stock prices crash and in order to answer the second question, presented some cases as the factors that can reduce this phenomenon. Among these factors, the presence of aware and well-informed market participants such as institutional owners and market analysts, financial information transparency, lack of information asymmetry between the internal members and people outside the organization can be noted. In the meantime the factors such as the increase in the trading volume of the stock relative to its trend during the past six months, the experience of positive returns in more than 36 months ago, shares buying and selling by internal members of the organization ... are introduced as warning signs that predict the occurrence of stock price crash.

By reviewing these studies and focusing on the causes of the stock price crash, it can be realized that all these factors lead to bubble creation in stock prices of the firm. This event always happens as a result of the measures such as accumulating bad news in the firm, accelerating the identification of news good in profit, profit management, and lack of transparency of financial information, etc.

Furthermore, the presence of institutional investors limits the opportunistic and partisan behavior of managers and delays the recognition of profit. As a result, net assets and profit are

shown lower. Timely recognition of losses and its clear potential condition for shareholders and creditors, lead them to do faster reaction to prevent more losses. For example, shareholders can convince the Board of Directors to change the CEO and/or persuade the CEO to stop the loss-making projects and prevent managers' investment in negative current valuable projects. In addition, the researchers demonstrate that institutional investors can play an effective role in reducing the profits obtained from earnings management done by senior managers.

Meanwhile, the presence of institutional investors can be effective in improving the quality of information provided by management and increase the transparency of financial information. In fact, agency theory proves that the firm's managers try to increase the profits in order to hide bad news related to the firm and report good news soon. This can have negative effects on the quality of the presented reports. However, institutional investors can increase the quality of reports provided by management by adjusting the negative effects of such efforts [4].

Liquidity:

Liquidity is a complex concept that cannot be directly observed. In addition, liquidity and illiquidity are two sides of the same coin, which in many cases are used to refer to a single concept. The simplest definition of the liquidity of an asset can be as the market's ability to absorb large volumes of transactions without causing severe fluctuations in the price. Gradually and with the growth and development of financial markets, both in the dimension of physical issues such as the mechanisms and rules, diversity of financial instruments, and the number of participants in the market ... and in other dimensions such as the emergence and spread of modern financial theories regard to the liquidity potential, the above definition cannot be a comprehensive and detailed definition of liquidity.

Now, the most complete form of the definition of liquidity, on the basis of which financial markets, especially capital markets in the world can be ranked and graded, is: "the ability to buy or sell large amounts of securities, quickly and with little effect on prices". Liquidity of assets reflects the ease of converting those assets into cash or a cash equivalent asset. Therefore, the liquidity risk is resulted from difficulties in converting assets into cash without incurring a loss. Liquidity, merchantability or transaction costs are among the significant features in many investments programs and financial instruments. The lack of liquidity may be considered equivalent to "immediate implementation cost".

The enthusiasm of an investor to transaction faces a replacement relationship: he/she may have to wait to trade with a favorable price, or persists to achieve the transaction as soon as possible with a current price of supply and demand. The announced request price includes spending for urgent purchase and the bid similarly reflects the need for a concession (discount) presentation for urgent sale. Therefore, a normal standard for measuring illiquidity is the gap between bids and requested. This gap is the sum of effective solicited to buy and concessions granted for the sale. In fact, the findings indicate that the relative gap to stocks is negatively correlated with liquidity characteristics such as transaction volume, number of shareholders, the number of market makers who trade the stocks and the amount of share price stability [5].

Kim and Zhang (2010) in a study entitled "Does risk accounting conservatism decrease the stock price crash? ", investigated the relationship between accounting conservatism and risk of stock prices crash. Their research results showed that conservatism has limited managers' motivation for the performance overstatement and lack of disclosure of bad news and hence, reduces the risk of stock prices crash. In addition, using the research and development costs, the market situation of firms' products and the combination of firm's shareholders as variables affecting the information asymmetry between managers and investors, they have proved that in the conditions of the existence of information asymmetry, the ability of conservatism to reduce the risk of future stock price crash is more[6].

Dianati et al (2012) examined the effect of working capital management based on the cash conversion cycle (Gitman) on the reduction of the risk of stock prices crash (falling). In this study, the cash conversion cycle is used to measure working capital management and the negative coefficient model of stock returns skewness is used to measure stock prices crash[7]. In this research strong evidence was provided that approved working capital management significantly reduces the risk of stock prices crash Chen et al (2015), in order to assess the consequences of income smoothing in creation of the risk of shareholder's wealth downside movement, examined the relationship between income smoothing and risk of stock prices crash. The results suggest that the high income smoothing is associated with the high risk of stock price crash. However, this combination is lower for firms with a higher percentage of institutional ownership. The results also show that when income smoothing is associated with positive discretionary accruals, risk of stock prices crash is higher[8].

Chang et al (2016) on an investigation, studied the relationship between stock liquidity and risk of stock prices crash. The results indicate a significant positive relationship between stock liquidity and risk of stock prices crash, which means high liquidity increases the risk of stock price crash[9].

RESEARCH HYPOTHESES

According to the defined objectives and to answer the research questions, the research hypotheses are posed as the following:

Hypothesis:There is a significant correlation between stock liquidity with transaction-based criteria and risk of stock prices crash of firms.

Hypothesis (1): here is a significant correlation between volume of transactions and risk of stock prices crash of firms.

Hypothesis (2):There is a significant correlation between value of transactions and risk of stock prices crash of firms.

Hypothesis (3):There is a significant correlation between stock turnover and risk of stock prices crash of firms.

Hypothesis (4):There is a significant correlation between number of trading days and risk of stock prices crash of firms.

Hypothesis (5):There is a significant correlation between the percentage of free float stock and risk of stock prices crash of firms.

Hypothesis (6):There is a significant correlation between float stock turnover and risk of stock prices crash of firms.

METHODOLOGY

The population of this research includes the firms listed on the Tehran Stock Exchange, among which 90 firms are selected as sample.

The method used to collect research data is documents mining method. Research variables are derived from the information of financial statements and notes of the firm. Therefore, the application of Rah-Avard-Novin as well as the official website of Codal and Tehran Stock Exchange are used. In this study, Excel software is applied in order to prepare the information of firms in every industry and Eviews 6 software is used to estimate the econometric models. The research hypotheses are tested using logistic regression method.

Research Model:

$$CRASH_{i,t} = \beta_0 + \beta_1 TV_{i,t} + \beta_2 VT_{i,t} + \beta_3 TS_{i,t} + \beta_4 NTD_{i,t} + \beta_5 FFS_{i,t} + \beta_6 CFS_{i,t} + \beta_3 LEV_{i,t} + \beta_4 SIZE_{i,t} + \beta_5 ROA_{i,t} + \beta_6 MB_{i,t} + \beta_7 R_{i,t} + \beta_8 DA_{i,t} + \varepsilon_{i,t}$$

Stock Liquidity: in this study, the transaction-based criteria are used to assess the liquidity.

Transaction-Based Criteria:

• **Volume of Transactions (VT)**: It is the number of shares traded in a time slot. Volume of transactions for each firm in the annual intervals is obtained from databases.

• **Value of Transactions (VT)**: It is the product of the number of traded share in the stock price.

• **Stock Turnover (TS)**: Regarding the viewpoint of Banerjee et al (2007), the volume of stock trading turnover is considered as a proportion of shares traded to total shares issued in the desired year.

• **Number of Trading Days (NTD)**: It refers to the number of days in a specified period, when the share exchange is occurred. This measure is calculated on an annual basis.

• **Percentage of Free Float Shares (FFS)**: It is a percentage of total capital of a firm that is available to trade in the stock market or a part of the shares of a firm that is traded without any restrictions. The percentage of free float shares is calculated by the Securities and Exchange and is published in the form of quarterly reports. To obtain the free float shares on an annual basis, the mean of the quarterly free float shares percentage calculated by the Exchange organization, is used.

• **Cycle of Float Shares (CFS)**: It is obtained by dividing the volume of shares traded on the number of float shares.

The dependent variable of the present study is the risk of stock prices crash. Negative coefficient of skewness model [11] .

Is used as follows to measure the risk of stock prices crash:

$$NSKEW_{i,t} = -[n(n-1)^{3/2} \sum W_{i,t}] / [(n-1)(n-2)(\sum W_{i,t})^{3/2}]$$

In the above model, Wi, t represents the monthly returns specific to firm i for month t and n is the number of monthly returns observed during the fiscal year. In this model, the more is the negative coefficient of skewness, the more the firm will expose the risk of stock prices crash. "Firm's specific monthly returns" that is shown by w (Formula (1)), is equal to the natural logarithm of number one plus the residual value ε_t and is calculated from the formula number (2).

1) $W_{j,t} = \ln(1+\varepsilon_{j,t})$

2) $r_{j,t} = \alpha_j + \beta_1 rm_{,t-2} + \beta_2 rm_{,t-1} + \beta_3 rm_{,t} + \beta_4 rm_{,t+1} + \beta_5 rm_{,t+2} + \varepsilon_{j,t}$

In the formula number (2), $r_{j,t}$ is the stock return of firm j in month t and $r_{m,t}$ is the market monthly returns (based on market index).

• **Leverage (LV)**: It is equal to the ratio of total debt to total assets.

• **Firm Size (SIZE)**: It is equal to the natural logarithm of total assets.

• **Return on Assets (ROA)**:It is the rate of return on assets of the firm that is obtained from the ratio of earnings before interest and taxes to total assets of the period.

• **Book Value to the Equity Value (MB)**: It is equal to the ratio of the market value of equity to book value of equity.

• **Stock Returns (R)**: Stock returns involves annual profit and the increase (decrease) in the value of the stock, (changes in stock prices of the end of the period compared with the beginning

of the period) divided by the stock price of the beginning of the period. The stock return rate is calculated for a year.
To calculate the stock returns in the current study, which is the dependent variable, the following equation is used:

$$R = \frac{(1+\alpha)(P1+D) - P0}{P0}$$

R is the stock returns, P1 is the stock market price at the end of the period, P0 is the firm's stock market price at the beginning of the period, D is the dividends, received priority, stock splits, dividend belonged to per share of the firm and α is the percent of capital increase.

• **Discretionary Accruals (DA)**: To measure discretionary accruals, first the total accruals and non-discretionary accruals are measured. Then, subtracting the total accrual from non-discretionary accruals, discretionary accruals are obtained.

$$TA = NI - CFO$$

Where:
TA: total accruals
NI: net profit
CFO: cash flow from operations

Then, the following model is also fitted regard to the total accruals against the change in sales and the cost of fixed assets of the period:

$$\frac{TA_{i,t}}{A_{i,t-1}} = {}_1\left(\frac{1}{A_{i,t-1}}\right) + \propto_2 \left(\frac{\Delta REV_{i,t}}{A_{i,t-1}}\right) + \propto_3 \left(\frac{PPE_{i,t}}{A_{i,t-1}}\right) + \varepsilon_{i,t}$$

Where:
Ai, t-1: Total assets of the firm in the beginning of the period.
△REVi, t: Change in net income (sales) of the firm.
PPEi, t: The amount of property, plant and equipment.
α1 and α2 and α3: The estimator parameters specific to the firm.

Non-discretionary accruals are calculated as follows:

$$NDA_{i,t} = \alpha_0\left(\frac{1}{A_{i,t-1}}\right) + \beta_1\left(\frac{\Delta REV_{i,t} - \Delta REC_{i,t}}{A_{i,t-1}}\right) + \beta_2\left(\frac{PPE_{i,t}}{A_{i,t-1}}\right)$$

α0, β1 and β2 are the specific parameters of the firm which are estimated in the equation. Firm-specific parameters, based on the firm's relevant industry, are taken from Jones Modified Model. In the final step, discretionary accruals are calculated as follows:

$$DA_{i,t} = \left[\frac{TA_{i,t}}{A_{i,t-1}}\right] - NDA_{i,t}$$

RESULTS:

In a summary, using descriptive statistics methods properly, the characteristics of a bunch of information can be represented exactly. Descriptive statistics are always used to determine and express research data characteristics. Study on the descriptive results of research variables show that the mean of the risk of stock prices crash in surveyed firms is obtained 0.236. According to the fact that the variable is 0 and 1, it can be said that more than 76 percent of

firms have lacked stock prices crash. This means that they had no risk of their stock prices crash. In addition, the mean score of the variables of transaction and order-based liquidity measures is presented in Table 1.

Table 1. Descriptive Statistics of Research Variables

Variable	Mean	Median	SD	Min	Max
Stock Prices Crash Risk	0.236	0	0.425	0	1
Volume of Transactions	92695682.019	6760675.007	311430610.790	14855	4096816477
Value of Transactions	386059.149	16908	1435327.861	21	17797172.960
Stock Turnover	0.132	0.060	0.193	0	1,100
Number of Trading Days	124.740	123	69.542	6	296
Percentage of Free Float shares	16.432	12.555	13.690	0.330	78.150
Cycle of Float Shares	-24.442	-9.425	92.270	-501.570	472.000
Absolute Gap between Supply and Demand	0	0.142	1	-4.392	6.243
Relative Gap between Supply and Demand	-0.336	-0.215	1.141	-5.410	3.730

Hypothesis Test (Logit Regression)

In linear and multivariate regression, those situations are analyzed in which the dependent variable has been continuous. However, in many studies the dependent variable has two possible results and can accept only one of two values of zero or one. The value of one means the occurrence of desired event and the value of zero means lack of it, or vice versa. In this analysis, rather than predicting that the event occurs or not, the probability of the event occurrence is predicted. In this way the dependent variable can include a range of values from 0 to 1. To make the relations between independent and dependent variables limited between 0 and 1, the analysis uses the assumed relationship between these variables that is similar to S curve.

At low levels of the independent variable, the probability is close to zero, and the more the values of the independent variables increase, after the slope begins to decrease, at every level of independent variables, the more the probability is close to one. However, it will never be more than one. At logit regression, the concept called superiority ratio (ratio of (Pi / (1-Pi))) is used that indicates the proportion of the probability of the event occurrence to the probability of its lack of occurrence. Then log of superiority is calculated based on the following equation.

$$Ln\left(\frac{Pi}{1-Pi}\right) = \beta_0 + \beta_{ixi}$$

Where, P is the probability of the risk of stock prices crash, β0 is the intercept and βi is the variable coefficient associated with the explanatory variable (independent variables) of x.

The dependent variable is the logarithm of the ratio of the probability of stock prices crash to the probability of the lack of its occurrence probability. Based on this method, the probability of the occurrence of each event as the dependent variable is considered between 0 and 1. The most important feature of this approach is that there is no need to make assumptions about normality and homogeneity of covariance matrix. In addition, the other feature of logit analysis is the nonlinear transformation of the input data, by which the effect of external variables decreases.

Research Hypothesis Test:

There is a significant correlation between stock liquidity with transaction-based criteria and risk of stock prices crash of firms.

First Hypothesis Test:

There is a significant correlation between volume of transactions and risk of stock prices crash of firms.

As shown in Table 2, the significance level of Z statistic value (-2.623) of transactions volume variable is less than 5% and significant (sig= 0.009). Therefore, the hypothesis H0 is rejected and the hypothesis H1 is accepted. That is to say, there is a negative (inverse) and significant correlation between the volume of transactions and risk of stock prices crash of the studied firms. This means that, the more the volume of transactions of firms increases (decreases), the more the risk of stock prices crash of firms will decrease (increase).

Table (2) First Hypothesis Test

Variable	β	SE	Z Statistic	sig	Result
Constant	0.067	0.889	0.075	0.940	-
Volume of Transactions	-0.130	0.050	-2.623	0.009	H0 Rejection
F	1.158	0.440	2.635	0.008	-
MB	0.081	0.101	0.805	0.421	-
Stock Return	-0.342	0.228	1.501-	0.133	-
Discretionary Accruals	-0.026	0.139	-0.184	0.854	-
McFadden Determination Coefficient			4.105		
Likelihood Ratio			20.167(0.001)		
Hosmer-Lemeshow Test			13.699(0.090)		
Forecast Percentage			%76.89		

Second Hypothesis Test:

There is a significant correlation between value of transactions and risk of stock prices crash of firms.

As can be seen in Table 3, the significance level of Z statistic value (-2.022) of transactions value variable is less than 5% and significant (sig= 0.043). Therefore, the hypothesis H0 is rejected and the hypothesis H1 is accepted. That is to say, there is a negative (inverse) and significant correlation between the value of transactions and risk of stock prices crash of the studied firms. This means that, the more the value of transactions of firms increases (decreases), the more the risk of stock prices crash of firms will decrease (increase).

Table (3) Second Hypothesis Test

Variable	β	SE	Z Statistic	sig	Result
Constant	-1.035	0.630	-1.643	0.100	-
Value of Transactions	-0.098	0.048	-2.022	0.043	H0 Rejection
Leverage	1.164	0.439	2.650	0.008	-
MB	0.101	0.101	0.996	0.319	-
Stock Return	-0.353	0.228	-1.554	0.120	-
Discretionary Accruals	-0.070	0.139	-0.501	0.617	-
McFadden Determination Coefficient			3.514		
Likelihood Ratio			(0.004)17.266		
Hosmer-Lemeshow Test			(0.278) 9.826		
Forecast Percentage			%26.89		

Third Hypothesis Test:

There is a significant correlation between stock turnover and risk of stock prices crash of firms.

As shown in Table 4, the significance level of Z statistic value (-2.257) of stock turnover variable is less than 5% and significant (sig= 0.024). Therefore, the hypothesis H0 is rejected and the hypothesis H1 is accepted. That is to say, there is a negative (inverse) and significant correlation between the stock turnover and risk of stock prices crash of the studied firms. This means that, the more the stock turnover of firms increases (decreases), the more the risk of stock prices crash of firms will decrease (increase).

Table (4) Third Hypothesis Test

Variable	β	SE	Z Statistic	sig	Result
Constant	-1.890	0.390	-4.847	0.000	-
Stock Turnover	-1.859	0.824	-2.257	0.024	H0 Rejection
Leverage	1.345	0.437	3.081	0.002	-
MB	0.080	0.102	0.786	0.432	-
Stock Return	0.309	0.226	-1.368	0.171	-
Discretionary Accruals	0.070	0.137	-0.509	0.611	-
McFadden Determination Coefficient			3.982		
Likelihood Ratio			(0.002) 19.562		
Hosmer-Lemeshow Test			(0.777) 4.867		
Forecast Percentage			%76.67		

Fourth Hypothesis Test:

There is a significant correlation between the number of trading days and risk of stock prices crash of firms.

As shown in Table 5, the significance level of Z statistic value (-0.517) of the number of trading days variable is greater than 5% and insignificant (sig= 0.605). Therefore, the hypothesis H0 is not rejected. That is to say, there is no significant correlation between the number of the trading days and risk of stock prices crash of the studied firms.

Table (5) Fourth Hypothesis Test

Variable	β	SE	Z Statistic	sig	Result
Constant	-1.736	0.756	-2.297	0.022	-
Number of Trading Days	-0.073	0.141	-0.517	0.605	H0 Lack of Rejection
Leverage	1.311	0.423	3.036	0.002	-
MB	0.082	0.100	0.817	0.414	-
Stock Return	0.352	0.227	-1.552	0.121	-
Discretionary Accruals	-0.098	0.139	-0.702	0.483	-
McFadden Determination Coefficient			2.715		
Likelihood Ratio			(0.021) 13.341		
Hosmer-Lemeshow Test			(0.365) 8.738		
Forecast Percentage			%76.67		

Fifth Hypothesis Test:

There is a significant correlation between the percentage of free float stock and risk of stock prices crash of firms.

As can be seen in Table 6, the significance level of Z statistic value (-0.073) of the percentage of free float stock variable is greater than 5% and insignificant (sig= 0.942). Therefore, the hypothesis H0 is not rejected. That is to say, there is no significant correlation between the percentage of free float stock and risk of stock prices crash of the studied firms.

Table (6) Fifth Hypothesis Test

Variable	β	SE	Z Statistic	sig	Result
Constant	-2.054	0.487	-4.216	0.000	-
Percentage of Free Float Shares	-0.009	0.122	-0.073	0.942	H0 Lack of Rejection
Leverage	1.329	0.431	3.083	0.002	-
MB	0.077	0.101	0.770	0.441	-
Stock Return	0.354	0.228	-1.556	0.120	-
Discretionary Accruals	-0.100	0.139	-0.715	0.475	-
McFadden Determination Coefficient			2.662		
Likelihood Ratio			(0.023)13.081		
Hosmer-Lemeshow Test			(0.784)4.751		
Forecast Percentage			%77.11		

Sixth Hypothesis Test:

There is a significant correlation between float stock cycle and risk of stock prices crash of firms.

As shown in Table 7, the significance level of Z statistic value (-2.183) of float stock cycle variable is less than 5% and significant (sig= 0.029). Therefore, the hypothesis H0 is rejected and the hypothesis H1 is accepted. That is to say, there is a negative (inverse) and significant correlation between the float stock cycle and risk of stock prices crash of the studied firms. This means that, the more the float stock cycle of firms increases (decreases), the more the risk of stock prices crash of firms will decrease (increase).

Table (7) Sixth Hypothesis Test

Variable	β	SE	Z Statistic	sig	Result
Constant	-1.814	0.393	-4.618	0.000	-
Cycle of Float Shares	-0.256	0.117	-2.183	0.029	H0 Rejection
Leverage	1.251	0.431	2.901	0.004	-
MB	0.092	0.102	0.899	0.368	-
Stock Return	-0.337	0.225	-1.500	0.134	-
Discretionary Accruals	-0.050	0.140	-0.360	0.719	-
McFadden Determination Coefficient			3.849		
Likelihood Ratio			(0.002) 18.912		
Hosmer-Lemeshow Test			(0.110) 13.070		
Forecast Percentage			%76.67		

CONCLUSIONS and RECOMMENDATION

In this study, we investigate the relationship between stock liquidity with transaction-based criteria and risk of stock prices crash of firms listed in Tehran Stock Exchange. The results of the research in hypotheses (1), (2), (3) and (6), regard to the significant relationship between liquidity based on transaction criteria and the volume of transaction, the value of transactions, stock turnover, float stock turnover and the risk of falling stock prices are accepted in regression test and the direction of the relationship is inverse. This means that the more the volume of transaction, the value of transactions, stock turnover and float stock turnover increase, the more the risk of stock prices crash decreases. The results of hypotheses (1) , (2) and (3) of the research are consistent with the results of the studies carried out by Chang et al (2016).

According to the results of the research and the theoretical principles in this regard, higher stock liquidity because of the specificity and positive impact on reducing bad news speculation prevents the risk of stock prices crash.

High liquidity stock can increase the manager's incentive to prevent the spread of bad news and undermine the stability of financial markets. In other words, the higher the level of stock liquidity, the less the managers are able to collect will bad news for a considerable period. This in turn will lead to a reduce risk stock price crash.

The results of the research on the hypotheses (4) and (5) regard to the significant relationship between liquidity based on transaction criteria and the number of trading days, the percentage of free float shares and the risk of stock prices crash in regression test are disapproved. This means that based on the findings and empirical evidence, in a conclusion, it can be stated that there is no significant relationship between the presence or absence of the trading days, and the percentage of free float shares and the risk of stock prices crash.

According to research hypotheses result and its comparison with previous hypotheses, it seems that factors other than the number of trading days and the percentage of free float shares are involved on the stock prices crash of firms. Therefore, to evaluate the relationship between stock liquidity and the risk of stock prices crash, criteria and factors other than the number of trading days and the percentage of free float shares must be investigated. Identification of these factors needs more research that can be the subject of future studies.

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