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Effect of Debt Maturity on the Risk of Stock Prices Crash in Companies Listed on Tehran Stock Exchange

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Abstract: Proper and timely disclosure of information is one of the important tools for investors to reduce the risk of investment and to predict stock prices. The purpose of this study was to investigate the effect of debt maturity on the risk of stock price crash in companies listed on Tehran Stock Exchange. Of course, it should be noted that the purpose of debt maturity in this research is only short-term debt. To this end, 147 companies were surveyed during the period of 2010-2015. According to the statistical methods performed at 95% confidence level, the hypotheses were tested. Findings show that there is a significant and negative relationship between short-term debt ratio and future risk of stock price crash. There is also credible evidence that there is a stronger relationship between short-term debt and the future risk of stock price crash for firms with weaker governance than firms with stronger governance. No stronger relationship between short-term debt and future risk of stock price crash for companies with higher degrees of asymmetry than companies with lower degrees of asymmetry.

Keywords: Corporate Governance, Information Asymmetry, Debt Maturity, Risk of Stock Price Crash.

Introduction

The fall in stock prices is a phenomenon in which stock prices are subject to severe negative and sudden adjustments. Sometimes, the company's management uses the accounting system to overhaul the company's performance by postponing bad news release and accelerating the release of good news that this process results in the lack of transparency of financial information and the creation of bubbles in company stock prices. On the other hand, special attention to the quality of the audit performed on the financial statements due to the seriousness and carefulness of the investigation limits the opportunistic behavior of managers and promptly identifies losses and delays in identifying profits. Also, to earn or retain the reputation and credibility, auditors try to audit more carefully to avoid legal claims and deprivations, and increase the quality of financial information; thereby the transparency of corporate financial information increases (Maghsoudi, 2012). The risk of stock price crash is a major issue for investors and legislators in different countries. Stock price risk is often defined as the most negative return fluctuation. Stock return is a function of market expectations about future corporate profits. This issue depends on the information content of the stock price in the sense that the information about the company’s value is available to investors and can be taken into account in the stock price. Generally speaking, for choosing measures to improve market efficiency and liquidity that facilitates the flow of information in the market, policy makers of stock market in the world are more inclined to disclose more general information through legal regulation and to highlight the best practices that can be available over the next period which can become a routine and belief (Selarka & Choudhury, 2015). Lack of transparency of information gives managers more opportunity to conceal bad news from the company’s stakeholders, and ultimately, when this bad news is published in the company, it creates a negative

and severe adjustment in stock returns or stock price crash (Jin & Myers, 2006). Recent studies indicate that different internal and external factors affect the risk of stock price crash. Another factor that affects the risk of stock price crash is short-term debt. Short-term debt compared to long-term debt, usually measured at a shorter time, and recapitalization. Short-term debt can play a controlling role on the behavior of managers. Short-term debts compel managers to provide and disclose trusted and timely information at the time of the renewal of the debt contract. This feature of short-term debt increases the disclosure of managers' information and prevents and reduces the likelihood of hiding bad news that increases the risk of stock price crash (Dang et al., 2016). Short-term debt can play a fundamental role in reducing the cost of agency costs that results in under investment (Myers, 1977). In short, short-term debt reduces inefficient investments; the cost of agency resulting from information asymmetry and management risk-taking, and the reason for the reduction of these cases is the lower sensitivity of the value of short-term debt to corporate information changes relative to long-term debt (Barnea et al., 1980). Generally speaking, in firms with weak corporate governance, short-term debt can link management rewards to the price of stock thus play controlling and monitoring role on the behavior of managers and reduce the cost of agency due to board rewards and increase external oversight over the manager and his benefits, so it brings transparency of information and reduces company's information asymmetry and, ultimately, raises the credit rating of that company (Brockman et al., 2010). On the other hand, the existence of institutional investors in companies with a short-term debt maturity structure will weaken the impact of short-term debt on reducing stock price crash risk. Since institutional investors use their ability to monitor corporate governance and performance and it is a function of their investment, the more investments they make, the better management is done and prevent the accumulation of bad news. The existence of information asymmetry in short-term debt companies will strengthen the impact of short-term debt on reducing the risk of stock price crash. Information asymmetry is a negative phenomenon that typically occurs in the securities market and leads to a decrease in market efficiency (Diamond, 1991). Under the conditions of information asymmetry, due to the lack of a flow of information, investors cannot easily evaluate the performance of the company. As a result, managers will have the incentives not to disclose bad news and keep them inside the company. In these companies, in the case of short-term debt, this debt structure can monitor managers by controlling role and prevent the accumulation of this news and reduce the risk of stock price crash. Regarding the main issues in the research, the question arises as to whether the maturity of a debt affects the risk of stock price crash.

Materials and Methods

In terms of purpose, this research is applied and in terms of nature, it is descriptive – correlation. On the other hand, the present research is a post-event type (quasi-experimental). The statistical population of this research is listed companies on Tehran Stock Exchange. Therefore, the spatial domain of research is listed companies on Tehran Stock Exchange. Also, the time domain of the research is a 6-year period from 2010 to 2015. Sampling method in this research is a systematic elimination method. Sample size is the number of companies that have all of the following features and requirements:

A. For the purpose of homogeneous information and because of differences in the type of activity, the selected companies are not financial intermediation, banks and investment.
B. Has been listed on Tehran Stock Exchange prior to 2010.
C. In order to make information comparable, the financial year of the company will end on March 20th.
D. Information on the variables selected in this study is available.

In this research, the library method is used to collect theoretical foundations of the subject matter. For this purpose, information will be gathered through the study of books, journals and referrals to specialized websites. Document mining was used to gather data. To estimate the model and test the research hypotheses in the hypothesis testing section, the required data obtained through the financial statements and accompanying notes published by the companies during the years 2010-2015, as well as the existing information systems and software (Tadbir Pardaz and the Rah Avard Novin). To analyze the data, we used descriptive and inferential statistics. Descriptive statistics (mean, variance, correlation, covariance and etc.) were used to describe and summarize the collected data. Inferential statistics analysis was used to analyze and test the research hypotheses. In this research, logistic regression was used to test the significance of the general relationship between regression equations and the adjusted R2 determination coefficient was used for the relationship between dependent and independent variables. Also, for data analysis and extraction of research results, Excell and Eviews software were used.

Table 1. Descriptive statistics of the research variables.

Variable names	Risk of falling stock price	Stock circulation	Financial leverage	Book – to – market value	Risk of stock price crash of previous year	Previous period return	Assets return
Mean	0.609977	0.316791	0.633787	0.377290	0.067676	0.031236	0.116361
Median	1.000000	0.160000	0.620000	1.900000	0.280000	0.020000	0.110000
Max	1.000000	3.280000	3.060000	121.5100	7.320000	0.560000	0.630000
Min	0.000000	0.000000	0.100000	510.79000	10.810000	0.220000	0.39000
SD	0.488032	0.422487	0.268138	6.354837	0.977331	0.058177	0.133610
Skewness	0.450953	2.640862	2.842943	9.440933	3.136557	1.760080	0.347906
Traction	1.203359	12.41511	22.16678	191.0125	18.44973	13.99485	4.866733

Table 2. Rest of descriptive statistics of the research variables.

Variable names	Firm return fluctuations	Firm size	Short – term debt
Mean	0.136122	6.062052	0.866315
Median	0.120000	5.975000	0.920000
Max	0.870000	8.260000	1.000000
Min	0.000000	4.390000	0.270000
SD	0.087097	0.656159	0.134977
Skewness	2.001753	0.744724	10.771723
Traction	11.38123	3.667199	6.039599

Results

Results of the first model test: There is a significant relationship between the short-term debt and the future risk of stock price crash ratio.

The following regression model was used to test the research hypotheses.

$$Crash\ Risk_{i,t} = \alpha + \beta_1 STDM_{i,t-1} + \beta_2 DTURN_{i,t-1} + \beta_3 SIGMA_{i,t-1} + \beta_4 RET_{i,t-1} + \beta_5 Size_{i,t-1} + \beta_6 MB_{i,t-1} + \beta_7 Lev_{i,t-1} + \beta_8 ROA_{i,t-1} + \beta_9 NCSKEW_{i,t-1} + \varepsilon_{i,t}$$

Table 3. Statistical results summary of the first model test.

Variable	Coefficient	SD error	Z – statistics	Significance level
C	0.960160	0.828909	1.158342	0.2467
Short – term debt	-1.72286	0.515199	-3342568	0.0319
Stock circulation	-0.142426	0.178881	-0.796206	0.4259
Firm return fluctuations	1.331143	1.044315	1.274657	0.2024
Previous period return	-1.440532	1.507761	-0.955412	0.3394
Firm size	-0.059651	0.107678	-0.553978	0.5796
Book – to – market value	0.002377	0.011765	0.202066	0.8399
Financial leverage	-0.292622	0.351858	-0.831650	0.4056
Asset return	-1.787963	0.742021	-2.409584	0.0160
Risk of last year stock price crash	021723	0.074341	0.292211	0.7701
LR Statistics (significance level)	2205007	significance level		0.05007

The estimating coefficient of the short-term debt independent variable indicates that there is a significant relationship between short-term debt and future risk of stock price crash at the error level of 0.05. Because the calculated p-value for the coefficient of this independent variable was less than 0.05 (0.0319), it can be said that

there is a significant relationship between short-term debt and future risk of stock price crash at the 95% confidence level.

The estimating coefficient of stock circulation control variable indicates that there is no significant relationship between stock circulation and future risk of stock price crash at the error level of 0.05. Because the calculated p-value for the coefficient of this control variable was more than 0.05 (0.4259), it can therefore be said that there is no significant relationship between stock circulation and future risk of stock price crash at 95% confidence level.

The estimating coefficient of SIGMA control variable of the firm return fluctuations indicates the absence of a significant relationship between firm returns fluctuations and the future risk of stock price crash at an error level of 0.05. Because the calculated p-value for the coefficient of this control variable was more than 0.05 (0.2044), it can therefore be said that there is no significant relationship between firm returns fluctuations and future risk of stock price crash at 95% confidence level.

The estimating coefficient of the previous period return control variable indicates that there is no significant relationship between the previous period return and the future risk of stock price crash at the error level of 0.05. Because the calculated p-value for the coefficient of this control variable is more than 0.05 (0.3394), it can therefore be said that there is no significant relationship between the previous period return and the future risk of stock price crash at 95% confidence level.

The estimating coefficient of the firm size control variable indicates that there is no significant relationship between firm size and future risk of stock price crash at the error level of 0.05. Because the calculated p-value for the coefficient of this control variable was more than 0.05 (0.5796). Therefore, it can be said that there is not a significant relationship between firm size and future risk of stock price crash at 95% confidence level.

The estimating coefficient of book – to – market value control variable indicates that there is no significant relationship between book – to – market value and future risk of stock price crash at the error level of 0.05. Because the calculated p-value for the coefficient of this control variable is more than 0.05 (0.8399), it can therefore be said that there is no significant relationship between book – to – market value and the future risk of stock price crash at 95% confidence level.

The estimating coefficient of financial leverage control variable indicates that there is no significant relationship between financial leverage and future risk of stock price crash at the error level of 0.05. Because the calculated p-value for the coefficient of this control variable is more than 0.05 (0.4056), it can therefore be said that there is no significant relationship between financial leverage and future risk of stock price crash at 95% confidence level.

The estimating coefficient of asset return control variable indicates that there is a significant relationship between asset return and future risk of stock price crash at the error level of 0.05. Because the calculated p-value for the coefficient of this control variable was less than 0.05 (0.0160), it can be said that there is a significant relationship between asset return and future risk of stock price crash at the 95% confidence level.

The estimating coefficient of last year stock price crash risk control variable indicates that there is no significant relationship between the risk of last year stock price crash and the future risk of stock price crash at an error level of 0.05. Because the calculated p-value for the coefficient of this control variable was more than 0.05 (0.7701), it can therefore be said that there is not a significant relationship between the risk of last year stock price crash and the future risk of stock price crash at 95% confidence level

The second model test results: The relationship between short-term debt and future risk of stock price crash is stronger for firms with weaker governance.

Table 4. Statistical results summary of the second model test with weaker governance.

Variable	Coefficient	SD error	Z – statistics	Significance level
C	1.393058	1.140212	1.221753	0.2218
Short – term debt	0.214425	0.673692	0.318283	0.7503
Stock circulation	-0.251711	0.210916	10.193417	0.2327
Firm return fluctuations	-0.474175	1.304819	-0.363403	0.7163
Previous period return	0.400144	2.003906	0.199682	0.8417
Firm size	-0.027774	0.158782	-0.174921	0.8611
Book – to – market value	0.001204	0.011638	0.103490	0.9176
Financial leverage	-0.405083	0.601831	-0.673085	0.5009
Asset return	10.710100	1.175356	10.454963	0.1457
Risk of last year stock price crash	0.018307	0.092715	0.197452	0.8435
LR Statistics (significance level)	40075135	significance level		0.000000

The estimating coefficient of the short-term debt independent variable indicates that there is no significant relationship between short-term debt and future risk of stock price crash with weak governance at the error level of 0.05. Because the calculated p-value for the coefficient of this independent variable was more than 0.05 (0.7503). Therefore, it can be said that there is not a significant relationship between short-term debt and future risk of stock price crash with weak governance at 95% confidence level.

The estimating coefficient of stock circulation control variable indicates that there is no significant relationship between stock circulation and future risk of stock price crash with weak governance at the error level of 0.05. Because the calculated p-value for the coefficient of this control variable was more than 0.05 (0.2327), it can therefore be said that there is not a significant relationship between stock circulation and future risk of stock price crash with weak governance at 95% confidence level.

The estimating coefficient of the firm return fluctuations control variable indicates that there is no significant relationship between the firm return fluctuations and the future risk of stock price crash with weak governance at the error level of 0.05. Because the calculated p-value for the coefficient of this control variable was more than 0.05 (0.7163), it can therefore be said that there is not a significant relationship between the firm return fluctuations and the future risk of stock price crash with weak governance at the 95% confidence level.

The estimating coefficient of the previous period return control variable indicates that there is no significant relationship between the previous period return and the future risk of stock price crash with weak governance at the error level of 0.05. Because the calculated p-value for the coefficient of this control variable was more than 0.05 (0.8417), it can therefore be said that there is no significant relationship between the previous period return and the future risk of stock price crash with weak governance at 95% confidence level.

The estimating coefficient of firm size control variable indicates that there is no significant relationship between firm size and future risk of stock price crash with weak governance at the error level of 0.05. Because the calculated p-value for the coefficient of this control variable is more than 0.05 (0.8611), it can therefore be said that there is not a significant relationship between firm size and future risk of stock price crash with weak governance at 95% confidence level.

The estimating coefficient of book – to – market value control variable indicates that there is no significant relationship between book – to – market value and the future risk of stock price crash with weak governance at the error level of 0.05. Because the calculated p-value for the coefficient of this control variable was more than 0.05 (0.9176). Therefore, it can be said that there is no significant relationship between book – to – market value and future risk of stock price crash with weak governance at 95% confidence level.

The estimating coefficient of financial leverage control variable indicates that there is no significant relationship between financial leverage and future risk of stock price crash with weak governance at the error level of 0.05. Because the calculated p-value for the coefficient of this control variable is more than 0.05 (0.5009), it can therefore be said that there is no significant relationship between financial leverage and future risk of stock price crash with weak governance at 95% confidence level.

The estimating coefficient of asset return control variable indicates that there is no significant relationship between asset return and future risk of stock price crash with weak governance at the error level of 0.05. Because the calculated p-value for the coefficient of this control variable is more than 0.05 (0.1457). Therefore, it can be said that there is no significant relationship between asset return and future risk of stock price crash with weak governance at 95% confidence level.

The estimating coefficient of the risk of last year stock price crash control variable indicates that there is no significant relationship between the risk of last year stock price crash and the future risk of stock price crash with a weak governance at an error level of 0.05. Since the calculated p-value for the coefficient of this control variable was more than 0.05 (0.8435), it can therefore be said that there is no significant relationship between the risk of last year stock price crash and the future risk of stock price crash with weak governance at the 95% confidence level.

Table 5. Statistical results summary of the second model test with strong governance.

Variable	Coefficient	SD error	Z – statistics	Significance level
C	-0.293016	1.286496	-0.227763	0.8198
Short – term debt	-0.688534	0.234859	-2.931691	0.0415
Stock circulation	0.117025	0.349083	0.335237	0.7374
Firm return fluctuations	4.175716	1.852508	2.254088	0.0242
Previous period return	-4.382938	2.550545	-1.718432	0.0857

Variable	Coefficient	SD error	Z – statistics	Significance level
Firm size	-0.021041	0.157693	-0.133427	0.8939
Book – to – market value	0.047092	0.057683	0.816393	0.4143
Financial leverage	-0.187842	0.483859	-0.38826	0.6979
Asset return	-1.885961	1.067151	-1.767286	0.0772
Risk of last year stock price crash	0.053910	0.128960	0.418038	0.6759
LR Statistics (significance level)	1823747	significance level		0.032516

The estimating coefficient of the short-term debt independent variable indicates that there is a significant relationship between short-term debt and future risk of stock price crash with strong governance at the error level of 0.05. Because the calculated p-value for the coefficient of this independent variable of research was less than 0.05 (0.0415), it can be said that there is a significant relationship between short-term debt and future risk of stock price crash with strong governance at 95% confidence level.

The estimating coefficient of stock circulation control indicates that there is no significant relationship between stock circulation and future risk of stock price crash with strong government at the error level of 0.05. Because the calculated p-value for the coefficient of this control variable is more than 0.05 (0.7374), it can therefore be said that there is no significant relationship between stock turnover and future risk of stock price crash with strong governance at 95% confidence level.

The estimating coefficient of the firm return fluctuations control variable indicates that there is a significant relationship between the firm return fluctuations and the future risk of stock price crash with strong governance at the error level of 0.05. Because the calculated p-value for the coefficient of this control variable was less than 0.05 (0.0242), it can be said that there is a significant relationship between the firm return fluctuations and the future risk of stock price crash with strong governance at the 95% confidence level.

The estimating coefficient of the previous period return control variable indicates that there is no significant relationship between previous period return and the future risk of stock price crash with strong governance at the error level of 0.05. Because the calculated p-value for the coefficient of this control variable was more than 0.05 (0.0857). Therefore, it can be said that there is no significant relationship between previous period return and the future risk of stock price crash with strong governance at 95% confidence level.

The estimating coefficient of firm size control variable indicates that there is no significant relationship between firm size and the future risk of stock price crash with strong government at the error level of 0.05. Because the calculated p-value for the coefficient of this control variable was more than 0.05 (0.8939), it can therefore be said that there is not a significant relationship between firm size and future risk of stock price crash with strong dominance at 95% confidence level.

The estimating coefficient of book – to - market value control variable indicates that there is no significant relationship between book – to - market value and future risk of stock price crash with strong governance at the error level of 0.05. Because the calculated p-value for the coefficient of this control variable was more than 0.05 (0.4143). Therefore, it can be said that there is no significant relationship between book – to - market value and future risk of stock price crash with strong governance in the 95% confidence level.

The estimating coefficient of financial leverage control variable indicates that there is no significant relationship between financial leverage and future risk of stock price crash with strong governance at error level of 0.05. Because the calculated p-value for the coefficient of this control variable was more than 0.05 (0.6979), it can therefore be said that there is no significant relationship between financial leverage and future risk of stock price crash with strong governance at 95% confidence level.

The estimating coefficient of the asset return control variable indicates that there is no significant relationship between asset return and future risk of stock price crash with strong governance at the error level of 0.05. Because the calculated p-value for the coefficient of this control variable was more than 0.05 (0.0772), it can therefore be said that there is no significant relationship between asset return and future risk of stock price crash with strong governance at 95% confidence level.

The estimating coefficient of the risk of last year stock price crash control variable indicates that there is no significant relationship between the risk of last year stock price crash and the future risk of stock price crash with strong governance at the error level of 0.05. Because the calculated p-value for the coefficient of this control variable is more than 0.05 (0.6759). Therefore, it can be said that there is no significant relationship between the risk

of last year stock price crash and the future risk of stock price crash with strong governance at a 95% confidence level.

The final result is that the short-run debt variable in companies with weaker governance is the variable coefficient of 0.214425 and with a stronger governance of 0.688543. Due to insignificance, the hypothesis is rejected.

The third model test results: The relationship between short-term debt and the future risk of stock price crash is stronger for companies with a higher degree of information asymmetry.

Table 6. Statistical results summary of the third model test with low information asymmetry.

Variable	Coefficient	SD error	t – statistics	Significance level
C	3.765605	1.284793	2.930904	0.0034
Short – term debt	-0.678426	0.200683	-3.80590	0.0335
Stock circulation	-0.919086	0.328793	-2.795336	0.0052
Firm return fluctuations	-1.530187	1.485990	-1.029742	0.3031
Previous period return	0.535465	2.511194	0.213231	0.8311
Firm size	-0.375266	0.165095	-2.273029	0.0230
Book – to – market value	-0.001180	0.014068	-0.083876	0.9332
Financial leverage	-0.231798	0.604374	-0.383533	0.7013
Asset return	-3.104936	1.141558	-2.719910	0.0065
Risk of last year stock price crash	0.150703	0.125956	1.196479	0.2315
LR Statistics (significance level)	2664961	significance level		0.001598

The estimating coefficient of short-term debt independent variable indicates that there is a significant relationship between short-term debt and future risk of stock price crash with lower asymmetry at the error level of 0.05. Because the calculated p-value for the coefficient of this independent variable is less than 0.05 (0.0335). Therefore, it can be said that there is a significant relationship between short-term debt and future risk of stock price crash with lower asymmetry at 95% confidence level.

The estimating coefficient of stock circulation control variable indicates a significant relationship between stock circulation and future risk of stock price crash with lower asymmetry at the error level of 0.05. Because the calculated p-value for the coefficient of this control variable is less than 0.05 (0.0052), it can be said that there is a significant relationship between stock circulation and future risk of stock price crash with less asymmetry at 95% confidence level.

The estimating coefficient of firm return fluctuations control variable indicates that there is no significant relationship between the firm return fluctuations and the future risk of stock price crash with lower asymmetry at the error level of 0.05. Because the calculated p-value for the coefficient of this control variable is more than 0.05 (0.3031), it can therefore be said that there is no significant relationship between firm return fluctuations and future risk of stock price crash with lower asymmetry at 95% confidence level.

The estimating coefficient of previous period return control variable indicates that there is no significant relationship between previous period return and the future risk of stock price crash with lower asymmetry at the error level of 0.05. Because the calculated p-value for the coefficient of this control variable was more than 0.05 (0.8311), it can be said that there is no significant relationship between the previous period return and the future risk of stock price crash with lower asymmetry at 95% confidence level.

The estimating coefficient of firm size control variable indicates that there is a significant relationship between firm size and future risk of stock price crash with lower asymmetry at the error level of 0.05. Because the calculated p-value for the coefficient of this control variable was less than 0.05 (0.0230), therefore, it can be said that there is a significant relationship between firm size and future risk of stock price crash with lower asymmetry at 95% confidence level.

The estimating coefficient of book – to – market value control variable indicates that there is no significant relationship between book – to – market value and the future risk of stock price crash with less asymmetry at the error level of 0.05. Because the calculated p-value for the coefficient of this control variable was more than 0.05

(0.9332), it can be said that there is no significant relationship between book – to – market value and future risk of stock price crash with lower asymmetry at 95% confidence level.

The estimating coefficient of financial leverage control variable indicates that there is no significant relationship between financial leverage and future risk of stock price crash with lower asymmetry at the error level of 0.05. Because the calculated p-value for the coefficient of this control variable was more than 0.05 (0.7013), it can therefore be said that there is no significant relationship between financial leverage and future risk of stock price crash with lower asymmetry at 95% confidence level.

The estimating coefficient of the control variable indicates that there is a significant relationship between asset return and future risk of stock price crash with lower asymmetry at the error level of 0.05. Because the calculated p-value for the coefficient of this control variable was less than 0.05 (0.0065), it can be said that there is a significant relationship between asset return and future risk of stock price crash with less asymmetry at 95% confidence level.

The estimating coefficient of the risk of last year stock price crash control variable indicates that there is no significant relationship between the risk of last year stock price crash and the future risk of stock price crash with lower asymmetry at an error level of 0.05. Because the calculated p-value for the coefficient of this control variable was more than 0.05 (0.2315). Therefore, it can be said that there is no significant relationship between the risk of last year stock price crash and the future risk of stock price crash with lower asymmetry at a confidence level of 95 %.

Table 7. Statistical results summary of the third model test with higher information asymmetry

Variable	Coefficient	SD error	t – statistics	Significance level
C	-1.318600	1.143842	-1.152781	0.2490
Short – term debt	0.086223	0.704025	0.122472	0.9025
Stock circulation	0.345423	0.235469	1.466959	0.1424
Firm return fluctuations	4.633561	1.594065	2.906757	0.0037
Previous period return	-3.505925	2.173993	-1.612666	0.1068
Firm size	0.139648	0.149015	0.937138	0.3487
Book – to – market value	-0.003516	0.020932	-0.167996	0.8666
Financial leverage	0.078517	0.472860	0.166048	0.8681
Asset return	-0.150390	1.060070	-0.141868	0.8872
Risk of last year stock price crash	-0.085262	0.100289	-0.850164	.03952
LR Statistics (significance level)	1938095	significance level		0.022142

The estimating coefficient of the short-term debt independent variable indicates that there is no significant relationship between short-term debt and future risk of stock price crash with higher asymmetry at the error level of 0.05. Because the calculated p-value for the coefficient of this independent variable of research was more than 0.05 (0.9025), it can be said that there is no significant relationship between short-term debt and future risk of stock price crash with higher asymmetry at 95%.

The estimating coefficient of the stock circulation control variable indicates that there is no significant relationship between stock circulation and future risk of stock price crash with higher asymmetry at the error level of 0.05. Because the calculated p-value for the coefficient of this control variable was more than 0.05 (0.1424). Therefore, it can be said that there is no significant relationship between stock circulation and future risk of stock price crash with higher asymmetry at 95% confidence level.

The estimating coefficient of firm return fluctuations control variable indicates that there is a significant relationship between the firm return fluctuations and the future risk of stock price crash with higher asymmetry at the error level of 0.05. Because the calculated p-value for the coefficient of this control variable was less than 0.05 (0.0037), it can therefore be said that there is a significant relationship between the firm return fluctuations and the future risk of stock price crash with higher asymmetry at the 95%.

The estimating coefficient of previous period return control variable indicates that there is no significant relationship between previous period return and the future risk of stock price crash with higher asymmetry at the error level of 0.05. Because the calculated p-value for the coefficient of this control variable was more than 0.05 (0.1068). Therefore, it can be said that there is no significant relationship between previous period return and the future risk of stock price crash with higher asymmetry at the 95% confidence level.

The estimating coefficient of the firm size control variable indicates that there is no significant relationship between firm size and future risk of stock price crash with higher asymmetry at the error level of 0.05. Because the calculated p-value for the coefficient of this control variable is more than 0.05 (0.3487). Therefore, it can be said that there is not a significant relationship between firm size and future risk of stock price crash with higher asymmetry at 95% confidence level.

The estimating coefficient of the book – to – market value control variable indicates that there is no significant relationship between book – to – market value and future risk of stock price crash with higher asymmetry at the error level of 0.05. Because the calculated p-value for the coefficient of this control variable was more than 0.05 (0.8666). Therefore, it can be said that there is no significant relationship between book – to – market value and future risk of stock price crash with higher asymmetry at a 95% confidence level.

The estimating coefficient of financial leverage control variable indicates that there is no significant relationship between financial leverage and future risk of stock price crash with higher asymmetry at the error level of 0.05. Because the calculated p-value for the coefficient of this control variable was more than 0.05 (0.8681). Therefore, it can be said that there is no significant relationship between financial leverage and future risk of stock price crash with higher asymmetry at 95% confidence level.

The estimating coefficient of asset return control variable indicates that there is no significant relationship between asset return and future risk of stock price crash with higher asymmetry at the error level of 0.05. Because the calculated p-value for the coefficient of this control variable was more than 0.05 (0.8872), it can therefore be said that there is no significant relationship between asset return and future risk of stock price crash with higher asymmetry at 95% confidence level.

The estimating coefficient of the risk of last year stock price crash control variable indicates that there is no significant relationship between the risk of last year stock price crash and the future risk of stock price crash with higher asymmetry at an error level of 0.05. Because the calculated p-value for the coefficient of this control variable is more than 0.05 (0.3952). Therefore, it can be said that there is no significant relationship between the risk of last year stock price crash and the future risk of stock price crash with a higher asymmetry at a 95% confidence level.

The final result is that the short-run debt variable in companies with lower information asymmetry, the variable coefficient is 0.678426 and in companies with a higher asymmetry the variable coefficient is 0.086223. Therefore, this relationship is stronger, but as significance level shows, this relationship is not significant. Therefore, the considered hypothesis is rejected.

Table 8. The results of research hypotheses test.

Hypotheses	Explanation of the hypothesis	Conclusion
The first hypothesis	There is a significant relationship between short – term debt and future risk of stock price crash	Confirm
The second hypothesis	The relationship between short – term debt and future risk of stock price crash is stronger for companies with weaker governance	Rejected
The third hypothesis	The relationship between short – term debt and future risk of stock price crash is stronger for companies with higher information asymmetry	Rejected

Discussion and Conclusion

In the present study, we intended to examine the effect of debt maturity on the risk of stock price crash in listed companies on Tehran Stock Exchange. Concerning the confirmation of the first hypothesis that there is a relationship between the short-term debt ratio and the future risk of stock price crash in companies, there was a significant relationship. Given that the estimating coefficient of the independent variable is negative, the relationship between short-term debt and future risk of stock price crash is also negative. This suggests that short maturity of debt in this regard leads to better supervision of managers, which increases the frequency of renewal of debt contracts. As a result, creditors will have a closer relationship with the company and will be able to properly assess the performance of the company. In this situation, the creditors decide to renew the debt agreement or change its terms. In general, due to higher transparency of information, the lender is more willing to give short-term loans (reducing information asymmetry), because it can monitor the company better. Therefore, it is likely that the greater use of short-term debt by reducing information asymmetry and incorrect choices can affect the quality of financial reporting, therefore reduce the risk of information and future risk of stock price crash. The overall result obtained from this hypothesis is in agreement with the results of Dang et al (2016). Dang et al (2016) investigated the impact

of short-term debt on the risk of stock price crash. Their results showed that there is a negative relationship between short-term debt and the risk of stock price crash, because short-term debt as an effective means has a regulatory role to prevent managers from controlling bad news that reduces the risk of stock price crash, as well the results show that the impact of short-term debt on the risk of stock price crash will be higher in firms with lower governance ratings and higher information asymmetry.

In the second hypothesis, based on the relationship between short-term debt and the future risk of stock price crash for companies with weaker corporate governance, the results showed that there is a stronger relationship between short-term debt and future risk of stock price crash in corporations with weaker governance than companies with a stronger governance. There was no reliable evidence to support this hypothesis, but the findings showed that in firms with stronger governance, the relationship between short-term debt and the future risk of stock price crash would be negative and meaningful, meaning that stronger governance will reduce the stock price crash. One of the most important ways to manipulate accounting information is to accelerate the identification of good news versus delaying the identification of bad news on profits. But there is always a final level to accumulate bad news in the company, and by reaching that final level, this bad news will be published and investors will shift their beliefs about the value of the company and, as a result, the company's stock price and this will lead to a fall in company stock prices. There are always two main reasons for stock price crash: First, the management of the company, which, because of its selfish motives (for its own benefit) or benevolence (for the purposes of the organization), makes the company more visible through postponing the publication of bad news and speeding up the publication of good news, (which creates the bubble in the stock price of the company), and secondly, the accounting system and its use for this management action, which permits the management to take the above measures. In addition to the above factors, factors such as lack of transparency of financial information and profit management can be mentioned as other causes of this phenomenon. Since institutional investors use their ability to monitor corporate governance and performance and it is a function of their investment, the more investments they make, the better management is done and prevent the accumulation of bad news. "This is a direct relationship". The overall result obtained from this hypothesis is consistent with the results obtained from Dianti et al (2012), Karimi (2013), Mahdavian (2013), Tanani et al (2015), Callen and Fang (2011), Dang et al (2016). Dianti et al (2012) in a study on the impact of institutional investors on reducing the risk of stock price crash examined the impact of institutional investors on reducing the risk of stock price crash. The results of this study indicate that the existence of institutional investors reduces the likelihood of stock price crash significantly. Karimi (2013) investigated the role of institutional investors and conservative reporting in reducing the risk of stock price crash. The results of testing the research hypotheses using panel data method indicate that conservatism in Iran's capital market has a decreasing effect on the risk of stock price crash of companies and, with increasing conservatism applied to financial statements, the risk of stock price crash decreases. In addition, the findings of this research confirm that with the increasing presence of institutional shareholders, the risk of stock price crash is reduced. Mahdavian (2013) conducted a study on the role of institutional investors and conservative reporting in reducing the risk of stock price crash. The results of the research hypothesis test show that there is a negative relationship between accounting conservatism and the risk of stock price crash, but this relationship is not statistically significant. The results of this study also show that accounting conservatism reduces the risk of stock price crash when information asymmetry exists between managers and investors. In this research, for the significance of the whole regression model, the Mac Faden determination coefficient statistics and exponential statistics (LR) were used. Tanani et al (2015), in a study on the role of corporate governance mechanisms in reducing the risk of stock price crash, examined the role of some corporate governance mechanisms in reducing the risk of stock price crash. The findings of the research indicate that there is a negative and significant relationship between institutional investors and the risk of stock price crash and there is a positive and significant relationship between the ratio of non-executive members of the board and the risk of stock price crash. In general, the results indicate that the mechanisms of corporate governance are factors that affect the risk of stock price crash. Callen and Fang (2011) conducted a study entitled: "The Relationship between Institutional Investors and Stock Price Crash". This research examines two opposing views of institutional investors: the supervisory (monitoring) view against foreclosure. The results of this study indicate that there is strong evidence of a reciprocal relationship between institutional owners and stock price crash in the future. In the implicit hypothesis that the relationship between short-term debt and future risk of stock price crash for companies with a higher and lower degree of information asymmetry, the results showed that there is a stronger relationship between short-term debt and future risk of stock price crash in companies with higher information asymmetry with companies with a lower degree of information asymmetry. There was no reliable evidence to support this hypothesis, but the findings showed that in companies with lower level of information asymmetry, the relationship between short-term debt and the future risk of stock price crash is negative and meaningful. Lower information symmetry will reduce stock price crash. The managers' abilities and opportunities to accumulate and not to disclose negative news in the form of the

above, depend on the costs and benefits. In the absence of any information asymmetry between managers and investors, managers are not motivated to reveal asymmetric information, because in such a situation, the cost of keeping and not disclosing negative news is more than its benefits. But as information asymmetry between executives and investors is high, the costs of not disclosing negative news and their accumulation inside the company will be less than its benefits, so managers are motivated, accumulate negative news within the company, and they will not disclose them, hence low information asymmetry will reduce the risk of stock price crash. The overall result obtained from this hypothesis is in contrast to the results obtained from Mahdavian's researches (2013), Farz Ali Zadeh (2014), Khandarhami et al (2016), Hutton (2009) and Dang et al (2016). Mahdavian (2013) conducted a study on the role of institutional investors and conservative reporting in reducing the risk of stock price crash. For this purpose, the financial information of 91 companies listed in the Tehran Stock Exchange during the years 2004-2011 has been reviewed. The results of the research hypothesis test show that there is a negative relationship between accounting conservatism and the risk of stock price crash, but this relationship is not statistically significant. The results of this study also show that accounting conservatism reduces the risk of lower stock prices in the absence of information asymmetry between managers and investors. In this research, for the significance of the whole regression model, the Mac Faden determination coefficient statistics and exponential statistics (LR) were used. Farz Ali Zadeh (2014) conducted a research entitled impact of the lack of transparency of profits and the sensitivity of operational cash flows on risk of stock price crash. His research shows that the lack of transparency of profit and the sensitivity of operating cash flows to the risk of stock price crash has a positive and significant effect. Also, the difference between the results of the test shows that the lack of transparency of profit and the sensitivity of operating cash flows are higher when there is a risk of stock price crash than when there is no risk of stock price crash. Khodarahmi et al (2016) investigated the effect of information asymmetry on the risk of future stock price crash in companies listed on the Tehran Stock Exchange. The findings of the present study indicate that there is a direct relationship between information asymmetry and the risk of future stock price crash; therefore, it can be concluded that with the increase of information asymmetry, the risk of future stock price crash increases. Hutton (2009) explores the relationship between lack of transparency of information and a sudden fall in stock prices in a study entitled non-transparency of financial reports and R2 and risk of crash. The results of this study indicate that there is a positive correlation between the lack of transparency of information and the possibility of a sudden fall in stock prices.

Conflict of interest

The authors declare no conflict of interest

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