

The Effect of Conservative Accounting on Reducing the Stock Price Crash Risk (Case Study: Companies Listed in Tehran Stock Exchange)

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Abstract: This paper studies the effect of conservatism in financial reporting on reducing the likelihood of stock price crash risk. Stock prices crash is a phenomenon that usually occurs due to the presence of bubbles in stock price and this problem accrued due to management practices such as tax evasion, doing the project with negative present value, lack of transparency of financial information and etc. Providing partial accounting information is caused to establish limits for controlling the management opportunistic behavior. Ultimately, we expect that this problem will reduce the stock price crash. In this study, Givoly *et al* (2000) model's to measure the coefficient of conservatism and the model of negative coefficient of stock skewness (Chen, 2001) and the frequency of stock prices crash (Hutton at al, 2009) are used. In order to measure the stock price crash, 59 companies listed in Tehran Stock Exchange from 1998 to 2009 are used. This study shows that conservatism in financial reporting of companies reduce stock price crash risk.

Key words: Conservative accounting • Stock price crash • Negative coefficient of skewness

INTRODUCTION

Stock price crash is a phenomenon in which stock prices becomes moderate suddenly. In researches which are presented on stock price crash, different reasons for this phenomenon are considered, but there are two main components. The first is the management company due to selfish motives (toward their personal interests) or benevolent, do something toward increasing the performance of company. This action can be done by continuing projects with negative present value, lack of transparency of financial information, tax evasion, etc. The result of these actions is to create bubbles in the stock price that is the main theme of stock price crash. The second is the accounting system. On the other hand, conservative accounting limits opportunistic behavior of managers and delays the recognition of profit and net assets are shown lower than real assets. Timely recognition the losses and potential conditions for shareholders and creditors caused to respond faster to prevent further losses. For example, shareholders can convince the board to change the CEO or pressures the

CEO to stop the project and to prevent managers in investing projects with negative present value. On the other hand, researchers are proving that conservative accounting can be effective in reducing benefits of earnings management that can be done by senior managers. The conservatism can improve the quality of information provided by the management. Given the above, conservatism can be seen as an effective mechanism that rises to the challenge with the main causes of stock price crash such as accelerating the identification of good news, continuous projects with negative present value, lack of transparency of financial information and etc. Therefore, this study seeks to answer the question whether the conservative accounting is with respect to their mechanisms can reduce or prevent the stock price crash risk on the Tehran Stock Exchange or not?

Literature Review: Chen *et al* [1] have been predicted stock price crash by three variables that include trading volume, past returns and stock price skewness. The results of this paper show that the negative skewness of

daily stock returns is important in a stock that experienced the two following: First, an increase in trading volume of stock compared to the past six months and experienced the positive returns in more than 36 month ago. Hong *et al* [2] are discussed that the heterogeneity of investors opinions a reason to expedite the stock price crash risk phenomenon. On the other hand, they noted that the lack of information asymmetry between investors. Kirschenheiter *et al* [3] examine the relationship between earnings management and Stock Price Crash Risk phenomenon. The results show that high earnings reported by managers, the implications of the level of permanent income increase the value of the company and the company's stock price will have bubble and caused to stock price crash. Jin *et al* [4] were investigated relationship between lacks of informational transparency and stock price crash in the capital market of different countries. They found that the lack of transparency in the markets in which financial information is high, the stock price crash is more. Hutton *et al* [5] studied the relationship between transparency in financial statements and correlation between stock prices, financial information and stock prices crash phenomenon. The results suggest that the lack of transparency of accounting information caused to a little change in stock prices due to new financial disclosure. On the other hand, these researchers have expressed a lower correlation between financial information and stock prices may lead to increase stock price crash risk. Kim *et al* [6] had been studied about the relationship between conservative accounting and stock prices crash in America. The results indicate that tax evasion make opportunities for managers to hide bad news about the activities that mislead investors and this problem led to stock price crash phenomena.

Hypothesis of Research: Conservatism in financial reporting are likely reduces stock price crash.

Population and Statistical Sample: The population of this study includes all companies listed in Tehran Stock Exchange. For sampling, the companies have been selected that 1. They are active in Stock Exchange from 1998 to 2009, 2. Fiscal year ended in March, 3. Financial changes have not accrued in the course of the study, 4. This company is not member of investment firms and financial intermediaries, 5. At least 6 months of the year have monthly returns, 6. Information of company is available. Finally with the above restrictions, 58 companies are selected for this research.

Tools for Data Collection and Analysis of Their: Since the research method of this paper is a field method and dealing with real data and to provide the information about companies with respect to research variables that are related to financial information, various sources have been used that including CDs of Tehran Stock Exchange, tadbir software and website of Tehran stock exchange. For data processing, Excel and SPSS software are used.

How to Measure Conservatism: In this study, for measuring conservatism, Givoly's model [7] is used. According to this model, conservatism is calculated as follow:

$$\text{CONSER}_{it} = \frac{\text{operatingitem}}{\text{Total of assets in the beginning of period}} \times (-1)$$

This criterion is determined based on the sign and the amount of aggregate operating goods during that time. Operating goods can be achieved from difference between operating profit and operating cash flow plus depreciation cost. According to Givoly opinion, developing of operating goods can be an index of change in the level of accounting conservatism over a long period of time. In other words, if accruals increase, then conservatism will decrease and vice versa, thus for determining the direction of conservative changes, operating goods will multiply in a negative number. For controlling inflation on operating goods and conservative changes and homogeneous information with the level of companies the variables are divided into the total of assets.

How to Measure the Stock Price Crash: To measure the stock price crash two models have been used:

- The model of Hutton *et al* [5]

According to Hutton *et al* [5], when we consider "monthly price crash" in a fiscal year for a company that the "special monthly returns of company," is 3.2 below standard deviations "average monthly return of company" for the entire fiscal year. "Special monthly returns of company," We show that it W (Eq. (1)) is equal to the natural logarithm of number one plus the number of ϵ_t that is obtained by Eq. (2).

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

$$r_{j,t} = \alpha_j + \beta_1 r_{m,t-2} + \beta_2 r_{m,t-1} + \beta_3 r_{m,t} + \beta_4 r_{m,t+1} + \beta_5 r_{m,t+2} + \epsilon_{j,t} \quad (2)$$

In Eq. (2), r_{jt} is the stock return of j company in the t month and $r_{m,t}$ is the monthly market return (based on market indicators).

- The model of Chen *et al* [1]

For improving the results of this paper, we used the negative coefficient of skewness model as follow:

$$NCSKEW_{it} = - [n(n-1)^{3/2} \Sigma W_{it}] / [(n-1)(n-2)(\Sigma W_{it})^{3/2}]$$

In this model, W_{it} represents the monthly return of company i for t month and n is the number of monthly returns observed during the fiscal year. In this model, by increasing of negative coefficient of skewness, the stock price crash risk will increase.

Variables of Research: To determine the precise effect of conservatism on stock price crash risk, several control variables that may affect the stock price crash have been used.

Heterogeneity of Investors' Beliefs: Chen *et al* [1] found that the heterogeneity in investor beliefs in the current year has a strong relationship with negative skewness of stock returns in the next year. In this study, for measuring this variable, difference between the average monthly trading volume in the current year and the average monthly trading volume in the previous year were used.

Negative Coefficient of Skewness (NCSKEW): Chen *et al* [1] also concluded in their study that the companies have a negative coefficient of skewness in the current year, will have a less negative coefficient of skewness in the next year.

Standard Deviation of Monthly Returns: Chen *et al* [1] also concluded in their study that the companies have a more fluctuate in the current year will have a more negative coefficient of skewness in the next year

Monthly Average of Return: Chen *et al* [1] also presented evidence which stated that the crash of future stock price in the long run will increase, for example a period of 12 to 36 months. Because of this and for controlling variables, we have entered a monthly average returns for the last 12 months in the original model.

Profitability Index: For controlling between company profitability and risk of stock price crash, we used the ratio of net profit to total shareholders' equity.

Financial Leverage: According to Hutton *et al* [5], increasing the amount of debt can increase the interest cost. Therefore, the increase of financial leverage can lead to reduced profits. Increasing the amount of debt in capital structure can lead to increase negative coefficient of skewness. In this study, for controlling the effect of variables, we have used the long time debt ratio to total of assets at the end of the period.

Size of Company: To control the size of our company, we have used the logarithm of total assets at the end of period.

Lack of Transparency in Financial Reporting: Hutton *et al* [5] have reached the direct and strong relationship between lack of transparency in financial reporting and stock prices crash phenomenon. The researchers due to the lack of standard criteria for measuring this variable used the sum of absolute operating goods for three years ago.

Introduce the Research Model: In this study, we use two models to test the research hypotheses:

The First Model:

$$CRASH_{t+1} = \alpha_0 + \alpha_1 CONSER_{it} + \sum_{q=2}^m \alpha_q (q^{th} Control Variables_t) + e_t$$

In this Model:

$CRASH_{t+1}$ shows the stock price crash that means if the company has experienced a price crash one time, this variable equals one, if the company has experienced a price crash twice, this variable equals two and otherwise this variable will be zero.

The Second Model:

$$NCSKEW_{t+1} = \alpha_0 + \alpha_1 CONSER_{it} + \sum_{q=2}^m \alpha_q (q^{th} Control Variables_t) + e_t$$

In this Model:

$NCSKEW_{t+1}$ is the negative coefficient of skewness in the next year. If the negative coefficient of skewness increases, the stock price crash will increase.

Descriptive Statistics: According to Givoly's model, mean and median of conservative variable is estimated and respectively equal to - 0.0722 and - 0.0865 but based on Chen's model the mean and median of negative coefficient

of skewness equal to 0.6633 and 0.7917. The distribution of profitability variables, financial leverage and a standard deviation of monthly returns is skewness to right. Other variables are almost symmetric. Table 1 shows the result of regression test.

Investigating of Research Hypothesis Using of Multiple Regression: Table 2 shows the results of the first model. According to table 2, the main independent variable is conservatism (+) and among the control variables, profitability (+), heterogeneity opinion of investors (-), lack of Transparency of financial information (-) and a negative coefficient skewness (+).

In interpretation of these variables should be noted that the negative sign (reverse), which means by increasing it, the value of the dependent variable decreases. (Moving toward the negative and increase the likelihood of falling prices) and a positive relationship (direct) means that by increasing it, the value of the dependent variable increases.

To estimate the appropriate model, the stepwise regression method is used. In this method, the independent variables were entered significantly.

To select the appropriate model, the test process of variables in the fifth stage is finished. The coefficient of determination in step 5 is equal to 0.09.

In interpreting the coefficients can be said if the amount of conservatism increase, negative coefficient skewness will increase, other coefficients have similar interpretation.

Investigating of Research Hypothesis Using of Hutton's Model: In order to investigate this hypothesis using this model, in the first step, we should determine which company has a one, two or zero stock price crash. For this purpose, first we calculate the "Special monthly returns of company ". Then, with calculating the "average monthly return" for each fiscal year and the "standard deviation of monthly returns" at 3.2, 2, 1.5 and 1 standard deviation, intervals are approximated. The monthly returns of each company for each month compared to these intervals. This result of this comparison is shown in the Table 4.

Review of Research Hypotheses Using One-way Analysis of Variance: For reviewing the effect of variables on the rate of stock price crash, one-way analysis of variance

Table 1: The results of regression test

Default	Type of test	Result
Residuals are normal	Kolmogorov- Smirnov	Values ??for significant level of negative coefficient skewness from 2002 to 2009 is higher than 0 / 05 and therefore can be concluded that the amounts remaining in the regression line are normally distributed.
Homogeneity of variance	graph of residual values versus predicted values	Scattered in almost all random graphs and not Algvmd.
Their lack of correlation between residuals	Durbin-Watson	2.018 values close to 2 indicates a correlation of their residuals
There is linear relationship and there are no influential points	Dispersion curves	In some, linear relationship was good, in others there is no significant relationship
The lack of linearity between independent variables	VIF statistics	These values for estimating model are calculated and in all cases less than 5.1

Table 2: Coefficients of model

Coefficient Model	Nonstandard coefficients		Standardized coefficients		Significant level	The linear statistic
	β	Standard error	β	t statistic		
Constant value	1.57	0.56	-	2.79	0.005	-
conservatism	0.91	0.44	0.1	2.08	0.038	1.139
Size of firm	0.13	0.09	0.069	1.47	0.142	1.07
Profitability (t+1)	0.31	0.13	0.11	2.33	0.020	1.13
leverage	0.07	0.7	0.05	0.1	0.921	1.048
Heterogeneity of investor beliefs	6.3	2.74	0.10	2.3	0.022	1.054
lack of Transparency of financial information	0.66	0.32	0.095	2.07	0.042	1.066
Average monthly return	1.18	1.39	0.048	0.851	0.359	1.541
Standard deviation of monthly return	1.4	0.93	0.08	1.5	0.136	1.581
negative coefficient skewness	0.19	0.05	0.18	3.75	0.000	1.144
Coefficient of determination	0.099	F statistic			Significant level of F statistic	
Adjusted coefficient of determination	0.081	5.383		0.000		
Durbin-Watson statistic	2.01					

Table 3: Estimated model and its coefficient

Coefficient Model	Nonstandard coefficients		Standardized coefficients		Significant level	The linear statistic
	β	Standard error	β	t statistic		
Constant value	0.619	0.139	-	4.748	0.000	-
negative coefficient skewness	0.185	0.048	0.174	3.836	0.000	1.014
Profitability (t+1)	0.345	0.127	0.127	2.787	0.006	1.031
lack of Transparency of financial information	0.658	0.323	0.094	2.037	0.042	1.055
Heterogeneity of investor beliefs	6.647	2.68	0.112	2.48	0.013	1.005
conservatism	0.842	0.419	0.093	2.01	0.045	1.005
Coefficient of determination in the fifth stage	0.090	Coefficient of determination in the fifth stage		0.080	Durbin-Watson statistic	
						2.018
Estimated model	$NCSKEW_{it+1} = 0/66 + 0/842 CONSER_{i,t} + 0/354 ROE_{i,t-1} +$ $-6/65DTURN_{i,t} - 0/658OPAQUE_{i,t} + 0/185NCSKEW_{i,t}$					

Table 4: The amount of Crash_{t+1}

Intervals	Different level of crash		
	0	1	2
1 times standard deviation of mean	14	143	228
1.5 times standard deviation of mean	217	222	25
2 times standard deviation of mean	381	83	-
3.2 times standard deviation of mean	464	-	-

Table 5: The result of one-way analysis of variance

Variable	Average of variables in different level of crash			F statistic	Significant level
	0	1	2		
negative coefficient skewness	0.548	0.782	0.768	7.389	0.001
conservatism	0.04	0.059	0.198	25.05	0.000
Size of firm	5.09	6.04	5.845	1.752	0.175
profitability	0.285	0.193	0.3253	2.430	0.052
leverage	0.0668	0.0918	0.1073	0.168	0.845
Heterogeneity of investor beliefs	0.00143	0.00158	0.00242	0.371	0.690
lack of Transparency of financial information	0.23	0.242	0.2852	0.068	0.934
Average of return	0.0026	0.0142	0.00222	2.332	0.098
standard deviation of return	0.1056	0.111	0.0973	1.868	0.156

Table 6: The result of Duncan test

Crash _{t+1}	The number of company	Homogeneous subsets (conservatism)		
		1	2	3
2	25	- 0.24260	-	-
1	222	-	- 0.09852	-
0	217	-	-	- 0.05629
Significant		1.000	1.000	1.000

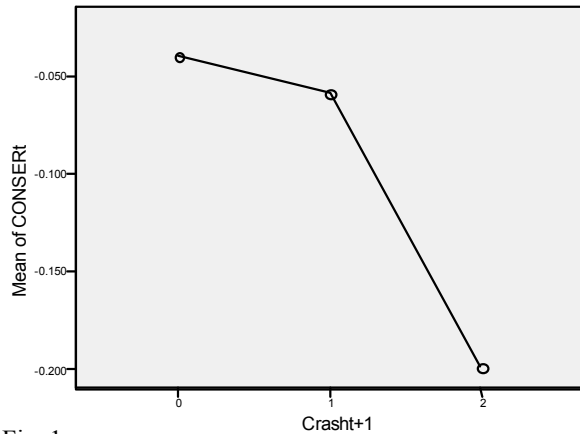


Fig. 1

was used. This method for testing of cases that have qualitative and quantitative variables is used. First by using of confidence intervals diagrams, the situation of mean at three levels of stock price crash is plotted as shown in Figure 1. In these figures, the average negative skewness and conservatism in Level 2 is lower than the other two levels.

Figure 1 As shown in Table 5, conservative variables, the negative coefficient skewness and profitability is significant.

Duncan Test: Duncan test to compare meaningful variables has been done. This test determines the direction of changes in these variables at different levels of stock price crash. The homogeneous subsets are created by significant changes of variables in different levels of stock price crash. For example, as you can see in the Table 6, three subsets are created based on the significant changes of conservatism variable and the first subset represents the lowest and the third subset represents the highest average for conservative variable. The average amount of conservatism in the first level is lower than the second level.

Investigating of Research Hypothesis Using of Sequential Regression: Using of sequential regression, unlike the one-way analysis of variance, the effect of variables with each other has been studied. The amount of significance level is equal to 0.000 means that this model is significant. Cox Snell coefficient was equal to 0.10, Nigel Kirk coefficient equal to 0.12. Using the Wald statistic, the significant of parameters is investigated and the amount of significant negative coefficient skewness is equal to 0.09 that means this variable is significant.

CONCLUSION

This paper studies the effect of conservatism in financial reporting on reducing the likelihood of stock price crash risk. This research is very important for Iranian companies because it has not done research on the issue of stock prices crash in Iran. The research evidence suggests that general conservatism in financial reporting will reduce the stock prices crash risk and we reached to the same result by using of two models. This result is consistent with this interpretation, conservatism in financial reporting reduces incentive and ability of management to hide bad news and along with other benefits such as enhance transparency of financial information prevents to create bubbles in stock price.

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