The Relationship between Accounting Conservatism and Stock Price Crash Risk
Companies accepted in Tehran Stock Exchange (TSE)

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Abstract: The purpose of this study was to investigate the relationship between accounting conservatism and stock price crash risk. 46 companies among the companies that were accepted in TSE from 2008 to 2013 were selected using systematic deletion sampling model. The hypotheses of the study were examined in Eviews software using econometric models and descriptive statistics. The results indicated that there is a significant relationship between accounting conservatism and stock price crash risk. And there was a negative relationship between unconditional conservatism and stock price crash risk in the future. There was also a significant relationship between conditional conservatism and stock price crash risk. Finally, audit quality lowers the probability of stock crash risk in the future.

Keywords: Conservatism, Future Stock Price Crash Risk in the Future, Unconditional Conservatism.

Introduction

Company managers tend to overstate their financial performance by withholding the bad news and hastening in revelation of good news hoping that their bad performance is covered by future better performances. Such behaviors are approved in many experimental studies. For instance, Kothari et al. (2009) presented evidences that indicated the tendency of managers in postponing the revelation of bad news and hastening in revelation of good news. Some researchers like Ball (2009) relate this twofold behavior to reasons like compensation contracts of managers and their job related worries. Withholding and hastening in revelation of good news in the market leads to adjustment of the stock price by investors. However, managers can delay the revelation of bad news only for a limited time. Hutman et al. (2009) .believe that there is a maximum limit for withholding the bad news, because keeping the secret news is costly.

When the secretly kept information reaches its maximum limit, it is not possible to prevent its revelation. The bad news is suddenly revealed and consequently the investors offer their stock for sale which leads to stock price crash in market. Conservatism is an accounting convention that emerged as a response to optimistic behavior of managers. Conservatism requires managers to underestimate the assets and future revenues and overestimate the risks. It also requires a delay in recognition of assets and profit and hastening in the recognition if loss and debts. Lafond and Watts (2008) consider conservatism as a mechanism that controls and limits the tendency of managers to delay the revelation of bad news and hasten in revelation of good news. Because, on one hand, according to the conservative methods, not approved good news are not recognizable and on the other hand bad news are recognized as loss with lower standards of influence. The main purpose of this study was to investigate the relationship between quality of accounting conservatism and stock price crash risk (in companies accepted in TSE). Dewey (1938) discussed the issue of studying the literature related to the subject of the research, as one of the most important

stages of scientific research and believes that this study helps the researcher to obtain a deep insight about the research. Thus, literature review, including recognizing, studying and evaluating the previous researches, beliefs and attitudes of scholars in relation to the subject of the study is an important part of scientific method of the research which is a necessity in all studies. Review of related literature gives an understanding of the current information about the subject and let the researchers take a new step in the field of study, because if the review of literature is not done well the study may be repetitive and naïve (quoted by Delavar, 2005). Thus, in this section the conservatism of the companies and the criteria used in this study are discussed and then stock price crash risk is explained.

Hypotheses of the Study
- There is a significant relationship between conservatism and stock price crash risk.
- There is a negative relationship between unconditional conservatism and future stock price crash risk.
- Audit quality reduces the probability of future stock price crash risk.

Materials and Methods

The current study was an applied study and the method of the study was descriptive-correlation type. The data of this study were based on the financial statements of the companies accepted in the TSE in a 6 year period (2008-2014). The sampling method used in this study was systematic deletion and the criteria for selecting the companies were:
1. The financial year of the company ended in 20th of March.
2. The financial year of the company did not change in the years between 2008 and 2014.
3. The financial information of the company was available.
4. The company was accepted in TSE before the financial year of 2007

According to these criteria, 46 companies qualified for the study and were investigated.

Research Variables
Independent Variable: The independent variable of this study was conditional conservatism (cc_score). To assess the conditional conservatism in each year for the company, Khan and Watts' model (2009) was used which itself was the modified version of Basu's model (1997). The model is based on the equation below.

$$\frac{EPS_{i,t}}{Pri_{i,t-1}} = \lambda_0 + \lambda_1 DT_{i,t} + \lambda_2 Ret_{i,t} + \lambda_3 DT_{i,t} \times RET_{i,t} + \lambda_4 MC_{i,t-1}$$
$$+ \lambda_5 Lev_{i,t-1} + \lambda_6 MtB_{i,t-1} + \lambda_7 DT_{i,t} \times MC_{i,t-1} + \lambda_8 DT_{i,t} \times Lev_{i,t-1}$$
$$+ \lambda_9 DT_{i,t} \times MtB_{i,t-1} + \lambda_{10} Ret_{i,t} \times MC_{i,t-1} + \lambda_{11} Ret_{i,t} \times Lev_{i,t-1}$$
$$+ \lambda_{12} Ret_{i,t} \times MtB_{i,t-1} + \lambda_{13} DT_{i,t} \times Ret_{i,t} \times MC_{i,t-1}$$
$$\lambda_{14} DT_{i,t} \times Ret_{i,t} \times Lev_{i,t-1} + \lambda_{15} DT_{i,t} \times Ret_{i,t} \times MtB_{i,t-1} + v_{i,t}$$

Where
- $EPS_{i,t}$ is the benefit of each stock.
- $Pri_{i,t-1}$ is the price of the stock during 9 month before the end of financial year.
- $RET_{i,t}$ indicates the stock return in the 9 month period.
- $DT_{i,t}$ is a dummy variable, if $RET_{i,t}$ was negative, $DT_{i,t}$ was 1 and vice versa.
- $MtB_{i,t}$ assesses the ratio of market to book value.
- $MC_{i,t}$ indicates the market value.
- $Lev_{i,t}$ indicates the ratio of long term debt to total assets. Leverage ratio is calculated in two ways; ratio of total debts to total assets, ration of total debts to stock holders. In this study, the second way is chosen.

In this model, according to the study of Kim and Zhang (2013), the variables $Lev_{i,t}$, $MC_{i,t}$ and $MtB_{i,t}$ were considered as the control variables. The above equation is derived from the annual cross-sectional regression and conditional conservatism is calculated according to the resulting coefficients of this equation and also the following equation.

$$CC\_Score_{i,t} = \lambda_3 DT_{i,t} \times RET_{i,t} + \lambda_{13} DT_{i,t} \times Ret_{i,t} \times MC_{i,t-1}$$
$$+ \lambda_{14} DT_{i,t} \times Ret_{i,t} \times Lev_{i,t-1} + \lambda_{15} DT_{i,t} \times Ret_{i,t} \times MtB_{i,t-1}$$

In order to estimate the lack of transparency of audit team, estimation of discretionary accruals for three years is calculated based on the following model.

$$Accruals_{i,t} = \varphi_0 Inter_{i,t} + \varphi_1 \Delta Rev_{i,t} + \varphi_2 PPE_{i,t} + \varphi_3 ROA_{i,t} + \omega_{i,t}$$

Where
- $TA_{i,t}$ indicates the total change in assets.
- $DICL_{i,t}$ indicates changes in total debts in current debts
- $Cash_{i,t}$ indicates the cash flow.
- $CL_{i,t}$ indicates the changes in current debts.
- $Rev_{i,t}$ is the change in total sale.
- $Acc\_Rec_{i,t}$ is the change in accounts receivable.
- $PPE_{i,t}$ is the change in assets and facilities.
- $ROA_{i,t}$ is the return on assets.

In this study, according to the study of Hutman et al. (2009), lack of transparency is estimated based on the following model.

$$\omega_{i,t} = Accruals_{i,t} - \left(\varphi_0 Inter_{i,t} + \varphi_1 (\Delta Rev_{i,t} - \Delta ARec_{i,t}) + \varphi_2 PPE_{i,t} + \varphi_3 ROA_{i,t} \right)$$

$$DA_{i,t} = \sum_{k=0}^{2} \omega_{i,t-k}$$

Lack of transparency and stock crash risk are used based on the following model.

$$Crash\_Measure_{i,t} = \alpha_0 + \alpha_1 Crash\_Measure_{i,t-1} + \alpha_2 Crash\_Measure_{i,t-2}$$
$$+ \alpha_3 Crash\_Measure_{i,t-3} + \alpha_4 DTurn_{i,t-1} + \alpha_5 Sigma_{i,t-1}$$
$$+ \alpha_6 Size_{i,t-1} + \alpha_7 Leverage_{i,t-1} + \alpha_8 ROE_{i,t} + \alpha_9 MtB_{i,t-1} + \varepsilon_{i,t}$$

Dependent Variable

The dependent variable of this study was future stock crash risk. Assessment of this variable was done based on the model presented by Hutman et al. (2009).

Control Variable

To control the effects of some other variables in the analysis, the required control variables were determined, according to the literature. The control variables of this study include:
1. Size of the company in the end of the t financial year which is the natural logarithm of total net sales of the company in the end of financial year.
2. Financial leverage of the company which is calculated as the ratio of total debts to total assets in the end of financial year.

Hypotheses test results

Hypothesis (1) there is a significant relationship between conservatism and stock price crash risk;

Table 1. Results of regression estimation.

Research model	$SPCR = \alpha_0 + \alpha_1 AC + \alpha_2 SIZE + \alpha_3 LEV$		
Research variables	Coefficients	T statistic	Significance level
Fixed coefficient	-21.223	-2.384	0.0017
Accounting conservatism	-19.923	-3.295	0.001
Company size	2.243	4.423	0.000
Financial leverage	-3.089	-1.478	0.140
F statistic		5.375	
F statistic probability		00.0	
Durbin-Watson statistic		2.094	
Determination coefficient		0.531	
Adjusted determination coefficient		0.433	

According to the results of F test for the first hypothesis model, the value of probability was 0.00 which was lower than the required value of the study α. Consequently, the null hypothesis of F test is rejected in 95% confidence interval. Thus the model is significant and there is a linear relationship between dependent and independent variables.

The determination coefficient was 0.531 that indicates that the independent variables can explain 53% of total changes in dependent variables. The high value of the determination coefficient indicates the high power of the model in explaining the changes in the dependent variables.

Durbin-Watson statistic was 2.09 which is in the acceptable range (1.5-2.5).

According to the negative value of accounting conservatism (-19.923) and the 0.0 value of t test, there is a negative and significant relationship between accounting conservatism and stock price crash risk. Thus, the first hypothesis is approved in 95% confidence interval.

Hypothesis (2) there is a negative relationship between unconditional conservatism and future stock price crash risk;

The following model will be used in the examination of second hypothesis.

$$SPCR = \alpha_0 + \alpha_1 UC + \alpha_2 SIZE + \alpha_3 LEV$$

Table 2. Results of regression estimation.

Research model	$SPCR = \alpha_0 + \alpha_1 UC + \alpha_2 SIZE + \alpha_3 LEV$		
Research variables	Coefficients	T statistic	Significance level
Fixed coefficient	-12.328	-1.403	0.161
Unconditional conservatism	-0.129	-5.542	0.001
Company size	1.457	2.226	0.026
Financial leverage	-3.500	-1.742	0.082
F statistic	6.219		
F statistic probability	00.0		
Durbin-Watson statistic	2.127		
Determination coefficient	0.568		
Adjusted determination coefficient	0.476		

According to the results of F test for the first hypothesis model, the value of probability was 0.00 which was lower than the required value of the study α. Consequently, the null hypothesis of F test is rejected in 95% confidence interval. Thus the model is significant and there is a linear relationship between dependent and independent variables.

The determination coefficient was 0.568 that indicates that the independent variables can explain 57% of total changes in dependent variables. The high value of the determination coefficient indicates the high power of the model in explaining the changes in the dependent variables.

Durbin-Watson statistic was 2.12 which is in the acceptable range (1.5-2.5).

According to the negative value of accounting conservatism (-0.129) and the 0.0 value of t test, there is a negative and significant relationship between unconditional conservatism and stock price crash risk. Thus, the first hypothesis is approved in 95% confidence interval.

Hypothesis (3) there is a significant relationship between conditional conservatism and stock price crash risk;

The following model will be used in the examination of third hypothesis.

Table 3. Results of regression estimation.

Research model	$SPCR = \alpha_0 + \alpha_1 CC + \alpha_2 SIZE + \alpha_3 LEV$		
Research variables	Coefficients	T statistic	Significance level
Fixed coefficient	-14.877	-1.744	0.161
Conditional conservatism	-0.131	-6.144	0.001
Company size	1.619	2.559	0.026
Financial leverage	-3.524	-1.779	0.082
F statistic	6.518		

F statistic probability	00.0
Durbin-Watson statistic	2.158
Determination coefficient	0.579
Adjusted determination coefficient	0.490

According to the results of F test for the first hypothesis model, the value of probability was 0.00 which was lower than the required value of the study α. Consequently, the null hypothesis of F test is rejected in 95% confidence interval. Thus the model is significant and there is a linear relationship between dependent and independent variables.

The determination coefficient was 0.579 that indicates that the independent variables can explain 58% of total changes in dependent variables. The high value of the determination coefficient indicates the high power of the model in explaining the changes in the dependent variables.

Durbin-Watson statistic was 2.15 which is in the acceptable range (1.5-2.5).

According to the negative value of accounting conservatism (-0.131) and the 0.0 value of t test, there is a negative and significant relationship between conditional conservatism and stock price crash risk. Thus, the first hypothesis is approved in 95% confidence interval.

Hypothesis (4) audit quality reduces the probability of future stock price crash risk;

The following model will be used for the examination of the fourth hypothesis.

$$SPCR = \alpha_0 + \alpha_1 QA + \alpha_2 SIZE + \alpha_3 LEV$$

Table 4. Results of regression estimation.

Research model	$SPCR = \alpha_0 + \alpha_1 QA + \alpha_2 SIZE + \alpha_3 LEV$		
Research variables	Coefficients	T statistic	Significance level
Fixed coefficient	-23.299	-2.610	0.009
Audit quality	-1.809	-2.579	0.010
Company size	2.363	3.586	0.000
Financial leverage	-2.829	-1.344	0.183
F statistic		5.196	
F statistic probability		0.00	
Durbin-Watson statistic		2.122	
Determination coefficient		0.523	
Adjusted determination coefficient		0.422	

According to the results of F test for the first hypothesis model, the value of probability was 0.00 which was lower than the required value of the study α. Consequently, the null hypothesis of F test is rejected in 95% confidence interval. Thus the model is significant and there is a linear relationship between dependent and independent variables.

The determination coefficient was 0.523 that indicates that the independent variables can explain 52% of total changes in dependent variables. The high value of the determination coefficient indicates the high power of the model in explaining the changes in the dependent variables.

Durbin-Watson statistic was 2.12 which is in the acceptable range (1.5-2.5).

According to the negative value of accounting conservatism (-1.809) and the 0.0 value of t test, there is a negative and significant relationship between audit quality and stock price crash risk. Thus, the first hypothesis is approved in 95% confidence interval.

Interpretation of the Results of Hypotheses Examinations
Interpretation of Examination of First Hypothesis

There is a negative and significant relationship between accounting conservatism and stock price crash risk and thus the first hypothesis is approved in 95% confidence interval. This result is in line with the studies of Moshki and Fattahi (2010) and Moradi et al. (2011) and Fouladi et al. (2012) and Dimitrios et al. (2014).

Interpretation of Examination of Second Hypothesis

There is a negative and significant relationship between unconditional conservatism and stock price crash risk and thus the second hypothesis is approved in 95% confidence interval. This result is in line with the studies of Tariq and Rasha and Tariq (2010) and Dimitrios et al. (2014). No studies were done in this field in Iran.

Interpretation of Examination of Third Hypothesis

There was a negative and significant relationship between conditional conservatism and stock price crash risk and thus the third hypothesis is approved in 95% confidence interval. This result is in line with the studies of Tariq and Rasha (2010) and Dimitrios et al (2014). No studies were done in this field in Iran.

Interpretation of Examination of Fourth hypothesis

There was a negative relationship between audit quality and stock price crash risk and thus the fourth hypothesis is approved in 95% confidence interval. This result is in line with the study of Dimitrios et al. (2014). No studies were done in this field in Iran.

Conflict of interest

The authors declare no conflict of interest

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