The Relation between Bankruptcy Risk, Unconditional and Conditional Conservatism

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ABSTRACT

This study examines association between present and subsequent bankruptcy risk, unconditional and conditional conservatism. The data for this study are extracted from Data stream for Tehran Stock Exchange listed for each year from 2004 to 2010. We specially focus on the conditional conservatism because using it enables managers to hide bad news from stockholders and investors. So Information asymmetry will increase. Our bankruptcy risk is calculated using the one year ahead bankruptcy risk model. To estimate unconditional and conditional conservatism we used Gioly and Hayn models.[6] The results show that unconditional conservatism negatively associated with subsequent bankruptcy risk but conditional conservatism have no relation with it. So we can use unconditional one in our predictions for bankruptcy risk. We also can use bankruptcy risk for predicting subsequent unconditional conservatism but this way is not suitable for conditional conservatism. Our research prove that current bankruptcy risk positively associated with conditional conservatism and negatively with unconditional one.

KEYWORDS: Bankruptcy Risk, Unconditional Conservatism, Conditional Conservatism, Information Asymmetry, Bad news.

1. INTRODUCTION

Gary and others(2010) examined relations between accounting conservatism and bankruptcy risk. They stated “these relations follow from conservatism’s cash enhancing properties and bankruptcy as a condition of cash insufficiency. Specifically, we provide empirical evidence regarding both contemporaneous and causal associations between unconditional and conditional conservatism and bankruptcy risk. We examined effect of bankruptcy risk on applying conservatism in future fiscal years” (Gary and others2010). According those research we want to examine the above relations in our country. Because the different conditions the results in Tehran Stock Exchange is important for us.

2. RESEARCH LITERATURE

Conditional and Unconditional Accounting

According to Gioly opinion “Conservatism is an important convention of financial reporting. It implies the exercise of caution in the recognition and measurement of income and assets”. The only official’ definition is that offered in the glossary of Statement of Concepts No. 2 of the FASB, namely, that conservatism is a prudent reaction to uncertainty to try to ensure that uncertainty and risks inherent in business situations are adequately considered.

Two variants of accounting conservatism are commonly distinguished: When ex post (conditional) conservatism is present in an accounting regime, accounting income asymmetrically recognizes economic developments conditional on current news, with ‘bad news’ being recognized more quickly as losses than ‘good news’ as gains. As a result, “book values are written down under sufficiently adverse circumstances but not written up under favorable circumstances, with the latter being the conservative behavior” (Beaver and Ryan, 2005: 269). In contrast, under ex ante (unconditional) conservatism, the accounting regime emanates a general, pervasive bias towards reporting low book values of stockholders’ equity, and this bias is unrelated to current news. It results in the creation of hidden reserves, or expected unrecorded goodwill (Beaver and Ryan, 2005: 269), due to understating net assets through accelerating loss recognition and

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ISSN 2090-4304
Journal of Basic and Applied Scientific Research
www.textroad.com

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ISSN 2090-4304
Journal of Basic and Applied Scientific Research
www.textroad.com
delaying income recognition (Penman and Zhang, 2002). Taken to the extreme, it recognizes investments as expenses, not assets (Pope and Walker, 2003: 2). [2]

Bankruptcy risk is measured as the probability that a firm cannot service their rising cash obligations. Varied bankruptcy risk measures have been previously estimated using both structural and restrictive form models, among which, we choose Etemadi et (2008) because it has been designed for Iran condition [5].

3. HYPOTHESIS

If contemporaneous bankruptcy risk is high, there is more bad news to report, so conditional conservatism increases. Gary and others (2010) considered some hypotheses for their research that we use them in our study:

H1: Conditional conservatism is positively associated with contemporaneous bankruptcy risk.
H2: Unconditional conservatism is negatively associated with contemporaneous bankruptcy risk, consistent with the cash enhancing and informational roles of conservatism.
H3: Conditional conservatism is negatively associated with subsequent bankruptcy risk.
H4: Unconditional conservatism is negatively associated with subsequent bankruptcy risk.
H5: Bankruptcy risk is negatively associated with subsequent conditional conservatism.
H6: Bankruptcy risk is negatively associated with subsequent unconditional conservatism.

3.1 Measure for Conditional Conservatism

According to Gioly & Hayn findings increase in total accrual is assign for using accounting conservatism. Total accrual is calculated as followed:

Total Accruals (before depreciation) = (Net Income-Depreciation)- Cash Flow from Operations.

Since increase in total accrual will result in decrease in conditional conservatism, we multiply our ratio in -1 to justify effects of inflation we insert total assets-beginning of fiscal year in denominator.

\[
cc_t = \frac{T\text{Accr}}{TA_{t-1}} \times (-1)
\]

3.2 Measure for Bankruptcy Risk

We use Etemadi, et (2010) model to assess bankruptcy risk.[6]

\[
BR_t = \frac{6}{2} \left( \frac{TL}{TA} - \frac{OI}{S} \right) - \frac{QA}{TA} + \left[ \left( \frac{-9}{66} S \right) \left( \frac{IE}{GP} \right) \frac{OI}{S} \right] + \left[ \left( \frac{-5}{5} S \right) \left( \frac{IE}{GP} \right) \frac{OI}{S} \right] + \left( \frac{-5}{5} S \right) \left( \frac{IE}{GP} \right) \frac{OI}{S} \right] + \left( \frac{-5}{5} S \right) \left( \frac{IE}{GP} \right) \frac{OI}{S} \right] + \left( \frac{-5}{5} S \right) \left( \frac{IE}{GP} \right) \frac{OI}{S} \right] + \left( \frac{-5}{5} S \right) \left( \frac{IE}{GP} \right) \frac{OI}{S} \right] + \left( \frac{-5}{5} S \right) \left( \frac{IE}{GP} \right) \frac{OI}{S} \right] + \left( \frac{-5}{5} S \right) \left( \frac{IE}{GP} \right) \frac{OI}{S} \right] + \left( \frac{-5}{5} S \right) \left( \frac{IE}{GP} \right) \frac{OI}{S} \right] + \left( \frac{-5}{5} S \right) \left( \frac{IE}{GP} \right) \frac{OI}{S} \right] + \left( \frac{-5}{5} S \right) \left( \frac{IE}{GP} \right) \frac{OI}{S} \right] + \left( \frac{-5}{5} S \right) \left( \frac{IE}{GP} \right) \frac{OI}{S} \right] + \left( \frac{-5}{5} S \right) \left( \frac{IE}{GP} \right) \frac{OI}{S} \right] + \left( \frac{-5}{5} S \right) \left( \frac{IE}{GP} \right) \frac{OI}{S} \right] + \left( \frac{-5}{5} S \right) \left( \frac{IE}{GP} \right) \frac{OI}{S} \right]
\]

\[
\frac{TL}{TA} = \text{total liability to total asset}
\]

\[
\frac{OI}{S} = \text{operating income to sale}
\]

\[
\frac{QA}{TA} = \text{quick asset to total asset}
\]

\[
\frac{IE}{GP} = \text{interest expense to Gross profit}
\]

\[
\frac{S}{CA} = \text{sale to current asset}
\]
3.3. Measure for Unconditional Conservatism

Several researchers used ratio of market value to book value of equity to assess unconditional conservatism. But Poorheiri et. showed in their research that difference between book value and market value of equity in Iran is a result of inflation or increase in stock price as a result of increase in demand.[10] So we used operating accruals (working capital) to assess unconditional conservatism. Unconditional conservatism is calculated as follows:[6]

\[
OAccr_t = \frac{(CA_t - CA_{t-1}) - (CASH_t - CASH_{t-1}) - [(CL_t - CL_{t-1}) - (SD_t - SD_{t-1}) - DEP_t]}{TA_t + TA_{t-1}}
\]

\[
Un_CC_t = \frac{OAccr + OAccr_1 + OAccr_2}{3} \times (-1)
\]

CA=current asset, CL=current liability, SD=Short debt, DEP=depreciation

1. Testing Hypothesis 1

We test association between conditional conservatism and present bankruptcy risk in hypothesis1. To test this hypothesis, the following model is used:

\[
c_t = \alpha_0 + \delta_1 BR_t + \delta_2 Un_CC_t + Leverage_t + Size_t + \varepsilon_t
\]

Table 1 reports that unconditional conservatism and present bankruptcy risk is positively associated with conditional conservatism-value of t-test is more than 0.05 for variables like firm size and leverage, we can say these variables are not correlated with conditional conservatism.

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>coefficients</th>
<th>Standard error</th>
<th>t-value of statistics</th>
<th>p-value of t-test</th>
</tr>
</thead>
<tbody>
<tr>
<td>intercept</td>
<td>-0.07</td>
<td>0.18</td>
<td>-0.4</td>
<td>0.69</td>
</tr>
<tr>
<td>Present bankruptcy risk</td>
<td>0.01</td>
<td>0.00</td>
<td>2.62</td>
<td>0.01</td>
</tr>
<tr>
<td>Unconditional conservatism</td>
<td>0.33</td>
<td>0.05</td>
<td>6.35</td>
<td>0.00</td>
</tr>
<tr>
<td>Leverage</td>
<td>-0.05</td>
<td>0.06</td>
<td>-0.79</td>
<td>0.43</td>
</tr>
<tr>
<td>Firm size</td>
<td>0.01</td>
<td>0.01</td>
<td>0.71</td>
<td>0.48</td>
</tr>
<tr>
<td>F-statistics</td>
<td>Durbin-Watson test</td>
<td>p-value of f-statistic</td>
<td>The coefficient of determination</td>
<td></td>
</tr>
<tr>
<td>4.21</td>
<td>1.98</td>
<td>0.00</td>
<td>0.43</td>
<td></td>
</tr>
</tbody>
</table>

To get final model, we used stepwise regression procedure. Final model is:

\[
\hat{c}_t = 0.001 + 0.0095BR_t + 0.049Un_CC_t
\]

2. Testing hypotheses 2

To test this hypothesis, the following model is used:

\[
Un_CC_t = \alpha_0 + \beta_1 BR_t + \beta_2 cc_t + Leverage_t + Size_t + \varepsilon_t
\]

As table 2 shows present bankruptcy risk associated with unconditional conservatism negatively and conditional conservatism and leverage growth will increase unconditional conservatism.
Table 2

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>coefficients</th>
<th>Standard error</th>
<th>t- statistics</th>
<th>p-value of t-test</th>
</tr>
</thead>
<tbody>
<tr>
<td>intercept</td>
<td>-0.35</td>
<td>0.07</td>
<td>-4.96</td>
<td>0.00</td>
</tr>
<tr>
<td>Present bankruptcy risk</td>
<td>-0.01</td>
<td>0.00</td>
<td>-6.20</td>
<td>0.00</td>
</tr>
<tr>
<td>conditional conservatism</td>
<td>0.10</td>
<td>0.02</td>
<td>4.18</td>
<td>0.00</td>
</tr>
<tr>
<td>Leverage</td>
<td>0.32</td>
<td>0.04</td>
<td>7.42</td>
<td>0.00</td>
</tr>
<tr>
<td>Firm size</td>
<td>0.01</td>
<td>0.00</td>
<td>1.56</td>
<td>0.12</td>
</tr>
<tr>
<td>F- statistics</td>
<td>1.78</td>
<td>0.00</td>
<td>0.18</td>
<td></td>
</tr>
</tbody>
</table>

To get final model, we used stepwise regression procedure. Final model is:
\[ \hat{c_t} = -0.25 - 0.01BR_t + 0.102cc_{it} + 0.32Leverage_t \]

3. Testing hypotheses

To test this hypothesis, the following model is used:
\[ BR_t = \alpha_{10} + \beta_{11}BR_{t-1} + \gamma_{11}cc_{it-1} + LEVERAGE_t + ROA_t + STD - RD_t + Size_t + RATE_t + CASH_t + \Delta CASH + \epsilon_{11} \]

According to table 3 results there is no association between subsequent bankruptcy risk and conditional conservatism. As we expect firm size and leverage associated with subsequent bankruptcy risk.

Table 3

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>coefficients</th>
<th>Standard error</th>
<th>t- statistics</th>
<th>p-value of t-test</th>
</tr>
</thead>
<tbody>
<tr>
<td>intercept</td>
<td>-7.87</td>
<td>1.94</td>
<td>-4.06</td>
<td>0.00</td>
</tr>
<tr>
<td>Ex ante bankruptcy risk</td>
<td>0.00</td>
<td>0.04</td>
<td>-0.04</td>
<td>0.97</td>
</tr>
<tr>
<td>Ex ante conditional conservatism</td>
<td>-0.14</td>
<td>0.33</td>
<td>-0.43</td>
<td>0.67</td>
</tr>
<tr>
<td>Leverage</td>
<td>5.53</td>
<td>0.65</td>
<td>8.49</td>
<td>0.00</td>
</tr>
<tr>
<td>Firm size</td>
<td>0.36</td>
<td>0.13</td>
<td>2.70</td>
<td>0.01</td>
</tr>
<tr>
<td>ROA</td>
<td>-15.07</td>
<td>0.99</td>
<td>-15.17</td>
<td>0.00</td>
</tr>
<tr>
<td>STD-ret</td>
<td>0.00</td>
<td>0.00</td>
<td>1.53</td>
<td>0.13</td>
</tr>
<tr>
<td>Risk-free rate</td>
<td>0.21</td>
<td>0.05</td>
<td>4.08</td>
<td>0.00</td>
</tr>
<tr>
<td>Cash</td>
<td>2.72</td>
<td>2.22</td>
<td>1.23</td>
<td>0.22</td>
</tr>
<tr>
<td>Δcash</td>
<td>0.28</td>
<td>1.60</td>
<td>0.18</td>
<td>0.86</td>
</tr>
<tr>
<td>F- statistics</td>
<td>0.97</td>
<td>0.00</td>
<td>1.91</td>
<td></td>
</tr>
</tbody>
</table>

To get final model, we used stepwise regression procedure. Final model is:
\[ B\hat{R}_t = -3.00 + 6.14 LEVERAGE_t - 15.81 ROA_t + 0.005 STD - RD_t + 0.204 RATE_t + 2.88 CASH_t \]

4. Testing hypotheses

To test this hypothesis, the following model is used:
\[ BR_t = \alpha_{10} + \beta_{11}BR_{t-1} + \gamma_{11}Uncc_{it-1} + \alpha_{11}cc_{it-1} + LEVERAGE_t + ROA_t + STD - RD_t + Size_t + RATE_t + CASH_t + \Delta CASH + \epsilon_{11} \]

As table 4 presents unconditional conservatism and return on assets are associated with subsequent bankruptcy risk negatively. Leverage, liquidity and risk free rate are associated with subsequent bankruptcy risk positively.
To get final model, we used stepwise regression procedure. Final model is:

$$BR_t = -8.49 - 0.83 Un_{-}CC_{t-1} + 4.97 \text{LEVERAGE}_t + 0.43 \text{Size}_t - 15.31 \text{ROA}_t + 0.21 \text{RATE}_t + 4.14 \text{CASH}_t$$

### 5. Testing Hypothesis 5
To test this hypothesis, the following model is used:

$$cc_{it} = \alpha_{20} + \beta_{21} BR_{t-1} + \gamma_{21} cc_{i,t-1} + \text{LEVERAGE}_t + \text{Size}_t + \epsilon_{21}$$

As following table shows coefficient of bankruptcy risk is zero and p-value of t-test is more than 0.05(0.52), so we can say there is no relation between bankruptcy risk and subsequent conditional conservatism.

### Table 5

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>Coefficients</th>
<th>Standard error</th>
<th>t-statistics</th>
<th>p-value of t-test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>0.43</td>
<td>0.31</td>
<td>1.41</td>
<td>0.16</td>
</tr>
<tr>
<td>Present bankruptcy risk</td>
<td>0.00</td>
<td>0.00</td>
<td>1.65</td>
<td>0.52</td>
</tr>
<tr>
<td>Ex ante conditional conservatism</td>
<td>-0.07</td>
<td>0.05</td>
<td>-1.54</td>
<td>0.12</td>
</tr>
<tr>
<td>Leverage</td>
<td>0.23</td>
<td>0.10</td>
<td>2.35</td>
<td>0.02</td>
</tr>
<tr>
<td>Firm size</td>
<td>-0.04</td>
<td>0.02</td>
<td>-1.77</td>
<td>0.08</td>
</tr>
<tr>
<td>F- statistics</td>
<td>Durbin-Watson test</td>
<td>p-value of f-statistic</td>
<td>The coefficient of determination</td>
<td></td>
</tr>
<tr>
<td>1.65</td>
<td>0.26</td>
<td>0.00</td>
<td>2.13</td>
<td></td>
</tr>
</tbody>
</table>

### 6. Testing Hypothesis 6
To test this hypothesis, the following model is used:

$$Un_{-}CC_t = \alpha_{20} + \beta_{21} \text{BR}_{t-1} + \gamma_{21} Un_{-}CC_{t-1} + \alpha_{22} \text{cc}_{i,t-1} + \text{LEVERAGE}_t + \text{Size}_t + \epsilon_{21}$$

As table 6 presents coefficient of bankruptcy risk is -0.01 and p-value of t-test is less than 0.05 so we can say this variable is associated with subsequent unconditional conservatism negatively.

### Table 6

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>Coefficients</th>
<th>Standard error</th>
<th>t-statistics</th>
<th>p-value of t-test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-0.14</td>
<td>0.03</td>
<td>-4.14</td>
<td>0.00</td>
</tr>
<tr>
<td>Ex ante bankruptcy risk</td>
<td>-0.01</td>
<td>0.00</td>
<td>-4.07</td>
<td>0.00</td>
</tr>
<tr>
<td>Ex ante unconditional conservatism</td>
<td>0.52</td>
<td>0.04</td>
<td>13.96</td>
<td>0.00</td>
</tr>
<tr>
<td>Ex ante conditional conservatism</td>
<td>-0.02</td>
<td>0.03</td>
<td>-0.69</td>
<td>0.49</td>
</tr>
<tr>
<td>Leverage</td>
<td>0.17</td>
<td>0.03</td>
<td>5.76</td>
<td>0.00</td>
</tr>
<tr>
<td>Firm size</td>
<td>0.00</td>
<td>0.00</td>
<td>0.32</td>
<td>0.75</td>
</tr>
<tr>
<td>F- statistics</td>
<td>Durbin-Watson test</td>
<td>p-value of f-statistic</td>
<td>The coefficient of determination</td>
<td></td>
</tr>
<tr>
<td>67.23</td>
<td>0.51</td>
<td>0.00</td>
<td>1.98</td>
<td></td>
</tr>
</tbody>
</table>

To get final model, we used stepwise regression procedure. Final model is:
\[ Un\_CC_t = -0.13 - 0.005BR_{t-1} + 517Un\_CC_{t-1} + 0.165LEVERAGE_t \]

4. DISCUSSION AND CONCLUSION

This study examines empirically relations between accounting conservatism and bankruptcy risk that follow from conservatism’s cash enhancing and informational properties, and bankruptcy, which is fundamentally a condition of cash insufficiency. Because conservatism is an enduring and pervasive property of financial accounting, and bankruptcy is a condition of considerable consequence to firms, this relationship is of fundamental importance to firms’ stakeholders including auditors, creditors, regulators and shareholders, and also to accounting standards setters who are presently considering conservatism’s relevance as a core accounting concept. Bankrupt firm’s managers usually apply conservatism or earning smoothing to survive in capital market (according to bankrupt firms condition in Iran), (Jabarzadeh, 2010) [8]. Our findings show that conditional conservatism is associated with present bankruptcy risk positively so first hypothesis is confirmed. Managers and stockholders can use conditional conservatism with other variables to examine firm’s financial position.

Biddle and Song (2010) concluded that unconditional conservatism is negatively associated with contemporaneous and subsequent bankruptcy risk[4]. Applying unconditional conservatism increase cash enhancing so bankruptcy that is a result of cash insufficiency will reduce. So second and forth hypothesis are approved.[3]

Accrual based accounting provide evidence for applying conservatism (Gregoriou and Skerra, 2007). Although applying conservatism can affect earning but we expect this would not change future cash flows.[7] So we can conclude that conditional conservatism is not associated with subsequent bankruptcy risk.

As we said applying conservatism improves quality of accounting information. When bankruptcy risks increase, firm directors mitigate unconditional conservatism to reduce stockholder’s pressure on managers. Our findings show that bankruptcy risk associated negatively with subsequent unconditional conservatism but there is no relation between contemporaneous bankruptcy risk and subsequent conditional conservatism.

Acknowledgment
The authors declare that they have no conflicts of interest in this research.

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