Debt maturity structure, institutional ownership and accounting conservatism

Evidence from Iranian listed companies

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Abstract

Purpose – The purpose of this paper is to examine the impact of debt maturity structure and types of institutional ownership on accounting conservatism by using different financial variables and proxies.
Design/methodology/approach – Employing panel data analysis in the R programming language, the authors test their hypotheses on a sample of 143 (858 firm-year observations) companies listed on the Tehran Stock Exchange during 2011–2016.
Findings – Using Basu (1997) and Beaver and Ryan (2000) models as proxies for accounting conservatism, the findings suggest a non-significant relationship between accounting conservatism and debt maturity structure. Contrary to the primary expectation, the results indicate that short-maturity debts are also non-significantly and negatively associated with accounting conservatism in financially distressed firms. Finally, using both conservatism measures, the authors document that there is no significant relationship between both active and passive institutional ownership and accounting conservatism as well as debt maturity structure.
Originality/value – The current study is the first study conducted in a developing country like Iran, and the outcomes of the study may be helpful to other developing nations.

Keywords Accounting conservatism, Institutional ownership, Debt maturity structure
Paper type Research paper

1. Introduction

One of the most important financial issues in today's growing capital markets is the quality of firms' financial information. Higher quality financial information leads to sound financial decisions made by potential investors and also contributes to more appropriate allocation of financial resources. In this respect, it is of considerable importance for managers to maintain a proper level of conservatism when providing required financial information for interested investors, primarily due to the fact that future losses stemming from too optimistic estimates are much more serious than losing profitable opportunities arising from adopting too pessimistic valuation approaches. Creditors are among the interested users of financial information, and their returns from investing in the net value of firms' total assets are typically asymmetrical. That is, creditors do not earn any additional return from their investment when the value of a firm's net total assets is more than the nominal value of its debts, regardless of the amount of the overvaluation. However, these interested groups earn

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the sole net value of a firm's total assets from their investment when the net assets are less than the nominal value of the debts. Therefore, creditors are more concerned about the undervaluation of assets than their overvaluation. From the creditors' point of view, firms should report the least possible value for their net total assets, mainly because higher values of net total assets are generally regarded as unacceptable. The can be attained by recognizing losses in a more timely fashion than gains (or the adoption of conservative reporting practices). Accordingly, the present paper aims to investigate the impact of short-maturity debt and the type of institutional ownership (i.e. active vs passive) on different kinds of accounting conservatism (i.e. conditional and unconditional). Our primary inquiry is motivated based on the mixed results provided by prior literature, indicating similar roles for debt maturity structure, institutional ownership and accounting conditional and unconditional conservatism in resolving agency costs. Indeed, we aim to address the question of whether the degree of conservatism in financial reports is associated with the extent of agency problem arising from both debt financing and the presence of institutional investors within the corporate governance framework.

Although several empirical studies, to date, have examined accounting conservatism, the economic demands for conservatism are still under a long-running debate. Some papers, for instance, suggest that equity investors (shareholders) are more inclined toward conservative financial reporting as a corporate governance mechanism or tool (Ball, 2001; Watts, 2003; Ramalingegowda and Yu, 2012). Consistent with this notion, more recent studies document that greater financial conservatism is captured when there is greater separation of ownership and control (diffused ownership structure) as well as higher information asymmetry between managers and shareholders (LaFond and Roychowdhury, 2008; LaFond and Watts, 2008; Ramalingegowda and Yu, 2012). Prior literature also draws a clear distinction between individual (unsophisticated) investors whose trading goals are unrelated to information and institutional investors as sophisticated price-setters in capital markets who are more likely to value conservative financial reporting (Chan and Lakonishok, 1995; Sias *et al.,* 2006; Ramalingegowda and Yu, 2012). The latter also adopt a direct monitoring approach rather than monitoring through accounting numbers, primarily due to greater access to both the managers and insider financial information (Carleton *et al.*, 1998; Ke *et al.*, 1999; Prendergast, 2002; Ramalingegowda and Yu, 2012). According to the argument of Ramalingegowda and Yu (2012), institutional characteristics inducing greater monitoring incentives among institutional investors and subsequently driving greater demand for the adoption of conservatism are concentration of share holdings, investment horizon and independence from firm management. The major role played by institutional investors within the corporate governance structure is also noteworthy. Specifically, institutions have the distinct privilege of controlling and monitoring firms' corporate policies through their concentrated holdings, and, consequently, higher levels of institutional ownership lead to lower agency costs (Crane *et al.*, 2016). The extant literature argues that institutional investors have the special privilege of monitoring corporate policies and lower costs of monitoring. Therefore, it is likely for firms with higher levels of institutional ownership to exploit the potential of lower agency costs (Jensen and Meckling, 1976). Prior literature also suggests that both active and passive institutional ownerships in the USA have increased to more than 60 percent over the past 40 years, with passive funds forming more than 20 percent of the public equity holdings (Aghion *et al.*, 2013; Crane *et al.*, 2016). Both the theory and empirical evidence confirm the active monitoring function of institutional investors inside the corporate governance structure and suggest that the process is rather difficult for more passive or less-informed investors (Almazan *et al.*, 2005).

In addition to the preceding discussion, we attempt to question the importance of short-maturity debts in explaining conservative financial reports. It has been argued that

the inherent agency costs arising from the nature of debt financing such as information asymmetry and suboptimal investments could be mitigated by short-maturity debt covenants (Datta *et al.*, 2005; Khurana and Wang, 2015). In this respect, Khurana and Wang (2015) argue that short-maturity debts are likely to affect the demand for accounting conservatism in two ways. On the one hand, based on the extant literature (e.g. Barnea *et al.*, 1980; Leland and Toft, 1996), the authors demonstrate that the sensitivity of short-maturity debts in comparison with long-maturity debts in terms of valuation is lower and consequently propels managers to employ more monitoring mechanisms. This facilitates the shifting of investments toward less risky projects and accordingly lowers the need for debt-contracting as a potential contributing factor in the adoption of accounting conservatism. On the other hand, lenders are more inclined to demand more accounting conservatism when firm value decreases as a result of incomplete financial contracts, particularly debt contracts. At the same time, Khurana and Wang (2015) expect less demand for accounting conservatism when debt maturity is shorter, primarily due to the fact that lenders would be able to re-price debt when it is due for renewal and/or not renew the contract. Taking the results of Khurana and Wang (2015) together, the present paper posits a negative association between the debt maturity structure and accounting conservatism but, in contrast, finds a non-significant relationship.

Using a sample of 143 (858 firm-year observations) companies listed on the Tehran Stock Exchange (TSE) during 2009–2014, our findings, contrary to the results of prior literature, suggest that there is no significant relationship between debt maturity structure and the demand for conservative financial reports. This result is also confirmed for financially distressed firms. In addition, we show that both active (i.e. ownership by institutions that have an incentive to actively monitor management) and passive (i.e. ownership by institutions without corporate board representations) ownership structures are not significantly associated with accounting conservatism (both conditional and unconditional) as well as the debt maturity structure.

This paper proceeds as follows: the next section reviews prior literature on accounting conservatism and develops our hypotheses. Section 3 discusses our research design and sample selection procedure. Section 4 presents the estimation results. Finally, Section 5 concludes the paper.

2. Research background and hypothesis development

2.1 Accounting conservatism defined

As the old adage "anticipate no profits but anticipate all losses" goes, accountants are often inclined to require higher verifiability for recognizing good news as gains than for bad news as losses (Basu, 1997). Accordingly, conservative reporting is typically defined as the timely recognition of expected unfavorable events in income than the recognition of the effects of expected favorable events (Givoly *et al.*, 2007). Lower cost or market accounting for inventories and the timely recognition of cost estimates leading to future expected losses on long-term contracts than those resulting in higher future profits are typical examples of financial conservatism (Basu, 1997). Nevertheless, from a broader perspective, conservatism is also defined and interpreted as accountants' preference for the adoption of accounting methods leading to lower values of assets and revenues along with higher values of liabilities and expenses (Belkaoui, 1985; Basu, 1997).

2.2 Conditional vis-à-vis unconditional conservatism

Prior literature draws a sharp distinction between the two types of conservatism using different terminologies and/or several pairs of terms. In this respect, several papers have classified conservatism under income statement and balance sheet conservatism

categories (e.g. Basu, 1997; Ball *et al.*, 2000; Pae *et al.*, 2004). Beaver and Ryan (2005), arguably, criticize this classification for being rather unrealistic, primarily due to the consistency of the impact of conservatism on the income statement and balance sheet when the firm employs clean surplus accounting. The authors refer to conditional and unconditional conservatism just as Ball and Shivakumar (2005) do. Other pairs of names used for classifying conservatism are *ex post* and *ex ante* as well as news-dependent and news-independent conservatism. Following Beaver and Ryan (2005) and Ball and Shivakumar (2005), we use conditional and unconditional terms to name the two types of conservatism. Based on the argument of Beaver and Ryan (2005), unconditional conservatism can be triggered when the expected unrecorded goodwill is captured through the accounting process of assets and liabilities such as immediate expensing of the costs of intangible assets, accelerated depreciation of property, plant, and equipment and the historical cost accounting for positive net present value projects. The authors also define conditional conservatism as the timely recognition of book values under sufficiently adverse circumstances than their recognition under favorable circumstances.

2.3 Active vis-à-vis passive institutional ownership

Prior studies suggest that institutional investors are not alike in terms of their monitoring functions. In other words, they have different incentives for actively monitoring corporate managers (Navissi and Naiker, 2006; Cornett *et al.*, 2007). Accordingly, institutional ownership is generally comprised of both active and passive investors. Passive institutional investors possess a high portfolio turnover and transient trading strategy. They are interested only in short-term profits and their performance is evaluated primarily based on the short-term returns they generate (Navissi and Naiker, 2006). On the other hand, active institutional investors are more inclined to gain corporate board representation than passive ones and consequently exercise efficient monitoring (Navissi and Naiker, 2006).

2.4 Debt maturity structure and accounting conservatism

To our knowledge, to date, prior literature on the relationship between accounting conservatism and the agency costs arising from debt financing has focused on different aspects of debts, such as debt maturity structure, the interest charged on the debts and in some cases, the extent of debt used in a firm's capital structure (Ahmed *et al.*, 2002; Zhang, 2008; Beatty *et al.*, 2008; Khurana and Wang, 2015). The collective evidence provided by Ahmed *et al.* (2002), for instance, highlights the significant role of accounting conservatism in reducing corporate debt costs. Employing both market-based and accrual-based proxies for accounting conservatism, the authors indicate that corporate debt is negatively associated with the adoption of conservatism in financial reports, ceteris paribus. In a similar vein, Zhang (2008) recognizes mutual benefits for two sides of a debt contract, i.e., the lender and the borrower. Specifically, he predicts and finds that more conservative borrowers, as compared to their counterparts, enjoy lower initial interest rates offered by lenders as a result of their covenant violation and the consequent signaling of default risk. Using 3,641 private debt agreements with net worth covenants issued during 1994 to 2004, Beatty *et al.* (2008) documented the existence of conservative contract modifications, but not ubiquitously. Specifically, they provided some evidence that debt contracts are modified mostly when there are higher agency costs and lower litigation, tax and equity demands for conservatism. Recent evidence by Khurana and Wang (2015) focuses on the relationship between the debt maturity structure and accounting conservatism and indicates that the adoption of conservative accounting approach is negatively influenced by the short-maturity debt, which is also more

pronounced among financially distressed firms. Ball and Shivakumar (2005) took into consideration the extent of debt used in the capital structure of a sample of the privately held and publicly traded companies of the UK and demonstrated that the publicly held companies of the UK were more likely to recognize losses in a timelier manner (i.e. adopt conservative financial reporting) than their counterparts.

It has been argued that shortening debt maturity could provide the ground for mitigating both the agency costs arising from debt financing and underinvestment problems. The latter can be fulfilled through facilitating frequent debt re-pricing and making debt mature before the growth options expire (Myers, 1977; Barnea *et al.*, 1980; Khurana and Wang, 2015). However, although shortening debt maturity has the above-cited strengths, firms are required to consider the suboptimal liquidation risks stemming from too much refinancing and the consequent bankruptcy costs. Indeed, they have to trade off the benefits and costs of using short-maturity debt (Sharpe, 1991; Diamond, 1991; Khurana and Wang, 2015). Furthermore, accounting conservatism could be a curative mechanism through which lender–borrower conflicts and the agency costs of debt can be mitigated (Watts, 2003; Ball and Shivakumar, 2005; Khurana and Wang, 2015). Prior literature also suggests that accounting conservatism can act as much of a deterrent against managers' incentives to undertake self-serving projects that do not enhance shareholder value. To put it more simply, accounting conservatism, to some extent, prevents managers from deferring the recognition of economic losses and thus pursuing negative net present value projects by providing timelier revisions of earnings and asset book values (Watts, 2003; Ball and Shivakumar, 2005; Khurana and Wang, 2015). In this context, Bushman *et al.* (2011) examined the relations between corporate investment behavior and the timeliness of accounting recognition of economic losses by using firm-level investment decisions for a sample of 25 countries and found that managers' tendency toward investment spending is positively associated with investment opportunities in countries where conservative reporting is more pronounced. Based on above-cited arguments, we hypothesize that short-maturity debt contracting is likely to be negatively associated with the demand for accounting conservatism, particularly when it facilitates the monitoring function of lenders and discourages shifting toward risky projects. As Khurana and Wang (2015) point out, it is predictable from the incomplete financial contracts perspective that short-maturity debt financing is likely to negatively affect the demand for accounting conservatism. Therefore, we present the following hypotheses to examine our prediction:

H1. Short-maturity debt is negatively associated with accounting conservatism.

H1a. Short-maturity debt is negatively associated with conditional accounting conservatism.

H1b. Short-maturity debt is negatively associated with unconditional accounting conservatism.

Despite the above predictions, several papers have focused on the conflicts between lenders and shareholders in the presence of default risk. In this case, several events cause the longevity of effective debt maturity such as choosing riskier investment projects, over-financing, lower equity financing and concealing problems from creditors (Myers, 2001; Khurana and Wang, 2015).

Myers (2001) asserts that where the default risk is very small or negligible, debts values are rarely influenced by news regarding the economic performance of corporations. However, as the level of default risk rises, the value of debts are further influenced, and, consequently, the creditors are provided with an incentive to receive the performance-related news of the corporations. Eisdorfer (2008) examines the relationship between investment and volatility and finds the expected negative relation between the

two variables to be reversely affected by shareholders' risk-shifting incentives. Indeed, the author offers two major results. The first result is related to the fact that financially distressed firms are faced with a weak negative relationship (and, in some cases, a positive relationship) between their investment intensity and volatility. The second finding reveals that the value-creation potential of investments in financially distressed firms is lower during times of high uncertainty. Based on the previously mentioned discussions, it can be concluded that financial distress (FD) is likely to influence the relationship between short maturity debts and accounting conservatism. Therefore, we posit the following hypotheses in the null form:

H2. Short-maturity debt is negatively associated with accounting conservatism in financially distressed firms.

H2a. Short-maturity debt is negatively associated with conditional accounting conservatism in financially distressed firms.

H2b. Short-maturity debt is negatively associated with unconditional accounting conservatism in financially distressed firms.

Some recent studies indicate a positive association between the level of accounting conservatism and agency problems. LaFond and Roychowdhury (2008), for instance, examined the impact of managerial ownership on accounting conservatism employed by corporations and found that manager-owned firms with an accentuated state of ownership and control separation as well as agency conflicts are faced with lower conservatism. Likewise, LaFond and Watts (2008) demonstrate that there is a positive association between conservatism and information asymmetry arising from agency problems. These studies are indicative of how equity investors demand conservatism. Nevertheless, Ramalingegowda and Yu (2012) predict and find that institutional investors that are more likely to monitor corporate managers drive the demand for conservatism more than the individual investors. Indeed, institutional investors, as more sophisticated and important price-setters in capital markets, perceive and value corporate governance benefits of conservative financial reporting and, consequently, demand more conservative accounting from managers (Bartov *et al.*, 2000; Chakravarty, 2001; Sias *et al.*, 2006; Ramalingegowda and Yu, 2012). Prior literature also introduces some institutional characteristics inducing higher monitoring incentives such as long investment horizons, concentration of share holdings and independence from management (Shleifer and Vishny, 1986; Hartzell and Starks, 2003; Chen *et al.*, 2007; Ramalingegowda and Yu, 2012). This leads to our next hypotheses as follows:

H3. There is a significant association between institutional ownership and accounting conservatism.

H3a. There is a significant association between active institutional ownership and conditional accounting conservatism.

H3b. There is a significant association between passive institutional ownership and conditional accounting conservatism.

H3c. There is a significant association between active institutional ownership and unconditional accounting conservatism.

H3d. There is a significant association between passive institutional ownership and unconditional accounting conservatism.

Finally, based on the above-mentioned relationships, we posit the following hypotheses as well:

H4. There is a significant association between institutional ownership and short-maturity debt.

H4a. There is a significant association between active institutional ownership and short-maturity debt.

H4b. There is a significant association between passive institutional ownership and short-maturity debt.

3. Research design

3.1 Data sources and sample selection procedure

We obtain our required data manually from the hardcopy financial statements held in the TSE library (Codal[1] and its supplementary software known as Rahavard Novin) for the period 2011–2016. To construct our sample for the paper's hypotheses, we begin with all client-year observations present on the Codal database, i.e., a potential population of 2,982 firm-year observations. We then exclude delisted observations (696 firm-year observations), observations with missing or insufficient variable data (126 firm-year observations) and newly-listed observations[2] (408 firm year observations). We also exclude firms operating in banking industry as well as financial and investment institutions (894 firm-year observations) to calculate the variables used in our equations, primarily because financial institutions and banking industry have different reporting requirements that could influence the figures associated with dependent variables. This leaves us with a primary sample of 858 firm-year observations. Table I discusses the breakdown of sample attrition.

3.2 Measures of accounting conservatism

The present paper employs Basu's (1997) earning-return model along with Beaver and Ryan's (2000) book-to-market model to measure accounting conservatism. Basu's (1997) model regresses earnings on positive (negative) stock returns (i.e. the sign of the return coefficient could be either positive or negative) to capture good or bad economic news as follows:

$$NI_{jt} = \beta_0 + \beta_1 NEG_{JT} + \beta_2 RET_{JT} + \beta_3 NEG_{JT} \times RET_{JT} + \varepsilon, \quad (1)$$

where NI_{jt} is the annual income before extraordinary items of firm j in year t scaled by the market value of stockholders' equity; RET_{JT} is the buy-and-hold stock return of firm j over year t; NEG_{JT}, is the indicator variable equal to 1 if RET_{JT} is negative and 0 otherwise.

In Equation (1), the coefficient on NEG_{JT} (β_2) captures the timeliness of earnings concerning good news and the coefficient on the interaction variable of $NEG_{JT} \times RET_{JT}$ (β_3) captures asymmetric timeliness regarding bad news vs good news (i.e. the measure of accounting conservatism). We use Equation (1) to measure conditional conservatism. Following Ismail and Elbolok (2011), we also incorporate MB (ratio of market value to book value of stockholders' equity) in Equation (1) in order to measure unconditional conservatism.

Beaver and Ryan (2000) designed a model for measuring accounting conservatism by capturing the difference between the book value and market value of net total assets. To put

Initial population of industrial firms with required data for estimating variables derived from the TSE database for the sample period 2011–2016		2,982
Less:	Delisted observations	696
Less:	Observations with missing variable data	126
Less:	Observations operating in banking industry as well as financial and investment institutions	894
Less:	Newly-listed observations	408
Equal:	Total observations in sample	858

Table I. Sample attrition

it simply, the authors measured conservatism as the ratio of book to market value of stockholders' equity:

$$CON = \frac{\text{Book Value of Stockholders'Equity}}{\text{Market Value of Stockholders'Equity}} \times (-1). \quad (2)$$

3.3 Regression models

Following Khurana and Wang (2015), we use Basu's (1997) modified model to empirically examine the relationship between short-maturity debts and conditional (unconditional) conservatism reflected in *H1–H1b* as follows:

$$\begin{aligned} NI_t &= \beta_0 + \beta_1 NEG_t + \beta_2 ST_{t-1} + \beta_3 MB_{t-1} + \beta_4 LEV_{t-1} + \beta_5 SIZE_{t-1} \\ &+ \beta_6 NEG_t \times ST_{t-1} + \beta_7 NEG_t \times MB_{t-1} + \beta_8 NEG_t \times LEV_{t-1} \\ &+ \beta_9 NEG_t \times SIZE_{t-1} + \beta_{10} RET_t + \beta_{11} RET_t \times ST_{t-1} + \beta_{12} RET_t \times MB_{t-1} \\ &+ \beta_{13} RET_t \times LEV_{t-1} + \beta_{14} RET_t \times SIZE_{t-1} + \beta_{15} RET_t \times NEG_t \\ &+ \beta_{16} RET_t \times NEG_t \times ST_{t-1} + \beta_{17} RET_t \times NEG_t \times MB_{t-1} \\ &+ \beta_{18} RET_t \times NEG_t \times LEV_{t-1} + \beta_{19} RET_t \times NEG_t \times SIZE_{t-1}. \end{aligned} \quad (3)$$

In Equation (2), *ST* represents the extent of short-maturity debt in a firm's capital structure. Following Fan *et al.* (2012) and Wang *et al.* (2010), we use the ratio of short-term debts to total debts as a proxy for the debt maturity structure. The market-to-book (*MB*) ratio is computed as the market value scaled by the book value of common equity. *MB* is used to measure unconditional conservatism and its relation with the debt maturity structure. *LEV* represents the financial leverage and is calculated as the book value of debts scaled by the book value of total assets. *SIZE* is a proxy for firm size and computed as the natural logarithm of market value of equity. To examine the relation between debt maturity structure and accounting conservatism, we also estimate the following model (Beaver and Ryan, 2000):

$$CON_t = \beta_0 + \beta_1 ST_{t-1} + \beta_2 LEV_{t-1} + \beta_3 SIZE_{t-1} + \varepsilon. \quad (4)$$

where *CON* is the accounting conservatism; *ST* is the extent of short-maturity debt in a firm's capital structure; *LEV* is the financial leverage, calculated as the book value of debts scaled by the book value of total assets; *SIZE* is the firm size, computed as the natural logarithm of the market value of equity.

To test the association between short-maturity debts and conditional and unconditional conservatism in financially distressed firms (i.e. *H2–H2b*), we employ Altman's (1968) bankruptcy prediction model (*Z*-score). This model is dependent on five different ratios: namely, liquidity, solvency, profitability and activity:

$$\begin{aligned} Z = \alpha &+ 0/012\ WCTA + 0/014\ ROA + 0/033\ EBTA \\ &+ 0/006\ MVTD + 0/999\ STA. \end{aligned} \quad (5)$$

In Equation (5) *WCTA* represents the ratio of working capital to total assets; *ROA*, the ratio of retained earnings to total assets; *EBTA*, the ratio of earnings before income and tax to total assets; *MVTD*, the ratio of the market value of equity to book value of total debts; *STA*, the ratio of sales income to total assets; and *Z*, the overall *Z* index. The lower a firm's *Z*-score, the higher its probability of bankruptcy. Indeed, *Z* values lower than 1.81 are indicative of bankruptcy. Based on the previous measure of FD or bankruptcy and

following Khurana and Wang (2015), we estimate the following regression model to test *H2–H2b*:

$$\begin{aligned} NI_t &= \beta_0 + \beta_1 NEG_t + \beta_2 ST_{t-1} + \beta_3 MB_{t-1} + \beta_4 LEV_{t-1} + \beta_5 SIZE_{t-1} + \beta_6 FD \\ &+ \beta_7 NEG_t \times ST_{t-1} + \beta_8 NEG_t \times MB_{t-1} + \beta_9 NEG_t \times LEV_{t-1} \\ &+ \beta_{10} NEG_t \times SIZE_{t-1} + \beta_{11} NEG_t \times FD + \beta_{12} RET_t + \beta_{13} RET_t \times ST_{t-1} \\ &+ \beta_{14} RET_t \times MB_{t-1} + \beta_{15} RET_t \times LEV_{t-1} + \beta_{16} RET_t \times SIZE_{t-1} \\ &+ \beta_{17} RET_t \times FD + \beta_{18} RET_t \times NEG_t + \beta_{19} RET_t \times NEG_t \times ST_{t-1} \\ &+ \beta_{20} RET_t \times NEG_t \times MB_{t-1} + \beta_{21} RET_t \times NEG_t \times LEV_{t-1} \\ &+ \beta_{22} RET_t \times NEG_t \times SIZE_{t-1} + \beta_{23} RET_t \times NEG_t \times FD + \varepsilon, \end{aligned} \quad (6)$$

where *FD* is our variable of interest which equals 1 if the firm is faced with *FD*, and 0 otherwise. The rest of the variables are similar to those defined in Equation (3). To test the relationship between the debts maturity structure and accounting conservatism by our second conservatism measure, we estimate the following Beaver and Ryan's (2000) model:

$$CON_t = \beta_0 + \beta_1 ST_{t-1} + \beta_2 FD + \beta_3 ST \times FD + \beta_4 LEV_{t-1} + \beta_5 SIZE_{t-1} + \varepsilon. \quad (7)$$

All of the variables included in Equation (7) are similar to variables used in Equations (3), (4) and (6). We examine the effect of active and passive institutional ownerships on accounting conservatism (*H3–H3d*) by modifying Basu's (1997) model as follows:

$$\begin{aligned} NI_t &= \beta_0 + \beta_1 NEG_t + \beta_2 RET_t + \beta_3 RET_t \times NEG_t \\ &+ \beta_4 INST_t + \beta_5 INST_t \times NEG_t + \beta_6 INST_t \times RET_t \\ &+ \beta_7 INST_t \times RET_t \times NEG_t + \varepsilon. \end{aligned} \quad (8)$$

In Equation (8), the positive or negative sign of β_7 indicates that greater (lesser) institutional ownership results in greater (lesser) accounting conservatism. Next, we draw a distinction between active and passive institutional ownerships and then modify the above-mentioned model:

$$\begin{aligned} NI_t &= \beta_0 + \beta_1 NEG_t + \beta_2 RET_t + \beta_3 MB_{t-1} + \beta_4 RET_t \times NEG_t \\ &+ \beta_5 NEG_t \times MB_{t-1} + \beta_6 RET_t \times MB_{t-1} + \beta_7 RET_t \times NEG_t \times MB_{t-1} \\ &+ \beta_8 ACINST_t + \beta_9 ACINST_t \times NEG_t + \beta_{10} ACINST_t \times RET_t \\ &+ \beta_{11} ACINST_t \times RET_t \times NEG_t + \beta_{12} INACINST_t + \beta_{13} INACINST_t \times NEG_t \\ &+ \beta_{14} INACINST_t \times RET_t + \beta_{15} INACINST_t \times RET_t \times NEG_t + \varepsilon. \end{aligned} \quad (9)$$

In Equations (8) and (9), *INST* represents the percentage of shares held by institutional investors; *ACINST*, the percentage of shares owned by active institutional investors (i.e. the institutional investors with representatives on corporate board of directors); *INACINST*, the percentage of shares owned by passive institutional investors (i.e. the institutional investors without any board representation). The rest of variables are similar to previous equations. In addition to Equation (9), we attempt to examine the effect of active and passive institutional ownerships on the second measure of accounting conservatism proposed by Beaver and Ryan (2000) by estimating the following equation:

$$CON_t = \beta_0 + \beta_1 ACINST_t + \beta_2 INACINST_t + \beta_3 LEV_{t-1} + \beta_4 SIZE_{t-1} + \varepsilon. \quad (10)$$

Finally, the following equation captures the effect of active and passive institutional ownerships on the debt maturity structure:

$$ST = \beta_0 + \beta_1 NEG_t + \beta_2 ACINST_t + \beta_3 INACINST_t + \beta_4 LEV_{t-1} + \beta_5 SIZE_{t-1} + \varepsilon. \quad (11)$$

3.4 Specification tests (diagnostics) in panel data models

We conduct several diagnostic tests by using the R programming language to estimate the most appropriate models. What follows is a succinct explanation of these tests at 0.05 significance level: the results of F-limer specification test ($P1 < 0.001$; $P2 < 0.001$; $P3 < 0.001$; $P4 < 0.001$) confirms the preference of panel data model for all four models and for both accounting conservatism measures. The results of Hausman test indicates that all models are better fitted using the random effects model (P1: 0.497; P2: 0.962; P3: 0.961; P4: 0.204) for both conservatism measures. Next, we use Lagrange Multiplier Test (Breusch-Pagan) to choose the appropriate model between a random effects regression and a simple OLS regression. The null hypothesis in the LM test is that variances across entities are zero. That is, there is no significant difference across units (i.e. no panel effect). This test confirms the appropriateness of the pooled OLS model with time effects for all regression models (P1: 0.023; P2: 0.003; P3: 0.388; P4: 0.387) and for both conservatism measures. Finally, the results of specification tests indicate that the panel of random effects is the most appropriate model so far all models. To test the serial correlation of (the idiosyncratic component of) the errors in panel models, we also conduct the Breusch-Godfrey/Wooldridge test on the residuals of the (quasi-) demeaned model, which should be serially uncorrelated under the null of no serial correlation in idiosyncratic errors for both conservatism measures. The results suggest that our final models are fitted using the Panel Generalized Linear Model (PGLM). A brief summary of the above-cited tests is shown in Table II.

4. Results

4.1 Descriptive statistics

Table III reports the descriptive statistics of the variables used in the regression models. As it is evident in panel A of this table, current debts on average account for 86 percent of the total debts of the sample firms. Comparing the average and standard deviation of debt maturity structure (*ST*) and Beaver and Ryan (2000) conservatism measure also reveals a negative relationship between the two, which could provide supporting evidence for *H2*.

Table II. The summary of specification tests in panel data models

Specification test	Null hypothesis	Hypothesis (Basu)	Hypothesis (B&R)	Test result
F-limer	OLS model is appropriate	1, 2, 3 & 4	1, 2, 3 & 4	Preference of panel data model
F-limer	OLS model with time effects is appropriate	1, 2, 3 & 4	1, 2, 3 & 4	Preference of panel data model
Hausman	Random effects model is appropriate	1, 2, 3 & 4	1, 2, 3 & 4	Appropriate
LM	Pooled OLS model with individual effects is appropriate	1, 2, 3 & 4	1, 2, 3 & 4	Inappropriate
LM	Pooled OLS model with time effects is appropriate	1, 2, 3 & 4	1, 2, 3 & 4	Appropriate
LM	Pooled OLS model with individual and time effects is appropriate	1, 2, 3 & 4	1, 2, 3 & 4	Inappropriate
Breusch–Godfrey/ Wooldridge	No serial correlation in idiosyncratic errors	1, 2, 3 & 4	1, 2, 3 & 4	The residuals are serially correlated

Variable	*n*	Min.	Max.	Mean	Median	SD
Panel A: descriptive statistics of 858 firm-year observations over 2009–2014						
NI	858	−3.306	1.827	0.097	0.165	0.412
ST	858	0.156	1.000	0.858	0.915	0.154
RET	858	−0.784	6.992	0.077	0.014	0.687
MB	858	−277.242	87.069	1.104	1.463	12.919
LEV	858	−0.758	6.596	0.670	0.685	0.507
SIZE	858	9.254	18.629	12.985	12.994	1.501
CON	858	−5.148	8.509	−0.699	−0.613	0.965
ACINST	858	0.000	0.990	0.573	0.680	0.311
INACINST	858	0.000	0.820	0.126	0.065	0.161
Panel B: descriptive statistics of financially distressed observations (FD = 1)						
NI	616	−3.310	1.830	0.936	0.170	0.432
ST	616	0.160	1.000	0.857	0.920	0.160
RET	616	−0.780	4.520	0.077	0.000	0.465
MB	616	−277.240	87.070	0.668	1.435	15.011
LEV	616	0.140	3.060	0.678	0.665	0.243
SIZE	616	9.250	18.630	13.295	13.240	1.461
CON	616	0.000	0.710	−0.699	−0.610	0.968
Panel C: descriptive statistics of non-financially distressed observations (FD = 0)						
NI	242	−2.070	1.650	0.104	0.150	0.357
ST	242	0.230	1.000	0.757	0.890	0.135
RET	242	0.780	6.600	0.075	0.000	0.598
MB	242	−7.112	43.400	2.219	1.500	3.915
LEV	242	0.150	2.770	0.651	0.640	0.283
SIZE	242	9.450	15.970	12.208	12.085	1.297
CON	242	−3.770	5.370	−0.689	−0.605	0.946

Table III.
Descriptive statistics

In panels B and C of Table III, the proxy used for FD indicates that an average of 72 percent of sample firm are faced with FD. The indicator variable with respect to Basu's (1997) model (*NEG*) demonstrates an average of 46 percent negative return on common equity of sample firms, suggesting the critical condition of most companies listed on the *TSE*. The average net income before extraordinary items of sample firms is 10 percent of market value of stockholders' equity. Finally, Table III indicates that 57 percent of institutional investors are active institutional investors (i.e. with board representation) and 13 percent of them are passive institutional investors (i.e. without any representative on the corporate board of directors).

4.2 Estimation results

Table IV exhibits the estimation results of model (3) using PGLM. As it is shown in panel A of this table, while *LEV* is negatively (C: −0.936) and significantly (two-tailed $p < 0.001$) associated with accounting conservatism, the coefficient on $RET \times NEG$ (C: 3.336) as well as the coefficient on $RET \times LEV$ (C: 0.283) suggest a significant and positive relation with accounting conservatism. In addition, the interaction variables of $RET \times NEG \times LEV$ (C: −1.120; P: 0.017) and $NEG \times RET \times SIZE$ (C: −0.158; P: 0.047) indicate a negative and significant relation with accounting conservatism. As the estimation results show, the rest of variables used in model (3) are not significantly associated with accounting conservatism. Based on preceding discussions and considering the non-significant coefficient on $RET \times NEG \times ST$, our results do not provide supporting evidence for *H1*. However, the results confirm the negative relationship between debt maturity structure and accounting conservatism.

Variable	Coefficient	SD	*t*-statistic	*p*-value
Panel A: estimation results by using modified Basu's (1997) model				
Constant	0.551	0.267	2.061	0.039**
NEG	0.394	0.477	0.825	0.409
ST	0.096	0.151	0.640	0.522
MB	0.002	0.001	1.604	0.108
LEV	−0.963	0.107	−8.977	< 0.001***
SIZE	0.011	0.016	0.720	0.471
NEG × *ST*	−0.083	0.257	0.321	0.748
NEG × *MB*	−0.003	0.003	−0.756	0.450
NEG × *LEV*	0.077	0.193	0.403	0.687
NEG × *SIZE*	−0.029	0.028	−1.056	0.291
RET	0.587	0.556	1.056	0.290
RET × *ST*	−0.212	0.346	−0.612	0.540
RET × *MB*	0.009	0.010	0.846	0.397
RET × *LEV*	0.283	0.168	1.690	0.047**
RET × *SIZE*	−0.048	0.033	−1.443	0.148
RET × *NEG*	3.336	1.451	2.298	0.021**
RET × *NEG* × *ST*	−0.173	0.898	−0.192	0.847
RET × *NEG* × *MB*	−0.010	0.012	−0.861	0.389
RET × *NEG* × *LEV*	−1.120	0.470	−2.381	0.017**
RET × *NEG* × *SIZE*	−0.158	0.079	−1.986	0.047**
Panel B: estimation results by using Beaver and Ryan's (2000) model				
Constant	−6.392	0.430	−14.862	< 0.001***
ST	−0.358	0.185	−1.932	0.053*
LEV	2.933	0.134	21.773	< 0.001***
SIZE	0.311	0.027	11.398	< 0.001***

Notes: *,**,***Statistical significance at 10, 5 and 1 percent, respectively

Table IV.
Estimation results for *H1* by using PGLM

Panel B of Table IV also suggests that *LEV* (C: 2.933; $p < 0.001$) and *SIZE* (C: 0.311; $p < 0.001$) are negatively and significantly associated with accounting conservatism computed by Beaver and Ryan's (2000) model (at 0.01 significance level). Furthermore, the figures reported in panel B are also indicative of the significance of the coefficient on *ST* at 0.05 of significance level. Therefore, our findings provide supporting evidence for *H1*. That is, accounting conservatism measured by Beaver and Ryan's (2000) model is negatively influenced by debt maturity structure.

The figures shown in Table V are the estimation results of models (6) and (7) using PGLM. Panel A of this table indicates that *LEV* and the interaction variables of *RET* × *NEG* × *LEV* as well as *RET* × *NEG* × *SIZE* are negatively and significantly associated with accounting conservatism measured by modified Basu's (1997) model. Since the coefficient on the interaction variable of *RET* × *NEG* × *ST* × *FD* (C: −0.321; P: 0.882) is non-significant, our findings do not support *H2*. Nevertheless, our findings confirm the negative relation between debt maturity structure and accounting conservatism. Panel (B) of Table V indicates a significant relationship between all the variables used in model (7) and accounting conservatism measured by Beaver and Ryan's (2000) model. In this respect, the significant coefficients on *ST* (C: −1.122; $p < 0.001$) and *FD* (−1.245; $p < 0.001$) provide support for *H2*.

Table VI indicates the estimation results of model (9) and (10) using PGLM. As it is evident in panel A of Table VI, the ratio of MB value of stockholders' equity and passive institutional investors (*INACINST*) is significantly associated with accounting conservatism (at 0.05 of significance level). However, since the coefficients on the interaction variables of *INACINST* × *RET* × *NEG* (C: 0.860; P: 0.076) and ACINST × RET × NEG

Variable	Coefficient	SD	*t*-statistic	*p*-value
Panel A: estimation results by using modified Basu's (1997) model				
Constant	0.936	0.334	2.802	0.005***
NEG	0.172	0.621	0.276	0.782
ST	−0.299	0.285	−1.050	0.293
MB	0.002	0.001	1.638	0.101
LEV	−1.007	0.108	−9.289	< 0.001***
SIZE	0.004	0.017	0.248	0.803
FD	−0.334	0.292	−1.143	0.253
NEG × *ST*	0.222	0.522	0.427	0.669
NEG × *MB*	−0.002	0.003	−0.755	0.451
NEG × *LEV*	0.033	0.204	0.163	0.870
NEG × *SIZE*	−0.028	0.030	−0.933	0.351
NEG × *FD*	0.332	0.526	0.631	0.527
RET	0.906	1.057	0.857	0.391
RET × *ST*	−0.435	1.136	−0.383	0.701
RET × *MB*	0.005	0.013	0.432	0.665
RET × *LEV*	0.296	0.169	1.749	0.080
RET × *SIZE*	−0.052	0.034	−1.523	0.127
RET × *NEG*	3.017	2.071	1.457	0.145
RET × *NEG* × *ST* × *FD*	−0.321	2.165	−0.148	0.882
RET × *NEG* × *MB*	−0.005	0.014	−0.423	0.672
RET × *NEG* × *LEV*	−1.398	0.498	−2.807	0.005***
RET × *NEG* × *SIZE*	−0.179	0.083	−2.144	0.032**
Panel B: estimation results by using Beaver and Ryan's (2000) model				
Constant	−5.560	0.486	−11.579	< 0.001***
ST	−1.122	0.331	−3.382	< 0.001***
FD	−1.245	0.356	−3.498	< 0.001***
ST × *FD*	1.113	0.392	2.834	0.0045***
LEV	2.899	0.132	21.899	< 0.001***
SIZE	0.320	0.026	12.053	< 0.001***

Notes: *,**,***Statistical significance at 10, 5 and 1 percent, respectively

Table V.
Estimation results for *H2* by using PGLM

(C: −1.578; P: 0.104) are not statistically significant, *H3* is not supported. Panel B of Table VI indicates that *LEV* and *SIZE* are significantly and positively associated with accounting conservatism measured by Beaver and Ryan's (2000) model. However, these figures do not show any significant relationship between active (C: −0.152; P: 0.387) and passive (C: −0.243; P: 0.329) institutional investors (*ACINST* and *INACINST*) and accounting conservatism. Accordingly, *H3* is not supported by our findings.

Finally, the estimation results of model (11) reported in Table VII suggest that active (C: 0.0008; P: 0.978) and passive (C: −0.006; P: 0.895) institutional ownerships are not significantly associated with accounting conservatism and consequently *H4* is not supported as well.

5. Conclusions

The present paper examines the relation between a firm's overall the debt maturity structure and accounting conservatism in financially distressed and non-distressed firms. In this respect, we employ two different measures for accounting conservatism often used in prior literature, i.e., Basu's (1997) earning-return model as well as Beaver and Ryan's (2000) book-to-market model. We argue that short-maturity debts contributes to the reduction of suboptimal investment problems inherent in debt financing and information asymmetry and mitigates agency costs of debts. Indeed, we expect that short-maturity debt covenants

Variable	Coefficient	SD	*t*-statistic	*p*-value
Panel A: estimation results by using modified Basu's (1997) model				
Constant	0.169	0.070	2.387	0.017**
NEG	−0.126	0.123	−1.031	0.303
MB	0.004	0.001	2.710	0.006***
RET	−0.002	0.079	−0.025	0.980
ACINST	0.046	0.096	0.481	0.630
INACINST	−0.400	0.174	−2.299	0.021**
NEG × *MB*	−0.001	0.003	−0.376	0.707
RET × *MB*	−0.002	0.008	−0.205	0.837
RET × *NEG*	0.119	0.342	0.349	0.726
RET × *NEG* × *MB*	0.005	0.010	0.554	0.579
ACINST × *NEG*	0.172	0.161	1.066	0.286
ACINST × *RET*	−0.081	0.138	−0.592	0.553
ACINST × *RET* × *NEG*	0.860	0.482	1.774	0.076
INACINST × *NEG*	0.126	0.308	0.408	0.683
INACINST × *RET*	0.482	0.296	1.629	0.103
INACINST × *RET* × *NEG*	−1.578	0.973	−1.621	0.104
Panel B: estimation results by using Beaver and Ryan's (2000) model				
Constant	−6.682	0.393	−16.982	< 0.001***
ACINST	−0.152	0.176	−0.865	0.387
INACINST	−0.243	0.248	−0.976	0.329
LEV	2.955	0.134	21.929	< 0.001***
SIZE	0.317	0.028	11.418	< 0.001***

Notes: *,**,***Statistical significance at 10, 5 and 1 percent, respectively

Table VI.
Estimation results for *H3* by using PGLM

Variable	Coefficient	SD	*t*-statistic	*p*-value
Constant	0.985	0.068	14.528	< 0.001***
ACINST	0.0008	0.032	0.026	0.978
INACINST	−0.006	0.046	−0.131	0.895
LEV	−0.051	0.024	−2.137	0.032**
SIZE	−0.007	0.005	−1.518	0.129

Notes: *,**,***Statistical significance at 10, 5 and 1 percent, respectively

Table VII.
Estimation results for *H4* by using PGLM

lead to less conservative financial reporting, primarily because conservatism *per se* can trigger debt covenant violations. However, our findings are in contradiction to our primary expectation and suggest a non-significant relation between the two in both financially distressed and non-distressed firms. This finding is inconsistent with the results reported by Khurana and Wang (2015) who found a negative and significant relationship.

Our study also extends an emerging empirical literature examining institutional investors' demand for accounting conservatism (LaFond and Roychowdhury, 2008; LaFond and Watts, 2008; Ramalingegowda and Yu, 2012). To put it simply, we shed further light on prior studies by providing evidence that institutional investors as a major group of investors who demand conservatism could significantly influence the extent of conservatism employed in financial reports. Again, our results did not provide supporting evidence for preceding expectation as they indicated a non-significant relationship between both active and passive institutional ownerships and accounting conservatism. Likewise, the relationship between institutional ownership and accounting conservatism was found to be non-significant.

Notes

1. www.codal.ir
2. That is those companies that had been listed on the TSE after the fiscal year of 2011.

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