JOURNAL OF CURRENT RESEARCH IN SCIENCE (ISSN 2322-5009)
CODEN (USA): JCRSDJ
2014, Vol. 2, No. 3, pp: 306-314
Available at www.jcrs010.com

REVIEW ARTICLE

DEFINING THE RELATION BETWEEN ACCOUNTING CONSERVATIVE AND OPERATING RISK THROUGH THE RISK SIGNALING THEORY

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ABSTRACT: The objective of this paper is to show the relation between a firm's choice of accounting conservatism and its operating risk through risk signaling theory**.** Signaling model of accounting conservatism has a separating equilibrium, in which the low risk firms choose a high degree of accounting conservatism and the high risk firms a low degree of conservatism. In this paper, show some of the key predictions of the signaling theory of accounting conservatism.
KEYWORDS: accounting conservatism, operating risk, risk signaling theory

INTRODUCTION

Conservatism is an established feature of accounting measurement, and is one mechanism used to constrain managerial opportunistic behavior and to enhance the reliability of financial reporting and disclosure. The presence of inherent uncertainty in the real world makes conservatism a desirable feature of performance measurement. Under conditions of uncertainty, economic forces, generated by the fact that various stakeholders will act in their own economic interests, creates a demand for conservative reporting. Ball and Shivakumar, (2005) contend that the economic role of conservatism in accounting, which enhances relevance and representational faithfulness, is an important attribute of financial reporting quality. They also argue that conservatism enhances contracting efficiency because it increases the decision usefulness of reported financial statement information for a company's stakeholders who are deemed to be interested in asymmetrically timely information and rely on it for their decision making. Traditionally, conservatism in accounting ensures that costs are not understated in the accounts and revenues are not overstated, and it achieves this goal by requiring accountants, when facing uncertainties in economic transactions, or risks, to adopt higher verification criteria for assets and revenues, but lower verification criteria for liabilities and expenses (Basu, 1997; Watts, 2003a). Due to the pervasive nature of the conservatism principle in accounting, this principle has profound influences on many, if not all, accounting standards, as well as on the professional judgments of generations of accountants.

The objective of this paper is to show the relation between a firm's choice of accounting conservatism and its operating risk through risk signaling theory. In a recent analytical study, Wang *et al.*, (2010) propose a signaling theory of accounting conservatism in which accounting conservatism serves as a signal by which a borrower firm can convey their private information about their own operating risk to the lenders, *prior* to the signing of the debt contract. This signaling model of accounting conservatism has a separating equilibrium, in which the low risk firms choose a high degree of accounting conservatism and the high risk firms a low degree of conservatism (Wang *et al.*, 2010). In this paper, show some of the key predictions of the signaling theory of accounting conservatism.

LITERATURE REVIEW

2.1. Accounting conservatism

Accounting conservatism is one of the oldest and most important principles of accounting (Sterling, 1967; Watts, 2003a). Broadly speaking, conservatism is a tendency that accountants, when encountering uncertainties in economic transactions, choose to report lower estimates for the values of assets and revenues, but higher estimates for the values of liabilities and expenses.

Conservatism in accounting ensures that costs are not understated in the accounts and revenues are not overstated. Conservatism appears to be closely related to the concept of realisation, as conservatism implies that a profit should not be recognized before it is realized. Sterling, (1967) suggests that conservatism may in fact be the root of the realization principle.

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Conservatism, as viewed by modern researchers and accounting standard setters, is a principle under which accountants exercise a reasonable degree of prudence in recognizing transactions subject to genuine economic uncertainties. The modern view of accounting conservatism does not seem to include, or permit, any deliberate manipulations of the accounts by understating income in one period and overstating income in a latter period, if there is no or little economic uncertainty surrounding the transactions. The latter behavior is often called "big bath" accounting, which creates hidden reserves, and is inconsistent with the principle of accounting conservatism.

The view of accounting standard setters towards conservatism and hidden reserves is clearly evident in FASB's conceptual framework:

"Conservatism in financial reporting should no longer connote deliberate, consistent understatement of net assets and profits". (FASB, 1980)

Then in paragraph 95, the FASB conceptual framework indicates that:

"Conservatism no longer requires deferring recognition of income beyond the time that adequate evidence of its existence becomes available or justifies recognizing losses before there is adequate evidence that they have been incurred". (FASB, 1980)

Therefore, while conservatism and the creation of hidden reserves are superficially similar, there is however a clear line that separates these two types of behaviors. Conservatism is a genuine, prudent response to uncertainty, whereas big bath accounting is a deliberate attempt to mislead the users of financial statements when there is in fact no uncertainty. As Paton so clearly pointed out, "sheer understatement where it is possible to ascertain the actual facts is not conservatism but concealment" (Paton and Stevenson, 1916). Modern accounting researchers recognize that conservatism has the effect of accelerating the recognition of economic losses and deferring the recognition of economic gains (Basu, 1997; Watts, 2003a). Therefore, economic losses are reflected in earnings faster than economic gains, under conservatism. This property of conservatism is described by Basu, (1997) as the asymmetric timeliness of earnings, which has become the anchor for a number of empirical and theoretical works on accounting conservatism in recent years (Watts, 2003b; Ryan, 2006).

The asymmetric timeliness of earnings property of accounting conservatism, as described above, highlights the intertemporal nature of accounting conservatism: the recognition of unverifiable or unrealized economic gains in earnings are delayed until they subsequently become verifiable or realized in later periods. Thus, in a typical life cycle of a firm, earnings tend to lag economic income by several accounting periods. In the early stages of the life of the firm where investment outlays tend to be high and revenues low, earnings tend to be lower than the economic income of the firm; but in the mature stage of the firm, where revenues are larger and more stable, earnings tend to catch up with the economic income or even exceed it (Monahan, 2005; Zhang, 2005). However, one should not argue that accounting conservatism is not always "conservative" simply because it may lead to lower earnings in one period and higher earnings in another. To make that argument would be to entirely miss the main purpose of accounting conservatism, which is to create a higher standard of verification for recognition of good news, as a mechanism for coping with economic uncertainties. Thus, the intertemporal properties of earnings are merely a consequence of that main purpose of accounting conservatism, rather than the cause of it.

OVERVIEW OF EXPLANATIONS FOR CONSERVATISM

The main interest of contemporary accounting researchers in conservatism is to find the rationale, if any, behind conservatism, and thus to explain why conservatism is so resilient in the modern economy. While the search for rational explanations of conservatism is still ongoing, it has already paid big dividends. A large part of the recent advancements in the conservatism literature can be summarized in the following five rational explanations of accounting conservatism: (1) the litigation risk explanation, (2) the debt-contracting explanation, (3) the managerial-contracting explanation, (4) the political cost explanation, and (5) the tax-incentive explanation. All of the explanations for conservative reporting suggest that conservatism benefits users of the firm's accounting reports. One explanation is that conservatism arises because it is part of the efficient technology employed in the organization of the firm and its contracts with various parties. Under this *contracting explanation*, conservative accounting is a means of addressing moral hazard caused by parties to the firm having asymmetric information, asymmetric payoffs, limited horizons and limited liability. Even if one separates contracting and managerial accounting from financial reporting, moral hazard problems will exist in financial reporting as long as the reports' accounting

measures inform investors about managerial performance and affect investors' asset allocation decisions and managers' welfare. These effects on managers' welfare will motivate managers to introduce bias and noise into the same accounting measures that regulators hope will inform investors, just as they motivate managers to introduce bias and noise into contractual accounting measures. Absent constraints on this opportunistic managerial behavior, accounting measures in financial reports that 'a priori' appear neutral will be significantly biased and noisy in practice. Conservatism constrains managerial opportunistic behavior and offsets managerial biases with its asymmetrical verifiability requirement. Shareholder litigation is another source of conservatism in recent years. Litigation also produces asymmetric payoffs in that overstating the firm's net assets is more likely to generate litigation costs for the firm than understating net assets. By understating net assets, conservatism reduces the firm's expected litigation costs. The asymmetry in litigation costs is consistent with the legal system evolving to constrain opportunistic payments to managers and other parties to the firm. To that extent, the litigation explanation suggests that individuals other than the parties to the firm also value such constraint. The links between taxation and reporting can also generate conservatism in financial reporting. Asymmetric recognition of gains and losses enables managers of profitable firms to reduce the present value of taxes and increase the value of the firm. Delaying the recognition of revenues and accelerating the recognition of expense defers tax payments. Finally, financial reporting standard-setters and regulators have their own incentives to favor conservative accounting and reporting. Just as there is an asymmetry in litigation costs, there is an asymmetry in regulators' costs. Standard-setters and regulators are likely to face more criticism if firms overstate net assets than if they understate net assets. Conservatism reduces the political costs imposed on standard-setters and regulators. This asymmetry in political costs, like the asymmetry in litigation costs, is consistent with non-contracting parties (such as voters) valuing conservatism's constraint on opportunistic payments to managers and other parties (Wang *et al.*, 2010).

Of these five explanations, the debt-contracting theory is one of the most widely accepted economic explanations for conservatism, and also the most widely researched (Ahmed *et al.*, 2002; Beatty *et al.*, 2008; Zhang, 2008; Guay, 2008). The debt-contracting theory of conservatism argues that conservatism improves the debt-contracting efficiency between lenders and borrowers, for two main reasons: First, under conservatism, earnings reflect bad-news more timely than good-news, triggering earlier technical defaults on the debt-covenants which allows the lenders to control the firm earlier and constrains any wealth transfers from debt-holders to equity-holders in a failing firm. Second, because conservatism provides more protection to debt-holders in a firm, the interest rate on the firm's debt may be lowered as a result. Watts, (2003a); Ahmed *et al.*, (2002), Ball *et al.*, (2008) and Zhang, (2008) contend that a more conservative accounting system can reduce the interest rates charged by debt-holders, and thereby increase the value of the debt in a firm, *ceteris paribus*. This effect can happen because conservatism influences accounting-based debt covenants. Accounting-based debt covenants are contractual agreements that specify the minimum or maximum levels of certain key accounting ratios that the borrower firm can have. The main purpose of these covenants is to align equity-holders' incentives with those of the debt-holders, and to restrain the transfer of wealth from debt-holders to equity-holders.

MEASURES OF ACCOUNTING CONSERVATISM

There are five key measures of accounting conservatism:

(1) Basu's (1997) asymmetric timeliness of earnings measure ("AT"), (2) Ball and Shivakumar's (2005) asymmetric-accruals-to-cash-flow measure ("AACF"), (3) the commonly suggested Market-to-Book ratio measure ("MTB"), (4) Penman and Zhang's (2002) Hidden Reserves Measure ("HR"), and (5) Givoly and Hayn's (2000) Negative Accruals Measure ("NA"). While there are several other approaches to measurement of conservatism, these five measures are the most widely applied and have had the most significant impact on the empirical literature on conservatism. Below, we discuss the five measures individually.

4.1. Basu's Asymmetric Timeliness Measure (At)

Basu's (1997) operationalization of accounting conservatism focuses on the implication that earnings will reflect 'bad news' more quickly than 'good news', which is known as the asymmetric timeliness of earnings. Basu (1997) was the first to link asymmetric timeliness with accounting conservatism - the greater the asymmetric timeliness, the greater the degree of accounting conservatism. Empirically, Basu (1997) developed the following cross-sectional regression, also known as the Basu regression,

to estimate the degree of conservatism (i.e. asymmetric timeliness):

$$\frac{EPS_{it}}{P_{it}} = \alpha_0 + \alpha_1 DR_{it} + \beta_0 R_{it} + \beta_1 R_{it} DR_{it} + \varepsilon_{it}$$

Where:

- EPSit : Earnings per share for firm i year t
- Pit : Opening stock market price for firm i year t
- Rit : Stock markets return for firm i year t
- DRit : Dummy variable that is equal to 1 if the stock market return for firm i in year t is negative, and equal to 0 if the stock market return for firm i in year t is non- negative.

Technically, the Basu regression model uses the dummy variable, DR, to distinguish between 'good-news' and 'bad-news', and thereby allows the slope coefficients and the intercepts to differ between these two groups. Under good news (Rit ≥0), DR is equal to 0 and the good-news timeliness coefficient is 0. Under bad news (Rit 0), DR is equal to 1 and the bad-news timeliness coefficient is 0+1.

Clearly, 1 is the asymmetric timeliness coefficient and is the primary indicator of accounting conservatism in the Basu model. The greater 1 is, the higher the degree of conservatism. The Basu AT measure is the most popular measure of conservatism in the literature.

4.2. Asymmetric Accrual To Cash-Flow Measure (AACF)

Ball and Shivakumar (2005) developed the AACF measure in order to estimate the degree of accounting conservatism in private (unlisted) companies, as Basu's AT measure is not suitable for private companies given that there is no stock price information available for private companies. To overcome this difficulty, Ball and Shivakumar (2005) developed essentially the non-stock-market equivalent of the AT measure, which is based on the following cross-sectional regression:

$$ACC_{it} = \beta_0 + \beta_1 DCFO_{it} + \beta_2 CFO_{it} + \beta_3 DCFO_{it} CFO_{it} + \varepsilon_{it}$$

Where:

- ACCit: Operating accruals, measured as Inventory + Debtors + Other current assets - Creditors - Other current liabilities - Depreciation.
- DCFOit: Dummy variable that is set to 0 if CFOit ≥ 0, and is set to 1 if CFOit < 0.
- CFOit: Cash-flow for period t.

In the regression above, the coefficient 3 is the AACF measure of accounting conservatism. A higher 3 indicates a higher degree of accounting conservatism.

Clearly, the AACF measure and the Basu AT measure are based on the same fundamental idea of asymmetric timeliness and are estimated from models with a very similar structure. In essence, both models regress an earnings variable on a proxy for economic 'news'. Both models employ dummy variables (DR and DCFO) to distinguish between 'good-news' and 'bad-news'. The main difference between these two measures comes from their different choices of the proxies for economic 'news' and the response variable. The Basu AT model uses stock return as the proxy for news, whereas the AACF measure uses operating cash-flow as the proxy for news. In terms of the response variable, the Basu AT model uses total earnings, whereas the AACF measure selects only the accrual component of total earnings.

Ball and Shivakumar (2005) and Ball and Shivakumar (2006) use the accrual component of total earnings because, in their view, accounting conservatism mainly influences the accruals component of earnings rather than the cash flows component.

4.3. The Market-to-Book ("MTB") or Book-to-Market ("BTM") ratio

The idea underlying the use of MTB (or BTM) as a measure of accounting conservatism is that, ceteris paribus, a conservative accounting system tends to depress the net book value of a firm relative to the firm's 'true' economic value. Therefore, a higher MTB (and a lower BTM) implies a higher degree of accounting conservatism and vice versa.5 The MTB measure is strongly rooted in the analytical work based on the Residual Income Valuation Model (RIVM) (Feltham and Ohlson, 1995; Zhang, 2000; Beaver and Ryan, 2000). Beaver and Ryan (2000) developed a refinement in using the BTM as a measure of conservatism, which has been quite widely applied in the literature. This refinement decomposes the BTM ratio into two components - the bias component and the lag component. Beaver and Ryan (2000) argue that the bias component of BTM should be interpreted as a measure of accounting conservatism. In order to decompose BTM, Beaver and Ryan (2000) regress BTM on a series of lagged stock returns, leading up to six lagged years, as in the following fixed-effect panel data regression:

$$BTM_{it} = \alpha_t + \alpha_i + \sum_{j=0}^{6} \beta_j ROE_{i,t-j} + \varepsilon_{it}$$

Where:

- BTMit: Book-to-Market (BTM) ratio of firm i, at the end of year t.

- t : Year-to-year variation in the BTM common to the sample firms
- i: Bias component of BTM for firm i
- ROEtj: Return on Equity (ROE) in each of the 6 years preceding year t.
- j: Regression coefficients on ROEi;tj

In the regression above, the time intercept, t, is fixed for all firms in any particular year, but may change from year to year. Therefore, t captures the time effect of market-wide BTM movements. The fixed effect coefficient, i , captures the firm specific persistent bias component of BTM for firm i, and is fixed for each firm. j is the regression coefficient of the lag component of the BTM ratio. According to Beaver and Ryan (2000), the bias component of BTM, i, is a more accurate measure of the firm's degree of conservatism than the raw BTM.

4.4. Systematic risk: operating risk and leverage

It has been traditional in finance to divide risk into two components operating risk (often called business risk) and financial risk. Operating risk is generally associated with the uncertainty in operating results, especially operating earnings. Financial risk is associated with the effect on uncertainty of financial policy, especially the debt-equity mix and the fixed interest charge associated with debt. It is usually characterized by the extent to which debt financing magnifies operating risk. Hamada, (1972) reports that approximately one quarter of systematic risk is explained by financial leverage while Lev, (1974) provides empirical evidence that operating leverage, as measured by variable cost, is one of the real determinants of systematic risk. Hamada, (1972) and more recently Rubinstein, (1973) deserve credit for their efforts of decomposing systematic risk into operating risk and financial risk as indicated below:

$$\beta = \beta^* + \beta^*(1 - \tau)D/E\ , \qquad (1)$$

Where:
β= the levered firm's common stock beta
β* = the unlevered firm's common stock beta
t = the corporate income tax rate
D = the market value of debt
E = the market value of common equity.

β* Measures operating risk while β*(1 - i)D/E represents the financial risk of common stock. Rubinstein suggests that operating risk reflects the combined effects of the degree of operating leverage, the pure systematic influence of economy-wide events, and the uncertainty associated with the firm's operating efficiency. Financial leverage magnifies this operating risk to produce financial risk.

For an investigation of the association between systematic risk and the degrees of operating and financial leverage, an alternative to the Hamada and Rubinstein formula is necessary for the following reasons. First, equation (1) does not explicitly introduce the degrees of two types of leverage in its expression. Second, Hill and Stone, (1980) ably document various econometric problems caused by a nonlinear multiplicative effect of financial structure on operating risk as measured by β*. Third, equation (1) assumes that corporate debt is risk free. Although this assumption is consistent with Modigliani and Miller's, (1958) tax correction model, equation (1) must be modified to allow risky debt. With the introduction of risky debt, equation (1) is rewritten as:

$$\beta = [1 + (1 - \tau)D/E]\beta^* - (1 - \tau)(D/E)\beta_d \qquad (2)$$

Where; d denotes beta of risky corporate debt. After a slight rearrangement, we write equation (2) as:

$$\beta = \beta^* + (1 - \tau)\left(\beta^* - \beta_d\right)D/E\ . \qquad (3)$$

Financial risk as measured by(l - t)(β* - βd)D/E causes additional econometric problems associated with a multiplicative effect of financial structure on the beta of risky debt. Although it is not an impossible task to resolve these problems when investigating the real determinants of beta using equation (3), an alternative beta formula is derived to serve our purpose. This formula explicitly incorporates the degrees of operating leverage and financial leverage. By definition, the beta of common stock j is:

$$\beta_j = \mathrm{Cov}\left(\tilde{R}_{jt}, \tilde{R}_{mt}\right) / \sigma^2\left(\tilde{R}_{mt}\right) \qquad (4)$$

Where:
Rjt = the rate of return on common stock j for the period from t-l to t,
Rmt = the rate of return on the market portfolio for the period from t - 1 to t,
Cov (0) and 2(0) denote the covariance and variance operators, respectively.

Suppose that Rjt = (jt/Ejt _ 1) - 1 where jt denotes earnings after interest and taxes at t and Ejt _ 1 represents the market value of common equity at t - 1. Substitution of this definition of Rjt into equation (4) yields:

$$\beta_j = \mathrm{Cov}\left[\left(\tilde{\Pi}_{jt}/E_{jt-1}\right)-1, \tilde{R}_{mt}\right]/\sigma^2\left(\tilde{R}_{mt}\right) = \mathrm{Cov}\left(\tilde{\Pi}_{jt}/E_{jt-1}, \tilde{R}_{mt}\right)/\sigma^2\left(\tilde{R}_{mt}\right). \quad (5)$$

We can rearrange equation (5) by multiplying the first argument of the covariance by multiplying jt_1 /jt _1 and subtracting a constant from it:

$$\beta_j = \left(\Pi_{jt-1}/E_{jt-1}\right)\mathrm{Cov}\left[\left(\tilde{\Pi}_{jt}/\Pi_{jt-1}\right)-1, \tilde{R}_{mt}\right]/\sigma^2\left(\tilde{R}_{mt}\right). \quad (6)$$

The degree of financial leverage (DFL) is defined as the percentage change in that results from a percentage change in X, where X denotes earnings before interest and taxes. Thus,

$$\mathrm{DFL} = \left[\left(\tilde{\Pi}_{jt}/\Pi_{jt-1}\right)-1\right]/\left[\left(\tilde{X}_{jt}/X_{jt-1}\right)-1\right] \quad (7)$$

The degree of operating leverage (DOL) is measured by the percentage change in X that is associated with a given percentage change in the units produced and sold. Let Q denote the number of units. Thus,

$$\mathrm{DOL} = \left[\left(\tilde{X}_{jt}/X_{jt-1}\right)-1\right]/\left[\left(\tilde{Q}_{jt}/Q_{jt-1}\right)-1\right] \quad (8)$$

Successive substitution of these formulas together we obtain the result:

$$\beta_j = (\mathrm{DOL})(\mathrm{DFL})\beta_j^0, \quad (9)$$

This formula is an alternative formula to the risk decomposition of Hamada and Rubinstein. Because it explicitly introduces the degrees of two types of leverage, its usefulness is obvious for an empirical investigation of the impact of DOL and DFL on systematic risk. A nonlinear multiplicative effect of financial structure on operating risk as well as on the beta of risky corporate debt can be avoided by a logarithmic transformation of equation (9). This formula remains valid regardless of whether corporate debt is risky or not.

Operating risk is defined as the volatility of the economic value of the total assets of the firm. firms' asset volatility is calculated as the standard deviation of a firm's daily economic/market value of assets, by employing Vassalou and Xing's, (2004) advanced iterative method.

Vassalou and Xing's, (2004) method is a robust iterative algorithm for calibrating the volatility (σ) and the daily values (V) of the firm, based on the Black-Scholes-Merton model of equity value (see Equation 10) as shown below. The advantage of using the Vassalou and Xing algorithm is that this method produces a significantly more accurate estimate of firms' asset volatility σ than any other existing methods employed in accounting research (Crosbie and Bohn, 2003). As a testimony to the accuracy and power of this method, credit-rating agencies, such as Moody's *KMV*, also employ similar methods to evaluate default risk for credit-rating purposes (Crosbie and Bohn, 2003). The Vassalou and Xing's, (2004) method is based on the contingent assets pricing model proposed by Merton, (1974) who treats the value of equity as a call option the value of the underlying assets of the firm and the maturity value of debt as the strike price. Using this approach, Merton, (1974) derived the following Black-Scholes-Merton (BSM) formula for the value of equity (Et):

$$E_t = V_t N(d_1) - De^{-rt}N(d_2) \quad \text{where } d_1 = \frac{\ln(V_t/D)+(r+\sigma^2/2)t}{\sigma\sqrt{t}};\ d_2 = d_1 - \sigma\sqrt{t}. \quad (10)$$

In the Black-Scholes-Merton equation above, V is the value of the firm's underlying assets, α represents the (steady-state) constant growth rate of the value of the firm; σ denotes the standard deviation of the value of the firm. Lastly, the subscript t denotes a point in time, which is counting downwards towards the maturity date. The maturity value of debt, D, is the strike price of the call-option, and there exists a risk-less bond in the economy, with a continuous rate of return r. The goal of the Vassalou and Xing's, (2004) method is to solve the problem of reliably calculating both asset value (V) and asset volatility (σ) from the above BSM equation. To get very reliable answers, the Vassalou and Xing method does the following procedure iteratively: (1) Use daily stock prices over the 12 months prior to the desired balance date to form an initial estimate of the volatility of equity σE. (2) Use the initial σE to derive an initial estimate of the asset volatility, σ, by σ = [E/(E+D)]σE. (3) Use the new σ to solve the Black-Scholes-Merton equity-pricing equation (Equation 1) for the value of $V\,t$ in each of the trading days over a 12 months period. (4) Obtain a new σ from the newly estimated daily values of Vt. This new σ is then used as the input to the Black-Scholes-Merton equity-pricing equation in the next iteration. (5) Repeat Steps 3 and 4, until the values of σ from two consecutive iterations converge, specifically, where the difference between two consecutive σ is less than 0.001. In the actual computation of this Vassalou and Xing algorithm using the sample data, most of the sample firm-years converge pretty quickly, usually within 2 to 3 iterations.

RELATION BETWEEN ACCOUNTING CONSERVATISM AND OPERATING RISK

In this section, I discuss the tradeoff between the benefit and cost of accounting conservatism and how that tradeoff determines the relation between a firm's choice of the degree of conservatism in financial reporting and the firm's own operating risk. The analytical foundation of this section's discussion is underpinned by Wang *et al.*, (2010), who propose a risk-signaling theory of accounting conservatism in the debt market. The key elements of this new theory of conservatism are summarized below. First, Wang *et al.*, (2010) theory shows that the economic demand for accounting conservatism may be driven not only by the issue of moral hazards – firms may misuse the borrowed funds after signing the debt covenant – but also by *information asymmetry* in the debt market prior to the signing of the debt covenant. The signaling model shows that accounting conservatism, acting as a signaling device, can reduce the information asymmetry between lenders and borrowers.

Second, the concept of conservatism as used by Wang *et al.*, (2010) is consistent with the existing literature's view that accounting conservatism means that higher verification criteria for good news than for bad news (Watts, 2003a; Basu, 1997). Wang *et al.*, (2010) investigated for analytical properties of accounting conservatism based on this concept. One of the most important analytical properties of conservatism is that the marginal effect of conservatism on earnings is stronger when the firm has greater operating risks (Wang *et al.*, 2010). This is intuitive because if a firm faces no risks or uncertainties, then the degree of conservatism will have no impact on the firm's reported earnings at all, since conservatism only applies to situations of uncertainty. Third, the concept of the *operating risk* of a firm, or simply *risk* refers the volatility of the firm's values generated by 'news', which corresponds to Basu's (1997) interpretation of conservatism (Wang *et al.*, 2010). 'News' is essentially the random value shocks to the firm, and therefore the volatility of the random value-shocks is a logical measure of the *operating risk* of the firm. Firms subject to significant swings in their values are considered as having a higher operating risk. Fourth, in Wang *et al.*, (2010) analytical model, a separating signaling equilibrium exists with regard to the firms' operating risk levels. More specifically, it is assumed that there are two levels of risk: Risky and Safe. The firm itself and its equity-holders know its own level of operating risk, but the lenders in the credit market do not have that information. In the long-run, this information asymmetry problem may lead to adverse-selection in the credit-market, and possibly a credit-rationing problem (Stiglitz and Weiss, 1981). The model shows that accounting conservatism can help resolve this problem, by serving as an information signal about the firm's true level of risk. In particular, their model proves that if certain regularity conditions holds (i.e. the Single-Crossing Property of conservatism), then there exists a separating signaling equilibrium for the game. In the separating equilibrium, the risky firms choose a low level of conservatism (usually the zero level), while the safe firms choose a high level of conservatism. Thus, by observing what level of conservatism a firm adopts, outside investors who are not privy to the firm's private information is able to correctly tell the level of operating risk in that firm. Effectively this reduces, or eliminates, the information asymmetry about the firm's operating risk in the debt market. The intuition for the separating equilibrium in Wang *et al.*, (2010) is as follows: First, the prior literature shows that accounting conservatism provides more protection to creditors, because conservatism tends to trigger debt defaults earlier, with the benefit of paying lower interest charges. But such earlier debt defaults do not come without costs to the borrower, who now faces greater bankruptcy risks due to the increased likelihood of default. Then the increased bankruptcy risk in turn reduces the value of equity in the firm. Thus, a higher degree of accounting conservatism produces two opposite forces on the value of the higher bankruptcy risk that lowers the value of equity. By rationally optimizing these two forces, the firm is able to select an optimal level of accounting conservatism that produces the highest value equity.

And it turns out that the low risk firm will optimally select a higher equilibrium level of conservatism, whereas the high risk firm will optimally select a lower level of conservatism. Thus, the firm of low operating risk would choose a higher level of conservatism, but the firm of high operating risk would choose a lower level of conservatism. Lastly, Wang *et al.*, (2010) model of the debt market is conceptually based on a strand of economic literature (Bester, 1985; Stiglitz and Weiss, 1981). This literature analyses adverse selection and signaling problems in the debt market. Stiglitz and Weiss (1981) shows that when borrower firms have more information about the risk levels of their investments than do the banks, the banks will ration the supply of credit to the market, which

leads to an excessive demand for credit. That arises because adverse selection will "squeeze" low risk borrowers out of the debt marking and leave only the high risk borrowers in the market, gradually creating a debt market for "lemons" (Akerlof, 1970). Further research by Bester, (1985) and Grinblatt and Hwang, (1989) argue that the credit-rationing may not be necessary if there are certain signaling mechanisms to help reduce information asymmetry in the market. The signaling role of accounting conservatism appears to be another way of reducing the information asymmetry in the debt market, according to Wang *et al.*, (2010).

CONCLUSION

In a Utopian world devoid of risk and uncertainty, there would be no role for accounting conservatism. But unfortunately, such an ideal world does not exist in real life. Firms and other economic actors must constantly wade through the murky waters of risk and uncertainty, and that is where accounting conservatism thrives. However, prior literature on accounting conservatism has paid scant attention to the role that risks play in shaping accounting conservatism and the role accounting conservatism plays in response to risks. Through risk signaling theory of accounting conservatism which proposed by Wang *et al.*, (2010), this paper conclude that there was a negative relationship between operational risk and accounting conservatism. In other words, there is a significant negative relationship between operational risk and accounting conservatism. Knowing that accounting conservatism is a mechanism of communicating the operating risk of the firm to the capital market, investors and financial analysts may then better utilize accounting conservatism as a tool of investment risk analysis. This could potentially improve the investors' and financial analysts' investment and risk management effectiveness.

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