Accounting Conservatism and Bankruptcy Risk

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Abstract

This study examines relations between accounting conservatism and bankruptcy risk and we present evidence that unconditional and conditional conservatism help mitigate subsequent bankruptcy risk via their cash enhancing and informational properties. Bankruptcy risk is in turn positively associated with subsequent unconditional conservatism and negatively associated with subsequent conditional conservatism, reflecting regulator and auditor monitoring and managerial career motives. These findings are robust to endogeneity between unconditional and conditional conservatism, conservatism gaming, extreme distress and actual bankruptcy. Combined, our results suggest that accounting conservatism both influences and is influenced by bankruptcy risk, thus lending support to a traditional rationale for conservatism and helping inform continuing deliberations regarding conservatism's ongoing role as a pervasive and enduring tenet of financial accounting.

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Keywords: accounting conservatism; bankruptcy risk; unconditional conservatism; conditional conservatism

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Accounting Conservatism and Bankruptcy Risk

1. Introduction

This study examines relations between accounting conservatism and bankruptcy risk. Our results reveal negative associations between both unconditional and conditional conservatism and subsequent bankruptcy risk that follow from conservatism's accrual nature, cash enhancing and informational properties. Bankruptcy risk is found to be positively related to subsequent unconditional conservatism, consistent with auditor and regulator incentives, and negatively related to subsequent conditional conservatism, consistent with offsetting managerial incentives to withhold bad news. Overall, our findings lend support to a traditional economic rationale for accounting conservatism that will help inform ongoing debates regarding its continuing role as a central tenet of financial accounting.

Whereas historical evidence indicates that accounting conservatism arose at least a millennium ago in response to demands by capital providers to inform lending and liquidation decisions and potentially reduces failure risk (De Ste. Croix (1956), Watts (2003), Basu (2009)), prior empirical evidence is mixed. Some studies find conservatism to reduce debt costs (and by inference bankruptcy risk).[1] Others find positive relations between conservatism and debt covenant violations (e.g. DeAngelo *et. al.* (1994), DeFond and Jiambalvo (1994), Sweeney (1994), and Zhang (2010)) suggests that conservatism are positively correlated with bankruptcy risk. Jones (2011) document that R&D capitalization increases corporate failure, implying that R&D expensing mitigates corporate failure. However, R&D expensing is an extreme form of unconditional conservatism, and its evidence cannot be readily generalized to other types of unconditional and conditional conservatism. Hence, relations between accounting conservatism and bankruptcy risk still wait to be explored.

Evidence that accounting conservatism lowers bankruptcy risk is central to the interests of debtholders and other stakeholders, including shareholders (dividends and capital gains), managers and employees (career and compensation), customers (products and services), suppliers (sales), auditors and regulators (compliance) and governments (tax revenues). It is also a precursor to assessing conservatism's role in dampening economic panics and crises, with significant implications for economic policy making. Recent financial crises have heightened interest in mechanisms that promote cash adequacy and solvency given the

[1] Zhang (2008), for example, documents that conservatism can help lower initial interest rates in lending contracts; Ahmed and Duellman (2002), Wittenberg-Moerman (2008) and Li (2010) document that accounting conservatism reduces the carrying costs of debt. Hui *et al.* (2009b) document that suppliers prefer customers with conservative reporting.

contagion effects of bankruptcy risk within industries, along the supply chains, and between nonfinancial and financial sectors.[2]

Evidence regarding relations between accounting conservatism and bankruptcy risk will also help inform ongoing debates regarding conservatism's continuing role as both a pervasive characteristic and longstanding tenet of financial accounting. In *Statement of Financial Accounting Concepts* (SFAC) *No. 2*, the Financial Accounting Standards Board (FASB) defined conservatism as "a prudent reaction to uncertainty to ensure that uncertainty and risks inherent in business situations are adequately considered" (FASB (1980), p. 10). This definition is consistent with conservatism being relevant to assessing bankruptcy risk. However, the FASB and the International Accounting Standards Board (IASB) removed conservatism from their conceptual framework in 2010 because it violates neutrality.[3] In its exposure draft for the *Conceptual Framework for Financial Reporting* (FASB (2008)), the FASB argued that conservatism may produce information asymmetries that reduce investor insights into future cash flows from growth options.[4] In contrast, Kothari *et al*. (2010) argue that the broader economic consequences of accounting standards are of first-order significance, while their role in equity valuation is of secondary significance.

Recent studies distinguishing between unconditional and conditional conservatism motivate a further examination of whether these two types of conservatism relate to bankruptcy risk differently (Beaver and Ryan (2005), Qiang (2007), Ball *et al.* (2009)). They observe that conservatism can arise either "unconditionally" via inherently conservative accounting principles or "conditionally" via a more timely recognition of bad versus good news. Their evidence suggests that unconditional and conditional conservatism can play different roles in contracting, regulation, taxation, valuation and in reducing information asymmetries (Qiang (2007, 2008)), and that they are negatively (positively) correlated in the short (long) run (Beaver and Ryan (2005), Roychowdhury and Watts (2007), Ball *et al*. (2009)). They further suggest that auditors and regulators focus primarily on unconditional conservatism, litigation risk induces both, and that managers exercise more control over conditional conservatism, at

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[2] Specifically, Lang and Stulz (1992) document "contagious" valuation effects of bankruptcy announcements within the same industry. Hertzel *et al*. (2008) show that bankruptcy filings generate wealth effects for suppliers and customers along the supply chain, and Jorion *et al*. (2009) provide evidence regarding credit contagions via counter-party effects, suggesting that borrowing firms' bankruptcy announcements cause negative abnormal equity returns and increase credit default swap spreads among creditors.

[3] The FASB's *Conceptual Framework* defines and describes basic concepts by which financial statements are prepared and identifies qualitative characteristics that make information in financial statements useful. It serves as a guide to the Board in developing accounting standards and in resolving accounting issues not addressed directly by an existing standard. The IASB has a corresponding *Conceptual Framework*. These frameworks were combined into a unified set of accounting concepts and principles in *SFAC No. 8* (FASB, 2010).

[4] Similarly, Penman and Zhang (2002), and Lev *et al*. (2005) present evidence that the expensing of research and development costs reduces the value relevance of accounting information and causes market mispricing.

least in the short run, preferring counter-conservative treatments for career advancement (Watts (2003), Qiang (2007), Kothari *et al.* (2010)). Thus, this study examines causal relations between both unconditional and conditional conservatism and bankruptcy risk.

That conservatism should influence subsequent bankruptcy risk is suggested by recent studies of its cash enhancing and informational properties. Specifically, they find that accounting conservatism reduces cash outflows by mitigating capital overinvestment, reducing risk-shifting, delaying economic losses, promoting precautionary savings and lowering agency costs (Lara *et al*. (2010a), Callen *et al.* (2010), Kirschenheiter and Ramakrishnan (2010), Srivastava and Tse (2010)). Others find conservatism increases cash inflows from operations by evoking more favorable terms from trading partners and by reducing investment distortion (Hui *et al*. (2009b), Lara *et al.* (2010a), Bushman *et al.* (2010)). These cash enhancing properties of conservatism should reduce subsequent bankruptcy risk since bankruptcy is fundamentally a condition of cash insufficiency (Kim *et al.* (1993), Uhrig-Homburg (2005), Campbell *et al.* (2008).

Recent evidence further suggests that conservatism lessens information uncertainty and asymmetry via less optimistic reporting of net income and assets and more timely reporting of bad news (Watts (2003), Guay and Verrechia (2007)). This informational role of conservatism also enhances cash flows and reduces bankruptcy risk as better informed investors and trading partners provide more favorable financing and contracting terms. Under conditions of distress, conservatism facilitates negotiations and workouts among creditors, equity holders, trading partners, labor unions and other claimholders, thus helping avoid bankruptcy filings (Giammarino (1989), Mooradian (1994)). The cash-enhancing and informational properties of conservatism suggest negative causal relations between both unconditional and conditional conservatism and subsequent bankruptcy risk.

That bankruptcy risk influences subsequent conservatism follows from the reasoning that higher bankruptcy risk induces conservative treatments that enahnce cash and reduce information uncertainty, thereby reducing future bankruptcy risk. Auditors and regulators pay particular attention to unconditional conservatism as bankruptcy risk increases because unconditional conservatism is is easy to monitor, is the major contributor to total conservatism, , and is not bad-news-driven ((Ryan (2006) and Qiang (2007)). In contrast, managers on average resist both unconditional and conditional conservatism to advance their careers and to justify spending and portray more favorable performance, especially when bankruptcy risk increases, and their ability to do so is stronger for conditional conservatism. The equilibrium tradeoff between the tension between auditors' and regulators' interests and managers' career motives as bankruptcy risk increases suggest that bankruptcy risk is positively associated with subsequent unconditional conservatism and negatively associated with subsequent conditional conservatism.

These predictions are tested using U.S. firm-year observations for the period 1989-2007 with available data for unconditional and conditional conservatism, bankruptcy risk and control variables. Two of the three bankruptcy risk measures are continuous *ex ante* estimates derived from Merton (1974) and Campbell *et al*. (2008), respectively, that permit tests of causal relations between accounting conservatism and bankruptcy risk. The third measure is an *ex post* discrete (zero-one) indicator of actual bankruptcy filings. Four measures of unconditional conservatism are considered: total accruals (adapted from Ahmed and Duellman (2007)), rank of industry-adjusted book-to-market ratio (e.g., Ahmed *et al*. (2002), Zhang (2008)), hidden reserves (Penman and Zhang (2002)), and a factor score from a principal components analysis of the above three metrics. Four measures of conditional conservatism are likewise examined: accumulated non-operating accruals adapted from Zhang (2008), an extended measure of Khan and Watts (2009), a CR ratio measure adapted from Callen *et al.* (2010a), and a factor score from a principal component analysis of the above three metrics. We mainly employ tri-variate VARX (1) and tri-variate VARX (3) models to examine causal relations between conservatism and bankruptcy risk, extending Lara *et al.* (2009).

Our main results confirm the above predictions: (1) Unconditional and conditional conservatism are negatively associated with subsequent bankruptcy risk, consistent with conservatism's cash enhancement and informational properties serving to mitigate bankruptcy risk; (2) Bankruptcy risk is positively associated with subsequent unconditional conservatism, consistent with auditors' and regulators' interests, and negatively associated with subsequent conditional conservatism, consistent with countervailing managerial incentives to withhold bad news to advance their careers; (3) These findings are similar for extremely distressed firms and for firms that actually declare bankruptcy.

In further analyses, we use VARX (1) models with interactions of conservatism and cash holdings or information risk to examine separately whether the cash enhancing and informational roles of conservatism help to mitigate bankruptcy risk. We also use VARX (1) model with interactions of bankruptcy risk and indicators of post-*SOX* or indicators of post-auditor-resignation to examine whether auditors' and regulators' monitoring enhances unconditional conservatism as bankruptcy risk increases. The findings support the assertions that both the cash enhancing and informational roles of conservatism help mitigate bankruptcy risk and that monitoring by auditors and regulators increases subsequent unconditional conservatism as bankruptcy risk increases. These results are robust to endogeneity between unconditional and conditional conservatism, extreme distress, actual bankruptcy, conservatism gaming, debt contracting considerations, earnings management, alternative measures for unconditional and conditional conservatism and bankruptcy risk, and other control variables.

The remainder of the study is organized as follows: Section 2 details the conceptual framework and hypotheses to be tested. Section 3 describes the data and test methodologies. Section 4 presents empirical results and Section 5 concludes. Appendices A and B describe results of bi-variate VARX (1) models. Variable definitions are presented in Table 1.

2. Theoretical Framework

Figure 1 depicts the continuum along which firms evolve from financial health to debtholder-triggered bankruptcy. Accounting conservatism, by definition, reduces net income and net assets but not cash flows and balances by increasing both operating cash flows (OCF hereafter) and access to capital. Bankruptcy, in contrast, is fundamentally a cash rather than income condition. A firm can operate indefinitely with reduced or even negative net income without entering either default (Figure 1, $T = 2$) or bankruptcy (Figure 1, $T = 3$), so long as cash remains available from some source(s) to meet rising obligations.[5] Anecdotal evidence of firms that were not conservative and failed, for example AIG and GM, [6] suggest that accounting conservatism can operate directly in both "health" and "distress" stages (Figure 1, $T = 0, 1$), and even in the "default" stage (Figure 1, $T = 2$), to enhance cash and transparency regarding net assets and net income, thereby helping avert progressions into ultimate conditions of default or bankruptcy. Alternatively, conservatism accelerates technical defaults (Zhang (2008)) which appear to increase default and bankruptcy risk. However, Nini *et al.* (2009) documents that technical defaults trigger increased monitoring by capital providers who impose capital expenditure restrictions that increase cash flows, suggesting that conservatism increases cash. We next elaborate on the cash enhancing property of accounting conservatism as they relate to bankruptcy risk.

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[5] While certain creditors would monitor broader definitions of funds than cash, such as working capital, they ultimately are interested in the cash that working capital provides. Indeed, a firm with ample working capital can be bankrupt due to cash insufficiency if its working capital is comprised of uncollectible receivables and illiquid inventories. Whereas accrual measures are often included in debt covenants, they serve as "red flags" to bring to the attention of capital providers a condition of financial distress, with actual bankruptcy determined by the ongoing availability of cash.

[6] Before the 2009 financial crisis, AIG insured financial institutions but did not accrue related contingent liabilities. When the financial crisis arose, AIG experienced large losses and would have been forced into bankruptcy without a government bailout. Similarly, before 2007, subsequently bankrupt GM reported pension assets and liabilities as off-balance-sheet items under SFAS No. 87, rather than as contingent liabilities following SFAS No. 5, since before 2007, SFAS No. 87 gave firms the option to report estimated net pension liabilities in footnotes to their financial statements as an exception to the more conservative treatment in SFAS No. 5. Although we cannot assert from these anecdotal examples that greater accounting conservatism would have provided more cash for these firms, thereby averting their bankruptcies, their experiences are consistent with our predictions regarding relations between conservatism and bankruptcy risk developed below.

2.1 The Cash Enhancing Role of Accounting Conservatism

Conceptual constructs, analytical modeling and evidence suggest that accounting conservatism enhances cash availability by both increasing cash inflows and reducing cash outflows. Conservatism increases cash inflows by promoting precautionary savings, reducing cost of capital, alleviating underinvestment, and increasing OCFs. Kirschenheiter *et al.* (2010) argue analytically that prudent decision makers prefer more conservative accounting to facilitate decisions regarding precautionary savings as future cash inflows become riskier, thereby increasing (reducing) cash holdings (expenditures). Ahmed and Duellman (2002), Lara *et al.* (2010b) and Li (2010) document that conservatism lowers the cost of capital, makes external financing easier, and increases cash flows from financing. [7] Increased external financing by conservatism mitigates capital underinvestment and enhances future OCF. Hui *et al*. (2009b) argue that within some range, conservatism is helpful for obtaining more lenient contracting terms from other providers of factors of production, which has the effects of increasing OCF. In a more general setting, BMS (2011b) document that both unconditional and conditional conservatism mitigate future OCF downside risk, thus increasing future OCF and its upside potential.

Conservatism reduces cash outflows by discouraging cash disbursements, reducing cash wastage and lowering agency costs associated with cash holdings. By delaying the recording of net income and net assets, conservatism reduces or defers cash expenditures for performance-based compensation, taxation and dividends (Watts (2003)). Biddle (1980), and Callen *et al.* (2010b) provide confirming evidence that LIFO firms reduce taxes by adopting and subsequently managing inventories, and that conservatism discourages or defers dividends payout, respectively. Cash wastage and loss arise from perquisite consumption by managers and investments in negative net present value projects, especially when cash flows are unconstrained. Consistently, Lara *et al.* (2010b) argue that conditional conservatism increases managerial incentives to avoid suboptimal investments *ex ante*, and to abandon loss projects quickly *ex post* (see also Srivastava and Tse (2010)); Bushman *et al.* (2010) and Francis and Martin (2010) report that timely loss recognition curbs over-investment in cross-country settings and in acquisition settings, respectively; Loktionov (2009) argues that in distressed firms, conditional conservatism reduces risk-shifting in investment projects by speeding up technical defaults, timely signaling bad news, and by reducing information asymmetries. A

[7] Ahmed and Duellman (2002) provide evidence that conservatism increases the debt ratings of borrowers, which has the effect of reducing cash outflows as interest expenses as confirmed by Zhang (2008). Lara *et al.* (2010a) argue and provide consistent evidence that conservative accounting can also reduce the cost of equity capital. Li (2010) provides evidence that conservatism reduces the cost of both debt and equity capital in a cross-country comparison.

similar reasoning extends to unconditional conservatism. Louis *et al.* (2009) further argue ans document that timely losses reporting helps control value-destroying agency costs associated with increased cash holdings.

Ultimately, the cash enhancing role of conservatism helps mitigate bankruptcy risk because bankruptcy is fundamentally a condition of cash insufficiency as suggested by theories and evidence in finance. Kim *et al.* (1993), Anderson and Sundaresan (1996), Uhrig-Homburg (2005)) model bankruptcy as debt default triggered when cash flows available for payouts fall below required debt service payments, and Campbell *et al*. (2008) provide confirming evidence that prior cash holdings are negatively associated with default risk over various prediction horizons from one month to three years. Biddle *et al.* (2011) provide evidence that both unconditional and conditional conservatism are positively associated with the level and upside potentials of cash holdings. Thus, the cash enhancing role of conservatism operates to both increase internal cash flow generation and discourage or delay cash outflows, thereby decreasing bankruptcy risk.

2.2 The Informational Role of Accounting Conservatism

Prior research suggests that unconditional and conditional conservatism play an informational role in decreasing information uncertainties and asymmetries by constraining upward overstatement biases in net income or assets (Watts (2003), Li (2008)), and by timely revealing bad news (Lafond and Watts (2008), Wittenberg-Moerman (2008)) respectively. Guay and Verrecchia (2007) and Gox *et al.* (2009) suggest that conservative reporting decreases information uncertainty. In particular, Guay and Verrecchia (2007) argue that disclosing lower-end realizations of firm value via *ex ante* commitments to conservative reporting promotes voluntary disclosures of higher-end realizations, thereby promoting fuller disclosures regarding cash flows and improving information precision, and Gox *et al.* (2009) focus on one specific types of conditional conservatism and argue that impairment rules increases information precision. Watts (2003) and Qiang (2008) suggest that both unconditional and conditional conservatism reduce information asymmetry between firms and investors regarding asset values. Hui *et al.* (2009a) find that both unconditional and conditional conservatism substitute for managerial forecasts in reducing information asymmetry and information uncertainty.

The informational role of accounting conservatism reduces bankruptcy risk indirectly by supplementing its cash enhancing role. By reducing information uncertainties and asymmetries, conservatism reduces adverse selection costs and risks to investors, and the cost of equity and debt capital, increasing cash availability from external sources when firms approach default (Figure 1, Stages 0, 1, and 2). For firms that have entered into conditions of distress (Figure 1, Stages 1 and 2), the informational properties of conservatism help avert rightward progressions into bankruptcy by encouraging creditors, other capital providers and the borrowing firm to work more cooperatively with each other to avoid a bankruptcy filing, at least in the case of unconditional conservatism. Varied finance theories suggest that less information asymmetry facilitates debt renegotiations and reduces bankruptcy filings. In particular, low information asymmetry stimulates bargaining and multiple reorganization plans (Carapeto (2005)), helps to renegotiate their debts privately (Chen (2003)), and reduces bankruptcy filings by creditors (Giammarino (1989) and Mooradian (1994)). Similar arguments apply to information uncertainty. Thus, with improved transparency regarding income and asset values via conservatism's informational role, creditors and other capital providers can be more confident regarding the reliability of firms' financial conditions, and more willing to renegotiate debts and terms, thereby reducing the chances of default resolution via bankruptcy filings (Figure 1, Stage 3).

2.3 Relations between Accounting Conservatism and Subsequent Bankruptcy Risk

Both the cash enhancing role and the informational roles of accounting conservatism suggest that unconditional and conditional conservatism lower subsequent bankruptcy risk by increasing subsequent cash holdings and flows and by facilitating the avoidance of formal bankruptcy filings by firms that enter into financial distress. This reasoning leads to the prediction that both unconditional and conditional conservatism will be negatively related to subsequent bankruptcy risk:

H1a. Unconditional conservatism is negatively associated with subsequent bankruptcy risk, consistent with the cash enhancing and informational roles of conservatism.

H1b. Conditional conservatism is negatively associated with subsequent bankruptcy risk, consistent with the cash enhancing and informational roles of conservatism.

2.4 Relations between Bankruptcy Risk and Subsequent Accounting Conservatism

If unconditional and conditional conservatism are negatively associated with subsequent bankruptcy risk as predicted by hypotheses H1a and H1b, it follows that high bankruptcy risk could generate demands for subsequent conservatism.[8] However, associations between bankruptcy risk and subsequent conservatism may differ between unconditional and conditional conservatism due to the countervailing interests of managers, auditors and

[8] Conceptually, changes in conservatism are natural responses to increased bankruptcy risk and other risk dimensions, which suggest that both unconditional and conditional conservatism change over time as risks in firms' environments change. In a practical sense, GAAP allows flexibility over time in applying accounting policies and estimates, and firms do explore this flexibility.

regulators. Auditors, regulators, shareholders generally prefer *more* conservatism as financial distress increases, but shareholders and their collective-actions lawsuits focus on both unconditional and unconditional conservatism and thus do not significantly impact the differential demand for both. Nonetheless auditors and regulators focus more on unconditional than conditional conservatism because unconditional conservatism is more frequent, is the major contributor to total conservatism, is not conditioned on bad news, and involves less bad news "shocks" that auditors and regulators may wish to avoid, especially as bankruptcy risk increases (Qiang (2007)). Especially as bankruptcy risk increases, auditors and regulators monitor more intensely and also require higher level of unconditional conservatism. As a result, managers will face higher discipline costs for not applying unconditional conservatism such costs include litigation liabilities, regulatory penalties, embarrassment and loss of reputation for "cooking books".

In contrast, managers generally prefer *less* unconditional and conditional conservatism because conservatism understates earnings and assets, timely reports bad news, which is particularly counter to managers' career motives, such as career advancement, compensation, perquisites, pet investment, and other opportunistic expenditures. Managers of distressed firms have strong incentives to overstate earnings and withhold and defer the reporting of bad news, at least until performance improves or they secure alternative employment (Kothari *et al*. (2009), Kothari *et al*. (2010)). Conditional conservatism accords managers more flexibility and discretion regarding when and how to report bad news (Qiang (2007), Kothari *et al.* (2010)), partly due to the practical difficulty associated with a real-time monitoring of conditional conservatism, which would require continual active participation in reporting decisions that would be costly for auditors and regulators to staff except for periodic *ex post* reviews (Qiang (2007)). Therefore managers prefer to reduce conditional conservatism as bankruptcy risk increases. The analysis leads to the following hypotheses:

H2a. Bankruptcy risk is positively associated with subsequent unconditional conservatism.

H2b. Bankruptcy risk is negatively associated with subsequent conditional conservatism.

3. Data Sources, Sampling, Measurements and Models

3.1 Data and Sampling

This study utilizes a pooled sample of firm-year observations from NYSE, AMEX and NASDAQ for fiscal years 1989 through 2007. Data were retrieved from a combination of three data sources available via the Wharton Data Research Service (WDRS): Compustat, CRSP, and the Federal Reserve Bank Reports. Ex ante bankruptcy risk measures *EDF* from

Merton (1974) and *Campbell* following Campbell *et al*. (2008), are estimated using CRSP and Compustat data. Ex-post-bankruptcy risk measure *BANK*, indicator of firms that actually declared bankruptcy, is obtained from www.bankruptcydata.com. Firm-year observations with missing values for conservatism, bankruptcy risk, stock price, total assets and net income before extraordinary items are omitted. Since young firms have high bankruptcy risk and thus survival bias can significantly influences sampling and results, we include as much young firms as possible by setting the minimum requirement for calculating accrual-based conservatism measures as having prior two years and for using the one-period lag specifications for VARX models, so that only firms with less than three-year histories are excluded. We further omit post-bankruptcy firm-year observations for firms filing under Chapter 11 of the U.S. Bankruptcy Code since these observations may be incomparable with pre-bankruptcy data. To reduce the effects of outliers, observations in the top and bottom 1% of the major variables are winsorized, and firms in financial industries (SIC codes 6000-6999) are excluded. The final sample is comprised of 34,897 firm-year observations for 4,621 firms.

3.2 Measures for Bankruptcy Risk

Bankruptcy risk is measured as the probability that a firm will liquidate under Chapter 7 or reorganize under Chapter 11 of the U.S. Bankruptcy Code, which are conditions typically triggered when firms 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 Merton's (1974) *EDF* and *Campbell* score (Campbell *et al*. (2008)) (2008) as bankruptcy risk metrics in the main tests in terms of predictive ability and freedom of estimation bias caused by accounting conservatism. *EDF* measure is estimated from a structural model; it has superior predictive ability (Hillegerst *et al*. (2004)) and is less subject to conservatism bias, since its only accounting input is the face value of debt. The *Campbell* score is estimated from a restrictive form model; it t has the best predictability for bankruptcy risk among all available metrics (Campbell *et al.* (2008)), and is less subject to conservatism bias than accounting-based restrictive form model such as such as Altman's (1968) Z-score (except as a robustness check), Olson's (1980) O-score and Zmijewski's (1984) Z-score. Both *EDF* and *Campbell* are ex ante bankruptcy risk measure, to provide a measure that is free of estimation error, we also employ an ex post bankruptcy risk measure *BANK*, the indicator of actual bankruptcy. The three measures are detailed below.

EDF. *EDF* is the ranked probability that firm's asset value will fall below its liabilities after *T* years (*T* = one year in this study), assuming that the firm's asset value (continuous rate of growth in assets) is log-normally (normally) distributed. Merton (1974) *EDF* is an option-based structural model that expresses a firm's market value (V_E) as a call option on the firm's assets (V_A), with a strike price equal to the face value of debt, and time to expiration equal to T. Applying the Black and Scholes (1973) formula and Ito's lemma to Merton (1974) model, we estimate *EDF* as:

$$EDF_t = \text{prob}\{-[ln(V_{A,t} / X_t) + (\mu - 0.5\sigma_A^2)T] / (\sigma_A T^{1/2}) \geq \varepsilon_{t+T}\} \quad (1)$$
$$= N(-(ln(V_{A,t} / X_t) + (\mu - 0.5\sigma_A^2)T) / (\sigma_A T^{1/2})),$$

where N is the cumulative density function of the standard normal distribution, X is the face value of a firm's debt, σ_A is the volatility of a firm's assets, and μ is the instantaneous drift assuming the firm's market value follows Geometric Brownian Motion. Its intuition is that the probability that a firm's assets are insufficient to pay the face value of its debt increases with the firm's debt and asset volatility, and decreases with the firm's assets. Further details regarding the estimation of *EDF* are available on request.

The Merton (1974) model has strict assumptions, for example, it assumes that market is efficient, and information is complete. [9] In this study we relax this assumption, and allows accounting conservatism to impact *EDF* through the accounting input leverage ratio. Conservatism facilitates external financing and increases the leverage ratio, the strike price in the Merton (1974) model, and this may lead to an overestimate of EDF_t. However, this is not a serious issue, because this bias runs counter to the predictions of all hypotheses except H2a. Thus, if the empirical results for H1a, H1b, and H2b are as predicted, the true results should be stronger than those reported.

Campbell. *Campbell* is the ranked probability of a firm declaring bankruptcy one month ahead. It is estimated using a logit model based on monthly stock market variables and quarterly accounting variables, following the formula in the last column of Table III in Campbell *et al.* (2008). We estimate the *Campbell* for each fiscal quarter as follows, and use the *Campbell* for the last fiscal quarter in our main tests:

$$Campbell_t = exp(temp_t) / (1 + exp(temp_t)) \quad (2)$$

where $temp_t = -9.08 - 29.67 * NIMTAVG_t + 3.36 * TLMTA_t - 7.35 * EXRETAVG_t + 1.48 * SIGMA_t + 0.082 * Rsize_t - 2.40 * CASHHMTA_t + 0.054 * MB_t - 0.937 * PRICE_t$. The intuition for *Campbell* is that bankruptcy risk decreases with the predictability of market-based profitability (*NIMTAVG*), the predictability of excess return relative to S&P 500 index

[9] Other relevant assumptions include: (1) creditors and managers have symmetric information about firm value and can observe the inputs into the model, (2) default occurs when a firm's asset value drops below its debt obligations at the time of maturity, (3) the default barrier is the exogenously determined fixed face value of debt, and (4) the asset value follows a diffusion process without jumps.

(*EXRETAVG*), the market-based liquidity ratio (*CASHHMTA*), and the stock price (*PRICE*). Bankruptcy risk increases with the market-based leverage ratio (*TLMTA*), the stock return volatility (*SIGMA*), the market-to-book equity ratio (*MB*) and with firm size relative to that of the S&P 500 index (*Rsize*). Further details on estimating *Campbell* are available on request.

In comparison to Merton (1974) model, the assumptions underlying the restrictive form logit model for *Campbell* are more relaxed; for example, it allows market inefficiency and information asymmetry between creditors and the firm, and short-term default that can occur before net asset values breach bankruptcy barriers.[10] Therefore accounting conservatism could bias *Campbell* on some degree; conservatism understates net income e.g. $NIMTAVG_t$, asset items e.g. $CASHHMTA_t$, and overstates total liabilities e.g. $TLMTA_t$, and this leads to an an upward bias in estimating *Campbell*. However, this potential bias runs counter to the predictions of all hypotheses except H2a. Thus, if the empirical results for H1a, H1b, and H2b are as predicted, the true results should be stronger than those reported.

BANK. *BANK* is an indicator variable that is equal to one if a firm files for bankruptcy under Chapter 7 or 11 of the U.S. Bankruptcy Code, and zero otherwise. In contrast to *EDF* and *Campbell,* which are *ex-ante* bankruptcy risk metrics, *BANK* is an *ex-post* bankruptcy risk measure that is free of estimation error and conservatism bias. However, the subsample of firms that actually declare bankruptcy is much smaller and may not be representative of all firms along a bankruptcy risk continuum. Moreover, *BANK* does not support an examination of continuous relations between conservatism and bankruptcy risk, and because data may not exist or be comparable following the declaration of bankruptcy, *BANK* does not facilitate the testing of causal relationships between bankruptcy and subsequent unconditional and conditional conservatism. We therefore use *EDF* and *Campbell* in our main tests.

3.3 Measures for Unconditional and Conditional Conservatism

Givoly *et al.* (2007) advocate using multiple measures of conservatism since different metrics measure conservatism from different dimensions. Following these studies, we examine four firm-year measures of unconditional conservatism: *UC_ACC* (total accruals as adapted from Ahmed and Duellman (2007)), *UC_BM* (rank of industry-adjusted book-to-market ratio), *UC_RES* (hidden reserves), and *UC_PCA* (a factor score from a principal components analysis of the above three metrics). We likewise examine four firm-year measures of conditional conservatism: *CC_AR* (extending Khan and Watts (2009)), *CC_CR* (extending Callen *et al.*

[10]Other relevant assumptions include: (1) default time is unobservable and no longer tied to firm value falling below a pre-specified default barrier, (2) default follows an intensity-based process (e.g. Poisson/Cox process) with exogenous latent variables, (3) the probability of default is logistically distributed, i.e., the cumulative probability of default takes a logistic functional form.

(2010a)), *CC_ACM* (accumulated non-operational accruals extending Zhang (2008)), and *CC_PCA* (a factor score from a principal components analysis of the above three metrics), as described below.

UC_ACC. A proxy for unconditional conservatism equal to negative one times the ratio of average total accruals before depreciation to average total assets, both averaged over a three-year period ending with the current year. Thus, a higher total accrual indicates a higher degree of unconditional conservatism. The rationale is that conservatism results in persistently negative accruals (Givoly and Hayn (2000), Ahmed et al. (2007)). We calculate total accruals as $Total\ accruals_{it} = net\ income\ before\ extraordinary\ items_{it}$ (Compustat IB) $-operational\ cash\ flow_{it}$ (Compustat OANCF) + $depreciation\ expense_{it}$ (Compustat DP).

UC_BM. A proxy for unconditional conservatism measured as the industry-adjusted ranking of the product of negative one times the ratio of book value to market value of common shareholders' equity (Ahmed *et al.* (2007), Zhang (2008)). *UC_BM* also reflects expected economic rents and future growth opportunities and we use R&D intensity to control for them following Ahmed and Duellman (2007).

UC_RES. A proxy for unconditional conservatism reflected in "hidden" reserves related to advertising (ADV), research and development (RD) and last-in-first-out inventory accounting (INV). Extending Penman and Zhang (2002), this study measures *UC_RES* as the ratio of hidden reserves to total assets (TA):

$$UC\_RES_t = (INV_t^{res} + RD_t^{res} + ADV_t^{res}) / TA_t \quad (3)$$[11]

UC_PCA. A proxy for unconditional conservatism measured as the factor score generated from a principal components analysis of the three unconditional conservatism measures *UC_ACC*, *UC_BM* and *UC_RES*. *UC_PCA* reflects commonalities across these three measures that gauge unconditional conservatism at different dimensions and with different weaknesses. Specifically, *UC_ACC* is an accrual-based metric that does not capture non-accrual unconditional conservatism, for example, R&D and advertising expenditures. *UC_BM* is a market-based metric that not only measures the understatement of book value relative to market value, but also reflects expected economic rents and future growth opportunities. *UC_RES* captures only unconditional conservatism related to hidden reserves. Based on this reasoning, we employ *UC_PCA* as the primary measure of unconditional

[11] The inventory hidden reserve INV_{it}^{res} equals the LIFO reserve, RD_{it}^{res} is calculated using coefficients in Lev and Sougiannis (1996) to capitalize and amortize R&D, ADV_{it}^{res} is advertising expense capitalized and amortized over two years following Bublitz and Ettredge (1989). Penman and Zhang (2002) use net operating assets as the deflator for hidden reserves, but its value is negative for over one-sixth of our sample, which would potentially bias estimated hidden reserves. We therefore use total assets as the deflator. When data are missing for LIFO reserves, R&D expensing and advertisement expensing, they are set to zero.

conservatism in our main empirical tests. To the extent that the three component metrics measure unconditional conservatism from different dimensions, convergent validity is not a problem if they are all positively related with *UC_PCA* but are negative related with each other.[12]

CC_AR. A proxy for conditional conservatism defined as the ratio of the sum of the C Score and G Score to G Score from Khan and Watts (2009), and it is a measure of asymmetric response similar to that derived from Basu (1997). Our sampling period, 1989 through 2007, is similar to that examined in Khan and Watts (2009), 1963 through 2005, and our sample size is also similar. Hence, we use model 2 in Table 3 of Khan and Watts (2009) to estimate *CC_AR*.[13]

CC_CR. A proxy for conditional conservatism extending Callen *et al.* (2010a). We estimate *CC_CR* as the ratio of current earnings shocks to total earnings news for bad earnings news, with the ratio multiplied by -1 for good earnings news.[14] This definition derives from Vuolteenaho's (2002) return decomposition model, but differs from the definition of the CR ratio in Callen *et al.* (2010a) mainly at four respects: (1) *CC_CR* uses the indirect method to estimate earnings news as in Vuolteenaho (2002), (2) CC_CR multiplies the *CR* ratio by -1 for good earnings news, so that higher *CC_CR* represents greater conditional conservatism for the good news case, (3) negative observations of CC_CR are not eliminated from the sample, (4) Intercepts are added to the VAR (1) model for estimating CC_CR. Additional details regarding the estimation of *CC_CR* are available on demand.

CC_ACM. A proxy for conditional conservatism measured as negative one times the ratio of accumulated non-operating accruals over a three-year period to accumulated total assets, and is adapted from Zhang (2008). A higher value for *CC_ACM* indicates a higher level of bad news reported via non-operational accruals. Non-operating accruals are calculated as follows:

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[12] Convergent validity means multiple measures for a concept are valid when they are positively correlated with each other. The underlying assumption is that they are measuring the same concept from the same dimension. When measure from different dimension, they may be negatively correlated. For example, firms with high hidden reserves may have fewer incentives to use accrual-based unconditional conservatism, which may suggest a negative relation between UC_ACC and UC_RES.

[13] Khan and Watts (2009) use the following reverse earnings return response regression model:
$E_{it} = b_1 + b_2DR_{it} + R_{it}*(m_1 + m_2Size_{it} + m_3M/B_{it} + m_4LEV_{it}) + DR_{it}*R_{it}(l_1 + l_2Size_{it} + l_3M/B_{it} + l_4LEV_{it}) + b_3Size_{it} + b_4M/B_{it} + b_5LEV_{it} + DR_{it}*(l_1 + l_2Size_{it} + l_3M/B_{it} + l_4LEV_{it})$, *where* C (G) score measures the timeliness of bad (good) news as follows:
$G\_Score_{it} = m_1 + m_2Size_{it} + m_3M/B_{it} + m_4LEV_{it} = 0.237 - 0.033*Size_i - 0.007*M/B_{it} + 0.033*LEV_{it}$
$C\_Score_{it} = l_1 + l_2Size_{it} + l_3M/B_{it} + l_4LEV_{it} = 0.031 + 0.005*Size_{it} - 0.006*M/B_{it} + 0.005*LEV_{it}$.
Then *CC_AR* is calculated as $CC\_AR_{it} = (C\_Score_{it} + G\_Score_{it}) / G\_Score_{it} = 1 + C\_Score_{it} / G\_Score_{it}$.
CC_AR is the asymmetric response coefficient in the Khan and Watts (2009) framework corresponding to that in Basu (1997). However, by construction *CC_AR* may be positively correlated with both *EDF* and *Campbell*. For example, Khan and Watts (2009) suggest that the *C* (*G*) score is positively (negatively) associated with the leverage ratio, and that the *C* score is positively associated with return volatility.

[14] *CC_AR* derives from the Basu (1997) framework, and its criterion for classifying good versus bad news is whether the associated stock return is positive or negative; *CC_CR* derives from the Vuolteenaho (2002) framework, and its criterion for classifying good versus bad news is whether *ROE*, earnings scaled by book equity, is greater than the risk-free rate.

Nonoperating accruals = *Total accruals*[15] - *Δaccounts receivable* (Compustat RECT) - *Δinventories* (Compustat INVT) - *Δprepaid expenses* (Compustat XPP) + *Δaccounts payable* (Compustat AP) + *Δtaxes payable* (Compustat TXT).

CC_PCA. A proxy for conditional conservatism measured as the factor score generated from a principal components analysis of the three conditional conservatism measures *CC_AR*, *CC_CR* and *CC_ACM*. *CC_PCA* captures commonalities among these three metrics that measure conditional conservatism at difference dimensions and with different weaknesses. *CC_AR* and *CC_CR* are both market-based metrics, subject to noise from voluntary disclosures of accounting and non-accounting information. *CC_AR*, by construction, may be subject to upward bias in its correlation with bankruptcy risk metrics *EDF* and *Campbell*. *CC_ACM* is an accrual-based metric that captures both bad news in accruals and "big baths" resulting from earnings manipulations and investment accruals. Therefore this study employs *CC_PCA* as the primary measure of conditional conservatism in the main empirical tests.

3.4 Estimation Models and Methods

Following Lara *et al.* (2009), this study employs VARX models (VAR models with exogenous variables) to test causal relationships between the two types of conservatism and bankruptcy risk. The VARX models are estimated using seemingly unrelated regression (SUR), which improves efficiency when estimating systems of equations with correlated random errors by taking into account cross-equation correlations. When the cross-sectional covariance of the error terms is small, SUR estimation will differ little from OLS estimation.

Because prior studies e.g., Ryan (2006) suggest that to some degree unconditional and conditional conservatism can be substitutes, we use a tri-variate VARX (1) model consisting of equations (4) to (6) to examine the causal relations between unconditional and conditional conservatism and bankruptcy risk predicted by hypotheses H1a, H2a, H1b and H2b while controlling for the endogeneity between the two types of conservatism. H1a, H2a, H1b and H2b predict $\gamma_{11} < 0$, $\delta_{11} < 0$, $\beta_{21} > 0$ and $\beta_{31} < 0$, respectively.

$$BR_t = \alpha_{10} + \beta_{11}BR_{t-1} + \gamma_{11}UC\_PCA_{t-1} + \delta_{11}CC\_PCA_{t-1} + Controls_t + \varepsilon_{11} \quad (4)$$

$$UC\_PCA_t = \alpha_{20} + \beta_{21}BR_{t-1} + \gamma_{21}UC\_PCA_{t-1} + \delta_{21}CC\_PCA_{t-1} + Controls_t + \varepsilon_{21} \quad (5)$$

$$CC\_PCA_t = \alpha_{30} + \beta_{31}BR_{t-1} + \gamma_{31}UC\_PCA_{t-1} + \delta_{31}CC\_PCA_{t-1} + Controls_t + \varepsilon_{31} \quad (6)$$

[15] Zhang (2008) uses the term "operational accrual", but this term matches the definition of total accruals used in Ahmed *et al.* (2007). Following Zhang (2008), when cash flow from operations is not available, total accruals are calculated as follows: *Total accruals* = *net income* (Compustat NI) + *depreciation* (Compustat DP) - *funds from operations* (Compustat FOPT) + *Δcurrent assets* (Compustat ACT) - *Δdebt* (Compustat DLC) - *Δcurrent liabilities* (Compustat LCT) - *Δcash* (Compustat CHE).

where *BR* refers to bankruptcy risk measures *EDF* or *Campbell*, and the autoregressive vector includes BR_{t-1}, UC_PCA_{t-1} and CC_PCA_{t-1}. $Controls_t$ in equation (4) include previously identified determinants of bankruptcy risk (Anderson *et al.* (1996), Shumway (2001), Parker *et al.* (2002), Uhrig-Homburg (2005), Campbell *et al.* (2008), Eberhart *et al.* (2008)), namely, the leverage ratio ($Leverage_t$), return on total assets (ROA_t), return volatility (STD_Ret_t), firm size ($Ln(MV)_t$), the risk-free rate ($Rate_t$), liquidity ($Cash_t$), changes in liquidity ($\Delta Cash_t$), and R&D investment intensity ($Inten\_RD_t$). Consistent with Shumway (2001), Uhrig-Homburg (2004), Campbell *et al.* (2008) and Eberhart *et al.* (2008), this study predicts bankruptcy risk to be positively associated with leverage and return volatility and negatively associated with *ROA*, liquidity, cash flow, firm size, the risk-free rate and R&D investment intensity. $Controls_t$ in equation (5) include previously identified determinants of unconditional conservatism, namely, the leverage ratio ($Leverage_t$), firm size ($Ln(MV)_t$) and R&D investment intensity ($Inten\_RD_t$).[16] These variables proxy for demand for unconditional conservatism arising from contracting considerations, litigation risk, taxation and regulation, while investment intensity $Inten\_RD_t$ is used to control for the effects of R&D investment and growth opportunities (Ahmed and Duellman (2007)). $Controls_t$ in equation (6) are the same as in equation (5), but with different predictions.[17] Lastly, in all the three equations, dummies for the Fama and French (1997) industry classification (*Ind_Dum*), and for the fiscal year (*Year_Dum*), are included to capture fixed industry and year effects.

VARX estimation is also sensitive to lag structure. A lag structure that is too short wastes information and risks non-zero serial correlations with error terms thus biasing parameter estimates, while an overly long lag length can risks inaccurate parameter estimation.

[16] We predict unconditional conservatism to be negatively related to financial leverage and *ROA* and positively related to firm size. A negative association between unconditional conservatism and financial leverage follows from the reasoning that firms with high levels of leverage tend to have greater conflicts between bondholders and shareholders. Beaver and Ryan (2000) provide confirming evidence that leverage is negatively associated with unconditional conservatism. The relationship between unconditional conservatism and *ROA* reflects the net of incentives to mitigate bankruptcy risk and report higher earnings. As *ROA* increases, there is less incentive to use unconditional conservatism to lessen bankruptcy risk but also less incentive to boost earnings and more incentive to create hidden reserves that we predict will dominate. A positive association between unconditional conservatism and firm size follows from the reasoning in Khan and Watts (2009) that larger firms have richer information environments, reducing both overall uncertainty and information asymmetries, thus leading to less contracting demand, and findings in Qiang (2007) that contracting efficiency induces little demand for unconditional conservatism. Hagerman and Zmijewki (1979) suggest that firm size proxies for political visibility and because larger firms are more visible, they are subject to higher tax and regulation costs, and receive lower subsidies. Larger firms also may be more subject to greater litigation risk. Consistent with these arguments, Ahmed *et al.* (2002) document that firm size is positively associated with the unconditional conservatism metrics BM ratio and total accruals.

[17] We predict conditional conservatism to be positively related to financial leverage but negatively related to firm size and *ROA*. A positive association between conditional conservatism and financial leverage is expected because creditors preferring conditional conservatism will have increasing influence over firms as financial leverage increases, especially for firms in financial distress. A negative association between conditional conservatism and firm size is expected from the results of Khan and Watts (2009), who suggest that larger firms have richer information environments that reduce both overall uncertainty and information asymmetries and thus contracting demand for conditional conservatism. Givoly *et al*. (2007) and LaFond and Watts (2008) similarly document that the asymmetric timeliness of earnings for large firms is significantly smaller than for small firms. A negative association between conditional conservatism and *ROA* follows from the reasoning that well-performing firms have less pressure to use conditional counter-conservatism to boost earnings.

To examine the robustness of our results to the length of lag structure in the VARX model, we also use the following VARX(3) model to examine the causal relations between unconditional and conditional conservatism and bankruptcy risk predicted by hypotheses H1a, H2a, H1b and H2b:

$$BR_t = \alpha_{10} + \beta_{11}BR_{t-1} + \beta_{12}BR_{t-2} + \beta_{13}BR_{t-3} + \gamma_{11}UC\_PCA_{t-1} + \gamma_{12}UC\_PCA_{t-2} + \gamma_{13}UC\_PCA_{t-3} + \delta_{11}CC\_PCA_{t-1} + \delta_{12}CC\_PCA_{t-2} + \delta_{13}CC\_PCA_{t-3} + Controls_t + \varepsilon_{11} \quad (7)$$

$$UC\_PCA_t = \alpha_{20} + \beta_{21}BR_{t-1} + \beta_{22}BR_{t-2} + \beta_{23}BR_{t-3} + \gamma_{21}UC\_PCA_{t-1} + \gamma_{22}UC\_PCA_{t-2} + \gamma_{23}UC\_PCA_{t-3} + \delta_{21}CC\_PCA_{t-1} + \delta_{22}CC\_PCA_{t-2} + \delta_{23}CC\_PCA_{t-3} + Controls_t + \varepsilon_{21} \quad (8)$$

$$CC\_PCA_t = \alpha_{30} + \beta_{31}BR_{t-1} + \beta_{32}BR_{t-2} + \beta_{33}BR_{t-3} + \gamma_{31}UC\_PCA_{t-1} + \gamma_{32}UC\_PCA_{t-2} + \gamma_{33}UC\_PCA_{t-3} + \delta_{31}CC\_PCA_{t-1} + \delta_{32}CC\_PCA_{t-2} + \delta_{33}CC\_PCA_{t-3} + Controls_t + \varepsilon_{31} \quad (9)$$

where *BR* refers to bankruptcy risk measures *EDF* or *Campbell*, and the autoregressive vector includes the one- to three- period lags of *BR, UC_PCA* and *CC_PCA*. *Controls* used in equations (7) to (9) are the same as those used in equations (4) to (6). H1a predicts $\gamma_{11} + \gamma_{12} + \gamma_{13} < 0$, H2a predicts $\delta_{11} + \delta_{12} + \delta_{13} < 0$, H1b predicts $\beta_{21} + \beta_{22} + \beta_{23} > 0$, and H2b predicts $\beta_{31} + \beta_{32} + \beta_{33} < 0$.

This study employs the Akaike Information Criterion (AIC) to identity an optimal lag structure for VARX model. The Akaike Information Criterion is a goodness of fit measure for estimated models that considers both precision and complexity. It is not a hypothesis test but a tool for model selection. For a given dataset, the competing model with the lowest AIC is considered to have the best fit. We do not use first-order differencing since Dickey-Fuller tests reveal the major testing variables to be stationary, and when there is no unit root, first-order differencing can generate biased coefficient estimates in VARX models.[18]

4. Empirical Results

4.1 Descriptive Statistics

Table 1 reports summary statistics (Panel A) and correlation matrices (Panel B) for major variables of interest. In Panel A, the mean of *EDF*, 0.0365, is close to its value reported in Vassalou and Xing (2004) of 0.0420.[19] The mean of *UC_ACC*, -0.0012, is lower than in Ahmed *et al*. (2002), 0.003, and in Ahmed and Duellman (2007), 0.010, with this difference

[18] Sims (1980) and Doan (1992) argue that differencing should not be used even if the variables contain a unit root (i.e., are non-stationary), since the goal of VAR analysis is to determine the inter-relationships among variables, and differencing can destroy information concerning data co-movements. We perform the Dickey-Fuller unit root tests for the unbalanced panel data in this study by running the following regression model for the pooled panel data: $\nabla y_t = \delta y_{t-1} + \varepsilon_{it}$, where ∇y_t is the first differencing of *y*. Then we test the hypothesis H0: $\delta = 0$. *F*-statistics indicate that the major testing variables are stationary at least at the 99% confidence level, with results available on request.

[19] Vassalou and Xing (2004) do not directly report the mean of the *EDF*, which is default likelihood. Rather, in Table II, Vassalou and Xing (2004) report a mean for *SV*, the survival rate, of 0.9579. Since *SV* is defined as one minus the aggregate default likelihood, the mean of *EDF* is inferred to be 0.0421. Their sampling period is 1971 to 1999 versus 1989 to 2007 in this study.

likely due to differing sample periods.[20] The mean of *CC_CR* is -0.3102, much lower than the *CR* ratio in Callen *et al.* (2010a); however, these values are not comparable because the *CR* ratio in Callen *et al.* (2010a) omits observations with negative values, whereas the *CC_CR* measure in this study does not.

Insert Table 1 about here

Panel B of Table 1 presents correlations among contemporaneous observations of the main testing variables, with Pearson (Spearman) correlations reported in the upper (lower) triangle of the table. The Spearman (Pearson) correlations between the bankruptcy risk metrics *EDF* and *Campbell* are 0.7789 (0.7789), both statistically significant, suggesting that they have strong convergent validity in measuring ex ante bankruptcy risk. Both measures are also significantly positive related with the ex post bankruptcy risk measure *BANK*, but both the Pearson and Spearman correlations are as low as 2%-3.5%. However, this does not mean that *BANK* has low convergent validity with *EDF* and *Campbell* since they measures bankruptcy risk from different dimensions.

UC_PCA is significantly negatively associated with *CC_PCA*, with their Spearman (Pearson) correlation -0.1441 (-0.0637). Except for *CC_ACM*, the Spearman correlations among other component measures of the two types of conservatism are predominantly negative, a finding consistent with prior evidence (Beaver and Ryan (2005), Ryan (2006), Roychowdhury and Watts (2007), Ball *et al*. (2009)). Spearman and Pearson correlations between *UC_PCA* and its component unconditional conservatism metrics at different dimensions are uniformly positive and statistically significant, suggesting *UC_PCA* is an representative overall unconditional conservatism measure that possesses reasonable content validity, concurrent validity and convergent validity.[21]

Likewise, Spearman and Pearson correlations between *CC_PCA* and its component conditional conservatism metrics are uniformly positive and statistically significant, the only exception being its Pearson correlation with CC_ACM, which is insignificantly different from zero. These correlations suggest that *CC_PCA* is a representative metric that reasonably reflects the overall levels of conditional conservatism and captures the commonality of

[20] Ahmed *et al*. (2002) and Ahmed and Duellman (2007) use samples of S&P 500 firms during 1993-1998 and 1998-2002 respectively, whereas this study uses NYSE, AMEX and NASDAQ listed firms for 1989-2007.

[21] The Spearman and Pearson correlations among the three component measures for unconditional conservatism are within the range of +/-0.10. However, this does not mean that they have low convergent validity because they measure unconditional conservatism on different dimensions rather than on the same dimension, and thus could be highly uncorrelated. In particular, the Spearman correlation between *UC_RES* and *UC_ACC* is -0.0390, significantly negative, suggesting that firms with higher hidden reserves has less incentives for accrual-based unconditional conservatism; it does not suggest lower convergent validity between the two because both measures unconditional conservatism at different dimensions.

component metrics that measure conditional conservatism from different dimensions.[22]

The Pearson and Spearman correlations of unconditional conservatism with *EDF* and *Campbell* are negative, whereas the correlations of conditional conservatism with *EDF* and *Campbell* are positive. Care should be taken in interpreting these latter correlations because they are subject to omitted variable biases. In the following sections, we systematically examine the lead-lag relations between unconditional conservatism, conditional conservatism, and bankruptcy risk in multivariate analyses.

4.2 Causal Relations Between Unconditional and Conditional Conservatism in Full and Extremely Distressed Samples

We first examine the lead-lag relations between unconditional and conditional conservatism using a tri-variate VARX (1) model described by equations (4) to (6), with results for the full sample and subsample of firms in extreme distress presented in Table 2, Panels A and B, respectively. Models 1 and 2 in both Panels use EDF_t and $Campbell_t$ as bankruptcy risk measures respectively. Panel A of Table 2 shows that in both Models 1 and 2, UC_PCA_{t-1} and CC_PCA_{t-1} are significantly negatively associated with EDF_t and $Campbell_t$ when both are predictors, with coefficients (*t*-statistics) of -0.0431 (-8.82) and -0.0083 (-15.05) in the EDF_t equation, respectively, and -0.0184 (-3.65) and -0.0110 (-19.38) in the $Campbell_t$ equation, respectively. *F*-statistics for the null hypothesis that the predictor coefficients of EDF_t and $Campbell_t$ are zero indicate rejection beyond the 99% confidence level. EDF_{t-1} and $Campbell_{t-1}$ are both significantly positively associated with UC_PCA_t and negatively associated with CC_PCA_t, with coefficients (*t*-statistics) of 0.0389 (13.61) and -0.2865 (-8.01), respectively, for UC_PCA_{t-1} and CC_PCA_{t-1} in the EDF_t equation, and 0.0388 (14.16) and -0.4431 (-12.95), respectively, in the $Campbell_t$ equation. These results indicate that the evidence presented in Tables 3 and 4 supporting H1a and H2a, and H1b and H2b, respectively, and that the evidence is robust to endogeneity between unconditional and conditional conservatism.[23]

Insert Table 2 about here

For extremely distressed firms, managerial incentives and governance mechanisms may

[22] Some Spearman and Pearson correlations among the three component measures for conditional conservatism are within the range of +/-0.05. However, this does not mean that they have low convergent validity because they measure conditional conservatism from different perspectives rather than on the same dimensions, and thus could be highly uncorrelated.

[23] In both models, conditional conservatism CC_PCA_{t-1} exhibits a significant positive association with subsequent unconditional conservatism UC_PCA_t, with coefficients (*T*-statistics) 0.0021 (5.17) and 0.0019 (4.67), respectively in Panel A. This result is consistent with expectation and suggests that bad news "shocks" associated with conditional conservatism generate demand for subsequent unconditional conservatism. UC_PCA_{t-1} also exhibits a positive association with subsequent conditional conservatism CC_PCA_t, with coefficients (*t*-statistics) 0.0940 (2.12) and 0.0571 (1.29), respectively. However, when we take the first difference of *UC_PCA* to consider only the unconditional conservatism that occurred in a specific fiscal year, the coefficient is significantly negative. This result is consistent with prior notions that unconditional conservatism preempts conditional conservatism (Beaver and Ryan (2005) and Ryan (2006)).

differ from those in healthier firms, which may qualitatively change relations between conservatism and bankruptcy risk for several reasons. When shareholders' implicit call options on assets are at or close to the money in deeply distressed firms, equity values will increase in asset volatility, shareholders' risk-shifting incentives may dominate and firms may have less incentive to use conservatism to mitigate bankruptcy risk. Firms' control rights also may progressively transfer to creditors, who may demand higher levels of conservatism to prevent risk shifting to creditors and wealth transferring to shareholders (Loktionov (2009)). Finally, the going concern assumption may no longer apply, making accrual accounting and unconditional conservatism less relevant. To investigate whether the results for the full sample still hold under these contexts, we examine in Panel B of Table 5 a subsample of most distressed firms defined by the lowest decile of returns-on-assets (largest (-*ROA*)). Consistent with the results in Panel A, both UC_PCA_{t-1} and CC_PCA_{t-1} remain significantly negatively associated with subsequent bankruptcy risk, except for UC_PCA_{t-1} with $Campbell_t$. EDF_{t-1} and $Campbell_{t-1}$ remain significantly and positively associated with UC_PCA_t, and CC_PCA_t, except for EDF_{t-1} with CC_PCA_t. Thus, the prior findings are qualitatively similar for deeply distressed firms.

Insert Table 3 about here

One may concern that our results are driven by cross-sectional relations between unconditional conservatism, conditional conservatism and bankruptcy risk, and that our results may be sensitive to lad structure. To address these concerns, we reexamine the lead-lag relations between unconditional and conditional conservatism using a tri-variate VARX (3) model described by equations (7) to (9), with results for the full sample presented in Table 3. Model 1 shows that UC_PCA_{t-1} UC_PCA_{t-2} and UC_PCA_{t-3} are all consistently negatively associated with EDF_t, with the coefficient of UC_PCA_{t-1} statistically significant, while Model 2 shows that UC_PCA_{t-1} are significantly negatively associated with EDF_t, and UC_PCA_{t-2} and UC_PCA_{t-3} are positively associated with EDF_t, with the coefficient of UC_PCA_{t-2} statistically significant. The sum of the coefficients of UC_PCA_{t-1} UC_PCA_{t-2} and UC_PCA_{t-3} is all negative, and the F-test for the null hypothesis that the sum is zero derives significant F-statistics 72.10 and 18.48 for EDF_t and $Campbell_t$ equations, respectively, thus providing strong support for H1a. In both models, CC_PCA_{t-1}, CC_PCA_{t-2} and CC_PCA_{t-3} are all significantly and negatively associated with EDF_t and $Campbell_t$, and the F-test for the null hypothesis that the sum of the coefficients of CC_PCA_{t-1}, CC_PCA_{t-2} and CC_PCA_{t-3} are zero for EDF_t and $Campbell_t$ equations indicate rejection at least at the 99% confidence level, thus providing strong support for H1b.

In Model 1, EDF_{t-1}, EDF_{t-2} and EDF_{t-3} are significantly positively associated with UC_PCA_t, and likewise in Model 2, $Campbell_{t-1}$, $Campbell_{t-2}$ and $Campbell_{t-3}$ are consistently positively associated with UC_PCA_t, but only the coefficient of $Campbell_{t-1}$ is statistically significant. The F-tests for the null hypotheses that the sum of the coefficients of EDF_{t-1}, EDF_{t-2} and EDF_{t-3} is zero and that the sum of the coefficients of $Campbell_{t-1}$, $Campbell_{t-2}$ and $Campbell_{t-3}$ is zero indicate rejection at least at the 99% confidence level, thus providing strong support for H2a that bankruptcy risk is positively associated with subsequent unconditional conservatism. Results for testing H2b are relatively weaker. In Model 1, EDF_{t-1} are significantly negatively associated with CC_PCA_t while EDF_{t-2} and EDF_{t-3} are significantly positively associated with CC_PCA_t, but the sum of their coefficient is still negative, and the same pattern applies to $Campbell_{t-1}$, $Campbell_{t-2}$ and $Campbell_{t-3}$ in CC_PCA_t equation in Model 2. The F-test for the null hypothesis that the sum of the coefficients of EDF_{t-1}, EDF_{t-2} and EDF_{t-3} is zero indicates a rejection at least at the 99% confidence level in Model 1, but the F-test for the null hypothesis that the sum of the coefficients of $Campbell_{t-1}$, $Campbell_{t-2}$ and $Campbell_{t-3}$ is zero is insignificant, thus providing partial support for H2b that bankruptcy risk is negatively associated with subsequent unconditional conservatism.

We further compare the Akaike Information Criterion (AIC) number for the corresponding VARX (1) and VARX(3) models used in Tables 2 and 3 to examine the optimal lag structure for VARX model. AIC number is calculated as AIC = N*Ln((1 - R-sqr) / N) + 2K, where N is sample size, K is number is independent variables, and R-sqr is the proportion of the sum of square accounted for by the model under consideration. The last two lines in Table 3 indicates that AIC numbers for VARX (1) models are unanimously smaller than those for VARX (3) models. Untabulated results also indicate that AIC numbers for VARX (1) models are smaller than those for the corresponding VARX (2) models. Since the models with the lowest AIC number is best fitted, we use VARX (1) model in the rest of the empirical tests. Moreover, one may concern whether the results for each complement of *UC_PCA* and *CC_PCA* are consistent with Tables 2 and 3. We further report the results for testing the lead-lag relations between bankruptcy risk and unconditional conservatism, and between bankruptc risk and conditional conservatism by bi-variate VARX (1) models in Appendix A and B respectively.

4.3 Causal Relations between Unconditional and Conditional Conservatism and Actual Bankruptcy

Examining a subsample of firms that actually declared bankruptcy encompasses the upper limit of bankruptcy risk and eliminates estimation error in calculating bankruptcy risk. However, actual bankruptcy as an indicator variable precludes examining continual relations and the effects of bankruptcy on subsequent conservatism. For these reasons, we test only hypotheses H1a and H2a using a logit model following Compbell et al. (2008), and H1a and H2a predict that $\gamma < 0$:

$$BANK_t = \alpha + \gamma CON_{t-1} + Controls_t + \mu_t \quad (10)$$

where BANK equals one if a firm files for bankruptcy under Chapters 7 or 11 of the Bankruptcy Code, and zero otherwise, and *CON* refers to unconditional or conditional conservatism measured by *UC_PCA* or *CC_PCA,* , or both.[24] Models 1 and 3 to 5 in Table 4 find that UC_PCA_{t-1} is significantly negatively associated with the probability that firms file for bankruptcy, a result that holds after controlling for earnings management and earnings smoothing. However, CC_PCA_{t-1} is insignificantly associated with the probability of bankruptcy in Models 2 to 5. These results strongly confirm hypothesis H1a, but do not support hypothesis H2a for firms actually filing for bankruptcy. This is consistent with reduced incentives for conditional conservatism as firms enter into actual bankruptcy, perhaps because bad news is already revealed and further bad news is unhelpful for reducing information asymmetries and could even cause frictions among claimants.

Insert Table 4 about here

The signs of the control variable coefficients are consistent with expectations: *NIMTAVG, Exretavg*, *Inten_RD*, *Cash* and *Rate* are negatively associated with *BANK*, and *Leverage*, *STD_ret* and *MB* are positively associated with *BANK*.

4.4 The Cash Enhancing and Informational Roles of Accounting Conservatism and Causal Relations between Conservatism and Bankruptcy Risk

This section examines how unconditional and conditional conservatism impact bankruptcy risk through the cash enhancing role and informational role. Table 5 replicates Table 3, adding interactions between *UC_PCA*, *CC_PCA* and *Cash* (Panel A) and between

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[24] Following Campbell *et al.* (2008), we employ the following commonly used determinants of bankruptcy risk as controlling variables: the market-based profitability (*NIMTAVG*), the predictability of excess return relative to S&P 500 index (*EXRETAVG*), R&D investment intensity (*Inten_RD*), firm size relative to that of the S&P 500 index (*Rsize*), the stock price (*PRICE*) and the risk-free rate (*Rate*), which are expected to reduce the probability of *BANK*; the leverage ratio (*Leverage*), the liquidity ratio (*Cash*), changes in the liquidity ratio (Δ*Cash*), return volatility (*STD_Ret*) and the market-to-book equity ratio (*MB*), all of which are expected to increase the probability of *BANK*. Other controlling variables include year and industry dummies, earnings management (*Emgmt*) and earnings smoothing (*Esmooth*).

UC_PCA, CC_PCA and STD_Ret_{t-1} (Panel B) to the *EDF* and *Campbell* equations. Stock volatility STD_Ret_{t-1} is used to proxy for information uncertainty and information asymmetry following Zhang (2006) and Khan and Watts (2009). Panel A reveals that the interactions of both unconditional and conditional conservatism with cash ($UC\_PCA_{t-1}*Cash_{t-1}$ and $CC\_PCA_{t-1}*Cash_{t-1}$, respectively) are significantly negatively associated with subsequent bankruptcy risk proxied by EDF_t in Model 1, with coefficients (*t*-statistics) of -0.3010 (-9.46) and -0.0276 (-5.83), and with subsequent bankruptcy risk proxied by $Campbell_t$ in Model 2, with coefficients (*t*-statistics) -0.3437 (-10.85) and -0.0115 (-2.44), respectively. *F*-statistics for the null hypothesis that the sum of the coefficients of conservatism and of its interaction with cash is zero are significant beyond the 99% confidence level for both unconditional and conditional conservatism in both Models 1 and 2. Thus, the evidence in Panel A suggests that both unconditional and conditional conservatism mitigate bankruptcy risk via their cash enhancing roles.

Insert Table 5 about here

Panel B of Table 7 shows that the interactions of conservatism with stock return volatility ($UC\_PCA_{t-1}*STD\_Ret_{t-1}$ and $CC\_PCA_{t-1}*STD\_Ret_{t-1}$) are also significantly negatively associated with subsequent bankruptcy risk as proxied by EDF_t in Model 1, with coefficients (*t*-statistics) of -0.0453 (-3.00) and -0.0201 (-10.56), respectively. Similarly, the interaction of unconditional conservatism with return volatility is also significantly negative for $Campbell_t$ in Model 2, with a coefficient (*t*-statistic) of -0.1367 (-9.07), but the interaction of conditional conservatism with return volatility is statistically insignificant. *F*-statistics for the null hypothesis that the sum of coefficients for conservatism's interactions with return volatility is zero is nonetheless significant beyond the 90% confidence level for both unconditional and conditional conservatism in both Models 1 and 2. Overall, the evidence in Panel B suggests that both unconditional and conditional conservatism help mitigate bankruptcy risk via their informational roles.

4.5 Sarbanes-Oxley, Auditor Turnover and Causal Relations between Bankruptcy Risk and Subsequent Unconditional and Conditional Conservatism

This section uses the contexts of the passage of the Sarbanes-Oxley Act in 2002 (*SOX*) and auditor resignations as natural experiments to examine the effects of auditors, regulators, and litigation on causal relations between bankruptcy risk and subsequent unconditional and conditional conservatism. Prior evidence suggests that *SOX* heightened legal and regulatory attention to financial reporting and increased managerial litigation exposures and punishment, which leads to enhanced accounting conservatism (Lobo and Zhou (2006), Cefaratti *et al*. (2010)).[25] Auditor resignations are often triggered by aggressive reporting or misrepresentations (Krishnan and Krishnan (1997), Menon and William (2008), Krishnan *et al.* (2010)), therefore it signals enhanced litigation risk of firms and auditors, enhanced monitoring by successor auditors, regulators, and investors, and thus enhanced conservatism in the post-auditor-resignation period.

Our main argument for the relations between bankruptcy risk and subsequent unconditional and conditional conservatism is that different from shareholders' litigation that creates demand for both unconditional and conditional conservatism, enhanced monitoring by auditors and regulators mainly enhance unconditional conservatism which is their primary focus (Qiang (2007)). If this argument is valid, the interaction of bankruptcy risk and indicator for the post-*SOX* period (*SOX*), and the interaction of bankruptcy risk and indicator for the post-auditor-resignation period (*Post_resign*) should increase subsequent unconditional conservatism. We test this conjecture by replicating the analysis in Panel A, Table 2, adding these interactions.

Results reported in Panel A of Table 6 reveal that the interactions of *SOX* with EDF_{t-1} and $Campbell_{t-1}$ are both statistically positive for UC_PCA_t, suggesting that enhanced auditors and regulators' monitoring following the passage of *SOX* enhanced the effects of bankruptcy risk on subsequent unconditional conservatism as predicted by H2a. In contrast, interactions of *SOX* with EDF_{t-1} and $Campbell_{t-1}$ are statistically insignificantly associated with CC_PCA_t, suggesting that *SOX* influenced little the effects of bankruptcy risk on subsequent conditional conservatism predicted by H2b. In addition, the interaction of *SOX* with UC_PCA_{t-1} is statistically significant for EDF_t but is statistically insignificant for $Campbell_t$, and the opposite is true for the interaction of *SOX* with CC_PCA_{t-1}, suggesting that *SOX* enhanced, albeit modestly, the mitigating effects of both unconditional and conditional conservatism on subsequent bankruptcy risk.

Insert Table 6 about here

We use a subsample of 124 firms with auditor resignations between 2000 and 2007 to examine the effects of auditors on relations between accounting conservatism and bankruptcy

[25] Lobo and Zhou (2006) find that both unconditional conservatism (measured by total accruals) and conditional conservatism (Basu (1997) measure) increased in the post-SOX period. Similarly, Cefaratti *et al*. (2010) report that the passage of *SOX* enhanced litigation risk and thereby increased conservatism. Our study finds only the pattern of unconditional conservatism confirms Lobo and Zhou (2006) and Cefaratti *et al*. (2010). In particular, for the six years centered around SOX passage, unconditional conservatism (*UC_PCA*) increases from 0.3443 in the pre-SOX period (2000-2002) to 0.3805 in the post-SOX period (2003-2005), with a *t*-statistic of 8.77. Conditional conservatism (*CC_PCA*) increases from 0.8055 in the pre-SOX period to 0.8582 in the post-SOX period, with a *t*-statistic of 1.60.

risk.[26] Panel B of Table 8 reveals that the interactions of *Post_resign* with EDF_{t-1} and with $Campbell_{t-1}$ are significant for UC_PCA_t but insignificant for CC_PCA_t in both Models 1 and 2. In addition, the interactions of *Post_resign* with UC_PCA_{t-1} and with CC_PCA_{t-1} are statistically insignificant for EDF_t and $Campbell_t$ in both Models 1 and 2. We also perform the t-test of the difference in mean for *UC_PCA* and *CC_PCA* for three years post- versus pre-resignation periods. The average *UC_PCA* (*CC_PCA*) in the pre-resignation period is 0.3710 (1.2295), then it increases (decreases) to 0.4200 (1.1639) in the post-resignation period, with *t*-statistic (2.92) significant for *UC_PCA* and insignificant for *CC_PCA*. Overall, Table 6 provides consistent evidence for the argument that enhanced monitoring by auditors and regulators mainly enhance unconditional conservatism rather than enhance conditional conservatism as bankruptcy risk increases, using the nature experiments of *SOX* passage and auditor resignations. This evidence provides further support for hypotheses H2a and H2b.

4.6 Conservatism Gaming and Causal Relations between Conservatism and Bankruptcy Risk

One main concern that "conservatism gaming," a version of earnings smoothing whereby managers apply more conservatism during good times to provide earnings cushions during downturns, may drive the relations between conservatism and bankruptcy risk because conservatism gaming is expected to mitigate bankruptcy risk. Smith and Stulz (1985)'s model argue that earnings smoothing may serve as a hedge against bankruptcy risk and Trueman and Titman (1988)'s model concur that earnings smoothing may lower claimholders' perceptions of bankruptcy risk by lowering perceptions of earnings volatility. To address this concern, we examine whether the causal relations between unconditional and conditional conservatism and bankruptcy risk are robust to conservatism gaming, employing a tetra-variate VARX (1) model consisting of equations (11) to (14):

$$BR_t = \alpha_{10} + \beta_{11}BR_{t-1} + \gamma_{11}UC\_PCA_{t-1} + \delta_{11}CC\_PCA_{t-1} + \theta_{11}Esmooth_{t-1} + Controls_t + \varepsilon_{11} \quad (11)$$

$$UC\_PCA_t = \alpha_{20} + \beta_{21}BR_{t-1} + \gamma_{21}UC\_PCA_{t-1} + \delta_{21}CC\_PCA_{t-1} + \theta_{21}Esmooth_{t-1} + Controls_t + \varepsilon_{21} \quad (12)$$

$$CC\_PCA_t = \alpha_{30} + \beta_{31}BR_{t-1} + \gamma_{31}UC\_PCA_{t-1} + \delta_{31}CC\_PCA_{t-1} + \theta_{31}Esmooth_{t-1} + Controls_t + \varepsilon_{31} \quad (13)$$

$$Esmooth_t = \alpha_{40} + \beta_{41}BR_{t-1} + \gamma_{41}UC\_PCA_{t-1} + \delta_{41}CC\_PCA_{t-1} + \theta_{41}Esmooth_{t-1} + Controls_t + \varepsilon_{41} \quad (14)$$

where *BR* is *EDF* or *Campbell* and $Controls_t$ in equations (11) to (13) and their predictions are the same as for equations (4) to (6).[27] We consider two types of income smoothing to proxy for conservatism gaming: innate smoothing, the product of negative one times the Spearman

[26] Auditor resignation data were collected from *AuditAnalytics* in the WRDS database. Among the 124 firms with auditor resignations in our sample, 6 occurred in fiscal year 2000; 4 in 2001, 6 in 2002, 18 in 2003, 33 in 2004, 22 in 2005, 23 in 2006 and 12 in 2007.

[27] $Controls_t$ in equation (14) include $Leverage_t$, ROA_t, $Ln(MV)_t$, $Volatility\_ROA_t$, and industry and year dummies, which are previously identified determinants of earnings smoothing.

correlation between accruals and OCF, and discretionary smoothing, the decile ranking of the product of negative one times the ratio of the standard deviation of accruals to that of OCF.

Insert Table 7 about here

Table 7 report the testing results and reveals that the causal relations between the two types of conservatism and bankruptcy risk observed above are robust to conservatism gaming. Qualitatively similar results hold for discretionary smoothing (results not tabulated). Table 7 further reveals that innate smoothing, $Esmooth_{t-1}$, is significantly negatively associated with $Campbell_t$, consistent with theoretical predictions (Smith and Stulz (1985) and Trueman and Titman (1988)) and prior findings that innate smoothing reveals information and increases firm value (Tucker and Zarowin (2006), Leuz *et al.* (2003)).[28]

4.9 Robustness Checks

Sensitivity Tests for Validity of the VARX Models

VARX models may be sensitive to order. So we reorder the predictors in each equation of the VARX models derives qualitatively similar findings. A first-differencing specification for the VARX model finds the results weaker but qualitatively unchanged, with autoregressive coefficients for the two main conservatism measures significantly negative, consistent with the inference from our Dickey-Fuller unit-root tests that taking first-differences may yield biased results in the VARX models where there is no unit-root. Concerns that mean-reversions of accruals or EDF_t and $Campbell_t$ could explain certain findings is made unlikely by our design that utilizes conservatism measures that are three-year smoothing for *UC_ACC* and *CC_ACM* that considerably smooth away mean-reversions, and other conservatism measures that are relatively insensitive to accrual reversals (*UC_BM, UNC_RES, CC_AR* and *CC_CR*). Moreover, in all EDF_t and $Campbell_t$ regressions, the coefficients on EDF_{t-1} and on $Campbell_{t-1}$ are significantly positive, indicating there are no mean-reverting tendencies in the bankruptcy risk measures.

Alternative Tests for Cash Enhancing and Informational Roles of Conservatism

Concerns that firms with weak (strong) cash flow prefers aggressive (conservative) reporting, so it is higher cash holdings that cause higher conservatism and then lower bankruptcy risk. To address this issue, we orthogonalize both *UC_PCA* and *CC_PCA* by the lagged value of *cash*, and use the residual value of *UC_PCA* and *CC_PCA* to replace their

[28] In contrast, discretionary smoothing has a weak mitigating effect on bankruptcy risk, whereas bankruptcy risk is negatively associated subsequent discretionary smoothing, consistent with the argument that discretionary smoothing reduces information transparency (untabulated results available on request).

original value and rerun the VARX (1) models for Panel A, Table 5. After netting the endogeneity of both unconditional and conditional conservatism to cash holdings in this way, the results are qualitatively the same as previously reported. We also use the upside potentials of cash holdings to proxy for cash, the results do not qualitatively change either. Using earnings forecast errors or earnings forecast dispersions to proxy for information uncertainty and asymmetry, following Zhang (2006), does not change the results FOR Panel B, Table 5. We also use the information asymmetry component of *PIN* score *adjPIN* (Duarte and Young (2009)) to measure information uncertainty and asymmetry, with the results are qualitatively unchanged too.

Controls for Debt Contracting, Debtholders' and Shareholders' Interests

Whereas results in Panel B of Table 3 suggest that relations between conservatism and bankruptcy risk still hold for bankrupt firms, there remains the question of whether the observed relations are robust to controls for debt contracting, debtholders' and shareholders' interests. To address this question, we replicate the tests in Panel A of Table 3 introducing additional controls for private debtholder monitoring, leverage, auditor going-concern opinions and credit ratings. Private debtholder monitoring is measured as the ratio of the sum of private long-term debt, other long-term debt, and capitalized lease obligations to total long-term debt, following Qiang (2007), and leverage is an noisy indicator of higher debt costs, larger debtholder claims, more intense monitoring and accentuated conflicts of interests between shareholders and debtholders. A dummy for periods following auditors' going-concern opinions proxies for enhanced debtholders control relative to shareholders. Untabulated results reveal that these further controls do not qualitatively change the previously reported causal associations between conservatism and bankruptcy risk.

Senior long-term debt ratings by S&P proxy for the cost of debt and monitoring by rating agencies on a scale of 1 to 21, with 1 for a "AAA" rating and "21" for "D" rating. [29] Untabulated results show that the main results previously reported remain qualitatively unchanged after controlling for credit ratings. Its interactions with EDF_{t-1} and $Campbell_{t-1}$ are significantly positive for both UC_PCA_t and CC_PCA_t, and its interactions with EDF_{t-1} and $Campbell_{t-1}$ are negative for CC_PCA_t. Moreover, credit ratings *per se* are significantly negatively associated with EDF_t and $Campbell_t$, and positively associated with UC_PCA_t and CC_PCA_t. These findings are consistent with both the monitoring role of credit ratings, and with credit ratings inadequately capturing default risk, as illustrated by the bankruptcies of

[29] S&P rates a firm's debt from AAA (indicating a strong capacity to pay interest and repay to SD (the obligor has selectively defaulted on a specific issue or class of obligations). Compustat codes these ratings on a scale from 2 to 29 such that AAA (the best S&P rating) corresponds with 2 and SD (the worst rating) with 29.

highly-rated firms during the 2008-2009 financial crisis. Alternatively, we added a dummy to proxy for the lowest-rated firms (SD and D) and highest-rated firms (AAA) which are subject to the most intense public monitoring, with qualitatively similar findings.

Controls for Earnings Management

To examine whether our results are robust to earnings management, we rerun the tetra-variate VARX (1) model consisting of equations (11) to (14) by replacing *Esmooth* with *Emgmt*. Untabulated results show that the conclusions about the causal relations between bankruptcy risk and unconditional and conditional conservatism still hold. Importantly, both UC_PCA_{t-1} and CC_PCA_{t-1} are negatively associated with subsequent $Emgmt_t$, corroborating Watts' (2003) and Kothari *et al.*'s (2010) reasoning that, absent conservatism, financial reporting would be biased upward *a priori* in practice.

Alternative Measure of Unconditional and Conditional Conservatism and Bankruptcy Risk

One may concern that our unconditional conservatism measurement *UC_ACC* and *UC_RES* do not isolate discretionary unconditional conservatism. To address that concern, we alternatively use Qiang (2007)'s discretionary accrual-based measure to replace *UC_ACC*, and use the first difference of *UC_RES* to capture firm-specific discretionary hidden reserve. Doing so does not qualitatively change the previous results in Table 2. As an alternative to the industry adjusted BM ratio *UC_BM*, we also use Qiang (2007) approach that builds upon Beaver & Ryan (2005) to measure unconditional conservatism, and the results are qualitatively the same as using *UC_BM*. We do not use Qiang (2007)'s measurement in the main tests because it is firm-specific and invariant over time, which is in appropriate for a time-series model like VARX.

One may concern that *CC_AR* is subject to potential mechanical relationship with *Campbell* since both are functions of leverage, size, and book-to-market ratio. We use the negative skewness measure in Zhang (2008) to replaces *CC_AR*, the results for Panel A of Table 2 are qualitatively unchanged, suggesting that the mechanical relation problem is not serious. However, the skewness measure requires at least previous five years' data and thus is not used in the main tests because doing so could expose our sample to severe survival bias. Using an A_score defined as the ratio of the C score to the sum of C score and G score as in Khan and Watts (2009) and *CC_CR* calculated using the direct method following Callen *et al.* (2009), results does not qualitatively change either. We also use the averages (and rankings) of *UC_ACC*, *UC_BM* and *UNCON_RES* to measure unconditional conservatism, and those of

CC_ACM, *CC_AR*, and *CC_CR* to measure conditional conservatism, with qualitatively similar (more statistically significant) findings (suggesting that ranking increases power by reducing measurement error).

When the *Z-score* (Altman (1968)) is used as an alternative bankruptcy risk metric, main results in Tables 2 and 3 are qualitatively unchanged. Z-score is accounting-based measure subject to estimation bias caused by accounting conservatism, and it has more missing values, therefore it is not used in the main tests. In calculating *Campbell*, we follow Campbell *et al.* (2009) to winterize stock price lower than $15 up to $15 to avoid estimation bias caused by small stocks. When we drop this limitation, the main results do not change for an alternative *Campbell* thus calculated.

5. Conclusion

This study examines relations between accounting conservatism and bankruptcy risk that follow from conservatism's cash enhancing and informational properties. Our primary findings are a negative association between both unconditional and conditional conservatism and subsequent bankruptcy risk consistent with conservatism's cash enhancing and informational roles, a positive (negative) association between bankruptcy risk and subsequent unconditional conservatism consistent with the interests of auditors, investors and regulators to mitigate future failure risk, and a negative association between bankruptcy risk and subsequent and concurrent conditional conservatism, consistent with countervailing managerial incentives to withhold bad news for career motives. Further analyses provide confirming evidence that the cash enhancing and informational roles of conservatism help mitigate bankruptcy, and that regulators' and auditors' monitoring enhance demand for unconditional conservatism as bankruptcy risk increases. The findings are qualitatively unchanged under conditions of extreme distress and actual bankruptcy, and are robust to controls for endogeneity between unconditional and conditional conservatism, debt contracting considerations, conservatism gaming and other controls.

These findings have several key implications. First, they provide evidence consistent with a traditional rationale for accounting conservatism that it arose in response to requests from creditors, joined in recent times by shareholders, auditors and regulators, to help conserve cash and enhance transparency, thereby reducing failure risk. Second, our evidence that accounting conservatism mitigates bankruptcy risk is consistent with the findings that conservatism reduces cost of capital and increases trading contracting efficiency (Zhang (2008), Hui *et al.* (2009b)) but makes contributions by showing that the evidence follows from the cash enhancing and informational roles of conservatism. Third, this evidence is not only central to the interests of firms' stakeholders but also to economic policy makers by helping to dampen the contagion effects of bankruptcy. In this sense, this study complements the evidence of Francis *et al.* (2010) that conservatism benefited shareholders during the 2008-2009 financial crisis and of Kim and Zhang (2010) that conservatism helps mitigate stock market crash risk, suggesting that conservatism is relevant to economic policy-making.

Fourth, findings that bankruptcy risk is related differently with subsequent unconditional and conditional conservatism are consistent with offsetting managerial, auditors' and regulators' interests. Lastly, our evidence helps inform ongoing debates regarding the role of conservatism as an enduring core concept of financial accounting.

Since this study is the first to examine empirically causal relations as well as contemporaneous relations between unconditional and conditional conservatism and bankruptcy risk, there is considerable potential for related research. For example, this study leaves largely unexplored specific linkages between conservatism and bankruptcy risk that explain precisely how its cash enhancing and informational properties relate to bankruptcy risk, how bankruptcy risk influences decisions regarding unconditional and conditional conservatism, how these relations are affected by differing economic conditions, and whether they hold in other countries with different institutional arrangements, for example, in developing economies and settings with differing bankruptcy provisions or regulations.

References

Ahmed, A. S., Billings, B. K., Morton, R. M. and Stanford-Harris, M., 2002. The Role of Accounting Conservatism in Mitigating Bondholder-Shareholder Conflicts over Dividend Policy and in Reducing Debt Costs. *The Accounting Review* 77, 867–890.

Ahmed, A. S. and Duellman, S., 2007. Accounting Conservatism and Board of Director Characteristics: An Empirical Analysis. *Journal of Accounting and Economics* 43, 411-437.

Altman, E., 1968. Financial Ratios, Discriminant Analysis and the Prediction of Corporate Bankruptcy. *Journal of Finance* 23, 589–609.

Anderson, R. and Sundaresan, S., 1996. Design and Valuation of Debt Contracts. *Review of Financial Studies* 9, 37–68.

Ball, R., 2001. Infrastructure Requirements for an Economically Efficient System of Public Financial Reporting and Disclosure. *Brookings-Wharton Papers on Financial Services*, 127-270.

Ball, R., Kothari, S. P. and Nikolaev, V., 2009. Econometrics of the Basu Asymmetric Timeliness Coefficient and the Accounting Conservatism. Working paper, University of Chicago.

Ball, R. and Shivakumar, L., 2005. Earnings Quality in UK Private Firms: Comparative Loss Recognition Timeliness. *Journal of Accounting and Economics* 39, 83-125.

Barath, S. T. and Shumway, T., 2008. Forecasting Default with the Merton Distance-to-Default Model. *Review of Financial Studies* 21, 1339-1369.

Barth, M. E., Landsman, W. R. and Lang, M. H., 2008. International Accounting Standards and Accounting Quality. *Journal of Accounting Research 46*, 467-498.

Basel III, 2010. Basel Committee on Banking Supervision.

Basu, S., 1997. The Conservatism Principle and the Asymmetric Timeliness of Earnings. *Journal of Accounting and Economics* 24, 3-37.

Basu, S., 2009. Conservatism Research: Historical Development and Future Prospects. *Chinese Journal of Accounting Research* 2, 1-20.

Beaver, W. H. and Ryan, S. G., 2000. Biases and Lags in Book Value and Their Effects on the Ability of the Book-To-Market Ratio to Predict Book Return on Equity. *Journal of Accounting Research* 38, 127–148.

Beaver, W. H. and Ryan, S. G., 2005. Unconditional and conditional Conservatism: Concepts and Modeling. *Review of Accounting Studies* 10, 269-309.

Beneish, M. and Press, E., 1993. Costs of Technical Violation of Accounting-Based Debt Covenants. *The Accounting Review* 68, 233-257.

Biddle, G. C., 1980. Accounting Methods and Management Decisions: The Case of Inventory Costing and Inventory Policy. *Journal of Accounting Research* 18, 235-280.

Biddle, G. C., Ma, M. and Song, M., 2011. The Risk Management Role of Accounting Conservatism. Working paper, University of Hong Kong.

Black, F. and Scholes, M., 1973. The Pricing of Options and Corporate Liabilities. *Journal of Political Economy* 81**,** 637–654.

Bublitz, B. and Ettredge, M., 1989. The Information in Discretionary Outlays: Advertising, Research and Development. *The Accounting Review* 64, 108-124.

Bushman, R., M., Piotroski, J. D. and Smith, A., 2010. Capital Allocation and Timely Accounting Recognition of Economic Losses. Working Paper, The University of North Carolina at Chapel Hill.

Callen, J. L., Livnat, J. and Segal, D., 2006. Information Content of SEC Filings and Information Environment: A Variance Decomposition Analysis. *The Accounting Review* 81, 1017-1043.

Callen, J. L., Segal D. and Hope, O-K., 2010a. The Pricing of Conservative Accounting and the Measurement of Conservatism at the Firm-Year Level. *Review of Accounting Studies* 15, 145-178.
Callen, J. L., Chen, F., Dou, Y. and Xin, B., 2010b. Information Asymmetry and the Debt Contracting Demand for Accounting Conservatism. Working paper, University of Toronto.
Campbell, J., Hilscher, J. and Szilagyi, J., 2008. In Search of Distress Risk. *Journal of Finance* 53, 2899-2939.
Carapeto, M., 2005. Bankruptcy Bargaining with Outside Options and Strategic Delay. *Journal of Corporate Finance* 11, 736–746.
Cefaratti, M., Dorminey, J., Lin, H., and Reed, T., 2010. *The Effect of Litigation Risk on Conservatism: A Comparative Study of PSLRA and SOX.* Working paper, Northern Illinois University.
Chen, K. and Wei, K. C., 1993. Creditor's Decision to Waive the Violations of Accounting-Based Debt Covenants. *The Accounting Review* 68, 218-232.
Chen, N., 2003. Three Essays on Information Asymmetry and Corporate Defaults. Columbia University.
DeFond, M. and Jiambalvo, J., 1994. Debt Covenant Violation and Manipulation of Accruals. *Journal of Accounting and Economics* 17, 145-176.
Demirkan, S. and Platt, H. D., 2009. Financial Status, Corporate Governance Quality, and the Likelihood of Managers Using Discretionary Accruals. *Accounting Research Journal* 22, 93-117.
De Ste. Croix, G. E. M., 1956. Greek and Roman Accounting, pp. 14-74. In: Littleton, A. C. and Yamey, B. S., ed., *Studies in the History of Accounting*, Richard D. Irwin, Homewood, IL.
Dichev, I. and Skinner, D., 2002. Large-Sample Evidence on the Debt Covenant Hypothesis. *Journal of Accounting Research* 40, 1091-1123.
Doan, T., 1992. *Rats User's Manual*, Version 4.0, Estima.
Duarte, J. and Young, L. 2009. Why is PIN priced? *Journal of Financial Economics* 91, 119-138.
Eberhart, A., Maxwell, W. and Siddique, A., 2008. A Reexamination of the Tradeoff between the Future Benefit and Riskiness of R&D Increases. *Journal of Accounting Research* 46, 27-52.
Elliott, J. A. and Phibrick, D. R., 1990. Accounting Changes and Earnings Predictability. *The Accounting Review* 65, 157-174.
Fama E. F. and French, K. R., 1997. Industry Costs of Equity. *Journal of Financial Economics* 43, 153-192.
Financial Accounting Standards Board, 1980. *Statement of Financial Accounting Concepts No. 2*, *Qualitative Characteristics of Accounting Information*.
Financial Accounting Standards Board, 2008. Conceptual Framework for Financial Reporting: The Objective of Financial Reporting and Qualitative Characteristics and Constraints of Decision-Useful Financial Reporting Information. *Exposure Draft. Financial Accounting Series No. 1570-100.*
Financial Accounting Standards Board, 2010. *Statement of Financial Accounting Concepts No. 8. Conceptual Framework for Financial Reporting*.
Fischer, P. and Verrecchia, R., 2000. Reporting Bias. *The Accounting Review* 75, 229-245.
Francis, B., Hasan, I. and Wu, Q., 2010. The Benefits of Accounting Conservatism to Shareholders: Evidence from the Financial Crisis. Working paper, Rochester Institute of Technology.
Francis, J. and Martin, X., 2010. Acquisition Profitability and Timely Loss Recognition. *Journal of Accounting and Economics* 49, 161-178.
Franzen, L., Rodgers, K. and Simin, T., 2007. Measuring Distress Risk: The Effect of R&D Intensity. *Journal of Finance* 62, 2931-2967.

Giammarino, Ronald M., 1989. The Resolution of Financial Distress. *Review of Financial Studies*, 2, 25–47.
Givoly, D. and Hayn, C., 2000. The Changing Time-Series Properties Of Earnings, Cash Flows and Accruals: Has Financial Reporting Become More Conservative? *Journal of Accounting and Economics* 29, 287–320.
Givoly, D., Hayn, C. and Natarajan, A., 2007. Measuring Reporting Conservatism. *The Accounting Review* 82, 65-106.
Gox, R. and Wagenhofer, R., 2009. Optimal Impairment Rules. *Journal of Accounting and Economics* 48, 2–16.
Granger, C. W. J., 1969. Investigating Causal Relations by Econometric Models and Cross-spectral Methods. *Econometrica* 37 , 424–438.
Guay, W. and Verrecchia, R. E., 2007. Conservative Disclosure. Working paper, University of Pennsylvania.
Hagerman, R. and Zmijewski, M. E., 1979. Some Economic Determinants of Accounting Policy Choice**.** *Journal of Accounting and Economics* 1, 141-61.
Hertzel, M. G., Officer, M. S., Li, Z. and Rodgers, K. J., 2008. Inter-Firm Linkages and the Wealth Effects of Financial Distress Along the Supply Chain. *Journal of Financial Economics* 87, 374-387.
Hillegeist, Keating, E. K., Cram, D. P. and Lundstedt, K. G., 2004. Assessing the Probability of Bankruptcy. *Review of Accounting Studies* 9, 5-34.
Hui, K. W., Morse, D. and Matsunaga, S., 2009a. The Impact of Conservatism on Management Quantitative Earnings Forecasts. *Journal of Accounting and Economics* 47, 192-207.
Hui, K. W, Klasa, S. and Yeung, E., 2009b. Corporate Suppliers and Customers and Accounting Conservatism. Working paper, Hong Kong University of Science and Technology.
Jackson, S. and Liu, X. T., 2009. The Allowance for Uncollectible Accounts, Conservatism, and Earnings Management. *Journal of Accounting Research,* forthcoming.
Jones, J., 1991. Earnings Management during Import Relief Investigation. *Journal of Accounting Research* 29, 193-228.
Jones, S., 2011. Does the Capitalization of Intangible Assets Increase the Predictability of Corporate Failure?
Jorion, P. and Zhang, G., 2009. Credit Contagion from Counterparty Risk. *Journal of Finance* 64, 2053-2087.
Keating, S. and Zimmerman, J. L., 2000. Depreciation-policy Changes: Tax, Earnings Management, and Investment Opportunity Incentives. *Journal of Accounting and Economics* 28, 359-389.
Khan, M. and Watts, R., 2009. Estimation and Empirical Properties of a Firm-Year Measure of Conservatism. *Journal of Accounting and Economics* 48, 132-150.
Kim, J., Ramaswamy, K. and Sundaresan, S., 1993. Does Default Risk in Coupons Affect the Valuation of Corporate Bonds: A Contingent Claims Model. *Financial Management*, 117–131.
Kim, J., and Zhang, L., 2010. Does Accounting Conservatism Reduce Stock Price Crash Risk? Firm-Level Evidence. Working paper, City University of Hong Kong.
Kirschenheiter, M. and Ramakrishnan, R., 2010. Prudence Demands Conservatism. Working paper, University of Illinois at Chicago.
Kothari, S. P., Shu, S. and Wysocki, P., 2009. Do Managers Withhold Bad News? *Journal of Accounting Research* 47, 241-276.
Kothari, S. P., Ramanna, K. and Skinner, D. J., 2010. Implications for GAAP from an Analysis of Positive Research in Accounting. *Journal of Accounting and Economics* 50, 246-248.

Krishnan, J., and Krishnan, J., 1997. Litigation Risk and Auditor Resignations. *The Accounting Review* 72 539-60.
Krishnan, G., Sun, L. and Wang, Q., 2010. Accruals Quality, Audit Fees, and Auditor Resignations. Working paper, Lehigh University.
LaFond, R. and Watts, R., 2008. The Information Role of Conservatism. *The Accounting Review* 83, 447–478.
Lang, L. and Stulz, R., 1992. Contagion and Competitive Intra-industry Effects of Bankruptcy Announcements. *Journal of Financial Economics* 32, 45–60.
Lara, J. M. G., Osma, B. G. and Penalva, F., 2009. Accounting Conservatism and Corporate Governance. *Review of Accounting Studies* 14, 161-201.
Lara, J. M. G., Osma, B. G. and Penalva, F., 2010a. Conditional Conservatism and Cost of Capital. *Review of Accounting Studies,* forthcoming.
Lara, J. M. G., Osma, B, G. and Penalva, F., 2010b. Conditional Conservatism and Firm Investment Efficiency. Working paper, Universidad Carlos III De Madrid.
Leuz, C., Nanda, D. and Wysocki, P., 2003. Earnings Management and Investor Protection: An International Comparison. *Journal of Financial Economics* 69, 505-527.
Lev, B., Sarath, B. and Sougiannis, T., 2005. R&D Reporting Biases and Their Consequences. *Contemporary Accounting Research* 22, 977-1026.
Li, J., 2008. Accounting Conservatism, Information Uncertainty and Analysts' Forecasts. Working paper, Carnegie Mellon University.
Li, X., 2010. Accounting Conservatism and the Cost of Capital: International Analysis. Working paper, London Business School.
Lobo, G. J. and Zhou, J., 2006. Did Conservatism in Financial Reporting Increase After the Sarbanes-Oxley Act? Initial Evidence. *Accounting Horizons* 20, 57-73.
Loktionov, Y., 2009. Does Accounting Quality Mitigate Risk Shifting? Working paper, Massachusetts Institute of Technology.
Louis, H., Sun, A. and Urcan, O., 2009. Value of Cash Holdings and Accounting Conservatism. Working paper, Pennsylvania State University.
Menon, K. and Williams, D., 2008. Management Turnover Following Auditor Resignations. *Contemporary Accounting Research* 25, 567–604.
Merton, R. C., 1974. On The Pricing of Corporate Debt: The Risk Structure of Interest Rates. *Journal of Finance* 29, 449–470.
Mooradian, R. M., 1994. The Effect of Bankruptcy Protection on Investment: Chapter 11 as a Screening Device. *Journal of Finance*, 49, 1403–1430.
Nini, G., Smith, D. and Su, A., 2009. Creditor Control Rights and Firm Investment Policy. *Journal of Financial Economics* 92, 400-420.
Ohlson, J. A., 1980. Financial Ratios and the Probabilistic Prediction of Bankruptcy. *Journal of Accounting Research* 18, 109-131.
Parker S., Peters G. and Turetsky, H., 2002. Corporate Governance and Corporate Failure: A Survival Analysis. *Corporate Governance* 2, 4-12.
Penman, S. H. and Zhang, X., 2002. Accounting Conservatism, the Quality of Earnings, and Stock Returns. *The Accounting Review* 77, 237-264.
Qiang, X., 2007. The Effects of Contracting, Litigation, Regulation, and Tax Costs on Unconditional and Conditional Conservatism: Cross-Sectional Evidence at the Firm Level. *The Accounting Review* 82, 759-796.
Qiang, X., 2008. The Information Role of Unconditional and Conditional Conservatism. Working paper, Xiamen University.
Rosner, R. L., 2003. Earnings Manipulation in Failing Firms. *Contemporary Accounting Research* 20, 361-408.

Roychowdhury, S. and Watts, R. L., 2007. Asymmetric Timeliness of Earnings, Market-To-Book and Conservatism in Financial Reporting. *Journal of Accounting and Economics* 44, 2-31.
Ryan, S. G., 2006. Identifying Conditional Conservatism. *European Accounting Review* 15, 511 -525.
Shumway, T., 2001. Forecasting Bankruptcy More Accurately: A Simple Hazard Model. *Journal of Business* 74, 101-124.
Sims, C. A., 1980. Macroeconomics and Reality. *Econometrica* 48, 1-49.
Smith, C. W. and Stulz, R. M., 1985. The Determinants of Firms' Hedging Policies. *Journal of Financial and Quantitative Analysis* 20, 391-405.
Srivastava, A. and Tse, S., 2010. The Contribution of Delayed Gain Recognition to Trends in Conservatism: A Re-Examination Using a New Approach to Measuring Accounting Conservatism. Working paper, Northwestern University.
Sweeney, A., 1994. Debt-Covenant Violations and Managers' Accounting Responses. *Journal of Accounting and Economics* 17, 281-308.
Trueman, B. and Titman, S., 1988. An Explanation for Accounting Income Smoothing. *Journal of Accounting Research* 26, 127-139.
Tucker J. W. and Zarowin, P. A., 2006. Does Income Smoothing Improve Earnings Informativeness? *The Accounting Review* 81, 251-270.
Uhrig-Homburg, M., 2005. Cash-flow Shortage as an Endogenous Bankruptcy Reason. *Journal of Banking and Finance* 29, 1509–1534.
Vassalou, M. and Xing, H., 2004. Default Risk in Equity Returns. *Journal of Finance* 59, 831–868.
Vuolteenaho, T., 2002. What Drives Firm-Level Stock Returns? *Journal of Finance* 57, 233–264.
Watts, R., 2003. Conservatism in Accounting Part I: Explanations and Implications. *Accounting Horizons* 17, 207–221.
Wittenberg-Moerman, R., 2008. The Role of Information Asymmetry and Financial Reporting Quality in Debt Trading: Evidence from the Secondary Loan Market. *Journal of Accounting and Economics* 46, 240-260.
Zmijewski, M. E., 1984. Methodological Issues Related to the Estimation of Financial Distress Prediction Models. *Journal of Accounting Research* 22, 59-82.
Zhang, J., 2008. The Contracting Benefits of Accounting Conservatism to Lenders and Borrowers. *Journal of Accounting and Economics* 45, 27–54.
Zhang, F., 2006. Information Uncertainty and Stock Returns. *Journal of Finance* 61, 105-137.

Table 1 Descriptive Statistics for Main Variables

This table reports the descriptive statistics for the full sample of firm-year observations from 1989 through 2007. Panel A presents the summary statistics, and Panel B presents pairwise correlations among bankruptcy risk and accounting conservatism measures. The upper (lower) triangle of Panel B displays Pearson product-moment (Spearman) correlations with highlighted figures indicating statistical significance at the 90% confidence level. Variable definitions are provided below.

Panel A: Summary Statistics for the Full Sample

Variable	Mean	Q1	Median	Q3
EDF (unranked, %)	3.6502	0.0000	0.0000	0.0558
Campbell (unranked, %)	0.0127	0.0014	0.0028	0.0064
BANK	0.0059	0.0000	0.0000	0.0000
UC_PCA	0.3659	0.1897	0.3639	0.5319
UC_ACC	-0.0012	-0.0218	0.0010	0.0209
UC_BM (unranked)	-1.9489	-2.2175	-1.3437	-0.8280
UC_RES	0.0729	0.0000	0.0190	0.0910
CC_PCA	0.9188	0.4394	0.9534	1.5941
CC_ACM	0.0189	0.0004	0.0156	0.0355
CC_AR	2.1255	1.2598	1.9177	2.8431
CC_CR	-0.3102	-0.4259	-0.1237	0.1165
Leverage	5.8566	4.3320	5.8492	7.3159
ln(MV)	0.2540	0.1290	0.2478	0.3622
ROA	0.0336	0.0141	0.0420	0.0728
STD_Ret	0.4833	0.2939	0.4226	0.6119
Cash	0.0868	0.0131	0.0417	0.1156
ΔCash	0.0061	-0.0103	0.0015	0.0217
Rate	0.0418	0.0287	0.0460	0.0516
Inten_RD	0.1261	0.0054	0.0219	0.0612
Monitor	0.8448	1.0000	0.8924	1.0000
Rating	9.0508	9.0000	70000	12.0000
Esmooth (unranked)	0.6048	0.4000	0.7000	0.9000
Emgmt	-0.2631	-0.4550	-0.2735	-0.0771
Volatility_ROA	0.0054	0.0002	0.0006	0.0023
Turn	1.1700	0.6405	1.0352	1.4803
Eissue	0.0530	0.0000	0.0000	0.0050
Dissue	0.2137	-0.0457	0.0566	0.2225
Growth	0.2649	0.0051	0.0858	0.1955
Nimtaavg	0.0305	0.0101	0.0311	0.0476
Exretavg	-0.0031	-0.0244	0.0002	0.0226
Rsize	-10.0948	-11.5031	-10.0096	-8.6159
Mb	0.9042	0.4510	0.7442	1.2077
Price	2.3341	2.1401	2.7081	2.7081

Table 1 Descriptive Statistics for Main Variables (Cont'd)

Panel B: Correlation Matrix for the Full Sample

Variable	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1. *EDF*	1	**0.7789**	**0.0265**	**-0.1948**	**-0.0333**	**-0.2300**	**-0.0138**	**0.2404**	-0.0023	**0.4880**	**0.0671**
2. *Campbell*	**0.7789**	1	**0.0348**	**-0.0590**	**0.0334**	**-0.2136**	**-0.0025**	**0.2468**	-0.0081	**0.4764**	**0.0788**
3. *BANK*	**0.0265**	**0.0348**	1	**-0.0287**	**-0.0222**	**-0.0256**	**-0.0096**	**0.0117**	**-0.0103**	**0.0407**	-0.0035
4. *UC_PCA*	**-0.2168**	**-0.2170**	**-0.0298**	1	**0.1820**	**0.9025**	**0.4861**	**-0.0637**	**0.1237**	**-0.2020**	0.0104
5. *UC_ACC*	**-0.0274**	**0.0397**	**-0.0158**	**0.1611**	1	**0.0517**	**0.0489**	0.0029	**0.4819**	**-0.0728**	**0.0284**
6. *UC_BM*	**-0.2303**	**-0.2139**	**-0.0256**	**0.9349**	**0.0574**	1	**0.0808**	**-0.0964**	**0.0516**	**-0.2485**	-0.0061
7. *UC_RES*	**-0.0474**	**-0.1398**	-0.0078	**0.3023**	**-0.0390**	**0.0411**	1	**0.0468**	**0.0551**	**0.0514**	**0.0301**
8. *CC_PCA*	**0.4111**	**0.4095**	**0.0317**	**-0.1441**	**-0.0243**	**-0.1704**	-0.0028	1	-0.0062	**0.7160**	**0.6850**
9. *CC_ACM*	**-0.0204**	**-0.0454**	**-0.0089**	**0.1057**	**0.4483**	**0.0485**	**0.0391**	**0.0262**	1	-0.0425	**0.0375**
10. *CC_AR*	**0.4655**	**0.4335**	**0.0407**	**-0.2084**	**-0.0901**	**-0.2359**	-0.0060	**0.4056**	**-0.0591**	1	**0.0426**
11. *CC_CR*	**0.1922**	**0.2145**	0.0080	**-0.0299**	**0.0336**	**-0.0426**	-0.0043	**0.9305**	**0.0245**	**0.1167**	1

EDF is the ranking of the expected one-year-ahead default probability from Merton (1974) model. *Campbell* is the ranking of the one-month-ahead probability of business failure calculated based on the formula in the last column of Table III in Campbell *et al.* (2008). *BANK* proxies for bankruptcy risk and it is a dummy variable equal to one if the firm files for bankruptcy under Chapter 11 or Chapter 7 of the U.S. Bankruptcy code, and equal to zero otherwise. *UC_PCA* is the factor score generated from a principal component analysis of the three unconditional conservatism measurements: *UC_ACC*, *UC_BM* and *UC_RES*. Their eigenvalues are 0.9539, 1.1433 and 0.9028; their eigenvectors are 0.5380, 0.6342 and 0.6721; and their final communality estimates are 0.2894, 0.4022 and 0.4517, respectively. *UC_ACC* is equal to minus one times the ratio of total accruals to average total assets, calculated over a rolling window of the current year and prior two years. *UC_BM* is the industry-adjusted ranking of minus one times the ratio of book to market value of common shareholders' equity at fiscal year-end. *UC_RES* is the ratio of LIFO reserves plus hidden R&D and advertising reserves resulting from the application of unconditional conservatism to total assets, estimated as follows: $UC\_RES_{it} = (INV_{it}^{res} + RD_{it}^{res} + ADV_{it}^{res}) / AT_{it}$. *CC_PCA* is the factor score generated from a principal component analysis of the three conditional conservatism measurements: *CC_ACM*, *CC_AR*, and *CC_CR*. Their eigenvalues are 1.0461, 1.0324, and 0.9214; their eigenvectors are 0.3176, 0.5468, 0.8040; and their final communality estimates are 0.1008, 0.2990, and 0.6464, respectively. *CC_ACM* is minus one times the ratio of accumulated non-operating accruals to accumulated total assets, calculated over a rolling window of current year and prior two years. *CC_AR* is the ratio of C score plus G score to G score as defined in Khan and Watts (2009). This study directly uses the formula in Table 3 of Khan and Watts (2009) to calculate the *CC_AR*. *CC_CR* is the ratio of unexpected current earnings (or current earnings shocks) to total earnings news with the ratio times minus one if earnings news is positive. *Ln(MV)* is the natural logarithm of market capitalization at the end of the fiscal year. Leverage is measured as the ratio of book value of long-term debt (Compustat DLTT) and short-term debt (Compustat DLC) to total assets (Compustat AT). *ROA* is calculated as the ratio of earnings (Compustat NI) over total assets (Compustat AT). *STD_Ret* is the annualized standard deviation of daily stock return over the prior twelve months. *Cash* is the ratio of cash holdings (Compustat CHE) to total assets (Compustat AT). *ΔCash* is the ratio of cash flow (Compustat CHECH) to total assets (Compustat AT). *Rate* is the risk-free rate measured by the annualized three-month T-bill rate retrieved from Federal Reserve Bank Reports. *Inten_RD* is the ratio of R&D expenses (Compustat XRD) to total assets (Compustat AT). *SOX* is an indicator for the period after the passage of the SOX Act, equal to 1 for fiscal years 2003 and after, and 0 otherwise. *Aud_Resign* is an indicator for an auditor's resignation from a client firm equal to 1 for the three-year period after auditor resignation and 0 otherwise. *Emgmt* is the factor score generated from a principal component analysis of four earnings management metrics: the ranking of absolute value of discretionary accrual DA, abnormal operational cash flow R_OCF, abnormal discretionary expenses *R_DISX*, and abnormal product cost R_PROD. Their eigenvalues are 1.2992, 1.1747, 0.8823 and 0.6438; their eigenvectors are 0.2138, -0.7195, 0.8136 and -0.2691; and their final communality estimates are 0.0473, 0.5177, 0.6619 and 0.0724, respectively. *Esmooth* proxies for conservatism gaming and is measured as negative one times the Spearman correlation of OCF and accruals with both deflated by average total assets, measured using a rolling window of five fiscal years for all available accrual and cash flow data. *VolatilityROA* proxies for earnings variability estimated as the variance of *ROA* calculated over a rolling window of the current year and prior four years. *SPOS* is an indicator for small positive earnings that equals one if net income scaled by total assets is between 0 and 0.01, following Barth *et al.* (2008). *Turn* is measured as sales (Compustat SALE) divided by end-of-year total assets (Compustat AT), following Barth *et al.* (2008). *Eissue* is annual percentage change in shares of common stock measured as the ratio of the change in shares outstanding at the current and previous fiscal year-ends to the common shares outstanding at previous fiscal year-end (Compustat CSHO). *Dissue* is annual change in total liabilities (Compustat LT) deflated by beginning-of-year total liabilities, following Barth *et al.* (2008). *Growth* is annual change in sales (Compustat SALE) deflated by sales in previous period. *Nimtaavg* proxies for earnings predictability and it is defined as the present value of the three-year sum of *NIMTA*, the annual net income deflated by total liabilities and market value, assuming earnings degenerate at the monthly rate ϕ = ½: $Nimtaavg_{t-1,t-4} = \frac{1-\phi^{12}}{1-\phi^{24}}(NIMTA_{t-1,t-2} + \phi^{12} NIMTA_{t-2,t-3} + \phi^{24} NIMTA_{t-3,t-4})$. *Exretavg* proxies for return predictability of *EXRET* (past excess return relative to the value weighted S&P 500 index return over a period of 12 months), and $Exretavg_{t-1,t-12} = \frac{1-\phi}{1-\phi^{12}}(EXRET_{t-1} + \ldots + \phi^{11} EXRET_{t-12})$, where $EXRET_{it} = log(1+R_{it}) - log(1 + R_{S\&P500,t})$, and ϕ = ½. *Rsize* proxies for relative firm size calculated as the natural logarithm of market value of equity relative to that of the S&P 500 index. *Mb* is the ratio of firm's market equity value to its book equity value at fiscal year-end. *Price* is calculated as the log of price per share winsorized above \$15, following Campbell *et al.* (2008).

Table 2 Causal Relations between Unconditional and Conditional Conservatism and Bankruptcy Risk Estimated by VARX(1) Models

This table reports the SUR estimation results for tri-variate VARX (1) models. Bankruptcy risk measures are *EDF* and *Campbell*; unconditional and conditional conservatism measures are *UC_PCA* and *CC_PCA,* respectively. Model 1 uses *EDF*, *UC_PCA*, and *CC_PCA* as dependent variables and their one- period lags as autoregressive vectors; Model 2 uses *Campbell*, *UC_PCA*, and *CC_PCA* as dependent variables and their one- period lags as autoregressive vectors. Panel A reports the results for the full sample; Panel B reports the results for the extremely distressed subsample of firm-year observations in the highest decile of (-*ROA*). Model details are provided at the end of this table.

Panel A: Tri-variate VARX(1) Model Results for the Full Sample

Independent Variables	Model 1			Model 2		
	EDF_t	UC_PCA_t	CC_PCA_t	$Campbell_t$	UC_PCA_t	CC_PCA_t
Intercept	0.3532	0.0191	2.9846	0.3842	0.0213	3.0627
	(17.21)***	(3.73)***	(46.56)***	(18.10)***	(4.23)***	(48.60)***
UC_PCA_{t-1}	**-0.0431**	0.6616	0.0940	**-0.0184**	0.6619	0.0571
	(-8.82)* **	(186.62)***	(2.12)***	**(-3.65)*** **	(186.70)***	(1.29)
CC_PCA_{t-1}	**-0.0083**	0.0021	-0.0128	**-0.0111**	0.0019	-0.0076
	(-15.05)* **	(5.17)***	(-2.56)***	**(-19.38)*** **	(4.67)***	(-1.52)
EDF_{t-1}	0.2459	**0.0389**	**-0.2865**			
	(62.20)***	**(13.61)*** **	**(-8.01)*** **			
$Campbell_{t-1}$				0.3340	**0.0388**	**-0.4431**
				(85.31)***	**(14.16)*** **	**(-12.95)*** **
$Ln(MV)_t$	-0.0377	0.0162	-0.2663	-0.0305	0.0156	-0.2673
	(-64.60)***	(39.85)***	(-52.33)***	(-51.88)***	(39.76)***	(-54.53)***
$Leverage_t$	0.6452	-0.0636	0.3180	0.4687	-0.0634	0.4000
	(95.17)***	(-13.39)***	(5.35)***	(67.79)***	(-13.40)***	(6.77)***
ROA_t	-0.4263	-0.2552	-6.5643	-0.9634	-0.2437	-6.7519
	(-33.93)***	(-28.33)***	(-58.21)***	(-73.09)***	(-26.70)***	(-59.17)***
STD_Ret_t	0.3201			0.1702		
	(77.46)***			(40.06)***		
$Cash_t$	-0.0395			-0.3210		
	(-4.35)***			(-33.95)***		
$\Delta Cash_t$	-0.0600			-0.1348		
	(-4.39)***			(-9.52)***		
$Rate_t$	-1.1966			-0.0947		
	(-5.05)***			(-0.39)		
$Inten\_RD_t$	-0.0005	0.0023	-0.0085	-0.0011	0.0024	-0.0090
	(-0.97)	(6.11)***	(-1.78)*	(-2.05)**	(6.23)***	(-1.89)*
Year and Ind Dum	Yes	Yes	Yes	Yes	Yes	Yes
F-statistic	157.52***	185.30***	64.13***	197.75***	200.64***	167.79***
Sample size		34,896			34,890	
Sys. weighted R^2		0.6109			0.5994	

Panel B: Tri-variate VARX(1) Model Results for the Extremely Distressed Subsample

Independent Variables	Model 1			Model 2		
	EDF_t	UC_PCA_t	CC_PCA_t	$Campbell_t$	UC_PCA_t	CC_PCA_t
Intercept	0.2011	0.0919	3.0555	0.2267	0.0932	3.1876
	(3.49)***	(5.27)***	(12.16)***	(3.65)***	(5.40)***	(12.83)***
UC_PCA_{t-1}	**-0.0356**	0.5715	0.1176	-0.0090	0.5709	0.0864
	(-2.36) **	(51.83)***	(0.74)	(-0.56)	(51.92)***	(0.55)
CC_PCA_{t-1}	**-0.0086**	0.0019	0.0099	**-0.0096**	0.0019	0.0158
	(-5.33)* **	(1.65)	(0.58)	**(-5.53)*** **	(1.57)	(0.93)
EDF_{t-1}	0.2189	**0.0299**	-0.1227			
	(19.14)***	**(3.59)*** **	(-1.02)			
$Campbell_{t-1}$				0.2409	**0.0299**	**-0.3508**
				(20.77)***	**(3.79)*** **	**(-3.09)*** **
$Ln(MV)_t$	-0.0400	0.0136	-0.2302	-0.0305	0.0133	-0.2420
	(-23.96)***	(11.31)***	(-13.31)***	(-17.48)***	(11.46)***	(-14.43)***
$Leverage_t$	0.8631	0.0031	-1.1485	0.4519	0.0059	-1.0447
	(33.78)***	(0.17)	(-4.36)***	(16.81)***	(0.33)	(-4.03)***

ROA_t	-0.1574	-0.0774	-6.5650	-0.2767	-0.0744	-6.4869
	(-1.59)	(-1.08)	(-6.33)***	(-2.62)***	(-1.04)	(-6.27)***
STD_Ret_t	0.3210			0.1909		
	(28.06)***			(15.48)***		
$Cash_t$	-0.0016			-0.1584		
	(-0.07)			(-6.36)***		
$\Delta Cash_t$	-0.0149			-0.0582		
	(-0.44)			(-1.58)		
$Rate_t$	-1.0742			-0.4350		
	(-1.66)*			(-0.62)		
$Inten\_RD_t$	0.4858	0.3453	0.1069	0.4634	0.3449	0.2349
	(6.38)***	(6.31)***	(0.14)	(5.68)***	(6.31)***	(0.30)
Year and Ind Dum	Yes	Yes	Yes	Yes	Yes	Yes
F-statistic	17.55***	12.92***	1.05	15.61***	14.34***	9.53***
Sample size		3,488			3,488	
Sys. weighted R^2		0.5893			0.5125	

*, **, and *** indicates a coefficient is significant at 90% , 95%, and 99% confidence level, respectively.
The tri-variate VARX(1) model used in this table consists of the following three equations:

$$BR_t = \alpha_{10} + \beta_{11}BR_{t-1} + \gamma_{11}UC\_PCA_{t-1} + \delta_{11}CC\_PCA_{t-1} + \alpha_{11}Leverage_t + \alpha_{12}ROA_t + \alpha_{13}STD\_Ret_t + \alpha_{14}Ln(MV)_t + \alpha_{15}Rate_t + \alpha_{16}Inten\_RD_t + \alpha_{17}Cash_t + \alpha_{18}\Delta Cash_t + \sum\alpha_{1j}Ind\_Dum_{1j} + \sum\alpha_{1k}Year\_Dum_{1k} + \varepsilon_{11} \quad (11)$$

$$UC\_PCA_t = \alpha_{20} + \beta_{21}BR_{t-1} + \gamma_{21}UC\_PCA_{t-1} + \delta_{21}CC\_PCA_{t-1} + \alpha_{22}Leverage_t + \alpha_{23}ROA_t + \alpha_{24}Ln(MV)_t + \alpha_{25}Inten\_RD_t + \sum\alpha_{2j}Ind\_Dum_{2j} + \sum\alpha_{2k}Year\_Dum_{2k} + \varepsilon_{21} \quad (12)$$

$$CC\_PCA_t = \alpha_{30} + \beta_{31}BR_{t-1} + \gamma_{31}UC\_PCA_{t-1} + \delta_{31}CC\_PCA_{t-1} + \alpha_{32}Leverage_t + \alpha_{33}ROA_t + \alpha_{34}Ln(MV)_t + \alpha_{35}Inten\_RD_t + \sum\alpha_{3j}Ind\_Dum_{3j} + \sum\alpha_{3k}Year\_Dum_{3k} + \varepsilon_{31} \quad (13)$$

where *BR* = *EDF* in Model 1 and *BR* = *Campbell* in Model 2.
F-statistics reported in columns 2 and 5 are for H0: $\gamma_{11} = 0$ and $\delta_{11} = 0$; *F*-statistics reported in columns 3 and 6 are for H0: $\delta_{21} = 0$, and *F*-statistics reported in columns 4 and 7 are for H0: $\gamma_{31} = 0$.

Table 3 Causal Relations between Unconditional and Conditional Conservatism and Bankruptcy Risk for Full Samples Estimated by VARX (3) Models

This table report the SUR estimation results for tri-variate VARX (3) models. Bankruptcy risk measures are *EDF* and *Campbell*; unconditional and conditional conservatism measures are *UC_PCA* and *CC_PCA,* respectively. Model 1 uses *EDF*, *UC_PCA*, and *CC_PCA* as dependent variables and their one-, two-, three- period lags as autoregressive vectors; Model 2 uses *Campbell*, *UC_PCA*, and *CC_PCA* as dependent variables and their one-, two-, three- period lags as autoregressive vectors. Model details are provided at the end of this table.

Independent Variables	Model 1			Model 2		
	EDF_t	UC_PCA_t	CC_PCA_t	$Campbell_t$	UC_PCA_t	CC_PCA_t
Intercept	0.3315	-0.0342	2.6631	0.3469	-0.0311	2.7372
	(18.38)***	(-8.58)***	(30.94)***	(19.60)***	(-8.00)***	(32.71)***
UC_PCA_{t-1}	**-0.0495**	0.7670	-0.1699	**-0.1637**	0.7675	-0.3523
	(-3.59)* **	(125.13)***	(-1.28)	**(-11.90)*** **	(124.65)***	(-2.66)***
UC_PCA_{t-2}	-0.0013	0.1147	0.3115	**0.1298**	0.1155	0.4209
	(-0.09)	(18.82)***	(2.37)**	**(9.50)*** **	(18.90)***	(3.20)***
UC_PCA_{t-3}	-0.0034	0.0312	0.0404	0.0068	0.0302	0.0770
	(-0.56)	(11.62)***	(0.70)	(1.13)	(11.22)***	(1.33)
CC_PCA_{t-1}	**-0.0064**	0.0014	-0.0105	**-0.0082**	0.0012	-0.0021
	(-10.29)* **	(5.06)***	(-1.77)*	**(-13.18)*** **	(4.19)***	(-0.36)
CC_PCA_{t-2}	**-0.0069**	0.0018	0.0245	**-0.0090**	0.0018	0.0207
	(-11.14)* **	(6.39)***	(4.12)***	**(-14.53)*** **	(6.65)***	(3.47)***
CC_PCA_{t-3}	**-0.0030**	0.0007	0.0254	**-0.0035**	0.0008	0.0231
	(-5.05)* **	(2.53)***	(4.51)***	**(-6.07)*** **	(3.16)***	(4.12)***
EDF_{t-1}	0.2790	**0.0316**	**-0.5551**			
	(48.07)***	**(12.32)*** **	**(-10.05)** **			
EDF_{t-2}	0.1091	**0.0086**	**0.2038**			
	(18.98)***	**(3.38)*** **	**(3.71)*** **			
EDF_{t-3}	0.0348	**0.0034**	**0.0841**			
	(7.75)***	**(1.73)* **	**(1.95)* **			
$Campbell_{t-1}$				0.3548	**0.0385**	**-0.9421**
				(60.65)***	**(14.81)*** **	**(-16.84)*** **
$Campbell_{t-2}$				0.1348	0.0021	**0.4367**
				(22.89)***	(0.82)	**(7.71)*** **
$Campbell_{t-3}$				0.0308	0.0004	**0.1063**
				(6.96)***	(0.20)	**(2.49)** **
$Ln(MV)_t$	-0.0270	0.0091	-0.2514	-0.0203	0.0082	-0.2508
	(-38.44)***	(29.56)***	(-38.01)***	(-30.47)***	(28.55)***	(-40.40)***
$Leverage_t$	0.5335	-0.0383	0.3178	0.3687	-0.0383	0.4211
	(67.14)***	(-11.29)***	(4.34)***	(47.97)***	(-11.40)***	(5.82)***
ROA_t	-0.4501	-0.1496	-7.0033	-0.9515	-0.1317	-7.3962
	(-29.69)***	(-22.41)***	(-48.62)***	(-61.64)***	(-19.27)***	(-50.30)***
STD_Ret_t	-0.0313			-0.2552		
	(-2.95)***			(-24.20)***		
$Cash_t$	-0.1172			-0.2297		
	(-7.39)***			(-14.70)***		
$\Delta Cash_t$	0.2876			0.1239		
	(61.12)***			(27.18)***		
$Rate_t$	-1.1380			0.0793		
	(-4.20)***			(0.30)		
$Inten\_RD_t$	-0.0038	0.0058	-0.0750	-0.0117	0.0064	-0.0798
	(-1.01)	(3.52)***	(-2.10)**	(-3.15)***	(3.89)***	(-2.24)**
Year and Ind Dum	Yes	Yes	Yes	Yes	Yes	Yes
F-stat for H0: $\gamma_{11} + \gamma_{12} + \gamma_{13} = 0$	72.10***			18.48***		
F-stat for H0: $\delta_{11} + \delta_{12} + \delta_{13} = 0$	243.97***			402.16***		
F-stat for H0: $\beta_{21} + \beta_{22} + \beta_{23} = 0$		318.08***			97.78***	
F-stat for H0: $\beta_{31} + \beta_{32} + \beta_{33} = 0$			25.63***			0.53
Sample size		26,280			26,271	
Sys. weighted R^2		0.7880			0.7917	
AIC number for VARX(1)	-397,956	-398,824	-397,824	-396,725	-396,733	-396,733

AIC number for VARX(3)	-308,057	-308,065	-308,065	-308,405	-308,413	-308,413

*, **, and *** indicates a coefficient is significant at 90%, 95%, and 99% confidence level, respectively.
The tri-variate VARX(3) model used in this table consists of the following three equations:

$$BR_t = \alpha_{10} + \beta_{11}BR_{t-1} + \beta_{12}BR_{t-2} + \beta_{13}BR_{t-3} + \gamma_{11}UC\_PCA_{t-1} + \gamma_{12}UC\_PCA_{t-2} + \gamma_{13}UC\_PCA_{t-3} + \delta_{11}CC\_PCA_{t-1} + \delta_{12}CC\_PCA_{t-2} + \delta_{13}CC\_PCA_{t-3} + \alpha_{22}Leverage_t + \alpha_{12}ROA_t + \alpha_{13}STD\_Ret_t + \alpha_{14}Ln(MV)_t + \alpha_{15}Rate_t + \alpha_{16}Inten\_RD_t + \alpha_{17}Cash_t + \alpha_{18}\Delta Cash_t + \sum\alpha_{1j}\, Ind\_Dum_{1j} + \sum\alpha_{1k}\, Year\_Dum_{1k} + \varepsilon_{11} \quad (7)$$

$$UC\_PCA_t = \alpha_{20} + \beta_{21}BR_{t-1} + \beta_{22}BR_{t-2} + \beta_{23}BR_{t-3} + \gamma_{21}UC\_PCA_{t-1} + \gamma_{22}UC\_PCA_{t-2} + \gamma_{23}UC\_PCA_{t-3} + \delta_{21}CC\_PCA_{t-1} + \delta_{22}CC\_PCA_{t-2} + \delta_{23}CC\_PCA_{t-3} + \alpha_{22}Leverage_t + \alpha_{23}ROA_t + \alpha_{24}Ln(MV)_t + \alpha_{25}Inten\_RD_t + \sum\alpha_{2j}Ind\_Dum_{2j} + \sum\alpha_{2k}Year\_Dum_{2k} + \varepsilon_{21} \quad (8)$$

$$CC\_PCA_t = \alpha_{30} + \beta_{31}BR_{t-1} + \beta_{32}BR_{t-2} + \beta_{33}BR_{t-3} + \gamma_{31}UC\_PCA_{t-1} + \gamma_{32}UC\_PCA_{t-2} + \gamma_{33}UC\_PCA_{t-3} + \delta_{31}CC\_PCA_{t-1} + \delta_{32}CC\_PCA_{t-2} + \delta_{33}CC\_PCA_{t-3} + \alpha_{32}Leverage_t + \alpha_{33}ROA_t + \alpha_{34}Ln(MV)_t + \alpha_{35}Inten\_RD_t + \sum\alpha_{3j}Ind\_Dum_{3j} + \sum\alpha_{3k}\, Year\_Dum_{3k} + \varepsilon_{31} \quad (9)$$

where *BR* = *EDF* in Model 1 and *BR* = *Campbell* in Model 2.

Table 4 Causal Relations between Unconditional and Conditional Conservatism and Subsequent Actual Bankruptcy Estimated by Logit Models

This table reports estimation results for logit models that regress the bankruptcy indicator *BANK* on unconditional and conditional conservatism metrics, *UC_PCA* and *CC_PCA*, and other controlling variables. As testing varibles, Model 1 uses *UC_PCA*, Model 2 uses *CC_PCA*, and Models 3 to 5 use both *UC_PCA* and *CC_PCA*. Models 4 and 5 add earnings management (*Emgmt*) and earnings smoothing (*Esmooth*) as control variables, respectively. Model details are provided at the end of the table.

Independent Variables	Model 1	Model 2	Model 3	Model 4	Model 5
Intercept	-26.7094	-26.8657	-26.7027	-26.7179	-26.2651
	(-12.93)***	(-13.01)***	(-12.91)***	(-12.80)***	(-11.98)***
UC_PCA_{t-1}	**-1.0837**		**-1.0844**	**-1.0763**	**-1.1358**
	(-2.38)**		**(-2.38)****	**(-2.36)****	**(-2.44)****
CC_PCA_{t-1}		0.0026	0.0045	0.0035	-0.0084
		(0.06)	(0.10)	(0.08)	(-0.19)
$Emgmt_{t-1}$				0.1775	
				(0.68)	
$Esmooth_{t-1}$					-0.3326
					(-1.00)
$Nimtaavg_{t-1}$	-1.8605	-1.8098	-1.8543	-1.8134	-1.8142
	(-1.48)	(-1.46)	(-1.47)	(-1.44)	(-1.36)
$Leverage_{t-1}$	1.8871	1.8253	1.8850	1.8818	2.2959
	(2.46)**	(2.39)**	(2.47)**	(2.46)**	(2.73)***
$Exretavg_{t-1}$	-6.5512	-6.3473	-6.5619	-6.6528	-6.0151
	(-2.32)**	(-2.24)**	(-2.32)**	(-2.34)**	(-2.06)**
$Rsize_{t-1}$	-0.2951	-0.3035	-0.2939	-0.2884	-0.3422
	(-3.20)***	(-3.30)***	(-3.14)***	(-3.03)***	(-3.51)***
STD_Ret_{t-1}	1.3001	1.2614	1.2989	1.2946	1.2937
	(3.30)***	(3.18)***	(3.29)***	(3.25)***	(3.00)***
$Cash_{t-1}$	-5.0233	-4.8829	-5.0187	-4.8938	-4.6751
	(-3.40)***	(-3.34)***	(-3.39)***	(-3.31)***	(-3.17)***
$\Delta Cash_{t-1}$	3.4642	3.3340	3.4604	3.3898	3.7284
	(1.34)	(1.31)	(1.34)	(1.32)	(1.41)
Mb_{t-1}	0.0633	0.0068	0.0627	0.0776	0.2711
	(0.25)	(0.03)	(0.24)	(0.31)	(1.08)
$Price_{t-1}$	0.8508	0.8303	0.8510	0.8422	0.8439
	(3.42)***	(3.34)***	(3.42)***	(3.37)***	(3.21)***
$Rate_{t-1}$	35.4836	34.0016	35.5005	35.7905	34.9742
	(1.00)	(0.97)	(1.00)	(1.00)	(0.91)
$Inten\_RD_{t-1}$	-19.1577	-19.6993	-19.1563	-18.9446	-18.4807
	(-2.09)**	(-2.22)**	(-2.09)**	(-2.04)**	(-2.06)**
Year and Ind Dum	Yes	Yes	Yes	Yes	Yes
Obs.	30,986	30,986	30,986	30,941	29,614
Bankruptcy obs.	205	205	205	205	205
Psuedo *R-square*	0.2422	0.2392	0.2422	0.2428	0.2586

*, **, and *** indicates a coefficient is significant at 90%, 95%, and 99% confidence level, respectively.

The logit model used in this table is:

$$BANK_{it} = \alpha + \gamma CON_{it-1} + Controls_{it-1} + \mu_t \quad (10)$$

where *BANK* is the bankruptcy indicator equal to one for bankrupt firms and zero otherwise; *CON* refers to *UC_PCA* in Model 1, *CC_PCA* in Model 2 and to both *UC_PCA* and *CC_PCA* in Models 3 to 5. In Models 1 to 5, *Controls* include market-based profitability (*NIMTAVG*), predictability of excess return (*EXRETAVG*), market-to-book ratio (*Mb*), excess firm size (*Rsize*), leverage ratio (*Leverage*), liquidity (*Cash*, ratio of cash flow to total assets *(ΔCash*), return volatility (*STD_Ret*), stock price (*PRICE*), risk-free rate (*Rate*), R&D intensity (*Inten_RD*), and year and industry dummies.

Table 5 Cash Enhancing and Informational Roles of Accounting Conservatism and Causal Relations between Unconditional and Conditional Conservatism and Subsequent Bankruptcy Risk

This table reports SUR estimation results for tri-variate VARX (1) models using conditional and unconditional conservatism, bankruptcy risk, and their interactions with cash or information asymmetry as autoregressive vectors. Bankruptcy risk measures are *EDF* and *Campbell*; unconditional and conditional conservatism measurements used are *UC_PCA* and *CC_PCA*, respectively. Model details are provided at the end of the table.

Panel A: Tests for Cash Enhancing Role of Conservatism

Independent Variables	Model 1			Model 2		
	EDF_t	UC_PCA_t	CC_PCA_t	$Campbell_t$	UC_PCA_t	CC_PCA_t
Intercept	0.2944	-0.0308	3.0679	0.3040	-0.0296	3.1702
	(13.92)***	(-8.27)***	(39.82)***	(14.43)***	(-8.04)***	(41.68)***
$UC\_PCA_{t-1}*Cash_{t-1}$	**-0.3010**			**-0.3437**		
	(-9.46)* **			**(-10.85)*** **		
UC_PCA_{t-1}	-0.0321	0.8838	0.0997	-0.0067	0.8839	0.0620
	(-5.06)***	(354.25)***	(1.93)*	(-1.06)	(354.90)***	(1.20)
$CC\_PCA_{t-1}*Cash_{t-1}$	**-0.0276**			**-0.0115**		
	(-5.83)* **			**(-2.44)** **		
CC_PCA_{t-1}	-0.0050	0.0010	-0.0146	-0.0092	0.0008	-0.0099
	(-7.02)***	(3.66)***	(-2.62)***	(-12.93)***	(2.89)***	(-1.77)*
EDF_{t-1}	0.3527	0.0438	-0.3785			
	(77.54)***	(21.35)***	(-8.93)***			
$Campbell_{t-1}$				0.4619	0.0432	-0.5588
				(107.04)***	(22.48)***	(-14.08)***
Controls	Yes	Yes	Yes	Yes	Yes	Yes
F-statistic for H0: $\theta_{11}+\gamma_{11}=0$		131.31***			146.52***	
F-statistic for H0: $\delta_{11}+\theta_{12}=0$		55.70***			22.64***	
Sample size		30,276			30,270	
Sys. weighted R^2		0.6018			0.5893	

Panel B: Tests for Information Role of Conservatism

Independent Variables	Model 1			Model 2		
	EDF_t	UC_PCA_t	CC_PCA_t	$Campbell_t$	UC_PCA_t	CC_PCA_t
Intercept	0.3039	-0.0308	3.0679	0.3198	-0.0296	3.1702
	(14.29)***	(-8.27)***	(39.82)***	(15.07)***	(-8.04)***	(41.68)***
$UC\_PCA_{t-1}*STD\_Ret_{t-1}$	**-0.0453**			**-0.1367**		
	(-3.00)* **			**(-9.07)*** **		
UC_PCA_{t-1}	-0.0305	0.8838	0.0997	0.0346	0.8839	0.0620
	(-3.20)***	(354.25)***	(1.93)*	(3.65)***	(354.90)***	(1.20)
$CC\_PCA_{t-1}*STD\_Ret_{t-1}$	**-0.0201**			-0.0004		
	(-10.56)* **			(-0.20)		
CC_PCA_{t-1}	0.0026	0.0010	-0.0146	-0.0097	0.0008	-0.0099
	(2.40)**	(3.66)***	(-2.62)***	(-8.95)***	(2.89)***	(-1.77)*
EDF_{t-1}	0.3760	0.0438	-0.3785			
	(77.80)***	(21.35)***	(-8.93)***			
$Campbell_{t-1}$				0.4666	0.0432	-0.5588
				(106.88)***	(22.48)***	(-14.08)***
Controls	Yes	Yes	Yes	Yes	Yes	Yes
F-statistic for H0: $\theta_{11}+\gamma_{11}=0$		68.82***			125.08***	
F-statistic for H0: $\delta_{11}+\theta_{12}=0$		231.59***			76.27***	
Sample size		30,276			30,270	
Sys. weighted R^2		0.7761			0.7778	

*, **, and *** indicates a coefficient is significant at 90%, 95%, and 99% confidence level, respectively.
The tri-variate VARX(1) model used in this table consists of the following three equations:

$BR_t = \alpha_{10} + \beta_{11}BR_{t-1} + \gamma_{11}UC\_PCA_{t-1} + \delta_{11}CC\_PCA_{t-1} + \theta_{11}Role_{t-1}*UC\_PCA_{t-1} + \theta_{12}Role*CC\_PCA_{t-1} + \theta_{13}Role_{t-1} + Controls + \varepsilon_{11}$

$UC\_PCA_t = \alpha_{20} + \beta_{21}BR_{t-1} + \gamma_{21}UC\_PCA_{t-1} + \delta_{21}CC\_PCA_{t-1} + Controls + \varepsilon_{21}$

$CC\_PCA_t = \alpha_{30} + \beta_{31}BR_{t-1} + \gamma_{31}UC\_PCA_{t-1} + \delta_{31}CC\_PCA_{t-1} + \theta_{32}Role_{t-1} + Controls + \varepsilon_{31}$

where *Role* = *Cash* and *STD_Ret* in Panels A and B, respectively. *Controls* are the same as those in the corresponding equations (4) to (6).

Table 6 SOX, Auditor Resignation and Causal Relations between Bankruptcy Risk and Subsequent Unconditional and Conditional Conservatism

This table reports SUR results for tri-variate VARX (1) models with bankruptcy risk, unconditional and conditional conservatism as dependent variables, and with their one-period lags and interactions with post-SOX *SOX* and with post-auditor-resignation *Aud_resign* as autoregressive vectors. Bankruptcy risk measures are *EDF* and *Campbell*; unconditional and conditional conservatism measures are *UC_PCA* and *CC_PCA,* respectively. Model details are provided at the end of the table.

Panel A: SOX and Causal Relations between Conservatism and Bankruptcy Risk

Independent Variables	**Model 1**			**Model 2**		
	EDF_t	UC_PCA_t	CC_PCA_t	$Campbell_t$	UC_PCA_t	CC_PCA_t
Intercept	0.3505	0.0304	2.9754	0.3858	0.0318	3.0675
	(17.04)***	(5.31)***	(46.08)***	(18.10)***	(5.65)***	(48.38)***
$UC\_PCA_{t-1}*SOX$	**-0.0322**			0.0009		
	(-3.69)* **			(0.10)		
UC_PCA_{t-1}	-0.0327	0.6636	0.1056	-0.0197	0.6641	0.0743
	(-6.67)***	(184.04)**	(2.60)***	(-3.89)***	(184.19)**	(1.83)
$CC\_PCA_{t-1}*SOX$	-0.0007			**-0.0040**		
	(-0.56)			**(-3.13)*** **		
CC_PCA_{t-1}	-0.0081	0.0014	-0.0130	-0.0102	0.0012	-0.0076
	(-13.42)**	(3.21)***	(-2.58)***	(-16.21)**	(2.75)***	(-1.51)
$EDF_{t-1}*SOX$		**0.0105**	-0.0261			
		(1.81)*	(-0.39)			
EDF_{t-1}	0.2456	0.0316	-0.2777			
	(62.18)***	(9.04)***	(-7.03)***			
$Campbell_{t-1}*SOX$					**0.0135**	0.1041
					(2.37)* *	(1.59)
$Campbell_{t-1}$				0.3331	0.0320	-0.4661
				(85.15)***	(9.58)***	(-12.34)**
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Sample size		34,896			34,890	
Sys. weighted R^2		0.6016			0.5893	

Panel B: Auditor Resignations and Causal Relations between Conservatism and Bankruptcy Risk

Independent Variables	**Model 1**			**Model 2**		
	EDF_t	UC_PCA_t	CC_PCA_t	$Campbell_t$	UC_PCA_t	CC_PCA_t
Intercept	0.2311	0.0116	3.0028	0.3840	0.0011	2.9924
	(4.32)***	(0.32)	(6.98)***	(7.19)***	(0.03)	(7.01)***
UC_PCA_{t-1}	**-0.1108**	0.6775	-0.0284	-0.0593	0.6774	-0.0419
	(-2.79)* **	(26.99)***	(-0.09)	(-1.49)	(27.05)***	(-0.14)
$UC\_PCA_{t-1}*Aud\_resign_{t-1}$	-0.0400			0.0062		
	(-0.73)			(0.11)		
CC_PCA_{t-1}	-0.0042	0.0052	-0.0549	**-0.0215**	0.0050	-0.0545
	(-0.73)	(1.56)	(-1.38)	**(-3.72)*** **	(1.49)	(-1.36)
$CC\_PCA_{t-1}*Aud\_resign_{t-1}$	-0.0062			0.0009		
	(-0.80)			(0.11)		
EDF_{t-1}	0.0910	0.0235	0.0515			
	(3.34)***	(0.99)	(0.18)			
$EDF_{t-1}*Aud\_resign_{t-1}$		**0.0792**	0.0407			
		(2.56)* *	(0.10)			
$Campbell_{t-1}$				0.2751	**0.0437**	0.0965
				(10.14)***	**(1.84)***	(0.34)
$Campbell_{t-1}*Aud\_resign_{t-1}$					**0.0522**	-0.1155
					(1.67)*	(-0.30)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Sample size		732			732	
Sys. weighted R^2		0.6782			0.6351	

The tri-variate VARX (1) model used in this table consists of the following three equations:

$$BR_t = \alpha_{10} + \beta_{11}BR_{t-1} + \gamma_{11}UC\_PCA_{t-1} + \delta_{11}CC\_PCA_{t-1} + \theta_{11}Exp_{t-1}*UC\_PCA_{t-1} + \theta_{12}Exp_{t-1}*CC\_PCA_{t-1} + \theta_{13}Exp_{t-1} + Controls + \varepsilon_{11}$$

$$UC\_PCA_t = \alpha_{20} + \beta_{21}BR_{t-1} + \gamma_{21}UC\_PCA_{t-1} + \delta_{21}CC\_PCA_{t-1} + \theta_{21}Exp_{t-1}*BR_{t-1} + \theta_{22}Exp_{t-1} + Controls + \varepsilon_{21}$$

$$CC\_PCA_t = \alpha_{30} + \beta_{31}BR_{t-1} + \gamma_{31}UC\_PCA_{t-1} + \delta_{31}CC\_PCA_{t-1} + \theta_{31}Exp_{t-1}*BR_{t-1} + \theta_{32}Exp_{t-1} + Controls + \varepsilon_{31}$$

where *Exp* = *SOX* and *Aud_Resign* in Panels A and B, respectively. *Controls* are the same as in the corresponding equations (4) to (6).

Table 8 Conservatism Gaming and Causal Relations between Unconditional and Conditional Conservatism and Bankruptcy Risk

This table reports the SUR estimation results for tetra-variate VARX (1) models with bankruptcy risk, unconditional and conditional conservatism and conservatism gaming as dependent variables and their one-period lags as autoregressive vectors. Bankruptcy risk measures are *EDF* and *Campbell*. Model 1 uses *EDF, UC_PCA, CC_PCA* and *Esmooth* as the autoregressive vector; Model 2 uses *Campbell, UC_PCA, CC_PCA* and *Esmooth* as the autoregressive vector. Model details are provided at the end of this table.

Independent Variables	Model 1				Model 2			
	EDF_t	UC_PCA_t	CC_PCA_t	$Esmooth_t$	$Campbell_t$	UC_PCA_t	CC_PCA_t	$Esmooth_t$
Intercept	0.4339	0.0191	2.9232	0.1992	0.4795	0.0214	3.0107	0.1979
	(27.76)***	(3.62)***	(43.49)***	(15.07)***	(29.57)***	(4.11)***	(45.50)***	(15.18)***
UC_PCA_{t-1}	**-0.0463**	0.6789	0.1222	-0.0264	**-0.0215**	0.6792	0.0823	-0.0261
	(-8.94)* **	(185.10)***	(2.62)***	(-2.87)***	**(-4.02)*** **	(185.08)***	(1.77)*	(-2.84)***
CC_PCA_{t-1}	**-0.0077**	0.0018	-0.0129	0.0010	**-0.0110**	0.0016	-0.0077	0.0009
	(-13.34)* **	(4.44)***	(-2.46)**	(0.96)	**(-18.33)*** **	(3.93)***	(-1.46)	(0.91)
$Esmooth_{t-1}$	0.0009	-0.0029	-0.0424	0.7185	**-0.0041**	-0.0030	-0.0451	0.7186
	(0.42)	(-1.94)*	(-2.20)**	(189.28)***	**(-1.85)***	(-1.98)**	(-2.34)**	(189.30)***
EDF_{t-1}	0.2510	**0.0405**	**-0.2684**	-0.0023				
	(60.04)***	**(13.71)*** **	**(-7.15)*** **	(-0.31)				
$Campbell_{t-1}$					0.3405	**0.0396**	**-0.4287**	-0.0003
					(82.13)***	**(14.01)*** **	**(-11.95)*** **	(-0.05)
$Ln(MV)_t$	-0.0374	0.0157	-0.2657	-0.0010	-0.0308	0.0151	-0.2675	-0.0009
	(-61.02)***	(37.62)***	(-49.91)***	(-0.92)	(-49.70)***	(37.45)***	(-52.21)***	(-0.85)
$Leverage_t$	0.6472	-0.0685	0.2969	0.0516	0.4698	-0.0680	0.3835	0.0505
	(89.93)***	(-13.93)***	(4.74)***	(4.19)***	(63.90)***	(-13.88)***	(6.16)***	(4.12)***
ROA_t	-0.4005	-0.2626	-6.4814	0.0991	-0.9346	-0.2513	-6.6653	0.1003
	(-30.75)***	(-28.83)***	(-55.91)***	(4.35)***	(-68.24)***	(-27.21)***	(-56.80)***	(4.34)***
STD_Ret_t	0.3233				0.1706			
	(74.66)***				(38.25)***			
$Cash_t$	-0.0341				-0.3149			
	(-3.58)***				(-31.66)***			
$\Delta Cash_t$	-0.0685				-0.1386			
	(-4.81)***				(-9.38)***			
$Rate_t$	-2.0966				-1.1019			
	(-11.23)***				(-5.70)***			
$Inten\_RD_t$	-0.0005	0.0023	-0.0080		-0.0010	0.0023	-0.0085	
	(-0.89)	(6.15)***	(-1.70)*		(-1.93)**	(6.28)***	(-1.81)*	
$volatility\_ROA_t$				-0.0110				-0.0102
				(-0.48)				(-0.45)
Year and Ind Dum	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
F-statistic	133.83***	188.03***	51.10***		179.80***	196.44***	142.80***	
Sample size	32,361				32,355			
Sys. weighted R^2	0.6080				0.5990			

*, **, and *** indicates a coefficient is significant at 90%, 95%, and 99% confidence level, respectively.

The tetra-variate VARX(1) model used in this table consists of the following four equations:

$$BR_t = \alpha_{10} + \beta_{11}BR_{t-1} + \gamma_{11}UC\_PCA_{t-1} + \delta_{11}CC\_PCA_{t-1} + \theta_{11}Esmooth_{t-1} + Controls + \varepsilon_{11} \quad (11)$$

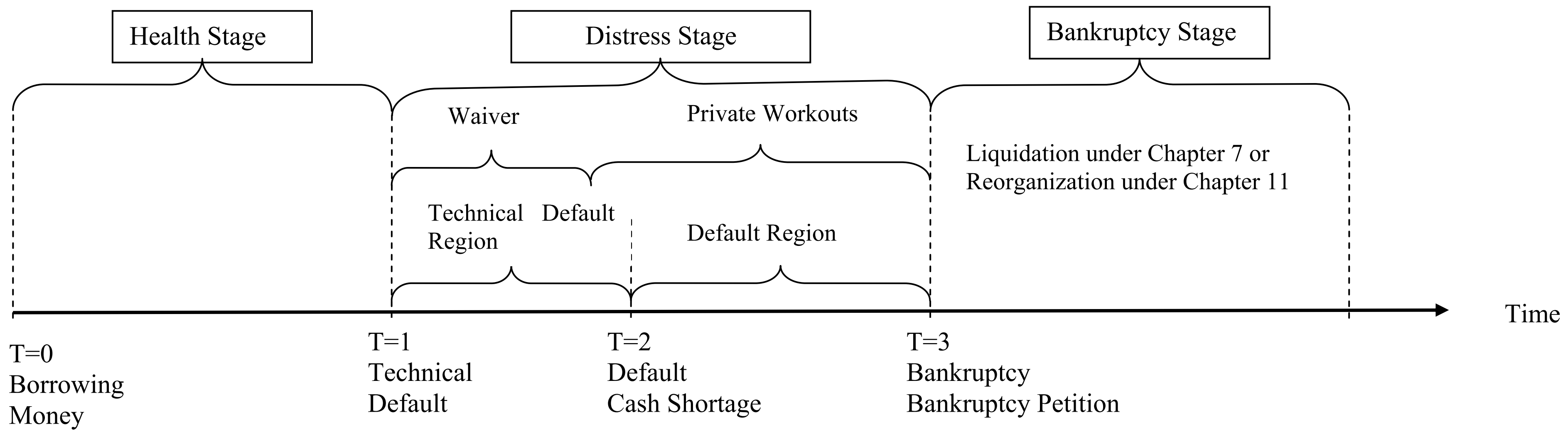
$$UC\_PCA_t = \alpha_{20} + \beta_{21}BR_{t-1} + \gamma_{21}UC\_PCA_{t-1} + \delta_{21}CC\_PCA_{t-1} + \theta_{21}Esmooth_{t-1} + Controls + \varepsilon_{21} \quad (12)$$

$$CC\_PCA_t = \alpha_{30} + \beta_{31}BR_{t-1} + \gamma_{31}UC\_PCA_{t-1} + \delta_{31}CC\_PCA_{t-1} + \theta_{31}Esmooth_{t-1} + Controls + \varepsilon_{31} \quad (13)$$

$$Esmooth_t = \alpha_{40} + \beta_{41}BR_{t-1} + \gamma_{41}UC\_PCA_{t-1} + \delta_{41}CC\_PCA_{t-1} + \theta_{41}Esmooth_{t-1} + \alpha_{41}Leverage_t + \alpha_{42}ROA_t + \alpha_{43}Ln(MV)_t + \alpha_{44}Volatility\_ROA_t + \sum\alpha_{4j}Ind\_Dum_j + \sum\alpha_{4k}Year\_Dum_{4k} + \varepsilon_{41} \quad (14)$$

where *BR* = *EDF* and *Campbell* in Models 1 and 2, respectively. *F*-statistics in columns 2 and 6 are for H0: $\gamma_{11} = 0, \delta_{11} = 0$; in columns 3 and 7 for H0: $\beta_{21} = 0$; in columns 4 and 8 for H0: $\beta_{31} = 0$. *Controls* in equations (11) to (13) are the same as in equations (4) to (6).

Figure 1
Bankruptcy Timeline



Appendix A Causal Relations between Unconditional Conservatism and Bankruptcy Risk and between Conditional Conservatism and Bankruptcy Risk

This appendix reports estimation models and results for examining relations between unconditional conservatism and bankruptcy risk using bi-variate VARX (1). In particular, the bi-variate VARX (1) model consisting of equations (1a) and (2a) tests hypotheses H1a and H2a:

$$BR_t = \alpha_{10} + \beta_{11}BR_{t-1} + \gamma_{11}UC_{t-1} + Controls_t + \varepsilon_{11} \quad (1a)$$

$$UC_t = \alpha_{20} + \beta_{21}BR_{t-1} + \gamma_{21}UC_{t-1} + Controls_t + \varepsilon_{21}, \quad (2a)$$

where *UC* refers to an unconditional conservatism metric *UC_ACC*, *UC_BM*, *UC_RES* or *UC_PCA*, and *BR* refers to a bankruptcy risk measure *EDF* or *Campbell*. The autoregressive vector includes BR_{t-1} and UC_{t-1}. Exogenous $Controls_t$ in equations (1b) and (2b) are the same as in equations (4) and (5), respectively. H1a and H1b predict that $\gamma 11 < 0$ and $\beta 21 > 0$, respectively, and Table A.1 reports the SUR estimation results.

Table A.1 Causal Relations between Unconditional Conservatism and Bankruptcy Risk

This table reports the SUR estimation results for bi-variate VARX (1) models consisting of equations (1b) and (2b). Panel A (Panel B) presents results for models using *EDF* (*Campbell*) bankruptcy risk measure. Unconditional conservatism measures used in both panels are and *UC_PCA,* UC_*BM*, *UC_ACC* and *UC_RES*. Model details are provided at the end of this table.

Panel A: VARX (1) Model Results when Bankruptcy Risk is *EDF*

Independent Variables	Model 1		Model 2		Model 3		Model 4	
	EDF$_t$	***UC_PCA$_t$***	***EDF$_t$***	***UC_BM$_t$***	***EDF$_t$***	***UC_ACC$_t$***	***EDF$_t$***	***UC_RES$_t$***
Intercept	0.3426	0.0224	0.3397	-0.0342	0.3403	-0.0068	0.3365	0.0979
	(16.66)***	(4.40)***	(16.60)***	(-5.24)***	(16.11)***	(-4.58)***	(15.91)***	(19.85)***
UC_PCA$_{t-1}$	**-0.0458**	0.6624						
	(-9.35)***	(186.96)***						
UC_BM$_{t-1}$			**-0.0310**	0.7169				
			(-8.57)***	(211.91)***				
UC_ACC$_{t-1}$					**-0.1087**	0.5198		
					(-5.54)***	(121.07)***		
UC_RES$_{t-1}$							**-0.0155**	0.4717
							(-2.55)**	(108.82)***
EDF$_{t-1}$	0.2387	**0.0409**	0.2386	**0.0709**	0.2465	**0.0051**	0.2463	**-0.0127**
	(60.65)***	**(14.42)*****	(60.32)***	**(19.35)*****	(63.52)***	**(6.06)*****	(63.46)***	**(-4.59)*****
Ln(MV)$_t$	-0.0362	0.0158	-0.0364	0.0199	-0.0373	0.0023	-0.0374	-0.0008
	(-62.82)***	(39.60)***	(-63.34)***	(38.76)***	(-65.38)***	(19.34)***	(-65.53)***	(-2.08)**
Leverage$_t$	0.6461	-0.0639	0.6432	-0.0132	0.6356	-0.0173	0.6345	-0.0947
	(95.00)***	(-13.45)***	(94.26)***	(-2.14)**	(93.29)***	(-12.09)***	(92.88)***	(-20.04)***
ROA$_t$	-0.4196	-0.2572	-0.4186	0.0106	-0.4291	-0.1458	-0.4265	-0.3507
	(-33.31)***	(-28.56)***	(-33.22)***	(0.91)	(-33.98)***	(-53.79)***	(-33.72)***	(-39.27)***
STD_Ret$_t$	0.3161		0.3131		0.3029		0.3058	
	(76.35)***		(76.18)***		(71.25)***		(71.60)***	
Cash$_t$	-0.0388		-0.0477		-0.0457		-0.0557	
	(-4.26)***		(-3.50)***		(-3.23)***		(-3.93)***	
ΔCash$_t$	-0.0638		-0.0694		-0.0703		-0.0715	
	(-4.65)***		(-7.68)***		(-7.48)***		(-7.57)***	
Rate$_t$	-1.1990		-1.1148		-1.1902		-1.1492	
	(-5.04)***		(-4.72)***		(-4.85)***		(-4.68)***	
Inten_RD$_t$	-0.0005	0.0023	-0.0005	0.0006	-0.0005	-0.0002	-0.0005	0.0045
	(-1.00)	(6.11)***	(-0.93)	(1.23)	(-0.93)	(-1.68)*	(-0.93)	(11.89)***
Year and Ind Dum	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
F-statistic	87.51***	208.08***	73.44***	374.50***	30.74***	36.77***	6.50**	21.03***
Sample size	34,896		34,896		34,896		34,896	
Sys. weighted R^2	0.6857		0.7035		0.5821		0.5962	

Panel B: VARX (1) Model Results when Bankruptcy Risk is *Campbell*

Independent Variables	Model 1		Model 2		Model 3		Model 4	
	Campbell$_t$	***UC_PCA$_t$***	***Campbell$_t$***	***UC_BM$_t$***	***Campbell$_t$***	***UC_ACC$_t$***	***Campbell$_t$***	***UC_RES$_t$***
Intercept	0.3726	0.0347	0.3672	-0.0351	0.3751	-0.0059	0.3717	0.0668
	(17.43)***	(6.66)***	(17.32)***	(-5.48)***	(17.12)***	(-4.03)***	(16.98)***	(19.45)***

UC_PCA_{t-1}	**-0.0231**	0.5811						
	(-4.98)* **	(172.12)***						
UC_BM_{t-1}			**-0.0150**	0.7187				
			(-4.01)* **	(212.72)***				
UC_ACC_{t-1}					-0.0067	0.5183		
					(-0.33)	(120.45)***		
UC_RES_{t-1}							**-0.0134**	0.5221
							**(-1.65)* **	(132.62)***
$Campbell_{t-1}$	0.3222	**0.0337**	0.3211	**0.0772**	0.3244	**0.0040**	0.3246	**-0.0042**
	(82.95)***	**(12.00)*** **	(82.07)***	**(22.11)*** **	(84.25)***	**(4.99)*** **	(84.55)***	**(-2.27)** **
$Ln(MV)_t$	-0.0285	0.0170	-0.0287	0.0191	-0.0295	0.0022	-0.0293	0.0020
	(-49.08)***	(42.67)***	(-49.45)***	(38.80)***	(-51.25)***	(19.13)***	(-50.99)***	(7.57)***
$Leverage_t$	0.4709	-0.0712	0.4672	-0.0168	0.4615	-0.0168	0.4624	-0.0906
	(67.73)***	(-14.46)***	(67.02)***	(-2.75)***	(66.29)***	(-11.76)***	(66.22)***	(-27.25)***
ROA_t	-0.9579	-0.2793	-0.9612	0.0349	-0.9673	-0.1453	-0.9659	-0.3136
	(-72.33)***	(-29.42)***	(-72.60)***	(2.98)***	(-72.91)***	(-52.91)***	(-72.47)***	(-48.90)**
STD_Ret_t	0.1655		0.1634		0.1549		0.1576	
	(38.68)***		(38.62)***		(35.32)***		(35.88)***	
$Cash_t$	-0.1368		-0.1234		-0.1196		-0.1334	
	(-9.58)***		(-8.72)***		(-8.13)***		(-9.08)***	
$\Delta Cash_t$	-0.3227		-0.3498		-0.3615		-0.3507	
	(-33.87)***		(-37.11)***		(-36.81)***		(-35.51)***	
$Rate_t$	-0.1104		0.0047		-0.0734		-0.0593	
	(-0.45)		(0.02)		(-0.29)		(-0.23)	
$Inten\_RD_t$	-0.0011	0.0025	-0.0011	0.0007	-0.0011	-0.0002	-0.0011	0.0031
	(-2.10)**	(6.36)***	(-2.03)**	(1.41)	(-2.00)**	(-1.65)*	(-2.02)**	(11.71)***
Year and Ind Dum	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
F-statistic	19.70***	228.45***	16.09***	488.85***	0.11	24.90***	2.71**	5.16**
Sample size	34,890		34,890		34,890		34,890	
Sys. weighted R^2	0.6742		0.6960		0.6965		0.6242	

*, **, and *** indicates a coefficient is significant at 90% , 95%, and 99% confidence level, respectively.
The bi-variate VARX (1) model used in this table consists of the following two equations:

$$BR_t = \alpha_{10} + \beta_{11}BR_{t-1} + \gamma_{11}CON_{t-1} + \alpha_{11}Leverage_t + \alpha_{12}ROA_t + \alpha_{13}STD\_Ret_t + \alpha_{14}Ln(MV)_t + \alpha_{15}Rate_t + \alpha_{16}Inten\_RD_t + \alpha_{17}Cash_t + \alpha_{18}\Delta Cash_t + \sum\alpha_{1j}Ind\_Dum_{1j} + \sum\alpha_{1k}Year\_Dum_{1k} + \varepsilon_{11} \quad (1b)$$

$$CON_t = \alpha_{20} + \beta_{21}BR_{t-1} + \gamma_{22}CON_{t-1} + \alpha_{21}Leverage_t + \alpha_{22}ROA_t + \alpha_{23}Ln(MV)_t + \alpha_{24}Inten\_RD_t + \sum\alpha_{2j}Ind\_Dum_{2j} + \sum\alpha_{2k}Year\_Dum_{2k} + \varepsilon_{21} \quad (2b)$$

where *BR* = *EDF* in Panel A and *BR* = *Campbell* in Panel B. *CON* = *UC_PCA* in Model 1, *CON* = *UC_BM* in Model 2, CON = *UC_ACC* in Model 3 and *CON* = *UC_RES* in Model 4.
F-statistics reported in columns 2, 4, 6 and 8 are for H0: $\gamma_{11} = 0$; those reported in columns 3, 5, 7 and 9 are for H0: $\beta_{21} = 0$.

Panel A of Table A.1 reveals that all four measures of unconditional conservatism, UC_PCA_{t-1}, UC_BM_{t-1}, UC_ACC_{t-1}, and UC_RES_{t-1}, are significantly negatively associated with the subsequent bankruptcy risk as measured by EDF_t; Panel B reports the same pattern for $Campbell_t$. For the null hypothesis that the predictor coefficients for EDF_t and $Campbell_t$ are equal to zero, the *F*-statistics are all significant beyond the 95% confidence level except for UC_ACC_{t-1} in Panel B. These results support hypothesis H1a in suggesting that the cash enhancing and informational roles of unconditional conservatism lowers subsequent bankruptcy risk.

Table A.1 further shows that EDF_{t-1} and $Campbell_{t-1}$ are significantly positively associated with subsequent unconditional conservatism except for *UC_RES*, suggesting that prior bankruptcy risk Granger-causes subsequent unconditional conservatism, consistent with hypothesis H1b. UC_RES_t exhibits negative coefficients (*t*-statistics) of -0.0127 (-4.59) for EDF_{t-1} in Panel A, and -0.0042 (-2.27) for $Campbell_{t-1}$ in Panel B. Although this result is inconsistent with H1b, it is consistent with the intuition that extreme unconditional conservatism in the form of immediate expensing of R&D and advertising expenditures is detrimental to managers' career motives, and dominates managers' disciplinary concerns and auditor and regulator interests, resulting in disincentives for UC_RES_t as bankruptcy risk rises. Nor does this negative association for UC_RES_t qualitatively change the positive association between bankruptcy risk and subsequent unconditional conservatism exhibited by the combined measure UC_PCA_t. For the null hypothesis that the predictor coefficients for UC_PCA_t, UC_BM_t, UC_ACC_t and UC_RES_t are equal to zero, *F*-statistics indicate rejection beyond the 95% confidence level. Overall, these findings support hypothesis H1b in suggesting that bankruptcy risk stimulates subsequent unconditional conservatism, consistent with the interests of auditors, creditors and regulators offsetting managers' career motives in the case of unconditional conservatism, as predicted. The signs of the coefficients of the exogenous control variable are also consistent with predictions. For example, EDF_t and $Campbell_t$ are generally positively associated with $Leverage_t$ and STD_Ret_t, and negatively associated with ROA_t, $Ln(MV)_t$, $Rate_t$, $Cash_t$, $\Delta Cash_t$ and $Inten\_RD_t$.

Appendix B Causal Relations between Conditional Conservatism and Bankruptcy Risk

This appendix reports estimation results regarding examining relations between conditional conservatism and bankruptcy risk using bi-variate VARX (1). In particular, the following bi-variate VARX (1) model consisting of equations (1b) and (2b) tests hypotheses H1b and H2b regarding causal relations between conditional conservatism and bankruptcy risk:

$$BR_t = \alpha_{10} + \beta_{11}BR_{t-1} + \gamma_{11}CC_{t-1} + Controls_t + \varepsilon_{11} \quad (1b)$$

$$CC_t = \alpha_{20} + \beta_{21}BR_{t-1} + \gamma_{21}CC_{t-1} + Controls_t + \varepsilon_{21}, \quad (2b)$$

where *CC* refers to a conditional conservatism metric *CC_ACM*, *CC_AR*, *CC_CR* or *CC_PCA*, and *BR* refers to a bankruptcy risk measure *EDF* or *Campbell*. The autoregressive vector includes BR_{t-1} and CC_{t-1}. $Controls_t$ in equations (3b) and (4b) are the same as in equations (4) and (6), respectively, with the same predictions. H1b and H2b predict that $\gamma_{11} < 0$ and $\beta_{21} < 0$, respectively, and Table B.1 reports the SUR estimation results.

Table B.1 Causal Relations between Conditional Conservatism and Bankruptcy Risk

This table reports the SUR estimation results for bi-variate VARX (1) models consisting of equations (1b) and (2b). Panel A (Panel B) presents results for models using *EDF* (*Campbell*) bankruptcy risk measure. Conditional conservatism measurements are *CC_PCA, CC_AR*, *CC_CR* and *CC_ACM*. Model details are provided at the end of this table.

Panel A: Bivaiate VARX (1) Model Results when Bankruptcy Risk is *EDF*

Independent Variables	Model 1		Model 2		Model 3		Model 4	
	EDF_t	CC_PCA_t	EDF_t	CC_AR_t	EDF_t	CC_CR_t	EDF_t	CC_ACM_t
Intercept	0.3478	3.0130	0.6136	3.8327	0.3369	0.3381	0.3368	0.0051
	(16.48)***	(48.06)***	(29.70)***	(186.58)***	(15.92)***	(4.43)***	(15.92)***	(3.77)***
CC_PCA_{t-1}	**-0.0084**	-0.0124						
	(-15.26)* **	(-2.47)**						
CC_AR_{t-1}			**-0.0724**	0.2947				
			(-59.20)* **	(93.98)***				
CC_CR_{t-1}					**-0.0009**	-0.0260		
					(-2.06) **	(-5.06)***		
CC_ACM_{t-1}							**-0.0570**	0.5317
							(-2.54) **	(119.59)***
EDF_{t-1}	0.2531	**-0.2990**	0.3006	**-0.3017**	0.2468	**-0.3311**	0.2463	**-0.0054**
	(64.97)***	**(-8.47)*** **	(78.55)***	**(-30.83)*** **	(63.48)***	**(-7.69)*** **	(63.46)***	**(-7.07)*** **
$Ln(MV)_t$	-0.0389	-0.2648	-0.0641	-0.3903	-0.0374	0.0174	-0.0373	0.0010
	(-67.39)***	(-52.56)***	(-89.55)***	(-215.72)***	(-65.58)***	(2.86)***	(-65.33)***	(8.90)***
$Leverage_t$	0.6343	0.3211	0.6495	0.9121	0.6345	-0.2801	0.6350	0.0065
	(93.34)***	(5.40)***	(99.84)***	(56.87)***	(93.06)***	(-3.84)***	(93.13)***	(5.03)***
ROA_t	-0.4323	-6.5718	-0.3462	-0.7408	-0.4274	-7.8724	-0.4252	-0.0695
	(-34.33)***	(-58.30)***	(-28.61)***	(-24.28)***	(-33.78)***	(-56.78)***	(-33.68)***	(-28.33)***
STD_Ret_t	0.3088		0.3451		0.3040		0.3052	
	(72.69)***		(85.17)***		(71.35)***		(71.61)***	
$Cash_t$	-0.0780		-0.1184		-0.0776		-0.0796	
	(-8.33)***		(-13.28)***		(-8.26)***		(-8.48)***	
$\Delta Cash_t$	-0.0484		-0.0161		-0.0526		-0.0512	
	(-3.42)***		(-1.20)		(-3.71)***		(-3.61)***	
$Rate_t$	-1.1459		-1.4083		-1.1560		-1.1476	
	(-4.68)***		(-6.04)***		(-4.70)***		(-4.67)***	
$Inten\_RD_t$	-0.0005	-0.0084	-0.0006	-0.0020	-0.0005	-0.0087	-0.0005	-0.0003
	(-0.89)	(-1.77)*	(-1.12)	(-1.54)	(-0.91)	(-1.49)	(-0.89)	(-2.46)**
Year and Ind Dum	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
F-statistic	232.76***	71.82***	3,505.80 ***	950.78***	4.26**	59.09***	6.48**	49.97***
Sample size	34,890		34,896		34,896		34,896	
Sys. weighted R^2	0.5516		0.8353		0.5263		0.5670	

Panel B: Bivaiate VARX (1) Model Results when Bankruptcy Risk is *Campbell*

Independent Variables	Model 1		Model 2		Model 3		Model 4	
	$Campbell_t$	CC_PCA_t	$Campbell_t$	CC_AR_t	$Campbell_t$	CC_CR_t	$Campbell_t$	CC_ACM_t
Intercept	0.3872	3.0793	0.6594	3.7606	0.3691	0.5207	0.3730	0.0062
	(17.75)***	(49.92)***	(30.78)***	(182.83)***	(16.86)***	(6.94)***	(17.03)***	(4.63)***

CC_PCA_{t-1}	**-0.0110** **(-19.34)*****	-0.0073 (-1.46)						
CC_AR_{t-1}			**-0.0721** **(-54.88)*****	0.2883 (88.02)***				
CC_CR_{t-1}					**-0.0035** **(-7.31)*****	-0.0228 (-4.45)***		
CC_ACM_{t-1}							-0.0376 (-1.62)	0.5323 (119.81)***
$Campbell_{t-1}$	0.3353 (86.81)***	**-0.4505** **(-13.36)*****	0.4035 (102.64)***	**-0.1588** **(-16.29)*****	0.3261 (84.80)***	**-0.6585** **(-16.07)*****	0.3241 (84.42)***	**-0.0076** **(-10.44)*****
$Ln(MV)_t$	-0.0315 (-54.20)***	-0.2663 (-55.09)***	-0.0579 (-78.07)***	-0.3824 (-210.63)***	-0.0294 (-51.18)***	0.0070 (1.21)	-0.0294 (-51.12)***	0.0009 (9.05)***
$Leverage_t$	0.4599 (66.42)***	0.4018 (6.80)***	0.4722 (70.79)***	0.8396 (52.10)***	0.4603 (66.18)***	-0.1020 (-1.41)	0.4610 (66.23)***	0.0077 (5.96)***
ROA_t	-0.9714 (-73.62)***	-6.7584 (-59.29)***	-0.8700 (-67.69)***	-0.7316 (-23.31)***	-0.9720 (-73.23)***	-8.1852 (-58.44)***	-0.9665 (-72.86)***	-0.0727 (-29.26)***
STD_Ret_t	0.1608 (36.82)***		0.1480 (35.41)***		0.1569 (35.79)***		0.1567 (35.70)***	
$Cash_t$	-0.3607 (-37.00)***		-0.3421 (-36.75)***		-0.3627 (-37.05)***		-0.3665 (-37.42)***	
$\Delta Cash_t$	-0.1209 (-8.27)***		-0.1017 (-7.27)***		-0.1235 (-8.41)***		-0.1227 (-8.35)***	
$Rate_t$	-0.0478 (-0.19)		-0.2909 (-1.20)		-0.0326 (-0.13)		-0.0475 (-0.19)	
$Inten\_RD_t$	-0.0010 (-1.95)**	-0.0089 (-1.88)*	-0.0011 (-2.21)**	-0.0022 (-1.69)*	-0.0011 (-1.97)**	-0.0094 (-1.61)	-0.0011 (-1.97)**	-0.0003 (-2.55)**
Year and Ind Dum	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
F-statistic	373.87***	166.27***	3,013.92 ***	265.65***	53.43***	258.29***	2.63	108.91***
Sample size	34,890		34,890		34,890		34,890	
Sys. weighted R^2	0.5300		0.8111		0.5043		0.5471	

*, **, and *** indicates a coefficient is significant at 90%, 95%, and 99% confidence level, respectively.
The bi-variate VARX (1) model used in this table consists of the following two equations:

$$BR_t = \alpha_{10} + \beta_{11}BR_{t-1} + \gamma_{11}CON_{t-1} + \alpha_{11}Leverage_t + \alpha_{12}ROA_t + \alpha_{13}STD\_Ret_t + \alpha_{14}Ln(MV)_t + \alpha_{15}Rate_t + \alpha_{16}Inten\_RD_t + \alpha_{17}Cash_t + \alpha_{18}\Delta Cash_t + \sum\alpha_{1j}Ind\_Dum_{1j} + \sum\alpha_{1k}Year\_Dum_{1k} + \varepsilon_{11} \quad (1b)$$

$$CON_t = \alpha_{20} + \beta_{21}BR_{t-1} + \gamma_{22}CON_{t-1} + \alpha_{21}Leverage_t + \alpha_{22}ROA_t + \alpha_{23}Ln(MV)_t + \alpha_{24}Inten\_RD_t + \sum\alpha_{2j}Ind\_Dum_{2j} + \sum\alpha_{2k}Year\_Dum_{2k} + \varepsilon_{21} \quad (2b)$$

where *BR* = *EDF* in Panel A and *BR* = *Campbell* in Panel B. *CON* = *CC_PCA* in Model 1, *CON* = *CC_AR* in Model 2, *CON* = *CC_CR* in Model 3 and *CON* = *CC_ACM* in Model 4.
F-statistics reported in columns 2, 4, 6 and 8 are for H0: $\gamma_{11} = 0$; those reported in columns 3, 5, 7 and 9 are for H0: $\beta_{21} = 0$.

Panel A of Table B.1 reveals that all four measures of conditional conservatism, CC_PCA_{t-1}, CC_AR_{t-1}, CC_CR_{t-1} and CC_ACM_{t-1}, are negatively associated with subsequent bankruptcy risk measured by EDF_t, and Panel B reveals the same pattern for $Campbell_{t-1}$. For the null hypothesis that the predictor coefficients for EDF_t and $Campbell_t$ are equal to zero, the *F*-statistics are all significant beyond the 90% confidence level except for CC_ACM_{t-1} in Panel B. These findings suggest that conditional conservatism reduces subsequent bankruptcy risk, consistent with the cash enhancing and informational properties of conditional conservatism as predicted by hypothesis H2b. Table B.1 further shows that bankruptcy risk metrics EDF_{t-1} and $Campbell_{t-1}$ are uniformly negatively associated with subsequent conditional conservatism measured by CC_PCA_t, CC_AR_t, CC_CR_t and CC_ACM_t. These findings suggest that prior bankruptcy risk lowers subsequent conditional conservatism, consistent with hypothesis H2b. For the null hypothesis that the predictor coefficients for CC_PCA_t, CC_AR_t, CC_CR_t and CC_ACM_t are equal to zero, *F*-statistics are all significant beyond the 99% confidence level. These findings support hypothesis H2b in suggesting that bankruptcy risk reduces subsequent conditional conservatism, and is consistent with the notion that although it mitigates subsequent bankruptcy risk, conditional conservatism is resisted by managers whose career motives dominate their disciplinary concerns, as predicted.