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Do bankrupt firms recognize publicly available bad news in a timely fashion?

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Abstract

Purpose – The purpose of this paper is to examine whether managers of bankrupt firms are more or less conditionally conservative in their financial reporting relative to non-bankrupt firms. The study further examines the cross-sectional differences in conditional conservatism among bankrupt and non-bankrupt firms.

Design/methodology/approach – The study employs a sample of US firms to investigate conditional conservatism in firms that experience financial distress and go bankrupt relative to non-stressed non-bankrupt firms. The study also uses switching regression models to identify the drivers of the cross-sectional difference in conditional conservatism among bankrupt and non-bankrupt firms.

Findings – Empirical results show that bankrupt firms are timelier in recognizing bad news than good news when compared to non-bankrupt firms. The higher level of conditional conservatism in bankrupt firms is mainly driven by their higher levels of leverage and tax-reduction incentives. The cross-sectional analyses show that these results largely hold for more leveraged firms and firms with higher tax costs. Taken together, these results suggest that the conservative tendency of managers of bankrupt firms can stem from the agency problem between lenders and managers and from tax-decreasing motivations.

Originality/value – The novelty of the authors' research stands in studying the drivers of the cross-sectional differences in conditional conservatism between bankrupt and non-bankrupt firms and specifically, the demonstration that taxation also induces conditional conservatism in the setting of ex post bankrupt firms.

Keywords Bankrupt, Conditional conservatism, Contracting, Litigation, Regulation, Taxation

Paper type Research paper

1. Introduction

We examine conditional conservatism [1] – an important attribute of financial reporting quality – in a large sample of US firms that experience financial distress and go bankrupt relative to non-stressed non-bankrupt firms [2]. Conditional conservatism refers to accountants' tendency to require a higher degree of verification to recognize good news as gains than to recognize bad news as losses (Basu, 1997, p. 7). We further investigate the drivers of the cross-sectional difference in conditional conservatism among bankrupt and

non-bankrupt firms. While there is extensive research analyzing the fresh start accounting (Lehavy, 1999, 2002; Gilson, Hotchkiss, & Ruback, 2000; Lehavy & Udpa, 2011) or financially distressed firms and going concerns (GC) opinions, and, more generally, auditors' risk assessments (Hopwood *et al.*, 1994; DeFond, Raghunandan, & Subramanyam, 2002; Geiger & Rama, 2003; Callaghan, Parkash, & Singhal, 2009; Li, 2009; Mayew, Sethuraman, & Venkatachalam, 2015; Gerakos, Hahn, Kovrijnykh, & Zhou, 2016; Gutierrez, Krupa, Mezza, & Vulcheva, 2020), empirical evidence on what happens to firms' financial reporting "near death" is limited. Therefore, ex post bankrupt firms provide a unique setting in which to address this issue by examining whether and how accounting behavior, and, more particularly, conditional conservatism varies between bankrupt and non-bankrupt firms.

Our research question is important for several reasons. First, our focus on the level of conservatism in the setting of bankrupt and non-bankrupt firms is motivated by the two competing hypotheses. On the one hand, we conjecture that stressed ex post bankrupt firms might demand higher levels of accounting conservatism than non-stressed non-bankrupt firms to mitigate both downside and litigation risks. Prior literature documents that managers are inclined to accelerate the recognition of bad news or delay the recognition of good news to avoid the default risk and mitigate personal liability over litigation (e.g. Skinner, 1994; Kasznik & Lev, 1995; Watts, 2003), or to reduce the exercise price on their option grants (Yermack, 1997; Aboody & Kasznik, 2000). Given the high levels of leverage and litigation risk in stressed ex post firms, conditional conservatism is likely to facilitate monitoring by providing timely loss information to reduce information asymmetry (e.g. Basu, 1997; Watts, 2003). Therefore, we anticipate managers of firms approaching bankruptcy to recognize losses more quickly to mitigate the likelihood of downside default. The threat of legal lawsuits against managers for inadequate or non-timely disclosure also motivates them to accelerate the disclosure of bad news and defer the disclosure of good news (Skinner, 1994, 1997). On the other hand, we predict managers of bankrupt firms to provide less timely disclosure of bad news versus good news relative to going concerns. Previous literature argues that CEOs who are concerned about the short-term performance and the effect of current performance on contemporaneous and future compensation try to hide bad news (Verrecchia, 2001). For instance, Baginski, Campbell, Hinson and Koo (2018) demonstrate that managers who are concerned about their career and performance-based compensation delay bad news disclosure. In addition, DeAngelo, DeAngelo and Skinner (1994) and Rosner (2003) show that managers of distressed firms manipulate earnings in order to hide their poor performance or postpone the firms' distressed condition. Accordingly, we, therefore, conjecture that managers of bankrupt firms will provide less conservative financial reports. Given the above competing arguments, the level of conservatism in bankrupt firms versus non-bankrupt ones is an open empirical question. Second, despite the significant work on the drivers of accounting conservatism in general, no prior study has empirically examined these economic determinants in the setting of ex post bankrupt firms, which is an extreme case of financially troubled firms. Third, we are motivated by the wave of collapses in the US in previous decades, such as Enron, WorldCom, Adelphia and, most recently, Sears in 2018, as well as the important role of accounting conservatism as a monitoring/contracting mechanism to address agency problems. The corporate failures that have rocked American stock markets and investors' confidence impact the reliability of companies' financial statements. Finally, bankruptcy is costly for the firm and its managers (Warner, 1977; Altman, 1984; Liberty & Zimmerman, 1986; Franks & Torous, 1989; Gilson, 1989, 1997; Weiss, 1990; Opler & Titman, 1994; Andrade & Kaplan, 1998; Hortaçsu *et al.*, 2013; Baghai, Silva, Thell, & Vig, 2021). Investors and creditors can lose their investments, and managers may lose their jobs and reputation.

Using a sample of US firms for the period 1987–2014, we first identify financially distressed firms. To do so, we follow Altman (1968) and define firms with a *Z*-score < 1.81 as

stressed firms. Then, we use the SDC Corporate Restructurings database, delisting codes from the CRSP database, and COMPUSTAT to identify ex post bankrupt firms (i.e. firms that end up bankrupt). To control for self-selection bias and rule out the possibility that our results are driven by a contemporaneous upward trend in conservatism in all firms, we use two-stage switching regression models and simple matching (firms with similar year, industry and size). We use four different proxies of accounting conservatism: the Basu (1997) return-based model, the C-score metric of Khan and Watts (2009), the conservatism ratio developed by Callen, Segal, and Hope (2010) and the negative cumulative non-operating accruals of Givoly and Hayn (2000). The analysis yields several key findings.

First, we find a positive association between the level of conditional accounting conservatism and bankruptcy. Even after using alternative proxies for conditional conservatism, using the full sample and controlling for financial crisis, our results still suggest that bankrupt firms exhibit a higher level of conditional conservatism than non-bankrupt firms. The switching regression analysis indicates that this higher demand for conditional conservatism in bankrupt firms is primarily driven by their higher level of leverage and tax costs, indicating the effective role of debt contracts and taxation consideration in inducing conservative practices. This result holds even when using OLS regression and not controlling for self-selection bias. Finally, the cross-sectional analyses show conditional conservatism to be most pronounced for bankrupt firms with higher levels of leverage and greater tax-reduction incentives. This suggests that debt contracting and taxation, rather than litigation risk or going concern problems, drive conditional conservatism in bankrupt firms.

Our results contribute to the literature in several ways. First, we extend the literature on earnings quality in ex post bankrupt firms (DeAngelo *et al.*, 1994; Rosner, 2003; Charitou, Lambertides, & Trigeorgis, 2007a, 2007b; 2011; Garcia-García Lara, García Osma, & Neophytou, 2009; Jenkins, Kane, & Velury, 2009; Beneish, Press, & Vargus, 2012). For example, Garcia-García Lara *et al.* (2009) investigate the earnings management behavior of listed firms in the UK and Ireland prior to their insolvency and document upward earnings management in the years $t-4$ to $t-2$ prior to insolvency, but find that accrual earnings management decreases in the year just before failure. Rosner (2003) shows that failing firms are more likely to exhibit signs of material increasing earnings management compared to non-failing firms. Dutzi and Rausch (2016) conclude that earnings management directions (i.e. upward and downward) in distressed firms, in the period before bankruptcy, are still ambiguous. Our study particularly complements previous work on earnings quality by providing empirical evidence of conditional conservatism in the setting of ex post bankrupt firms. Specifically, we find that the US stressed ex post bankrupt firms exhibit greater conditional conservatism compared to healthy ones. Our findings are not in conflict with prior studies because conditional conservatism and earnings management are different. Dechow, Ge and Schrand (2010) argue that while conditional conservatism and earnings management are often used as proxies for financial reporting quality, they are based on different underlying frameworks. In addition, there is no conclusive evidence about the relationship between earnings management and accounting conservatism. García Lara, García Osma and Penalva (2020, p. 2) conclude that "the links between conditional conservatism and accrual earnings management are far from obvious or mechanical." Second, we contribute to the literature on the drivers of accounting conservatism (Watts, 2003; Qiang, 2007; Garcia-García Lara *et al.*, 2009; Ahmed & Duellman, 2013; Dhaliwal, Huang, Khurana, & Pereira, 2014; Kong, Radhakrishnan, & Tsang, 2017). For instance, Qiang (2007) finds that (1) contracting induces conditional conservatism, (2) regulation and taxation induce unconditional conservatism and (3) litigation induces both conditional and unconditional conservatism. We extend her results and demonstrate that taxation also induces conditional conservatism in the setting of ex post bankrupt firms. We show that the higher demand for conditional conservatism in bankrupt firms is primarily driven by their higher level of leverage and tax costs. This suggests that

timely loss recognition increases in line with the relative importance of leverage and tax-reduction considerations. Third, our study also contributes to prior research by employing the switching regression methodology suggested by Heckman (1976, 1979) and Lee (1976, 1978) to account for the potential self-selection bias that may exist when investigating the drivers of the cross-sectional difference in conditional conservatism between ex post bankrupt and non-bankrupt firms. Finally, our study adds to the ongoing debate over conservatism and consequently should be of interest to regulators and accounting standard setters. In 2010, the International Accounting Standards Board (IASB) and the Financial Accounting Standards Board (FASB) took out the element of conservatism from their joint framework, which caused some uncertainty and led to confusion (Watts & Zuo, 2016; IASB, 2018). For that reason, the FASB put conservatism prudence back into the Conceptual Framework for Financial Reporting in 2018. In our study, we show that ex post bankrupt firms tend to use more conservative accounting in their financial reporting relative to healthy companies.

The remainder of the paper is organized as follows. Section 2 discusses the related literature and the hypotheses. Section 3 describes the research design. Section 4 presents the empirical results. Section 5 presents the robustness checks. Section 5 concludes the paper.

2. Related literature and hypothesis development

2.1 Earnings quality in bankrupt firms

Prior literature examines earnings quality in ex post bankrupt firms (e.g. DeAngelo *et al.*, 1994; Rosner, 2003; Charitou *et al.*, 2007a, b, 2011; Garcia-García Lara *et al.*, 2009; Jenkins *et al.*, 2009; Beneish *et al.*, 2012). For example, Rosner (2003) claims that managers optimistically suppose that the failing condition of the company is temporary and that its financial health may be ameliorated; therefore, they will be incited to materially overstate earnings in the years preceding bankruptcy. DeFond and Jiambalvo (1994) assert that managers manipulate earnings to avoid default. Dichev and Skinner (2002) find that managers take action to prevent debt covenant violations. Bochkay, Chychyla, Sankaraguruswamy and Willenborg (2018) find a negative association between the management's voluntary disclosures of going concerns and the issuing of financial motivations to withhold bad news. Charitou, Lambertides and Trigeorgis (2007b) find that firms that have unqualified audit opinions in all five years prior to failure manage earnings upward in those same years (especially in years five, four and three) via current accruals. Charitou *et al.* (2007a) argue that managers of bankrupt firms are able to increase earnings in order to avoid a management turnover during the period of financial trouble or increase their compensation. Though prior studies have examined earnings quality of firms during financial distress, surprisingly, conditional conservatism – an important financial reporting – has been overlooked.

2.2 Determinants of accounting conservatism

Prior accounting literature examines the drivers of accounting conservatism (e.g. Watts, 2003; Qiang, 2007; Garcia-García Lara *et al.*, 2009). These studies identify four main potential explanations for accounting conservatism: contracting, litigation, taxation and regulation. For instance, the demand for conservatism could be explained by the level of leverage (e.g. Ahmed, Billings, Morton, & Stanford-Harris, 2002; LaFond & Watts, 2008; Nikolaev, 2010), or compensation contracting (e.g. Iwasaki, Otomasa, Shiiba, & Shuto, 2018), litigation risk (e.g. Basu, 1997, Krishnan, 2007; Chandra, 2011), taxation (Kim & Bae, 2006; Kim & Jung, 2007) and regulation (Kong *et al.*, 2017). In our paper, we extend this literature and investigate the cross-sectional difference in conditional conservatism between bankrupt and non-bankrupt firms.

2.3 Hypothesis development

2.3.1 Conditional conservatism in bankrupt and non-bankrupt firms. In this study, we examine the level of conditional conservatism in bankrupt compared to non-bankrupt firms. We predict two competing arguments on this difference. On the one hand, we predict that stressed ex post bankrupt firms could demand higher levels of accounting conservatism than non-stressed non-bankrupt firms to mitigate both downside and litigation risks. Prior literature documents that managers are motivated to accelerate the recognition of bad news or delay the recognition of good news to avoid the default risk and mitigate personal liability over litigation (e.g. Skinner, 1994; Kasznik & Lev, 1995; Watts, 2003) or to reduce the exercise price on their option grants (Yermack, 1997; Aboody & Kasznik, 2000). Since financially troubled firms that go bankrupt ex post are highly leveraged and exhibit higher litigation risk, conditional conservatism can facilitate monitoring by providing timely loss information to reduce information asymmetry (Basu, 1997; Watts, 2003; Ball & Shivakumar, 2005; LaFond & Watts, 2008; Kothari, Ramanna, & Skinner, 2010). Specifically, given that debt holders are more concerned about the downside default risk of these financially troubled firms, they are likely to demand more verifiable loss recognition and net asset values than unverifiable gains to guarantee that the amount of net assets exceeds their contracted sum. Consequently, we expect managers of firms approaching bankruptcy to recognize losses more quickly to mitigate the probability of downside default. In addition, according to the litigation point of view, the threat of legal lawsuits against managers for inadequate or non-timely disclosure motivates them to accelerate the disclosure of bad news and defer the disclosure of good news (Skinner, 1994, 1997). Hopkins (2018) shows that the threat of shareholder litigation is likely to discipline managerial reporting practices and discourage misreporting. Therefore, we conjecture that as firms approach bankruptcy, managers engage less in actions that contradict creditors', shareholders' and auditors' interests and report in a more conservative fashion to mitigate the downside risk and avoid being sued. On the other hand, we predict that managers of bankrupt firms may have an incentive to provide less timely recognition of bad news versus good news relative to going concerns. Previous literature argues that CEOs who are concerned about the short-term performance and the effect of current performance on contemporaneous and future compensation are likely to hide bad news and gamble that subsequent events will allow them to "bury" the bad news (Verrecchia, 2001). Baginski *et al.* (2018) show that managers who are concerned about their career and performance-based compensation tend to delay bad news disclosure. DeAngelo *et al.* (1994) and Rosner (2003) find that managers of troubled companies manipulate earnings in order to conceal their poor performance or postpone the firms' distressed condition. Therefore, we predict that managers of bankrupt firms will likely adopt less conservative accounting. Given the above competing arguments, the level of conservatism in bankrupt firms versus non-bankrupt ones is an open empirical question. Taken together, given the competing perspectives outlined above, the level of conditional conservatism between bankrupt firms and non-bankrupt ones is, ultimately, an empirical question.

Therefore, we construct the following hypothesis:

H1. Conditional conservatism is related to bankruptcy.

This hypothesis is tested in two parts:

H1a. Conditional conservatism is higher in bankrupt firms.

H1b. Conditional conservatism is lower in bankrupt firms.

2.3.2 Drivers of conservatism in bankrupt firms. Firms experience severe agency conflicts between debt holders and shareholders over excessive shareholder distribution, asset substitution, underinvestment and claim dilution (Jensen & Meckling, 1976; Myers, 1977;

Smith & Warner, 1979; Barclay & Smith, 1995). Accounting conservatism is a useful tool to reduce managerial opportunistic behavior, that is, overstating earnings and net assets to mitigate the conflicting interests between debt holders and shareholders (Holthausen & Watts, 2001; Watts, 2003). For debt contracts, creditors demand conservative reporting to protect their rights. Empirical evidence supports this argument. LaFond and Watts (2008) predict and find that firms with higher leverage report more conservative earnings. Khan and Watts (2009) suggest that firms with high leverage exhibit a greater degree of conservatism. Furthermore, Garcia-García Lara et al. (2009) argue that highly levered firms are expected to be motivated to engage in conditional conservatism in years when the corporate bond yield rate is higher. They provide evidence of a positive association between the level of leverage and the degree of conditional conservatism. Prior literature argues that the level of leverage increases the probability of firm distress (Altman, 1968; Beaver, McNichols, & Rhie, 2005; Khan & Watts, 2009). Also, leverage increases heighten the potential for default and bankruptcy (Shumway, 2001; Chava & Jarrow, 2004; Beaver et al., 2005). Chatterjee, Dhillon and Ramirez (1995) document that firms that file for Chapter 11 are characterized by poor performance, high leverage and coordination problems among creditors. A company is more likely to go bankrupt when it is unprofitable, highly leveraged and suffers cash flows problems (Altman, 1968; Lennox, 1999). Campbell, Hilscher and Szilagyi (2008) argue that highly leveraged firms are more likely to fail. LaFond and Watts (2008) argue that leverage is predicted to decrease with growth options and consequently decrease with the level of information asymmetry. This results in a higher demand for conservatism by highly levered firms. Hence, lenders resort to conservatism to protect their own benefits by limiting the ability of managers to manipulate earnings, which improves the quality of earnings and prevents bankruptcy. Given the above arguments, the cross-sectional difference in conditional conservatism between bankrupt and matched healthy firms might be the result of differences in the levels of leverage. Therefore, we hypothesize the following:

H2. Stressed ex post bankrupt firms exhibit more accounting conservatism than the control firms' accounting reports when leverage is high.

Litigation risk provides another incentive to provide more conservative financial reporting. Previous studies argue that auditors bear higher litigation costs if earnings and net assets are overestimated (e.g. Kellogg, 1984; St. Pierre & Anderson, 1984). Auditors could also face SEC sanctions and suffer reputation loss if they issue an unqualified opinion on materially misstated financial statements (St. Pierre & Anderson, 1984; Palmrose, 1987). Therefore, auditors are motivated to be prudent in their financial reports to avoid the likelihood of litigation (e.g. Basu, 1997, 2001; Watts, 2003; Khan & Watts, 2009). Basu, Hwang, and Jan (2001) suggest that Big Eight auditors have incentives to be more conservative relative to non-Big Eight auditors because of their greater legal liability exposure. Distressed firms that bankrupt ex post exhibit higher litigation costs compared to non-bankrupt firms. For instance, Khan and Watts (2009) argue that financially troubled firms are more likely to be sued. Charitou et al. (2007a) advocate that during financial distress, auditors are exposed to litigation, which motivates them to play an increased monitoring role in distressed firms. Krishnan (2007) documents that large audit firms provide more conditionally conservative statements to reduce their vulnerability to the possibility of litigation. LaFond and Watts (2008) show that the degree of conditional conservatism goes up with the probability of litigation. More recent literature also argues that litigation and reputational concerns provide an auditor with incentives for conservatism (Ettredge, Huang, & Zhang, 2016; Chy & Hope, 2021). Given that ex post bankrupt firms are under the spotlight and often attract more attention from the public, we, therefore, anticipate ex post bankrupt firms to recognize losses in a speedier fashion to avoid being sued. Thus, if auditors of bankrupt firms are concerned

by the probability of lawsuits, they are assumed to demand greater conservatism in financial reporting. We formulate our third hypothesis as follows:

H3. Stressed ex post bankrupt firms exhibit more accounting conservatism than the control firms' accounting reports when auditor litigation risk is high.

Taxation is a third possible reason that might explain the cross-sectional difference in conditional conservatism between bankrupt and healthy firms. On the one hand, bankrupt firms could be more conservative and pay less taxes given their poor performance during the distress period. Watts (2003) argues that taxation generates a demand for conservatism. Qiang (2007) provides evidence that taxation only induces unconditional conservatism. García Lara *et al.* (2009) argue that tax pressures provide incentives for managers to use increased conservatism to minimize tax payments. Meanwhile, firms with lower growth opportunities are more likely to have higher taxable earnings. Khan and Watts (2009) suggest that given that stressed ex post bankrupt firms have higher proportions of losses and poor performance, non-bankrupt firms will likely report lower book earnings than bankrupt firms. Thus, we expect a lower taxation demand for conservatism from ex post bankrupt firms. It is also possible that financially distressed firms will try to intentionally avoid taxes as they approach bankruptcy. We expect that due to the decrease in economic and financial conditions, ex post bankrupt firms could perceive the potential costs of tax avoidance (e.g. higher penalties and reputation loss) to be minimal relative to the potential gains (e.g. the ability to continue as a going concern and emerge from bankruptcy) (Campello, Lin, Ma, & Zou, 2011). Richardson, Grantley and Roman (2015) demonstrate that tax avoidance may be exacerbated during periods of severe financial stress such as that experienced in 2008 during the global financial crisis (GFC). They argue that tax planning to reduce current income tax expense might be a priority manager strategy when firms face financial distress. Accordingly, we conjecture that if the costs of bankruptcy are high enough, firms will likely be motivated to pursue aggressive tax avoidance practices regardless of the risk of being audited by the tax authority (Campello *et al.*, 2011). When a firm approaches bankruptcy, it may have little options to survive, so it will take higher risk and avoid more tax payments in order to increase cash flows despite any negative reputational impacts. The early recognition of losses and delaying gains recognition enables managers of firms to decrease the amount of taxes and increase the firms' value. Particularly, the weakened financial position of firms could drive managers to become risk-takers and likely to decrease firms' current corporate tax liability. Given that tax avoidance incentives are positively associated with conservative accounting, we, therefore, anticipate ex post bankrupt firms to exhibit higher conditional conservatism.

The above arguments lead to the following hypotheses:

H4a. Stressed ex post bankrupt firms exhibit less accounting conservatism than the control firms' accounting reports when taxes are high.

H4b. Stressed ex post bankrupt firms exhibit higher accounting conservatism than the control firms' accounting reports when taxes are high.

Regulation explanation suggests that standard setters and regulators are more likely to receive blames and criticism from constituents when firms overstate net assets than understate them. Firms can reduce these political costs by responding to the demand of conservatism from constituents. Previous studies provide empirical evidence that accounting conservatism is a useful tool in financial reporting (Watts, 2003; Zhang, 2008). Qiang (2007) shows that regulation only induces unconditional conservatism. However, Garcia-García Lara *et al.* (2009) provide evidence that regulation leads to both forms of conservatism. They argue that regulators' monitoring is likely to incentivize managers to disclose losses in a

timely fashion. Sivakumar and Waymire (2003) also document that firms under more intense rate regulation exhibit greater asymmetric timeliness. Regulators face strong public scrutiny in periods of economic downturn, whereas they are not exposed to similar attention in periods of economy-wide growth. In the context of higher public scrutiny, regulator pressures will also impact firms' actions. Particularly, managers will likely shift income from periods of increased public scrutiny, to periods with lower public scrutiny. We argue that bankrupt firms are more exposed to greater scrutiny than non-bankrupt firms. Therefore, we anticipate bankrupt firms to recognize losses more quickly and delay the recognition of gains to reduce their visibility, and we propose the below prediction:

H5. Stressed ex post bankrupt firms exhibit more accounting conservatism than the control firms' accounting reports when regulatory costs are high.

3. Research design
3.1 Sample selection
We start our sample by combining CRSP monthly returns file, the annual COMPUSTAT file and the SDC Corporate Restructurings database between 1950 and 2015, which yields 258,087 observations (24,247 firms). We impose the following restrictions on the data. First, we remove the duplicates (76,088 observations) and missing data for any of the variables used in the estimation (161,966 observations). Second, we eliminate firm-years with negative total assets or book value of equity. Third, we delete firm-years with a price per share of less than $1 and firms with a market value of equity less than $10 million. Fourth, we require non-missing values of special items. Fifth, we delete the negative CR observations (2,286), as suggested by Callen *et al.* (2010). We also exclude firms in the financial (SIC 6,000–6,999) and utility industries (SIC 4,000–4,999), which reduces the sample size to 17,799 observations (3,492 firms) between 1987 and 2015. Then, we identify firms that experience financial distress. For that, we classify a firm as being stressed if its Altman Z-score is below 1.81. Moreover, we use the bankruptcy data from the SDC Platinum database, the delisting code 574 from CRSP and the *dlrsn* codes 02 or 03 (bankruptcy under Chapter 11 or under Chapter 7) from COMPUSTAT to identify ex post bankrupt firms. We consider stressed ex post bankrupt firms as those that experience financial distress (i.e. stressed) and end up bankrupt (i.e. ex post bankrupt), while non-stressed non-bankrupt firms are those that are neither stressed nor bankrupt.

Thereafter, we winsorize continuous variables at the top and bottom 1%t to mitigate data errors and scaling problems. These restrictions result in a sample of 276 bankrupt firms (584 observations) and 1,516 non-bankrupt firms (12,097 observations). Finally, we carry out a simple matching using the two-digit industry code, year and firm size, which reduces the sample of bankrupt firms to 273 (576 firm-years) and the sample of non-bankrupt firms to 329 (576 firm-years), covering 19 two-digit SIC industry groups, following Fama and French (1997), over the sample period dating from 1987 to 2014.

Table 1 provides the characteristics of the 576 bankrupt firm-years. Panel A presents the sample selection procedure. Panel B reports the time distribution of bankrupt firms each year. Many companies went bankrupt, and especially during the period preceding the dot-com bubble era: there were 3 cases in 1987 and 52 in 1998. Lately, the number of bankrupt firms has risen as a result of the financial crisis. Panel C presents the distribution of bankrupt firms by industry using Fama and French's (1997) industry classification. When all the bankrupt firms are studied together, the retail industry is the most dominant, with 20.49%, suggesting high risk in this sector. These findings are consistent with prior results (Charitou *et al.*, 2007a, b; Beaver & Ryan, 2005).

Panel A: Sample selection procedure	Firm-years	Firms
Firms with data available in CRSP, COMPUSTAT and SDC between 1950 and 2015	258,087	24,247
Less		
Duplicates	(76,088)	(2,000)
Missing data	(161,966)	(18,204)
Firm-years with negative total assets or book value of equity, price per share less than $1 and market value of equity less than $10 million	(311)	(224)
Negative CR	(2,286)	(1,329)
Financial services firms (6,000 series SIC code) and regulated industry firms (4,000 series SIC code);	(1,637)	(411)
Total firms (1987–2015)	17,799	3,492
Bankrupt firms (financially distressed and filed for Chapter 11)	584	276
Non-bankrupt firms	12,097	1,516
Total bankrupt and non-bankrupt firms	12,681	1,792
Others	5,118	1,700
After matching (1987–2014)	1,152	602
Bankrupt firms	576	273
Non-bankrupt firms	576	329

Panel B: Time distribution of bankrupt firms from 1987 to 2014

Year	Frequency	% of bankrupt firms
1987	3	0.52
1988	28	4.86
1989	32	5.56
1990	22	3.82
1991	17	2.95
1992	21	3.65
1993	25	4.34
1994	32	5.56
1995	42	7.29
1996	31	5.38
1997	33	5.73
1998	52	9.03
1999	43	7.47
2000	24	4.17
2001	16	2.78
2002	17	2.95
2003	16	2.78
2004	11	1.91
2005	16	2.78
2006	25	4.34
2007	18	3.13
2008	4	0.69
2009	4	0.69
2010	11	1.91
2011	6	1.04
2012	11	1.91

(*continued*)

Table 1.
Sample selection
procedure and
characteristics of
bankrupt firms
(1987–2015)

| Panel B: Time distribution of bankrupt firms from 1987 to 2014 | | |
Year	Frequency	% of bankrupt firms
2013	9	1.56
2014	7	1.22
Total	576	100.00

| Panel C: Industry distribution of bankrupt firms from 1987 to 2014 according to Fama and French (1997) | | | |
2-digit SIC	Industry name	No. of observations	Percentage of bankrupt firms
21	Machinery	10	1.74
22	Electrical equipment	19	3.30
23	Automobiles and trucks	27	4.69
24	Aircraft	3	0.52
25	Shipbuilding and railroad equipment	4	0.69
27	Precious metals	6	1.04
28	Nonmetallic and industrial metal mining	2	0.35
29	Coal	1	0.17
30	Petroleum and natural gas	63	10.94
33	Personal services	15	2.60
34	Business services	76	13.19
35	Computers	38	6.60
36	Electronic equipment	44	7.64
37	Measuring and control equipment	3	0.52
38	Business supplies	36	6.25
39	Shipping containers	1	0.17
41	Wholesale	41	7.12
42	Retail	118	20.49
43	Restaurants, hotels and motels	69	11.98
Total		576	100.00

Table 1.

3.2 Measurement of conditional conservatism

We use four measures to proxy conditional conservatism: the asymmetric timeliness measure of Basu (1997), the C-score (Khan & Watts, 2009), the conservatism ratio developed by Callen *et al.* (2010) and the measure developed by Givoly and Hayn (2000) based on the accumulation of non-operating accruals.

First, we run the Basu (1997) model in order to compare the level of conditional conservatism between bankrupt and non-bankrupt firms:

$$X_{it}/MV_{it-1} = \beta_0 + \beta_1 D_{it} + \beta_2 R_{it} + \beta_3 D_{it} * R_{it} + \sum \Psi_t Year + \varepsilon_{it} \qquad (1)$$

where X_{it}/MV_{it-1} is net income before extraordinary items (Compustat #18), scaled by lagged market value of equity (Compustat #125 * Compustat #199); R_{it} is the annual stock return of the firm, measured compounding twelve monthly Center for Research in Security Prices (CRSP) stock returns ending three months after the fiscal year-end; and D_{it} is a dummy variable that equals one if returns are negative, and zero otherwise. Year is a dummy variable for the fiscal year. In this model, the coefficient β_3 measures the level of conditional conservatism. If the coefficient β_3 is significantly higher for the bankrupt firms than matched control (non-bankrupt) firms, then the bankrupt firms are more likely to demand higher levels of conditional conservatism. The Basu asymmetric timeliness coefficient is a widely used measure of conditional conservatism (Watts, 2003; Mora &

Walker, 2015; Ruch & Taylor, 2015; Wang, Xie, & Xin, 2018). Second, we estimate the following C-score (Khan & Watts, 2009), which is a firm-year measure of conditional conservatism. Specifically, we use the following annual cross-sectional Fama MacBeth regression to estimate C-score and G-score:

$$X_{it}/MV_{it-1} = \beta_0 + \beta_1 D_{it} + R_{it}(\mu_0 + \mu_1 Size_{it} + \mu_2 MTB_{it} + \mu_3 LEV_{it}) + D_{it} * R_{it}(\lambda_0$$
$$+ \lambda_1 Size_{it} + \lambda_2 MTB_{it} + \lambda_3 LEV_{it}) + (\delta_1 Size_{it} + \delta_2 MTB_{it} + \delta_3 LEV_{it}$$
$$+ \delta_4 D_{it} * Size_{it} + \delta_5 D_{it} * MTB_{it} + \delta_6 D_{it} * LEV_{it}) + \varepsilon_{it} \qquad (2)$$

where X_{it}/MV_{it-1} is net income before extraordinary items (Compustat #18), scaled by lagged market value of equity (Compustat #125 * Compustat #199); R_{it} is the annual stock return of the firm, measured by compounding twelve monthly CRSP stock returns ending three months after the fiscal year-end; D_{it} is a dummy variable that equals one if returns are negative, and zero otherwise; $Size$ is the natural log of market value of equity (Compustat #25 * Compustat #199); MTB is the market-to-book ratio [(Compustat #25 * Compustat #199)/Compustat #60]; and LEV is leverage, measured as the sum of long-term and short-term debt (Compustat #9 + Compustat #34), scaled by the total numbers of assets (Compustat #6). Thereafter, the C-score for each firm-year is calculated as follows:

$$C\text{-}score = \lambda_0 + \lambda_1 Size_{it} + \lambda_2 MTB_{it} + \lambda_3 LEV_{it} \qquad (3)$$

where $C\text{-}score$ reflects the incremental timeliness of bad news; $Size$ is the natural log of the market value of equity; MTB is the market-to-book ratio; and LEV is leverage, measured as the sum of long-term and short-term debt deflated by total assets. If bankrupt (non-bankrupt) firms are more conditionally conservative, then it is expected that the mean value of the C-score will be significantly higher for the bankrupt (non-bankrupt) firms relative to non-bankrupt (bankrupt) firms.

Third, we use the conservatism ratio (CR) at the firm-year level developed by Callen et al. (2010), which is based on Vuolteenaho's (2002) return variance decomposition model. This metric is defined as the ratio of the current earnings shock divided by earnings news. Callen et al. (2010) argue that the greater the conservatism ratio is, the more conservative the firm will be. Specifically, we calculate CR as follows:

$$CR_t = n_{2,t}/N_{et} \qquad (4)$$

where $n_{2,t}$ is the current period earnings divided by earnings news (N_{et}). Following Callen et al. (2010), we drop the negative CR observations. In our setting, if bankrupt (control) firms are more conditionally conservative and accelerate bad news recognition, the mean value of CR will be significantly higher than in control (bankrupt) firms.

Finally, the accrual-based measure of conservatism, NOA, is computed as follows:

$$\text{Total Accruals (before depreciation)} = (\text{Net Income} + \text{Depreciation})$$
$$- \text{Cash Flow from Operations} \qquad (5)$$

$$\text{Non-Operating Accruals} = \text{Total Accruals (before depreciation)} - \text{Operating Accruals} \qquad (6)$$

Operating accruals are those arising from the basic day-to-day business of the firm. They are defined as:

$$\text{Operating Accruals} = \Delta\text{Accounts Receivable} + \Delta\text{Inventories} + \Delta\text{Prepaid Expenses}$$
$$- \Delta\text{Accounts Payable} - \Delta\text{Taxes Payable} \tag{7}$$

We then compute the cumulative non-operating accruals over the sample period deflated by beginning total assets, and multiplied by negative one, as in Givoly and Hayn (2000). The intuition underlying this measure is that conservative accounting results in persistently negative accruals. Accounting conservatism leads to negative accruals, and the more negative the accruals are, the more conservative the financial reports will be (Givoly & Hayn, 2000).

3.3 Switching regression models

Since firms are not randomly assigned to two subsamples bankrupt and control, the drivers of the cross-sectional difference in conditional conservatism between these two groups cannot be estimated by ordinary least squares (OLS) without sample selectivity and measurement error biases (Heckman, 1979; Maddala, 1983, 1986, 1991; Dietrich, Muller, & Riedl, 2007). The intuition is that conditioning on an endogenous variable results in sample selectivity bias unless one accounts for sample selectivity in the estimation procedure. To mitigate this concern, we employ a switching regression methodology [3] discussed extensively by Maddala (1983, 1986, 1991) to account for the potential endogenous assignment of firms to bankruptcy regimes while simultaneously estimating the relation between conservatism and its drivers. This method is also applied in accounting literature (e.g. Shehata, 1991; Callen *et al.*, 2010; Lourenço, Callen, Branco, & Curto, 2013; Callen, Chen, Dou, & Xin, 2016). The switching regression model consists of three equations and may be specified as follows:

$$\text{Bankruptcy} = \beta_0 + \beta_1 \text{ROA}_{it} + \beta_2 \text{ETL}_{it} + \beta_3 \text{LTA}_{it} + \beta_4 \text{LSIGMA}_{it} + \varepsilon_{it} \tag{8}$$

$$C\text{-}score_{1,it} = \beta_0 + \beta_1 Lev_{1it} + \beta_2 LtCst\text{-}Au_{1it} + \beta_3 Tax_{1it} + \beta_4 Reg_{1it} + \varepsilon_{1it} \tag{9}$$

$$C\text{-}score_{2,it} = \beta_0 + \beta_1 Lev_{2it} + \beta_2 LtCst\text{-}Au_{2it} + \beta_3 Tax_{2it} + \beta_4 Reg_{2it} + \varepsilon_{2it} \tag{10}$$

In the first stage, the Bankruptcy choice in Eq. (8) is estimated for the entire sample using probit analysis. The variables included in Eq. (8) are those considered in Beaver *et al.*'s (2005) study. They argue that ROA measures the profitability of the firm and that it reflects the firm's ability to repay its debts. ETL measures the ability of cash flow from operations' pre-interest and pre-taxes to service the principal and interest payments. For LTA, it is a key measure of the debt to be repaid relative to the total assets of the firm available as a source for repaying the debt. LSIGMA reflects the market perception of the firm's performance. Then, the estimated value is used to generate the Mills ratio for each sample observation. In the second stage, the Mills ratios are added to equations 9 and 10, which are estimated by OLS.

4. Empirical results

4.1 Descriptive statistics

Table 2 reports the summary statistics for the selected variables used in the empirical analysis. Panel A involves the entire sample, Panel B involves the sample of 329 non-bankrupt firms and Panel C involves the sample of 273 bankrupt firms. Compared to Panel B, Panel C shows that the mean leverage is higher (0.357) for bankrupt firms than for non-bankrupt firms (0.137). This indicates a higher level of leverage in bankrupt firms. LitiCost-Aud is measured by a dummy variable for big auditing firms. The mean of LitiCost-Aud is

Variables	N	Mean	Std.Dev	Q1	Median	Q3
Panel A: Pooled sample (N = 1152; n = 602)						
Earnings	1152	−0.038	0.196	−0.091	0.021	0.072
RET	1152	0.061	0.552	−0.320	−0.030	0.300
ROA	1152	−0.022	0.134	−0.055	0.010	0.054
ETL	1152	0.242	0.493	0.063	0.172	0.383
LTA	1152	0.517	0.223	0.337	0.528	0.698
LSIGMA	1152	−0.165	0.745	−0.653	−0.266	0.161
Size	1152	4.514	1.433	3.349	4.339	5.547
Leverage	1152	0.247	0.204	0.053	0.225	0.396
MTB	1152	1.872	1.415	0.962	1.449	2.296
LitiCost-Aud	1152	0.838	0.369	1.000	1.000	1.000
TaxCost	1152	0.689	0.259	0.525	0.760	0.904
Reg	1152	0.413	0.426	0.000	0.000	1.000
C-score	1152	0.198	0.151	0.094	0.203	0.301
CR	1152	0.483	0.509	0.270	0.387	0.499
NOA	1152	−0.423	1.530	−0.321	−0.053	0.000
Panel B: Non-bankrupt firms (N = 576; n = 329)						
Earnings	576	0.050	0.091	0.023	0.058	0.090
RET	576	0.179	0.505	−0.150	0.124	0.377
ROA	576	0.045	0.069	0.017	0.050	0.084
ETL	576	0.460	0.515	0.206	0.355	0.635
LTA	576	0.377	0.175	0.241	0.362	0.516
LSIGMA	576	0.002	0.678	−0.413	−0.077	0.287
Size	576	4.666	1.437	3.524	4.508	5.697
Leverage	576	0.137	0.142	0.002	0.106	0.230
MTB	576	1.853	1.260	0.966	1.477	2.339
LitiCost-Aud	576	0.833	0.373	1.000	1.000	1.000
TaxCost	576	0.690	0.260	0.525	0.760	0.904
Reg	576	0.379	0.403	0.000	0.000	1.000
C-score	576	0.139	0.133	0.049	0.149	0.239
CR	576	0.481	0.595	0.224	0.347	0.475
NOA	576	−0.502	1.691	−0.369	−0.077	0.000
Panel C: Bankrupt firms (N = 576; n = 273)						
Earnings	576	−0.126	0.230	−0.197	−0.075	0.019
RET	576	−0.057	0.571	−0.441	−0.187	0.157
ROA	576	−0.089	0.150	−0.147	−0.035	0.006
ETL	576	0.023	0.353	−0.010	0.091	0.146
LTA	576	0.656	0.174	0.544	0.683	0.790
LSIGMA	576	−0.332	0.771	−0.871	−0.480	−0.005
Size	576	4.362	1.414	3.191	4.159	5.269
Leverage	576	0.357	0.197	0.214	0.368	0.489
MTB	576	1.890	1.555	0.954	1.433	2.235
LitiCost-Aud	576	0.842	0.365	1.000	1.000	1.000
TaxCost	576	0.689	0.259	0.525	0.760	0.904
Reg	576	0.086	0.248	0.000	0.000	1.000

(*continued*)

Table 2.
Descriptive statistics

Variables	N	Mean	Std.Dev	Q1	Median	Q3
C-score	576	0.257	0.144	0.161	0.266	0.371
CR	576	0.484	0.406	0.322	0.419	0.518
NOA	576	−0.343	1.348	−0.284	−0.016	0.000

Note(s): This table shows descriptive statistics for 576 bankrupt firm-years and 576 non-bankrupt firm-years between 1987 and 2014. The mean, standard deviation (Std.dev), first quartile (Q1), median and third quartile (Q3) are reported. Earnings is net income before extraordinary items (Compustat #18), scaled by lagged market value of equity (Compustat #125 * Compustat #199). RET is the annual stock return from nine months before fiscal year-end of three months after fiscal year-end from CRSP; ROA is net income divided by total assets; ETL is EBITDA divided by total liabilities. EBITDA is earnings before interest, taxes, depreciation and amortization. LTA is total liabilities divided by total assets. LSIGMA is the standard deviation of the residual return from a regression of twelve-monthly returns of the firm on monthly returns of the market index. Size is the natural log of market value of equity. Leverage is defined as total debt (Compustat #9 + Compustat #34) scaled by total assets (Compustat #6). MTB is the market-to-book ratio ((Compustat #25 * Compustat #199)/ Compustat #60). LitiCost-Aud is a binary variable that equals one if the code of a firm's auditor (Compustat #149) is from one to eight, and zero otherwise. Following Qiang (2007), we measure TaxCost as the association between book income and tax income estimated from time-series regression $TX_{jt} = \beta_{0j} + \beta_{jt} BKTX_{jt} + \varepsilon_{jt}$ for firm j over the sample period, where BKTX jt is tax expense for firm j in year t (Compustat #16) and TX jt is tax expense minus deferred tax expense (Compustat #16 - Compustat #50). All variables are deflated by lagged total assets (Compustat #6); Reg is the firm's regulation cost. It is a dummy variable that equals 1 if sales deflated by industry total sales/the number of firms in the industry is of top quartile, and 0 otherwise; sales is Compustat #12. C-score is the firm-year measure of conservatism as in Khan and Watts (2009); CR is the conservatism ratio measure of Callen *et al.* (2010) computed as the earnings surprise divided by earnings news. NOA is negative cumulative nonoperating accruals over the sample period deflated by beginning total assets, multiplied by negative one, as in Givoly and Hayn (2000). A detailed definition of the variables can be found in Table A1

Table 2.

higher for the bankrupt firms (0.842) than the mean for the non-bankrupt firms (0.833). Moreover, bankrupt firms have, on average, lower TaxCost (0.689) than non-bankrupt firms (0.690). Concerning the C-score, the mean value is 0.257 for the bankrupt sample and 0.139 for the non-bankrupt sample, suggesting a higher level of conditional conservatism in bankrupt firms. The mean (median) CR is 0.484 (0.419) for the bankrupt sample, indicating that, on average, the current period shock to earnings equals approximately 48% of the total economic shock to current and future cash flows. The mean (median) CR in the non-bankrupt sample is 0.481 (0.347). The mean value of the accrual-based conservatism measure (NOA) is −0.343 for bankrupt firms compared to −0.502 for non-bankrupt firms, consistent with higher levels of conditional conservatism in bankrupt firms. For the LTA variable, the bankrupt means are higher (0.656) than the non-bankrupt firms' means (0.377), suggesting a higher level of leverage in bankrupt firms. Bankrupt firms have a lower mean return (−0.057) than non-bankrupt firms (0.179). For ROA, bankrupt firms have a mean (median) of −0.089 (−0.035), while non-bankrupt firms have a mean (median) of 0.045 (0.050). These findings show poor profitability in bankrupt firms relative to non-bankrupt firms. For ETL in bankrupt firms, the mean is 0.023, while the non-bankrupt firms' mean is 0.460, suggesting poor cash flows in bankrupt firms. These findings are consistent with those of Beaver *et al.* (2005). Finally, bankrupt firms have higher market-to-book ratios than non-bankrupt firms.

Table 3 shows the Pearson and Spearman's correlations among the variables used in our study. Bankruptcy is positively and significantly correlated with the C-score, the conservatism ratio (CR) and the negative cumulative non-operating accruals (NOA). The measures of conditional conservatism – the C-score, CR and NOA – are positively correlated. In addition, all the measures of conservatism are positively correlated with leverage, LitiCost-Aud, TaxCost and Reg.

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Bankruptcy	1	-0.44[a]	-0.21[a]	-0.49[a]	-0.44[a]	0.62[a]	-0.22[a]	-0.10[a]	0.53[a]	0.01	0.01	-0.01	0.27	0.38[a]	0.13[c]	0.05[a]
Earnings	-0.54[a]	1	0.26[a]	0.69[a]	0.38[a]	-0.27[a]	0.26[a]	0.16[a]	-0.20[a]	0.08[a]	-0.01	0.01	-0.15[c]	-0.24[a]	-0.02	-0.03
RET	-0.29[a]	0.45[a]	1	0.29[a]	0.19[a]	-0.17[a]	0.94[a]	0.08[a]	-0.16[a]	0.23[a]	-0.01	0.02	-0.08	-0.17[a]	0.03	-0.10[a]
ROA	-0.61[a]	0.86[a]	0.42[a]	1	0.60[a]	-0.20[a]	0.30[a]	0.19[a]	-0.11[a]	0.03	0.01	-0.00	-0.15[b]	-0.22[a]	-0.00	0.00
ETL	-0.63[a]	0.67[a]	0.36[a]	0.79[a]	1	-0.36[a]	0.20[a]	0.17[a]	-0.25[a]	0.09[a]	0.04	0.07[b]	0.09	-0.28[a]	-0.01	0.03
LTA	0.62[a]	-0.28[a]	-0.23[a]	-0.38[a]	-0.51[a]	1	-0.17[a]	0.01	0.82[a]	0.02	0.12[a]	0.01	0.05	0.45[a]	-0.01	0.13[a]
LSIGMA	-0.29[a]	0.45[a]	0.90[a]	0.42[a]	0.36[a]	-0.24[a]	1	0.11[a]	-0.16[a]	0.21[a]	-0.02	-0.04	0.16	-0.19[a]	0.04	-0.09[a]
Size	0.14[a]	0.17[a]	0.11[a]	0.24[a]	0.20[a]	0.03	0.14[a]	1	-0.02	0.25[a]	0.18[a]	-0.20[a]	0.34[b]	-0.81[a]	0.02	-0.01
Leverage	0.53[a]	-0.22[a]	-0.20[a]	-0.29[a]	-0.38[a]	0.83[a]	-0.20[a]	-0.02	1	-0.01	0.10[a]	0.04	-0.31	0.58[a]	-0.01	0.11[a]
MTB	-0.02	0.12[a]	0.27[a]	0.19[a]	0.13[a]	-0.01	0.25[a]	0.32[a]	-0.04[c]	1	-0.06[b]	0.02	-0.26	-0.28[a]	0.02	-0.15[a]
LitiCost-Aud	0.01	0.03	0.00	0.03[b]	0.05[b]	0.12[a]	-0.02	0.19[a]	0.10[a]	-0.05[c]	1	0.19[a]	0.19[b]	-0.08[a]	-0.02	-0.05[b]
TaxCost	-0.03	0.03	0.01	0.03	0.04	0.02	-0.04	-0.22[a]	0.04	-0.02	0.16[a]	1	0.06	0.18[a]	0.04	0.04
Reg	0.26	-0.06	-0.12	-0.35	0.32	0.12	0.16	0.62[a]	-0.28[c]	-0.27[b]	0.54[b]	-0.08	1	0.36	0.12	0.16
C-score	0.38[a]	-0.26[a]	-0.21[a]	-0.36[a]	-0.36[a]	0.45[a]	-0.24[a]	-0.80[a]	0.55[a]	-0.33[a]	-0.07[b]	0.21[a]	0.14	1	0.05[c]	0.15[a]
CR	0.17[a]	-0.16[a]	0.01	-0.17[a]	-0.17[a]	0.08	0.03	-0.04	0.04[c]	0.07[a]	-0.02	0.01	0.24	0.05[c]	1	0.02
NOA	0.09[a]	-0.09[a]	-0.09	-0.12[a]	-0.13[a]	0.10[a]	-0.08[a]	-0.13[a]	0.07[a]	-0.14[a]	-0.05[b]	0.03	0.27	0.15[a]	0.01	1

Note(s): The upper (lower) right triangle of the matrix shows Pearson (Spearman) correlations. The sample period encompasses the 1978 to 2014 time horizon. a, b, c indicate significance at the 0.01, 0.05 and 0.10 levels, two-tailed. Bankruptcy is a dummy variable that takes one if the Altman score is < 1.81 and the firm filed for Chapter 11. Earnings is net income before extraordinary items (Compustat #18), scaled by lagged market value of equity (Compustat #125 * Compustat #199). RET is the annual stock return from nine months before fiscal year-end of three months after fiscal year-end from CRSP; ROA is net income divided by total assets; ETL is EBITDA divided by total liabilities. EBITDA is earnings before interest, taxes, depreciation and amortization. LTA is total liabilities divided by total assets. LSIGMA is the standard deviation of the residual return from a regression of twelve-monthly returns of the firm on monthly returns of the market index. Size is the natural log of market value of equity. Leverage is defined as total debt (Compustat #9 + Compustat #34) scaled by total assets (Compustat #6). MTB is the market-to-book ratio ((Compustat #25 * Compustat #199)/Compustat #60). LitiCost-Aud is a binary variable that equals one if the code of a firm's auditor (Compustat #149) is from one to eight, and zero otherwise. Following Qiang (2007), we measure TaxCost as the association between book income and tax income estimated from time-series regression $TX_{ijt} = \beta_{0j} + \beta_{jt} BKTX_{jt} + \varepsilon_{jt}$ for firm j over the sample period, where BKTX jt is tax expense for firm j in year t (Compustat #16) and TX_{jt} is tax expense minus deferred tax expense (Compustat #16 - Compustat #50). Reg is the firm's regulation cost. It is a dummy variable that equals 1 if sales deflated by industry total sales/the number of firms in the industry is of top quartile, and 0 otherwise; sales is Compustat #12. All variables are deflated by lagged total assets (Compustat #6); C-score is the firm-year measure of conservatism as in Khan and Watts (2009); CR is the conservatism ratio measure of Callen *et al.* (2010) computed as the earnings surprise divided by earnings news. NOA is negative cumulative nonoperating accruals over the sample period deflated by beginning total assets, multiplied by negative one, as in Givoly and Hayn (2000). A detailed definition of the variables can be found in Table A1

Table 3.
Correlation matrix
(Pearson top;
Spearman bottom)

4.2 Regression results

4.2.1 Primary results using the Basu model. The results of the tests of the level of conditional conservatism are reported in Tables 4 and 5. Table 4 provides results on cross-sample conditional conservatism differences between bankrupt and non-bankrupt firms using the Basu model, which is based on pooled cross-sectional regression. In this model, the coefficient β_2, which reflects the asymmetric timeliness of good news, is positive and significant only for non-bankrupt firms (0.0381), suggesting that there is a positive association between earnings and returns for non-bankrupt firms. However, it is positive, but not significant, for bankrupt firms (0.0116). More interestingly, the results show that the coefficient, β_3, which measures the level of conditional conservatism, is significantly higher for bankrupt firms (0.128) than for non-bankrupt firms (0.0859). This result indicates that, on average, bankrupt firms are more likely to report losses more quickly than gains compared to non-bankrupt firms.

4.2.2 Results using other measures of conditional conservatism. Table 5 presents a comparison of the means and medians of proxies of conditional conservatism between bankrupt and non-bankrupt firms. The results show that the mean (median) C-score is 0.2566 (0.2661), significantly higher than the mean (median), which is 0.1394 (0.1493). Our results

$$X_{it}/MV_{it-1} = \beta_0 + \beta_1 D_{it} + \beta_2 R_{it} + \beta_3 D_{it} * R_{it} + \sum \Psi_t Year + \varepsilon_{it}$$

Variables	Full sample	Non-bankrupt	Bankrupt
D (β_1)	−0.0303* (−1.88)	−0.00319 (−0.30)	−0.0283 (−0.87)
R (β_2)	0.0172 (0.87)	0.0381*** (2.80)	0.0116 (0.31)
DR (β_3)	0.228*** (5.37)	0.0859*** (2.66)	0.128* (1.84)
Constant	0.121*** (3.92)	0.0260 (0.62)	0.116*** (3.55)
Year fixed effects	Yes	Yes	Yes
Observations	1,152	576	576
R^2	0.135	0.170	0.094

Note(s): OLS regression with year fixed effects. The *t*-statistics in parentheses are robust and adjusted for firm clustering. X_{it}/M_{it-1} is net income before extraordinary items (Compustat #18), scaled by lagged market value of equity (Compustat #125 * Compustat #199). R it is the annual stock return from nine months before fiscal year-end of three months after fiscal year-end from CRSP. $D_{it} = 1$ if $R_{it} < 0$, and zero otherwise. ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$. Year is a dummy variable for the fiscal year

Table 4.
Earnings-returns association for bankrupt and non-bankrupt firms using matching (1987–2014)

	Mean	*t*-stat	Median	Wilcoxon Z
C-score				
Bankrupt ($N = 576$)	0.2566	−14.3272***	0.2661	−13.048***
Non-bankrupt ($N = 576$)	0.1394		0.1493	
CR				
Bankrupt ($N = 576$)	0.4840	−0.0981	0.4192	−5.926***
Non-bankrupt ($N = 576$)	0.4811		0.3465	
NOA				
Bankrupt ($N = 576$)	−0.3433	−1.7591**	−0.0155	−3.153***
Non-bankrupt ($N = 576$)	−0.5018		−0.0770	

Note(s): C-score is the firm-year measure of conservatism as in Khan and Watts (2009); CR is the conservatism ratio measure of Callen *et al.* (2010) computed as the earnings surprise divided by earnings news. NOA is negative cumulative non-operating accruals over the sample period deflated by beginning total assets, multiplied by negative one, as in Givoly and Hayn (2000). ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$

Table 5.
Comparison between the measures of conditional conservatism in bankrupt and non-bankrupt firms using matching (1987–2014)

suggest that bankrupt firms experience greater levels of conservatism than their matched control non-bankrupt firms. Also, both the mean and median of the conservatism ratio measure of Callen *et al.* (2010) are 0.4840 and 0.4192, which are significantly higher than the mean and median in non-bankrupt firms (0.4811 and 0.3465). That is, the level of conditional conservatism is more pronounced in bankrupt firms. Finally, the comparison using the accrual based of Givoly and Hayn (2000) shows that bankrupt firms exhibit higher and significant mean (−0.3433) and median (−0.0155) of negative cumulative non-operating accruals than non-bankrupt firms (−0.5018 and −0.0770). This indicates that bankrupt firms are more positively associated with more timely accounting recognition of economic losses compared to the benchmark sample of non-bankrupt firms. Consistent with previous results, as presented in Table 4, the level of conditional conservatism is higher in bankrupt firms relative to non-bankrupt firms across the three measures of conservatism (see Figure 1).

Figures 2 and 3 plot the C-score measure for bankrupt and non-bankrupt firms across the matched sample as well as across the full sample. Figure 4 presents the plot for the C-score, the conservatism ratio (CR) and cumulative non-operating accruals (NOA) only for the sample of bankrupt firms.

Overall, the results in Table 5 and the plots in Figures 2 and 3 suggest that conditional conservatism is higher in bankrupt firms than in non-bankrupt firms. Consequently, our evidence supports Hypothesis 1a, suggesting that conditional conservatism is higher in bankrupt firms compared to non-bankrupt firms.

4.2.3 Results of the switching regression analysis. Table 6 reports the estimates of the switching regression model. The probit estimates of the bankruptcy equation are presented in Panel A, and the OLS estimates (corrected for self-selection bias and adjusted for firm clustering) are presented in Panels B and C for the bankrupt and non-bankrupt samples, respectively. All four ratios used in the logistic regression have the predicted sign. The
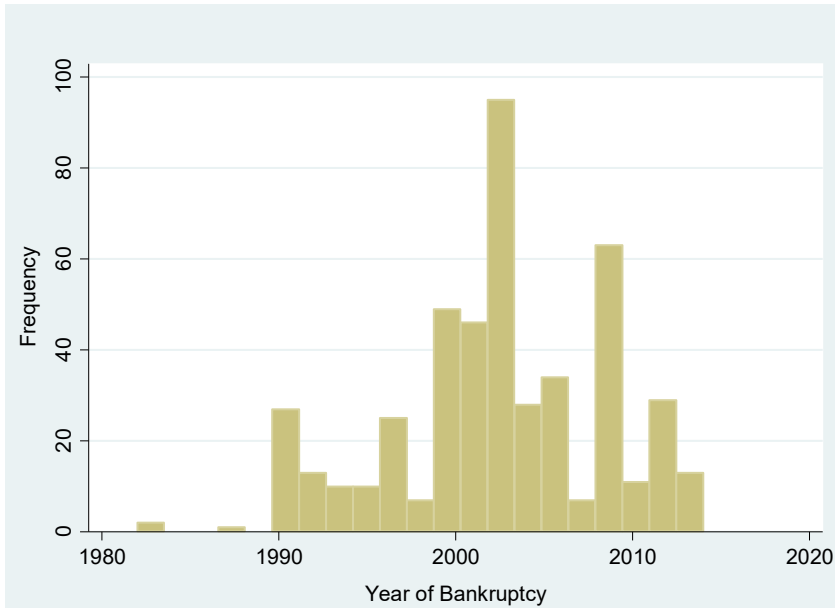

Figure 1.
Number of filing for
chapter 11

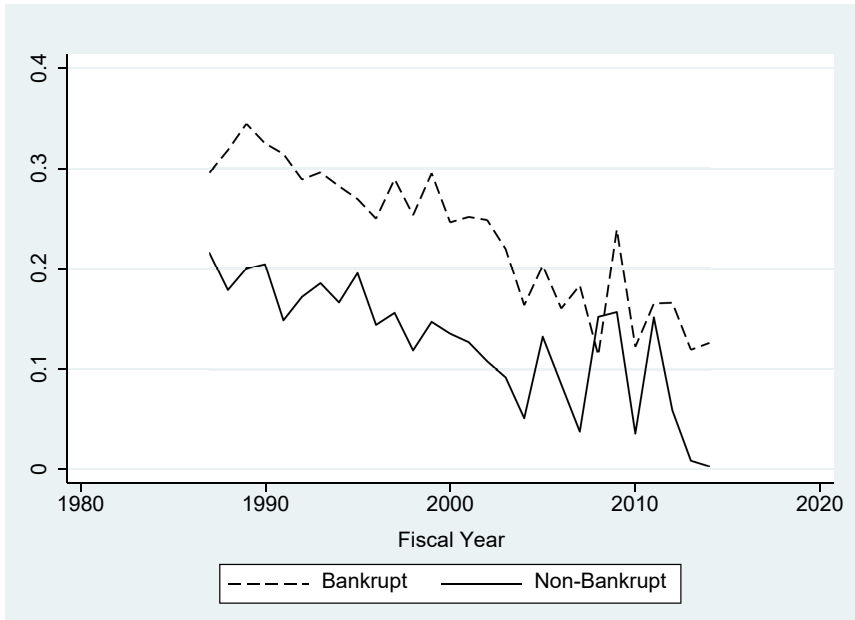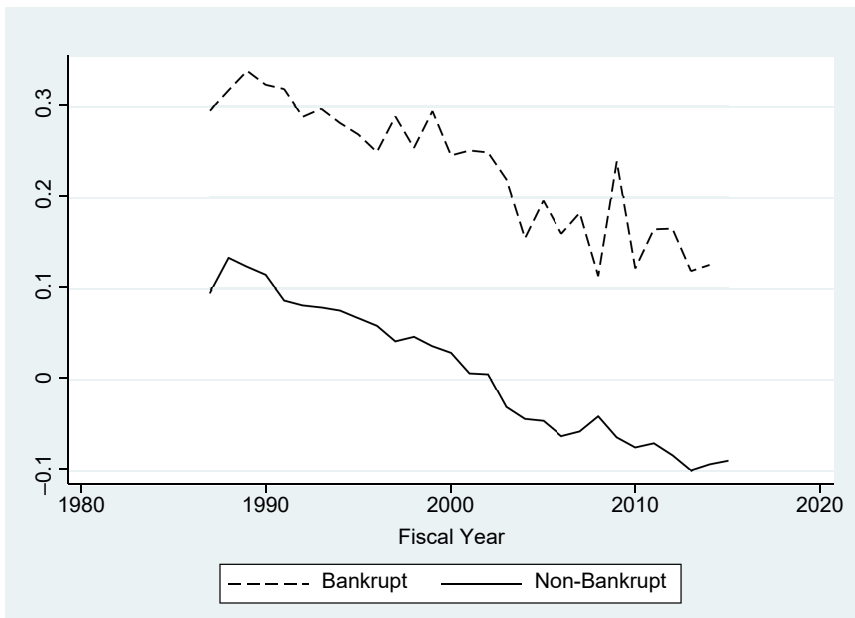estimated coefficient of the variable ROA is negative and significant at the 1% level (−9.0383). The coefficient of the variable ETL is also negative, but not significant (−0.1640). This suggests that bankruptcy is a decreasing function of profitability and cash flow.
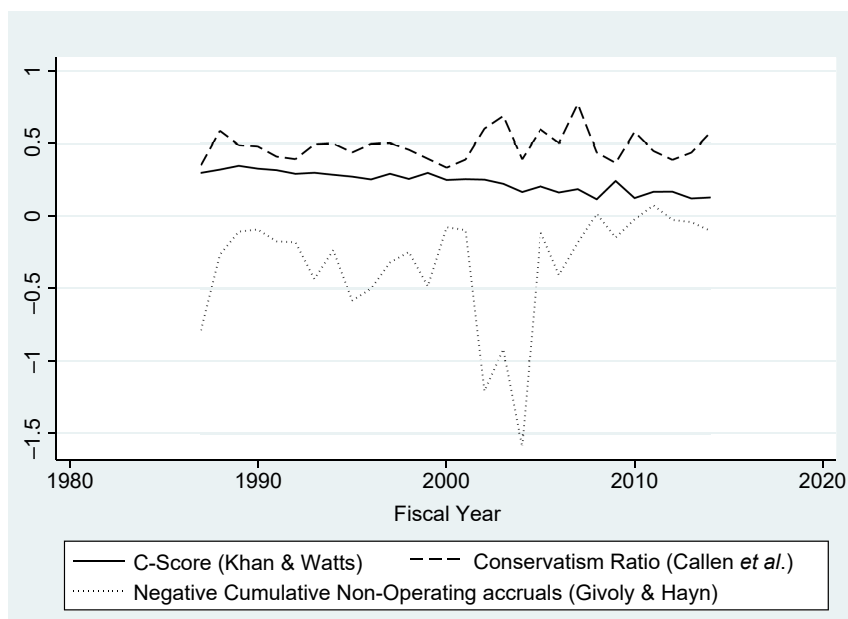
In addition, the results show that bankruptcy is an increasing function of LTA (5.0690) and LSIGMA (0.0436). These findings are consistent with those of Beaver and Ryan (2005); bankrupt firms are characterized by poor profitability, poor cash flows, higher volatility and higher leverage levels.

The results reported in Panels B and C suggest that the two groups, namely, bankrupt and non-bankrupt firms, are quite different in terms of conditional conservatism. The estimated coefficient of the variable Lev in the bankrupt firms (0.115) is larger than the estimated coefficient in the non-bankrupt firms (0.0429), suggesting that bankrupt firms exhibit greater conditional conservatism when the level of leverage increases relative to non-bankrupt firms. Since bankrupt firms have more debt than non-bankrupt firms, debt contracting drives cross-sectional differences in conditional conservatism between bankrupt and non-bankrupt firms. These findings are consistent with LaFond and Watts (2008) and Khan and Watts (2009), who find that there is a higher contracting demand for conditional conservatism from more levered firms. In addition, the results confirm those of Ball, Bushman and Vasvari (2008), who show that timely loss recognition increases in line with the relative importance of debt markets and conclude that the ultimate source of the demand for conditional conservatism is the debt market. This evidence supports our inference that lenders demand higher conditional conservatism from managers of bankrupt firms to mitigate the agency conflicts and level of information asymmetry.

Contrary to our expectations, the estimated coefficient of LtCst-Au is negative and significant (−0.117 and −0.0959) for both samples, which means that higher litigation risk with auditors is negatively associated with the level of conservatism in bankrupt and non-bankrupt firms. These results are consistent with Qiang's (2007) and Garcia-García Lara et al.'s (2009) findings. We, accordingly, attribute this result to the lack of cross-sectional variation in LitiCost-Aud (84% of sample firms hire big auditing firms). This indicates that our third hypothesis, predicting a positive association between the higher level of conditional conservatism in bankrupt firms and auditor litigation risk level, is rejected. In addition, the

	Predicted sign	Coefficients
Panel A: Bankruptcy equation		
Intercept		−2.7396***
ROA	(−)	−9.0383***
ETL	(−)	−0.1640
LTA	(+)	5.0690***
LSIGMA	(+)	0.0436
Log-likelihood = −370.1307		
Observations = 1,152		
Panel B: Bankrupt firms		
Intercept		0.162***
Lev	(+)	0.101***
LtCst-Au	(+)	−0.099***
Tax	(+)	0.117**
Reg	(+)	0.118
Selectivity variable		−0.0325***
Observations = 576		
Adjusted R^2 = 0.316		
Panel C: Nonbankrupt firms		
Intercept		0.295***
Lev	(+)	0.0209***
LtCst-Au	(+)	−0.0781***
Tax	(+)	0.0097
Reg	(+)	0.0783
Selectivity variable		−0.0413***
Observations = 576		
Adjusted R^2 = 0.367		

Note(s): Panel A presents the probit analysis with industry and year fixed effects. Dependent variable: bankruptcy (a dummy variable that equals one if the firm is financially distressed and bankrupt, and zero otherwise). Independent variables: ROA is net income divided by total assets; ETL is EBITDA divided by total liabilities. EBITDA is earnings before interest, taxes, depreciation and amortization; LTA is total liabilities divided by total assets; LSIGMA is the standard deviation of the residual return from a regression of twelve-monthly returns of the firm on monthly returns of the market index

Panels B and C present OLS regressions corrected for self-selection bias and adjusted for firm clustering. Dependent variable: C-score is the firm-year measure of conservatism as in Khan and Watts (2009). Independent variables: Lev is a dummy variable that takes one if leverage is above the median, and zero otherwise; leverage is defined as total debt (Compustat #9 + Compustat #34) scaled by total assets (Compustat #6); LitiCost-Aud is a binary variable that equals one if the code of a firm's auditor (Compustat #149) is from one to eight, and zero otherwise; Tax is a dummy variable that takes one if TaxCost is above the median, and zero otherwise. TaxCost is the association between book income and tax income estimated from time-series regression $TX_{jt} = \beta_{0j} + \beta_{jt} BKTX_{jt} + \varepsilon_{jt}$ for firm j over the sample period, where $BKTX_{jt}$ is tax expense for firm j in year t (Compustat #16) and TX_{jt} is tax expense minus deferred tax expense (Compustat #16 – Compustat #50). All variables are deflated by lagged total assets (Compustat #6). Reg is the firm's regulation cost. It is a dummy variable that equals 1 if sales deflated by industry total sales/the number of firms in the industry is of top quartile, and 0 otherwise; sales is Compustat #12. Selectivity variable (Mills ratio as defined in Shehata (1991) and Lourenço *et al.* (2013)). ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$

Table 6.
The drivers of
conditional
conservatism using the
two-steps switching
regression and
matching (1987–2014)

estimated coefficient of tax is positive and statistically significant at the level of 5% for the bankrupt sample (0.138). However, this coefficient is insignificant for the non-bankrupt sample, indicating that conditional conservatism is undesirable in tax planning in non-bankrupt firms, but likely to be desirable in tax planning for the bankrupt sample. These results suggest that regarding taxation, only bankrupt firms exhibit a significantly higher level of asymmetric timeliness of recognition of bad news versus good news. These results

suggest that the two groups differ in their characteristics as well as the drivers inducing conditional conservatism. Finally, we find that the estimated coefficient of Reg is positive, but not significant for both subsamples. This result is consistent with Qiang's (2007) conclusion that regulation does not provide incentives for conditional conservatism, whereas it drives only unconditional conservatism. Overall, the results demonstrate that bankrupt firms are more conditionally conservative than non-bankrupt firms. Furthermore, the higher demand for conditional conservatism by bankrupt firms is driven by their higher level of leverage compared to non-bankrupt firms and tax-reduction incentives.

4.2.4 Cross-sectional evidence. We also conduct tests to assess cross-sectional differences in conservatism within the bankrupt sample. If debt contracting and tax-reduction incentives are primary drivers of higher conditional conservatism in the bankrupt sample relative to non-bankrupt firms, we anticipate they will drive conservatism within the bankrupt sample in predictable ways. Thus, these analyses provide evidence of whether the cross-sample differences in conditional conservatism, as documented in Table 6, vary according to debt contracting and tax-decreasing motivations in bankrupt firms.

4.2.4.1 Cross-Sectional Differences Associated with Debt Contracting and Taxation. Table 7 provides evidence of the cross-sectional relationship between various measures of conditional conservatism, firm-level leverage and firm-level tax cost within the bankrupt sample. Panel A presents the results using the Basu measure. The findings indicate that the group of highly leveraged firms in the bankrupt sample shows significantly higher levels of conditional conservatism across the three measures. Using the Basu model, we find that bankrupt firms with higher levels of leverage tend to be more conditionally conservative ($\beta_3 = 0.203$, p-value $< 10\%$) than firms with lower levels of leverage ($\beta_3 = 0.0275$). We also split the bankrupt sample into two groups where the first group includes firms with tax cost above or equal to the median, and the second group includes firms where tax cost is below the median. Consistent with our prediction, the results reported in Table Panel A of Table 7 indicate that conditional conservatism is greater in bankrupt firms with higher tax cost as opposed to firms with lower tax cost. Panel B presents the results using other measures of conservatism (i.e. C-score measure, the conservatism ratio and the cumulative non-operating accruals). We find that bankrupt firms with greater levels of leverage have higher asymmetric timeliness coefficients than firms with lower levels of leverage. However, the difference in the conservatism ratio is not significant. Regarding the taxation sample decomposition, we find, however, that this difference is only significant with the C-score measure. These results suggest that tax-reduction motivations influence the degree to which bankruptcy affects conditional conservatism. This is consistent with the findings of Richardon *et al.* (2015). namely, that financial distress is significantly and positively associated with tax avoidance across several proxy measures of tax avoidance and financial distress.

5. Robustness tests
This study's main results hold after the following robustness checks:

(1) In this section, we test our hypotheses using the full sample of 584 observations of bankrupt firms and 12,097 observations of non-bankrupt firms between 1987 and 2015 instead of the matched sample. There is no qualitative change in our inferences. Table 8 reports the results for estimating the Basu (1997) model in both samples. The results show that bankrupt firms undertake timelier recognition of losses in earnings ($\beta_3 = 0.127$) compared to non-bankrupt firms ($\beta_3 = 0.0993$). The evidence suggests that conditional conservatism is higher in bankrupt firms than in non-bankrupt firms.

(2) We repeat our tests using the C-score measure, the conservatism ratio and cumulative non-operating accruals for the whole sample. We obtain results, as reported in

Panel A: $X_{it}/MV_{it-1} = \beta_0 + \beta_1 D_{it} + \beta_2 R_{it} + \beta_3 D_{it} * R_{it} + \sum \Psi_t Year + \varepsilon_{it}$

| | Leverage | | | | Taxation | | | |
| | High level of leverage | | Low level of leverage | | High level of tax cost | | Low level of tax cost | |
Variables	Coefficient	t-stat	Coefficient	t-stat	Coefficient	t-stat	Coefficient	t-stat
$D (\beta_1)$	−0.0110	−0.20	−0.0609	−1.45	−0.0645	−1.38	0.0151	0.32
$R (\beta_2)$	0.0101	0.16	0.00646	0.14	−0.0172	−0.24	0.0340	0.73
DR (β_3)	0.203*	1.81	0.0275	0.32	0.221*	1.95	0.0725	0.88
Constant	0.0952*	1.91	0.141***	3.80	0.168***	3.95	−0.170	−1.43
Year fixed effects	Yes		Yes		Yes		Yes	
Observations	288		288		266		310	
R^2	0.137		0.128		0.134		0.075	

Panel B: Other measures of conditional conservatism (C-score, conservatism and cumulative nonoperating accruals)

| | Leverage | | | | Taxation | | | |
Measure	Mean	t-stat	Median	Wilcoxon Z	Mean	t-stat	Median	Wilcoxon Z
C-score								
High	0.3245	−12.77***	0.3495	−11.50***	0.2930	−5.76***	0.3072	−5.80***
Low	0.1887		0.1971		0.2254		0.2304	
CR								
High	0.4973	−0.95	0.4215	−0.184	0.4813	−0.01	0.4213	−0.25
Low	0.4649		0.4134		0.4809		0.4187	
NOA								
High	−0.1941	−2.67***	0	−2.42**	−0.2851	−0.96	0	0.63
Low	−0.4926		−0.0236		−0.3933		−0.0021	

Note(s): Table 7 reports results for the comparison of conditional conservatism measures for bankrupt firms for the sample period 1987–2014. Panel A presents OLS regression with year fixed effects within the bankrupt sample partitioned by the level of leverage and by the level of tax costs. The t-statistics are robust and adjusted for firm clustering. X_{it}/MV_{it-1} is net income before extraordinary items (Compustat #18), scaled by lagged market value of equity (Compustat #125 * Compustat #199). R is the annual stock return from nine months before fiscal year-end of three months after fiscal year-end from CRSP. $D_{it} = 1$ if $R_{it} < 0$, and zero otherwise. ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$. Year is a dummy variable for the fiscal year
Panel B presents a comparison of other conditional conservatism measures for bankrupt firms partitioned by leverage levels and by the level of tax costs for the sample period 1987–2014. C-score is the firm-year measure of conservatism as in Khan and Watts (2009); CR is the conservatism ratio measure of Callen *et al.* (2010) computed as the earnings surprise divided by earnings news. NOA is negative cumulative nonoperating accruals over the sample period deflated by beginning total assets, multiplied by negative one, as in Givoly and Hayn (2000).
***$p < 0.01$, **$p < 0.05$, *$p < 0.1$

Table 7.
Comparison of
conditional
conservatism
measures for bankrupt
firms partitioned by
leverage levels and by
tax cost levels
(1987–2014)

Table 9, similar to those reported in Table 5. The level of conservatism is greater in bankrupt firms compared to non-bankrupt firms across the three measures of conditional conservatism [4].

(3) We compare the level of conditional conservatism between bankrupt and non-bankrupt firms using the earnings-returns association for the matched sample and control for the impact of financial crisis. The aim is to examine whether the greater level of conservatism in bankrupt firms is driven by financial crisis. We consider crisis as a dummy variable, included in the Basu regression, that takes the value of one for the years 2007, 2008 and 2009 [5] (see Table 10).

Variables	Full sample	Non-bankrupt	Bankrupt
D (β_1)	−0.00325 (−1.25)	−0.00422* (−1.92)	−0.0311 (−0.96)
R (β_2)	0.0289*** (9.07)	0.0309*** (11.28)	0.00955 (0.26)
DR (β_3)	0.155*** (14.10)	0.0993*** (11.64)	0.127* (1.84)
Constant	0.0658*** (6.20)	0.0589*** (5.46)	0.118*** (3.61)
Year fixed effects	Yes	Yes	Yes
Observations	12,681	12,097	584
R^2	0.134	0.138	0.091

Note(s): This table reports the results of the robustness tests for the earnings-returns association for the full sample (1987–2015) using OLS regression with year fixed effects. The t-statistics in parentheses are robust and adjusted for firm clustering. X_{it}/MV_{it-1} is net income before extraordinary items (Compustat #18), scaled by lagged market value of equity (Compustat #125 * Compustat #199). R is the annual stock return from nine months before fiscal year-end of three months after fiscal year-end from CRSP. $D_{it} = 1$ if $R_{it} < 0$, and zero otherwise. ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$. Year is a dummy variable for the fiscal year

Table 8.
Earnings-returns
association for
bankrupt and non-
bankrupt firms using
the full sample
(1987–2015)

	Mean	t-stat	Median	Wilcoxon Z
C-score				
Bankrupt ($N = 584$)	0.2565	−34.3592***	0.2664	−29.570***
Non-bankrupt ($N = 12,097$)	0.0081		0.0045	
CR				
Bankrupt ($N = 584$)	0.4792	−0.2562	0.4189	−7.537***
Non-bankrupt ($N = 12,097$)	0.4730		0.3529	
NOA				
Bankrupt ($N = 584$)	−0.3418	−1.2697	−0.0155	−3.446***
Non-bankrupt ($N = 12,097$)	−0.4264		−0.0664	

Note(s): This table reports robustness checks using different measures of accounting conservatism in bankrupt and non-bankrupt firms using the full sample (1987–2015). C-score is the firm-year measure of conservatism as in Khan and Watts (2009); CR is the conservatism ratio measure of Callen *et al.* (2010) computed as the earnings surprise divided by earnings news. NOA is negative cumulative non-operating accruals over the sample period deflated by beginning total assets, multiplied by negative one, as in Givoly and Hayn (2000). ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$

Table 9.
Comparison between
the measures of
conditional
conservatism in
bankrupt and non-
bankrupt firms using
the full sample

Variables	Full sample	Non-bankrupt	Bankrupt
D (β_1)	−0.0303* (−1.88)	−0.00319 (−0.30)	−0.0283 (−0.87)
R (β_2)	0.0172 (0.87)	0.0381*** (2.80)	0.0116 (0.31)
DR (β_3)	0.228*** (5.37)	0.0859*** (2.66)	0.128* (1.84)
Constant	0.121*** (3.92)	0.0260 (0.62)	0.116*** (3.55)
Year fixed effects	Yes	Yes	Yes
Crisis	Yes	Yes	Yes
Observations	1,152	576	576
R^2	0.135	0.170	0.094

Note(s): This table reports the results of the robustness tests for the earnings-returns association for bankrupt and non-bankrupt firms using matching and controlling for financial crisis. Crisis takes one for the years 2007, 2008 and 2009, and zero otherwise. The t-statistics in parentheses are robust and adjusted for firm clustering. X_{it}/MV_{it-1} is net income before extraordinary items (Compustat #18), scaled by lagged market value of equity (Compustat #125 * Compustat #199). R is the annual stock return from nine months before fiscal year-end of three months after fiscal year-end from CRSP. $D_{it} = 1$ if $R_{it} < 0$, and zero otherwise. ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$. Year is a dummy variable for the fiscal year

Table 10.
Earnings-returns
association for
bankrupt and non-
bankrupt firms using
matching and
controlling for financial
crisis (1987–2014)

Variables	Expected sign	Non-bankrupt	Bankrupt
Lev	(+)	0.0983***	0.103***
LtCst-Au	(+)	−0.0917***	−0.101***
Tax	(+)	0.0366	0.125**
Intercept		0.165***	0.128***
Observations		576	576
R^2(%)		0.301	0.278

Note(s): This table reports OLS estimates of the bankruptcy equation without correction for self-selection bias. Dependent variable: C-score is the firm-year measure of conservatism as in Khan and Watts (2009). Independent variables: Lev is a dummy variable that takes one if leverage is above the median, and zero otherwise; leverage is defined as total debt (Compustat #9 + Compustat #34) scaled by total assets (Compustat #6); LitiCost-Aud is a binary variable that equals one if the code of a firm's auditor (Compustat #149) is from one to eight, and zero otherwise; Tax is a dummy variable that takes one if TaxCost is above the median, and zero otherwise. TaxCost is the association between book income and tax income estimated from time-series regression $TX_{jt} = \beta_{0j} + \beta_{jt}BKTX_{jt} + \varepsilon_{jt}$ for firm j over the sample period, where $BKTX_{jt}$ is tax expense for firm j in year t (Compustat #16) and TX_{jt} is tax expense minus deferred tax expense (Compustat #16 – Compustat #50); all variables are deflated by lagged total assets (Compustat #6). Selectivity variable (Mills ratio as defined in Shehata (1991) and Lourenço et al. (2013)). ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$

Table 11.
OLS Estimates of
bankruptcy equation
using matching
(1987–2014)

(4) To facilitate a comparison with the switching regression results, we also estimate OLS regressions of the demand for conservatism equation without correcting for self-selection bias. The results are presented in Table 11. When comparing the results of the switching regression models (Panels B and C in Table 6) with those of the OLS regressions (Table 11), the statistical significance and signs for all the drivers of conditional conservatism remain the same. Consequently, the results reported above for the switching regression models are confirmed by the OLS estimates, indicating that the higher demand for conditional conservatism by bankrupt firms compared to non-bankrupt firms is due to their higher level of leverage and greater incentives for tax-reduction. However, conditional conservatism in non-bankrupt firms is not driven by tax planning. The results further show that conditional conservatism is unlikely to be explained by auditor litigation risk or firm litigation risk in the two groups of firms.

6. Conclusion

This paper examines the relationship between conditional conservatism (i.e. asymmetric timely loss recognition) and bankruptcy and the drivers of this cross-sectional difference in conditional conservatism between bankrupt versus non-bankrupt firms. We find that the level of conditional conservatism is higher in bankrupt firms compared to non-bankrupt firms. We also find that this higher level of conservatism is mainly explained by debt contracting and tax-decreasing incentives. In addition, we document cross-sectional evidence on the bankruptcy-conditional conservatism relationship. Specifically, we discover that an increase in the level of conservatism in bankrupt firms is positively associated with an increase in their level of leverage, as well as an increase in tax cost. The literature offers an alternative view on the bankruptcy-conservatism relationship. Our findings rule out the litigation risk explanation, namely, that bankrupt firms undertake conservatism to avoid litigation costs. They also contradict the going concerns problems argument, that financial distress and impending bankruptcy constrain managers such that they reduce the need for accounting conservatism. Rather, our evidence suggests that firms engage in conservatism because lenders demand verifiable

loss recognition and net asset values rather than unverifiable gains in order to guarantee that the amount of net assets exceeds their contracted sum. Support for these contracting and taxation arguments is bolstered by the fact that we find that the positive bankruptcy-conservatism relationship largely holds more for more leveraged firms and firms with higher tax costs.

Our findings have implications for researchers in accounting, who are investigating the economic determinants of accounting conservatism (Watts, 2003; Qiang, 2007; García Lara *et al.*, 2009). Our evidence suggests that the higher demand for conditional conservatism is mainly driven by bankrupt firms' higher level of debts and tax-reduction incentives relative to non-bankrupt firms. Our work also has implications for regulators. The evidence that conditional conservatism varies between bankrupt and non-bankrupt firms suggests that accounting principles may not be consistently implemented across different healthy financial situations. In addition, our findings have implications for debt holders because they strengthen the idea that conditional conservatism is used in debt contracting to mitigate the agency costs of debt.

Notes

1. This study investigates conditional conservatism, but frequently refers to it as conservatism.

2. For brevity, we use the terms stressed ex post bankrupt firms and bankrupt firms interchangeably. We also use non-stressed non-bankrupt firms and non-bankrupt firms interchangeably.

3. For surveys of switching regression models, see especially Maddala (1983, 1986). Also, see Callen (2015) for more details about switching regression models.

4. In our main analysis, we define ex post bankrupt firms as one if the Altman score is < 1.81 and the firm filed for Chapter 11. For the robustness test, this criterion is relaxed to only include firms not in immediate danger of bankruptcy and that bankrupt ex post. To do so, we limit our bankrupt subsample to firms that only file for Chapter 11 and exclude the requirement of Altman score <1.81. The main results still hold.

5. Given that bankrupt firms may have negative book value of equity and display low stock price and market capitalization prices, we reestimate our baseline model where this criterion is relaxed and assign these firms to the stressed ex post bankrupt subsample. The results are robust when these filters are not imposed.

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Appendix

Table A1.
Definition of variables

Variable	Definition
Bankruptcy	A dummy variable that takes one if the Altman score is < 1.81 and the firm filed for Chapter 11.
Earnings	Net income before extraordinary items (Compustat #18), scaled by lagged market value of equity (Compustat #125 * Compustat #199).
RET	Annual stock return from nine months before fiscal year-end of three months after fiscal year-end from CRSP.
ROA	Net income (Compustat #172) divided by total assets (Compustat #6).
ETL	EBITDA (Compustat #13) divided by total liabilities (Compustat #181). EBITDA is earnings before interest, taxes, depreciation, and amortization.
LTA	Total liabilities (Compustat #181) divided by total assets (Compustat #6).
LSIGMA	The standard deviation of the residual return from a regression of twelve monthly returns of the firm on monthly returns of the market index.
Size	The natural log of market value of equity (Compustat #25 * Compustat #199).
Leverage	Total debt (Compustat #9 + Compustat #34) scaled by total assets (Compustat #6).
MTB	The market-to-book ratio ((Compustat #25 * Compustat #199) / Compustat #60).
LitiCost-Aud	A binary variable that equals one if the code of a firm's auditor (Compustat #149) is from one to eight, and zero otherwise.
TaxCost	Following Qiang (2007), we measure TaxCost as the association between book income and tax income estimated from time-series regression $TX_{jt} = \beta_{0j} + \beta_{jt} BKTX_{jt} + \varepsilon_{jt}$ for firm j over the sample period, where $BKTX_{jt}$ is tax expense for firm j in year t (Compustat #16) and TX jt is tax expense minus deferred tax expense (Compustat #16 – Compustat #50); all variables are deflated by lagged total assets (Compustat #6).
Reg	The firm's regulation cost is measured following Qiang (2007). It a dummy variable that equals 1 if sales deflated by industry total sales/the number of firms in the industry is of top quartile, and 0 otherwise; sales is Compustat #12
C-score	The firm-year measure of conservatism as in Khan and Watts (2009).
CR	The conservatism ratio measure of Callen *et al.* (2010) computed as the earnings surprise divided by earnings news.
NOA	Negative cumulative non-operating accruals over the sample period deflated by beginning total assets, multiplied by negative one, as in Givoly and Hayn (2000).

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