THE ACCOUNTING REVIEW
Vol. 90, No. 6
2015
pp. 2267–2303

American Accounting Association
DOI: 10.2308/accr-51045

Accounting Conservatism and Creditor Recovery Rate

John Donovan
Richard M. Frankel
Xiumin Martin
Washington University in St. Louis

ABSTRACT: We examine the relation between accounting conservatism and creditor recovery rates for firms in default. We also test the link between conservatism and the length of bankruptcy resolutions. We find that creditors of firms with more conservative accounting before default have significantly higher recovery rates, and that this positive relation is more pronounced for default firms that violated covenants before the default. We also find that conservative firms have higher asset productivity, shorter bankruptcy resolution, and a significantly higher probability of emerging from bankruptcy. These results suggest that accounting conservatism preserves firm value, leading to higher creditor recovery upon borrower default.

Keywords: *accounting conservatism; recovery rate; bankruptcy resolution; covenant violation*.

JEL Classifications: *M4; G32; G33; G34*.

I. INTRODUCTION

We investigate whether accounting conservatism is associated with lenders' recovery rates from borrowers in default. Research indicates that accounting conservatism facilitates borrowing.[1] Conservatism can reduce borrowing rates by transferring control rights to creditors, thereby (1) facilitating renegotiation of lending terms and forcing changes to

We thank Brad Badertscher, Dmitri Byzalov (discussant), Bryan Graden, Tim Gray (copy editor), Sudarshan Jayaraman, Jared Jennings, Josh Lee, Nemit Schroff (discussant), Jerry Zimmerman, participants at the 2013 Nick Dopuch Conference, the 2014 American Accounting Association Annual Meeting, and participants at Indiana University, The University of Kansas, University of Notre Dame, University of Rochester, Stanford University, and Wharton School of the University of Pennsylvania accounting seminars. We greatly acknowledge financial support from the Wells Fargo Advisors Center for Finance & Accounting Research at Washington University in St. Louis.

Editor's note: Accepted by Mark L. DeFond.

Submitted: January 2014
Accepted: December 2014
Published Online: January 2015

[1] Prior studies document that accounting conservatism is associated with reduced cost of credit (Ahmed, Billings, Morton, and Stanford-Harris 2002; Wittenberg-Moerman 2008; Zhang 2008; Nikolaev 2010; Brockman, Ma, and Martin 2012), lower default risk (Ahmed et al. 2002), and the development of credit markets (Ball, Robin, and Wu 2003; Ball, Robin, and Sadka 2008).

borrower investment and financing practices well before financial distress, and (2) preserving assets to increase creditor recovery rates in financial distress. We refer to the first role of conservatism as default-risk control and the second role as recovery-risk control. Our goal is to isolate accounting conservatism's relation to recovery risk.

When financial reporting is conservative, negative economic shocks are more quickly recognized in earnings than positive shocks. Conservative accounting leads to more rapid covenant violations following negative shocks (Zhang 2008). Through timely covenant violation, creditors gain access to control rights and preserve firm value before the debtor is unable to make required payments. The creditor can use these rights to preserve remaining assets.[2] Furthermore, if more assets are preserved before default, then agency conflicts between senior creditors, on one side, and junior creditors and equity holders, on the other, can be reduced (Bernanke and Gertler 1989). Junior creditors and equity holders have less incentive to delay settlement in the hope of extracting value from senior creditors during bankruptcy proceedings, because if sufficient value exists before bankruptcy, then junior creditors and equity holders bear the costs of losing investment opportunities and settlement costs arising from delay. This reasoning predicts a positive relation between accounting conservatism and creditor recovery rate.

Alternatively, conservative accounting could have little effect on creditor collections. Debt agreements could be altered in light of accounting policies. Guay and Verrecchia (2006, 156) argue, "Bias can be accommodated readily within many contracting settings by simply adjusting the parameters of the contract." The net-asset threshold triggering technical default, for example, could be raised to counteract the effects of less conservative accounting policies. If so, then we expect no relation between conservative accounting and creditor recovery rates. However, adjustments to book value that convert it to an approximation of liquidation value can be difficult to replicate in a debt covenant. Our study aims to assess the descriptive validity of these competing stories.

We collect a sample of public firms in default from Moody's Ultimate Recovery Rate Database (URD) over the period of 1994–2011.[3] We use five individual measures of accounting conservatism (Basu 1997; Ball and Shivakumar 2005; Beatty, Weber, and Yu 2008; Zhang 2008) and one composite measure based on the average quintile ranks of the individual measures. We have five key findings. First, we find a positive relation between accounting conservatism and creditor recovery rate. The positive relation holds for using both firm-level "family recovery rate" and debt-level "issue-specific recommended discounted recovery rate," while controlling for debt structure, firm characteristics, and macroeconomic factors. Second, we show that this positive relation is stronger for firms that violated debt covenants before default. Third, conservative firms have higher cash flow-interest expense coverage and higher cash flow-to-total assets before default. These results suggest that timely covenant violation and higher asset productivity are mechanisms through which creditors of conservative borrowers improve collections. Fourth, conservative firms spend less time in bankruptcy, suggesting that accounting conservatism reduces agency conflicts and facilitates faster resolution. Last, we find that accounting conservatism is positively associated with the likelihood of emergence from bankruptcy, implying that conservatism aids the resolution of

[2] Creditors might destroy growth options (e.g., prematurely liquidate assets) to minimize risk to their cash flow rights. We do not draw conclusions regarding the efficiency effects of accounting conservatism. We focus on the characteristics of firms in default and not on how conservatism can affect production/investment decisions (e.g., Francis and Martin 2010). Instead, we provide evidence on whether conservatism tends to preserve assets or force healthy firms into bankruptcy.

[3] Moody's defines default as (1) a missed or delayed disbursement of interest, principal, or both; (2) bankruptcy, administration, legal receivership, or other legal blocks to the timely payment of interest, principal, or both; or (3) a distressed exchange. Contemporaneous work by Carrizosa and Ryan (2013) uses credit insurance as a proxy for expected default probability and expected recovery rates. Our results, using actual recoveries, complement theirs.

financial distress because it may mitigate agency conflict between stakeholders. Collectively, our findings highlight the role of accounting conservatism in controlling recovery risk.

Our paper relates to Carrizosa and Ryan (2013; hereafter, CR), who also study the relation between conservatism and creditor recovery rates. They use an expected recovery issue-based approach based on Credit Default Swaps (CDS) prices; we use an actual recovery family-based approach. Both methods have advantages and weaknesses. Therefore, both supply evidence on the sensitivity of results to the methods employed. For example, an advantage of using actual defaults is that it enables us to examine the intermediate links embedded in the reduced form correlation between conservatism and creditor recovery rates, such as asset productivity before bankruptcy and bankruptcy duration. We can also explore the possibility that the improved recovery rates that accompany conservative accounting stem from transfers of wealth from equity holders to creditors, because we can observe the consequences of financial distress for more conservative firms. Moreover, researchers disagree on the best way to measure expected recoveries and these measures can be biased by the liquidity premium in the CDS prices.[4] This premium can be correlated with information asymmetry and agency problems addressed by accounting conservatism.[5]

Our paper contributes to two streams of literature. First, it provides evidence on the benefits of accounting conservatism to debt holders. Prior studies find that accounting conservatism is associated with a lower cost of debt (Ahmed et al. 2002; Zhang 2008). Our results suggest that creditors price these benefits *ex ante*. Furthermore, our paper reinforces the results of Zhang (2008), who studies firms that experience a negative shock. We focus on the subsample of firms that cannot make promised payments to creditors. We illustrate the differences between the populations studied by the two papers in Figure 1.

Second, our study contributes to the literature investigating factors associated with positive bankruptcy resolution. For example, recovery rates have been linked to asset tangibility (Gilson, John, and Lang 1990), the intervention of banks and investment banks (James 1996; Mooradian and Ryan 2005), fire sales (Pulvino 1998, 1999; Eckbo and Thorburn 2002; Acharya, Bharath, and Srinivasan 2007), Chapter 11 versus Chapter 7 bankruptcy proceedings (Bris, Welch, and Zhu 2006), and macro-economic conditions (Thorburn 2000). Our findings of a positive correlation between accounting conservatism and both creditor recovery rates and the likelihood of emerging from bankruptcy suggest that accounting conservatism preserves going-concern value, which benefits both creditors and shareholders.

This paper proceeds as follows. Section II reviews literature on accounting conservatism and debt contracts and the institutional details of bankruptcy and develops hypotheses. Section III describes our sample and our measures of accounting conservatism. Section IV presents empirical results. Section V discusses robustness tests. Section VI concludes.

II. RELATED LITERATURE, INSTITUTIONAL DETAILS, AND HYPOTHESES DEVELOPMENT

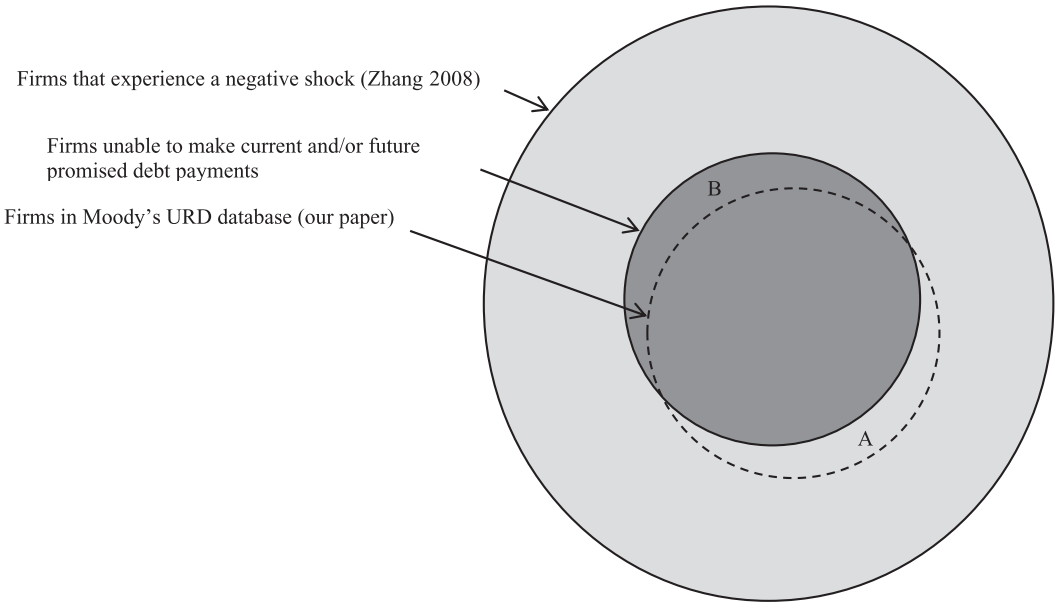
Related Literature

Our work relates to prior literature on the contracting role of financial reporting conservatism (Basu 1997; Watts 2003a, 2003b). Conservatism is defined as the differential verifiability required for recognition of profits versus losses (Watts 2003a), leading to timing differences in recognition

[4] Models continue to be refined because sufficient data on actual recoveries have been difficult to obtain. In fact, Moody's gathered data on recoveries because its staffers believed that information could be sold to investors trying to build models to predict recovery.

[5] On the other hand, our approach requires control for selection bias that is absent in Carrizosa and Ryan's (2013) design assuming firms with and without traded CDS are randomly selected.

FIGURE 1
Populations Examined



This figure illustrates the population of firms we wish to study. This population is shown as the darker inner circle. The lighter outer circle represents the population of firms studied by Zhang (2008). Inferential issues are illustrated by the fact that the dashed circle from which we draw our data does not perfectly coincide with the population of firms unable to make current or future promised payments on debt. It could contain firms forced by creditors into bankruptcy at the expense of shareholders (A) and could exclude firms unable to make current or future payments, omitted from the URD either because of Moody's data-collection procedures or because these firms still maintain liquidity to avoid default (B).

(i.e., anticipate no profits, but all losses). The literature argues that conservative financial reporting reduces information asymmetry and facilitates contracting. Creditors' payoffs are an asymmetric function of firm value. Their entire investment can be lost when the firm performs poorly, but their payoff is limited to promised interest and principal payments when the firm performs well. To ensure satisfaction of their claims, creditors focus on the lower portion of the borrower's net asset distribution (Townsend 1979; Watts 2003a). Thus, creditors demand conservatism for early warning of financial deterioration via timely covenant violations and for measurement of the firm's ability to pay debts. While both aspects can reduce creditors' recovery risk, the former also allows lenders to take actions to minimize default risk (e.g., forcing changes to borrower investment and financing practices well before financial distress, as in Nini, Smith, and Sufi [2009]).

Ahmed et al.'s (2002) analysis finds that higher levels of accounting conservatism are associated with lower cost of debt and that this association increases with borrowers' leverage and dividend payments. This suggests that conservatism protects lenders by constraining dividend payments and mitigating other incentive conflicts between equity and debt holders. Zhang (2008) finds that more conservative firms are more likely to violate a covenant over the life of a loan, conditional on experiencing a negative shock. She also shows that lenders reward more conservative firms with lower interest rates at loan inception, potentially due to expected benefits from swift control rights transfers. Tan (2013) examines the impact of a covenant violation on *ex post* conservatism and finds that financial reporting conservatism increases after debt covenant

violations. This increase is more pronounced when lenders gain greater power by appointing a chief restructuring officer. Beatty et al. (2008) observe that debt covenant terms alone do not satisfy lenders' demand for conservatism. They find that more conservative firms are more likely to have conservative modifications to covenant calculations in their debt contracts. That is, asymmetric timeliness and contract modifications complement each other in reducing agency costs. Biddle, Ma, and Song (2013) test the relation between accounting conservatism and bankruptcy risk and find that asymmetric timeliness is associated with lower estimated bankruptcy risk. Their sample consists of all firms, regardless of their financial condition. By including non-distressed firms in their sample, they address how conservatism affects default risk, but not recovery risk.[6]

Background on Bankruptcy

Financial distress can be resolved either inside or outside of the bankruptcy court. The Bankruptcy Reform Act of 1978 governs disputes that arise in court. A bankruptcy resolves impaired contractual claims against the firm. The 1978 code provides for either liquidation (Chapter 7) or reorganization (Chapter 11). Out-of-court resolution typically involves an agreement between creditors and shareholders to restructure the firm's financial claims and is implemented through an exchange offer (distressed exchange). Chapter 11 of the U.S. Bankruptcy Code allows the firm to continue operating while seeking to satisfy creditor claims.

Research fixes on the direct and indirect costs of bankruptcy and on deviations from absolute priority rule in resolving financial distress through bankruptcy (Weiss 1990; Franks and Torous 1994; Kalay, Singhal, and Tashjian 2007). Absolute priority rule specifies that senior claimholders receive the total value of their defaulted claim before junior claimholders or equity holders receive consideration (Weiss 1990; Franks and Torous 1994). These studies indicate that the direct costs of bankruptcy are relatively low. Weiss (1990) reports that direct costs are approximately 3 percent of the firms' total assets and that deviations from absolute priority are frequent in bankruptcy resolution. Subsequent papers (e.g., Capkun and Weiss 2008; Ayotte and Morrison 2009) document that increased creditor control over bankruptcy in recent years results in fewer violations of absolute priority rule and improved creditor recovery rates.

Studies also seek factors associated with creditor recovery rates during bankruptcy. Acharya et al. (2007) find that creditor recovery rates are significantly lower when an industry is in distress. Franks and Torous (1994) examine the recovery rates of different classes of creditors in the event of a distressed exchange or a bankruptcy filing. Bris et al. (2006) examine recoveries for defaults in Arizona and New York over the period of 1995–2001. They find that the creditors of firms that emerge from Chapter 11 restructurings recover more than those of firms liquidated through Chapter 7.

Some scholars suggest that rapid reorganization of distressed firms leads to efficient bankruptcies. Jensen (1991) writes: "[I]t often takes years to resolve individual cases. As a result of such delays, much of the operating value of businesses can be destroyed." Moreover, the Bankruptcy Abuse Prevention and Consumer Protection Act of 2005 (BAPCPA) contains elements specifically designed to expedite bankruptcies (Covitz, Han, and Wilson 2006).[7] The reason may be

[6] Default risk is the probability of default, while recovery risk is the product of default probability and recovery rate given default.

[7] As noted by Covitz et al. (2006), "[T]he BAPCPA caps a debtor's exclusivity period to file a reorganization plan at 18 months after the commencement of the bankruptcy and its exclusivity period to solicit votes on the plan to 20 months after the filing of a plan (§411). In contrast, the former bankruptcy code allows the court to extend both exclusivity periods indefinitely so long as the requisite cause is established. These new absolute deadlines may encourage more rapid plan proposals by debtors and thus lead to shorter proceedings as debtors try to minimize the ability of creditors to stall so as to cause the loss of exclusivity. Other amendments of the BAPCPA that may also expedite bankruptcy proceedings include a requirement for the debtor to make faster decisions on unexpired leases (§404) and an absolute plan-filing deadline for small business cases (§437)."

that the direct costs of restructuring—such as fees for retaining investment bankers, attorneys, and restructuring professionals—increase with time. Shorter workouts also reduce the indirect costs by limiting the bankruptcy's impact on firm reputation, freeing management from drawn-out negotiations, and reducing the extent to which firms forgo investment opportunities. Consistent with this view, Thorburn (2000) finds that the costs of bankruptcy increase with the time in default. Acharya et al. (2007) likewise find a statistically significant negative relationship between bond recovery rates and the time spent in default.

Hypotheses Development

Conservative reporting, by applying a higher standard for recognizing gains than losses, leads to the quicker recognition of negative economic shocks in earnings. Therefore, it also gives lenders a measure of the lower bound of a firm's net assets that closely tracks liquidation value. As a result, conservative accounting triggers more timely covenant violation (Zhang 2008; Tan 2013). Through timely violation of debt covenants, creditors gain access to control rights and can take actions, including exercising the option to liquidate assets, to preserve firm value before the debtor defaults (Chava and Roberts 2008; Roberts and Sufi 2009; Nini, Smith, and Sufi 2012).[8] Indeed, as observed by Ayotte and Morrison (2009), 70 percent of CEOs were replaced in the two years before Chapter 11 bankruptcy filings, suggesting that creditors do exert control over debtors encountering financial distress. Moreover, Baird and Rasmussen (2006, 1212) note that "When a business enters financial distress, the major decisions—whether the CEO should go, whether the business should search for a suitor, whether the corporation should file for Chapter 11—require the blessing of the banks . . . [T]hese contractual rights have reshaped the dynamics of Chapter 11." Therefore, by allowing creditors to gain decision rights over the remaining assets in a financially distressed firm, asymmetrically timely reporting can preserve assets available to creditors. This predicts a positive relation between accounting conservatism and creditor recovery rate.

In addition, prior studies document significant conflicts of interests between stakeholders regarding the firm's investment and continuation decisions in bankruptcy.[9] If more assets are preserved before default, then agency conflicts will be lower (Bernanke and Gertler 1989). In other words, as delaying reorganization destroys firm value, junior creditors and equity holders have less incentive to do so in the hope of extracting value from senior creditors during bankruptcy proceedings. This is because if sufficient value remains for junior creditors before bankruptcy, then they bear the full costs of delay. This line of argument again predicts a negative relation between accounting conservatism and the length of bankruptcy resolution. As a higher speed of bankruptcy resolution reduces both deadweight costs (i.e., fees paid to lawyers and accountants) and wealth

[8] Although a majority of our sample firms filed Chapter 11 bankruptcies and a majority of Chapter 11 bankruptcy cases were filed voluntarily by the debtors' owners (Bernstein 2006; Ayotte and Morrison 2009), we argue that managers' decisions to file for Chapter 11 protections result from the threat of being liquidated by creditors. As such, accounting conservatism can still protect creditor claims by preserving firm values even for Chapter 11 bankruptcies.

[9] Macy's bankruptcy exemplifies conflicting interests between stakeholders (Noe and Rebello 2003). After the company's bankruptcy filing in 1992, management proposed a plan to restructure and close underperforming stores with the objective of emerging from bankruptcy as an independent company. Negotiations between management, shareholders, and creditors over the restructuring plan broke down. Macy's creditors then solicited Federated Department Stores to acquire the firm. Management challenged the acquisition and sought an extension of its exclusivity period to propose a plan. Board members led by a bondholder, Laurence Tisch, opposed management's plan. Eventually, Federated and Macy's creditors filed a resolution plan allowing Federated to control Macy's, with no distribution to shareholders.

transfer from shareholders to creditors, accounting conservatism will result in higher creditor recoveries.[10]

Based on the above reasoning, our two hypotheses are stated below:

H1: Accounting conservatism is positively associated with creditor recovery rates for firms in financial distress.

H2: Accounting conservatism is negatively associated with the duration of financial distress resolution.

III. SAMPLE SELECTION AND MEASURES

Sample Selection

We identify firms in bankruptcy using Moody's URD, which includes data on firms defaulting on total debt obligations greater than $50 million over the period from 1994–2011.[11] Moody's identifies a default when a firm files for bankruptcy, misses an interest payment due on its debt, or enters into a distressed exchange with its debtholders.[12,13] For each firm included in the database, Moody's provides the date of default, date of emergence, the description and total principal amount of each financial instrument in default, and other detailed information on each security. We merge that data with the Compustat and CRSP datasets for required financial and stock price variables and also search for our covenant violation variable in 10-K and 10-Q filings. Our final sample, therefore, contains 347 firms in bankruptcy over the period from 1994–2011.

Creditor Recovery Rates

The key variable of interest for our study is creditor recovery rate. The URD database offers three recovery methods: the settlement method, the liquidity method, and the trading-price method. In the first measure, the value of the settlement instruments is taken at or close to emergence. In the second, the value of the settlement instruments is estimated at the time of a liquidity event, such as the maturity of the instrument, the call of the instrument, or a subsequent default. And in the third, the value is based on the trading pricing of the defaulted instrument taken at or after emergence from bankruptcy. Moody's recommends a method to calculate recovery rate for each default that best represents the actual recovery. The settlement method is most commonly used.

The URD database provides both instrument-specific and family recovery rates, where the family recovery rate is calculated as the total value distributed to creditors at the date of resolution, relative to the total liabilities in default at the date of default, and measures the weighted-average

[10] Alternatively, if contract adjustments substitute for conservatism and contract adjustments are the most efficient way to protect lenders, then we will not observe debt contract demand for accounting conservatism. However, Caskey and Hughes (2012) theoretically show that contractual adjustment cannot substitute for accounting conservatism. In addition, there is ample evidence from prior empirical research (Wittenberg-Moerman 2008; Nikolaev 2010; Roychowdhury and Martin 2013; among others) suggesting that debt contract demand drives the level of accounting conservatism.

[11] Moody's URD contains data on firms defaulting over the period from 1987–2011. Our sample period begins in 1994 because we hand-collect numerous dependent and control variables from Securities and Exchange Commission (SEC) filings, available electronically only after 1994. In untabulated analysis, we reestimate the relation between conservatism and creditor recovery rates over the period from 1987–2011 and find consistent results.

[12] The missed or delayed disbursement of interest, principal, or both includes delayed payments made within a grace period. In untabulated analysis, we eliminate distressed exchanges from our sample and find consistent results across all tests.

[13] Moody's excludes financial institutions as these firms are highly regulated, making their recoveries somewhat inconsistent and inappropriate for analyzing loss, given default.

collection percentage across all creditor classes.[14] Instrument-specific recovery rates are arguably sensitive to wealth transfers between debtors and, as a result, can be less sensitive to accounting conservatism. For example, senior creditors' recovery can be insensitive to asset preservation when the debtor has a sufficient junior debt to absorb losses and leave senior creditors whole. In contrast, a family recovery rate incorporates losses from inefficient liquidation and controls for intra-debtor wealth transfers because it measures the percentage collected across all creditors.[15] For this reason, all our empirical tests use family recovery rates while controlling for debt structure (i.e., the percentage of senior debt and debt with collateral in the firm's capital structure). We also conduct tests using instrument-specific recovery rates while controlling for issue-specific features that may affect recovery rates, and results are robust to this procedure (see results from Table 8).

Measures of Accounting Conservatism

Our conceptual construct relies on the notion that conditional conservatism and the asymmetric timely recognition of economic losses improve debt contracting efficiency (Ball 2001; Ball and Shivakumar 2005). However, we find a lack of consensus regarding which empirical measure best captures conditional conservatism. Therefore, we employ five firm-specific measures and create a composite measure based on the average quintile rank of the five individual measures. We use all of these measures for our main test of the relation between conservatism and creditor recovery rates. For the sake of brevity, we report all additional analysis using the composite measure. All firm-specific measures of conservatism are estimated over the ten years ending in the fiscal year immediately before default. If financial information required for estimation is unavailable at the measurement date, then we use the prior-period data, where available.

Our first measure of conservatism, *Cons_r2,* is the relative explanatory power of bad news in earnings versus the explanatory power of good news in earnings, following Zhang (2008) and Basu (1997). Our second measure of conservatism, *CSCORE,* estimates the sensitivity of earnings to bad news in the cross-section, following Basu (1997) and Khan and Watts (2009). One limitation of these measures is that they rely on the firm's stock price to identify news and economic earnings (Givoly and Hayn 2000). We employ additional measures that do not depend on stock returns. Following Ball and Shivakumar (2005), our third measure of conservatism, *Cons_BS,* estimates the extent to which firms record bad news in earnings through write-offs and other negative accruals. Our fourth measure, *Skewness,* captures the difference in skewness between operating cash flows and earnings, following Beatty et al. (2008). Both conditional and unconditional conservatism may result in a higher relative skewness measure. Thus, this measure alone cannot distinguish the effect of conditional conservatism from that of unconditional conservatism. In the empirical tests, we attempt to control for unconditional conservatism by including market-to-book ratio.

The above measures attempt to identify asymmetric treatment of bad news and good news in earnings. Given that our sample firms perform poorly and our interest is the extent to which accounting earnings reflect the deterioration, our final individual measure of conservatism, *Special Items Ratio,* attempts to capture the recognition of this type of news. Specifically, we compute the

[14] Moody's follows the standard groups for credit class set by the U.S. Bankruptcy Court. In the cases of distressed exchanges and other types of restructurings, debt is classified in a fashion consistent with that of the bankruptcy court by a Moody's analyst.

[15] Merely including an indicator variable for senior debt is not the appropriate way to model the effect of senior debt because the senior debt recovery rate for each issue also depends on the fraction of junior debt. For example, imagine the case of a company with 90 percent senior debt where an inefficient bankruptcy process allows senior debts to collect 100 percent of their claims, while junior debts collect 0 percent. Family recovery rate would show a 90 percent collection rate, whereas an issue-based method would have one observation with a 100 percent collection rate and another observation with a 0 percent collection rate.

average special items recorded in the Income Statement (SPI) scaled by the average total assets over the three years before default as a proxy for these recorded losses.[16] We then scale special items by cumulative firm stock returns on CRSP in the three years before default, reflecting the loss recognition relative to the total news, which follows the similar logic of Basu's (1997) asymmetric recognition of bad news. We standardize each conservatism measure to have a mean of 0 and standard deviation of 1 to facilitate interpretation and comparison across measures. Finally, we create a composite measure of conservatism, *All Conservatism,* based on the average quintile rank of each individual measure, requiring a minimum of two individual conservatism measures to calculate the composite measure. Refer to Appendix A for details.

IV. EMPIRICAL RESULTS

Descriptive Statistics

Table 1, Panel A presents descriptive statistics for all sample firms in bankruptcy over the period of 1994–2011, identified using Moody's URD. The mean (median) creditor recovery rate across all creditor classes is 53.23 percent (49.86 percent), indicating that creditors of sample firms lose substantial value on their claims. The average sample firm in the Moody's URD defaults on approximately $1.1 billion of total debt, corresponding to average creditor losses of approximately $514 million. Therefore, factors that can improve creditor recovery rates likely have significant economic value. Approximately 68.6 percent of sample firms violate a debt covenant in the year before default, which is much higher than the 30 percent reported by Zhang (2008) on the mean rate of covenant violation for firms experiencing large negative shocks (monthly stock return below −30 percent). This evidence is consistent with the idea that sharp declines in financial health prompt covenant violation for firms in distress. On average, 71.2 percent of sample firms emerge from bankruptcy, and sample firms require approximately 315 days (11 months) to resolve financial distress. This resolution period is shorter than in prior papers, which indicates that the average time from the bankruptcy filing date to the emergence date approximates two to three years (Weiss 1990; Franks and Torous 1994). This is consistent with shorter resolution periods following the 2005 Act, which is intended to expedite bankruptcies. Only 29.7 percent of sample firms have sufficient operating cash flows to cover their annual interest expense before bankruptcy (i.e., interest coverage >1).

Additionally, in Table 1, Panel A sample firms display high leverage before filing for bankruptcy. The mean (median) firm's total debt is approximately 93 percent (76 percent) of the firm's total assets in the quarter before default, reinforcing the liquidity constraints indicated by coverage ratios. Sample firms incur losses before default, with mean (median) return on assets of −0.131 (−0.044). Approximately 42.9 percent of sample firms have a debt contract with a net worth-ratio covenant, 76.9 percent of firms hold redeemable debt, and 14.4 percent of firms have sinking fund debt in their capital structure. Firms' Herfindahl bank-debt concentration ratio is 0.587 (0.541) at the mean (median), indicating that debt is concentrated among a few banks at default. Finally, bank debt, secured debt, and senior debt constitute 40.5 percent, 47.6 percent, and 51.3 percent, respectively, of total debt upon bankruptcy filing.[17]

[16] All results continue to hold if we compute the sum of special items recorded in the income statement scaled by the average total assets over the three years before default as a proxy for the recorded losses.

[17] In all multivariate analysis, we winsorize *MTB* (*Z-Score*) at the 99 percent (1 percent) level to eliminate the outliers (*MTB* and *Z-Score* shown in Table 1 are unwinsorized). All results testing the impact of accounting conservatism on bankruptcy outcomes are unaffected by this decision.

TABLE 1

Descriptive Statistics

Panel A: Dependent, Treatment, and Control Variable Distribution

Variable	n	Mean	25th Pctl	Median	75th Pctl	Std. Dev.
Dependent Variables						
Recovery Rate	347	53.231	29.690	49.860	78.640	29.177
Bankruptcy Period	347	314.879	84.000	221.000	451.000	325.254
Violate	347	0.686	0.000	1.000	1.000	0.465
Int Coverage	347	0.297	0.000	0.000	1.000	0.458
CFO	347	0.001	−0.023	0.020	0.054	0.158
Emerge	347	0.712	0.000	1.000	1.000	0.454
Conservatism Measures						
Cons_r2	153	0.000	−0.141	−0.138	−0.130	1.000
CSCORE	229	0.000	−0.112	−0.104	−0.092	1.000
Cons_BS	264	0.000	0.021	0.053	0.090	1.000
Skewness	347	0.000	−0.692	−0.033	0.799	1.000
Special Items Ratio	241	0.000	−0.335	−0.196	0.164	1.000
All Conservatism	347	2.011	1.500	2.000	2.667	0.851
Control Variables						
Total Assets	347	2,146.730	215.577	450.475	1,243.860	11,585.620
Leverage	347	0.928	0.557	0.759	1.052	0.871
ROA	347	−0.131	−0.117	−0.044	−0.018	0.312
MTB	347	5.294	−0.207	−0.003	0.660	78.873
Z-Score	347	−1.968	−1.151	0.311	1.263	27.923
Interest Miss	347	0.478	0.000	0.000	1.000	0.500
Net Worth Covenant	347	0.429	0.000	0.000	1.000	0.496
Redeemable	347	0.769	1.000	1.000	1.000	0.422
Sinking Fund	347	0.144	0.000	0.000	0.000	0.352
DIP Loan	347	0.608	0.000	1.000	1.000	0.489
Bank Debt Concentration	347	0.587	0.357	0.541	1.000	0.335
Bank_Share	347	0.405	0.128	0.344	0.627	0.327
Secured Debt %	347	0.476	0.173	0.453	0.742	0.353
Senior Debt %	347	0.513	0.218	0.550	0.826	0.348

Panel B: Moody URD Recovery Rate Descriptive Statistic

		Debt Structure Variables				
	Quintile	*Bank Debt Concentration*	*Bank Share*	*Secured Debt %*	*Senior Debt %*	*Leverage*
Mean Recovery Rate	1	42.332	45.470	43.679	53.938	61.517
	2	52.117	53.207	50.027	58.101	55.746
	3	60.272	55.379	52.038	52.755	52.228
	4	64.141	56.253	60.104	54.718	55.073
	5	52.727	55.801	60.253	46.791	41.527

This table reports descriptive statistics for the full sample of bankrupt firms over the period of 1994–2011, identified from Moody's URD. We identify 347 bankrupt firms with sufficient data to compute firm-specific measures of accounting conservatism. Panel A provides the distribution of dependent and explanatory variables. Panel B provides mean recovery rates within each quintile distribution of the firm's debt structure variables.
All variables are defined in Appendix C.

Table 1, Panel B provides additional information for *Recovery Rate* by quintile ranking variables capturing firms' debt structure: *Debt Concentration, Bank_Share, Secured Debt %, Senior Debt %,* and *Leverage*. We tabulate the average family recovery rate within each quintile rank. Recovery rates generally increase in bank debt concentration, bank debt percentage, and secured debt, but decrease in total leverage. However, these relations do not appear to be monotonic. Interestingly, recovery rates do not show any clear trend with senior debt, suggesting that debt seniority might not affect creditor collections. These descriptive statistics suggest that debt structure is an important determinant of creditor recovery rates, which highlights the necessity to control for these factors in the empirical tests when examining the effect of accounting conservatism.

Table 2 presents Pearson and Spearman correlations among variables below and above the diagonal, respectively. The table shows that creditor recovery rate is negatively associated with the duration of bankruptcy resolution and positively associated with the likelihood of emergence from bankruptcy. Our composite measure of accounting conservatism is positively correlated with creditor recovery rates, interest coverage, operating cash flows relative to total assets, and the likelihood of bankruptcy emergence. Therefore, these findings provide initial evidence that conservative financial reporting is associated with higher recovery rates, higher assets productivity, and the efficiency (speed) of bankruptcy resolution.

Results of Testing H1

We hypothesize that accounting conservatism is positively associated with creditor recovery rates for firms in default in H1. To test this hypothesis, we employ the Heckman (1979) two-stage procedure to mitigate sample selection bias. This is because firms entering in the URD database might differ systematically from other financially distressed firms. For example, if the URD contains only a subset of observations in the darker circle of Figure 1, then inferences based on this sample may be biased.[18] In the first stage, we first select firms in the intersection of Compustat, CRSP, Mergent FISD, and Capital IQ over the period from 1994–2011;[19] we then identify firms with negative annual return on assets within this group to approximate the population of firms in distress. The first-stage estimation pools these firms together with sample firms identified from the URD database and estimates the following model:

$$\begin{aligned} Bankrupt_i = {} & \alpha_0 + \delta_1 Conservatism_i + \delta_2 Size_{it} + \delta_3 Leverage_{it-1} + \delta_4 ROA_{it-1} + \delta_5 MTB_{it-1} \\ & + \delta_6 Net\ Worth\ Covenant_i + \delta_7 Redeemable_i + \delta_8 Sinking\ Fund_i + \delta_9 Bank\_Share_i \\ & + \delta_{10} Secured\ Debt\ \%_i + \delta_{11} Senior\ Debt\ \%_i + \delta_{12} STD\_3_{it-1} + \delta_{13} Litigation_i \\ & + \delta_{14} Big\ N_{it-1} + \delta_{15} Credit\ Rating_{it-1} + \delta_k Macroeconomic\ Controls + \varepsilon_{it} \end{aligned}$$

The dependent variable, *Bankrupt,* is an indicator equal to 1 if a firm is from the URD, and 0 otherwise. All other explanatory variables are defined in Appendix C. We motivate the explanatory variables by prior research that suggests that lender coordination affects whether financial distress can be resolved via bankruptcy filings or out of court (Giammarino 1989; Gertner and Scharfstein 1991; Mooradian 1994). In particular, we include variables proxying for debt structure, such as whether firms have redeemable outstanding debt, debt with a sinking fund provision, bank share, proportion of secured debt and senior debt, and debt maturity (*STD_3* is the percentage of firm debt maturing in the next three years). Appendix D provides the results of the first-stage estimation using

[18] In untabulated analysis, we estimate the relation between conservatism and creditor recovery rates using ordinary least squares (OLS) estimation, and find a positive and statistically significant coefficient on all five individual measures and our composite measure of accounting conservatism.

[19] We require Mergent FISD and Capital IQ data to measure first-stage control variables. See Appendix C for variable definitions.

TABLE 2

Correlation Matrix

	Recovery Rate	*Bankruptcy Period*	*Violate*	*Int Coverage*	*OCF*	*Emerge*	*All Conservatism*	*Size*	*Leverage*	*ROA*	*MTB*
Recovery Rate		−0.214	0.006	0.183	0.111	0.268	0.083	0.149	−0.128	0.054	0.021
		<0.0001	0.91	0.00	0.04	<0.0001	0.12	0.01	0.02	0.31	0.69
Bankruptcy Period	−0.238		0.051	0.078	0.069	−0.185	−0.053	0.181	−0.071	−0.012	−0.035
	<0.0001		0.34	0.15	0.20	0.00	0.33	0.00	0.19	0.82	0.52
Violate	0.009	0.109		0.114	0.166	0.008	0.089	−0.185	−0.014	−0.006	0.040
	0.87	0.04		0.03	0.00	0.88	0.10	0.00	0.80	0.90	0.45
Int Coverage	0.184	0.090	0.114		0.351	−0.004	0.101	0.078	−0.152	−0.037	−0.037
	0.00	0.10	0.03		<0.0001	0.93	0.06	0.15	0.00	0.50	0.50
OCF	0.214	0.056	0.199	0.704		0.022	0.131	0.207	−0.275	0.106	−0.001
	<0.0001	0.29	0.00	<0.0001		0.69	0.01	0.00	<0.0001	0.05	0.99
Emerge	0.270	−0.195	0.008	−0.004	0.109		0.164	0.100	−0.028	0.081	0.039
	<0.0001	0.00	0.88	0.93	0.04		0.00	0.06	0.60	0.13	0.46
All Conservatism	0.102	−0.052	0.088	0.107	0.127	0.178		0.092	0.001	−0.187	0.004
	0.06	0.33	0.10	0.05	0.02	0.00		0.09	0.98	0.00	0.94
Size	0.133	0.118	−0.167	0.091	0.049	0.082	0.068		−0.410	0.228	0.040
	0.01	0.03	0.00	0.09	0.36	0.13	0.21		<0.0001	<0.0001	0.46
Leverage	−0.199	−0.129	0.049	−0.233	−0.121	0.099	0.090	−0.357		−0.393	0.029
	0.00	0.02	0.36	<0.0001	0.02	0.07	0.09	<0.0001		<0.0001	0.59
ROA	0.199	−0.131	−0.029	0.023	0.136	0.063	−0.131	0.155	−0.325		0.022
	0.00	0.01	0.59	0.66	0.01	0.25	0.01	0.00	<0.0001		0.68
MTB	−0.005	0.064	−0.027	0.079	0.017	−0.091	−0.061	0.135	−0.412	0.173	
	0.92	0.24	0.62	0.14	0.75	0.09	0.26	0.01	<0.0001	0.00	

This table reports Pearson and Spearman correlations between key dependent and independent variables used in the analysis. Pearson correlations are presented below the diagonal, and Spearman correlations are presented above the diagonal. Correlation coefficients and p-values are presented for all correlations.
All variables are defined in Appendix C.

our composite measure of conservatism. Results indicate that larger firms, firms with redeemable and more secured debt, firms in high-litigation industries, and firms with worse credit ratings are less likely to be included in the Moody's URD, while firms exhibiting greater accounting conservatism, higher leverage, better accounting performance, and more short-term debt are more likely to be included in the Moody's URD. The percentage of concordant pairs from the model estimation is 92.9 percent, and the percentage of discordant pairs is 6.9 percent, suggesting that the explanatory variables predict whether a firm enters default in the Moody's URD reasonably well. Because of the selection bias concern for our sample, we apply the Heckman (1979) two-stage procedure for all empirical tests.

In the second stage, we estimate the following model:

$$\begin{aligned} Recovery_i = {} & \alpha_0 + \beta_1 Conservatism_i + \beta_2 Size_{it} + \beta_3 Leverage_{it-1} + \beta_4 ROA_{it-1} + \beta_5 MTB_{it-1} \\ & + \beta_6 Z\text{-}Score_{it-1} + \beta_7 Interest\ Miss_i + \beta_8 Distressed\ Exchange_i \\ & + \beta_9 Debt\ Concentration_i + \beta_{10} Bank\_Share_i + \beta_{11} Secured\ Debt\ \%_i \\ & + \beta_{12} Senior\ Debt\ \%_i + \beta_{13} Net\ Worth\ Covenant_i + \beta_{14} Redeemable_i \\ & + \beta_{15} Sinking\ Fund_i + \beta_{16} DIP\ Loan_i + \beta_{17} Macroeconomic\ Controls \\ & + Industry\ fixed\ effects + Year\ fixed\ effects + \varepsilon_{it}, \end{aligned} \tag{1}$$

where *Recovery* is the dependent variable, which is the family recovery rate.[20] We follow Acharya et al. (2007) and Zhang (2009) and select a comprehensive set of control variables in our test. Appendix B provides motivations for including these control variables, consisting of firm characteristics, debt structures, and macroeconomic variables. We also include Fama-French five industry and year fixed effects in the model and cluster standard errors by year.

The results from Table 3 show that the coefficient on conservatism is positive for all five measures, and all but one is statistically significant at the 10 percent level or better.[21] Evaluated based on *All Conservatism,* a firm moving from the first to the fifth conservatism quintile results in an increase in creditor recovery rate by 10.8 percent, approximately 20.2 percent relative to the mean. All other measures demonstrate a similar economic effect: a one-standard-deviation increase in conservatism is associated with an increase in creditor recovery rate ranging from 2.4 percent based on *Cons_BS* to 4.1 percent based on *Special Items Ratio*.

The signs of the coefficients on control variables are largely consistent with prior studies. For example, firms that are larger, have more secured debt, have sinking fund debt, and use distress exchange offers show higher creditor recovery rates (Acharya et al. 2007; Zhang 2009). Moreover, the coefficient on the inverse Mills ratio is positive and statistically significant in some models, suggesting that the Heckman (1979) method is removing a portion of the selection bias. Overall, we find evidence supporting H1: higher levels of financial reporting conservatism are associated with higher creditor recovery rates for firms in financial distress.

Additional Analysis

The Results of Testing the Effect of Debt Covenant Violation

To understand the institutional mechanisms linking accounting conservatism to higher creditor collection, we examine whether the positive relation between conservatism and creditor recovery

[20] In untabulated analysis, we also include the number of days the firm spends in Chapter 11 bankruptcy proceedings (*Bankruptcy Period*), as well as additional macroeconomic control variables and consistent results.

[21] The sample size varies across different measures of accounting conservatism due to data availability in computing the conservatism measure. A constant sample of 347 firms is used for all subsequent analysis because *All Conservatism* serves as the measure.

TABLE 3

The Relation between Accounting Conservatism and Creditor Recovery Rates

	Accounting Conservatism Measures											
	Cons_r2		*CSCORE*		*Cons_BS*		*Skewness*		*Special Items Ratio*		*All Conservatism*	
	Coeff.	**p-value**	**Coeff.**	**p-value**	**Coeff.**	**p-value**	**Coeff.**	**p-value**	**Coeff.**	**p-value**	**Coeff.**	**p-value**
All Conservatism	2.517**	(0.025)	2.904***	(0.006)	2.410***	(0.001)	3.084	(0.139)	4.127*	(0.075)	2.694**	(0.028)
Size	0.025	(0.994)	0.114	(0.943)	0.837	(0.590)	1.313	(0.341)	2.054	(0.294)	1.375	(0.338)
Leverage	−2.310	(0.251)	−0.567	(0.626)	2.384	(0.346)	2.026	(0.402)	5.129	(0.161)	2.840	(0.230)
ROA	3.385	(0.687)	−4.600	(0.427)	1.062	(0.914)	1.973	(0.789)	8.223	(0.146)	1.980	(0.752)
MTB	0.391	(0.541)	−0.021	(0.934)	0.203	(0.502)	0.133	(0.467)	0.350	(0.223)	0.129	(0.492)
Z-Score	1.214**	(0.044)	0.617	(0.268)	−0.175	(0.700)	0.269	(0.348)	0.041	(0.947)	0.232	(0.449)
Interest Miss	−3.064	(0.320)	2.770	(0.495)	0.002	(0.999)	−1.067	(0.701)	−1.743	(0.641)	−0.703	(0.786)
Distressed Exchange	23.47***	(0.004)	30.18***	(0.000)	23.23***	(0.000)	23.64***	(0.000)	23.82***	(0.000)	23.18***	(0.000)
Debt Concentration	0.741	(0.943)	2.487	(0.599)	0.661	(0.924)	0.899	(0.866)	3.574	(0.551)	0.973	(0.856)
Bank_Share	7.263	(0.675)	−4.273	(0.734)	2.916	(0.787)	0.798	(0.922)	11.07	(0.316)	2.305	(0.791)
Secured Debt %	5.857	(0.504)	10.51	(0.315)	13.62**	(0.047)	11.77*	(0.056)	5.622	(0.563)	12.18*	(0.058)
Senior Debt %	−0.894	(0.925)	−3.895	(0.593)	−4.671	(0.599)	−3.867	(0.462)	−2.578	(0.675)	−3.079	(0.562)
Net Worth Covenant	4.596	(0.214)	−0.484	(0.868)	1.155	(0.794)	−0.107	(0.969)	−0.956	(0.820)	0.321	(0.909)
Redeemable	0.005	(0.999)	−1.253	(0.832)	−4.239	(0.428)	−2.074	(0.672)	−0.331	(0.952)	−2.302	(0.642)
Sinking Fund	15.86**	(0.016)	15.16**	(0.011)	11.36**	(0.018)	11.85**	(0.019)	8.943	(0.152)	11.92**	(0.013)
DIP Loan	−2.832	(0.620)	−2.170	(0.572)	−3.719	(0.459)	−2.910	(0.456)	−2.644	(0.603)	−3.034	(0.421)
S&P 500 Ret	28.00	(0.406)	27.55	(0.187)	28.91	(0.102)	22.91	(0.139)	25.22	(0.128)	21.64	(0.155)
Spread	16.28	(0.131)	−5.703	(0.377)	−0.694	(0.913)	1.577	(0.865)	13.31*	(0.099)	−1.438	(0.819)
GDP Growth	414.3	(0.359)	−147.2	(0.549)	65.00	(0.726)	100.2	(0.667)	198.5	(0.494)	72.00	(0.701)
Lag S&P 500 Ret	−14.75	(0.419)	0.034	(0.998)	−0.162	(0.988)	15.15	(0.300)	10.03	(0.502)	−0.839	(0.938)
Lag Spread	−0.984	(0.940)	9.804	(0.374)	12.98*	(0.086)	22.76**	(0.026)	8.754	(0.368)	12.74*	(0.084)
Lag GDP Growth	−92.48	(0.778)	−48.05	(0.814)	−7.654	(0.957)	−307.6	(0.266)	−261.8	(0.221)	3.875	(0.979)
Lambda	−1.896	(0.768)	5.445	(0.396)	10.33**	(0.015)	7.166*	(0.086)	10.34	(0.125)	8.173*	(0.051)
Constant	17.30	(0.599)	25.79	(0.216)	33.67	(0.159)	19.31	(0.223)	5.284	(0.798)	11.12	(0.518)
Industry FE	Yes		Yes		Yes		Yes		Yes		Yes	
Year FE	Yes		Yes		Yes		Yes		Yes		Yes	

(continued on next page)

TABLE 3 (continued)

Accounting Conservatism Measures

	Cons_r2		*CSCORE*		*Cons_BS*		*Skewness*		*Special Items Ratio*		*All Conservatism*	
	Coeff.	**p-value**	**Coeff.**	**p-value**	**Coeff.**	**p-value**	**Coeff.**	**p-value**	**Coeff.**	**p-value**	**Coeff.**	**p-value**
Number Obs.	153		229		264		347		241		347	
R^2	0.408		0.485		0.353		0.416		0.410		0.417	

***, **, * Indicate statistical significance at the 1 percent, 5 percent, and 10 percent levels, respectively.
This table reports the results of testing the relation between accounting conservatism and creditor recovery rates of firms in bankruptcy using firms with available data in the Moody's URD over the period from 1994–2011. Heckman (1979) two-stage estimation procedures are used to estimate the relation between conservatism and recovery rates. Five individual accounting conservatism measures and a composite measure, *All Conservatism,* based on the average quintile rank of the individual measures are used in the test. Model includes industry and year fixed effects, with standard errors clustered by year.
All variables are defined in Appendix C.

rates varies with the incidence of covenant violations. If accounting conservatism accelerates covenant violation and covenant violation transfers control rights from shareholders to creditors, then we would expect the association of accounting conservatism with creditor recovery rate to be stronger for firms violating financing covenants before default.

We hand-collect debt covenant data for our sample of default firms by searching and reading public disclosures in the firms' Form 10-K, Form 10-Q, and Form 8-K in each quarter over the five years before the default date, using Morningstar's 10-K Wizard.[22] Following Nini et al. (2012), we identify a firm as having violated a covenant if the firm's disclosures specifically indicate that it violated a financial covenant, modified or amended a credit agreement to ensure compliance with covenants, or obtained a waiver for covenant violations during the period. Available data do not allow us to determine the precise covenant that is violated because it is rarely disclosed in either the SEC filings or in press releases. Therefore, we assume all covenant violations before default involve at least one financial covenant.[23]

Results of testing the effect of financial covenant violation are presented in Table 4. In Panel A we provide univariate analysis by independently sorting firms into high and low conservatism groups based on the sample median of our composite measure, *All Conservatism*. We further partition the sample into covenant violators and non-covenant violators, and examine the average recovery rate within each subsample. Consistent with our expectations, high conservatism firms violating covenants prior to bankruptcy exhibit significantly higher recovery rates. Specifically, the mean recovery rate for the High Conservatism-Covenant Violators group is 57.3 percent, which is significantly higher than the mean recovery rate for the Low Conservatism-Covenant Violators group (p-value 0.012). Furthermore, there is no significant difference in the average recovery rate between high and low conservatism firms among non-covenant violators (p-value 0.599). These results are consistent with covenant violation serving as a mechanism through which accounting conservatism improves creditor recovery rates.

In Table 4, Panel B we estimate Model (1) based on whether the firm violated a covenant prior to bankruptcy. Columns (1) and (2) focus on covenant violators and non-covenant violators, respectively. In Column (1), the coefficient on our conservatism composite measure is positive and significant at the 10 percent level. From an economic perspective, a firm's move from the first to the fifth conservatism quintile results in an increase in creditor recovery rate by 14 percent. In Column (2), we see a positive, but insignificant, coefficient on the conservatism measure, indicating that conservatism does not improve creditor collection for firms that do not violate covenants. The test of the difference in the two coefficient estimates between the two columns is statistically insignificant. Overall, the results from Table 4 provide weak evidence that financial covenant violation is the channel through which accounting conservatism protects creditors when borrowers default.[24]

---

[22] We thank Greg Nini, David Smith, and Amir Sufi for providing covenant violations data, available on Amir Sufi's website at: http://faculty.chicagobooth.edu/amir.sufi/data.html. This dataset includes covenant violations for 54 of our sample firms, which we include in our analysis. For the remaining 293 firms, we hand-collect covenant violation data by searching SEC filings with the aid of 10-K Wizard.

[23] We check the reasonableness of this assumption by hand-collecting sufficient detail to determine which covenant was violated for 95 firms in our sample. We find that 93 firms (98 percent) violated financial covenants. Two firms violated nonfinancial covenants related to financial reporting requirements.

[24] In untabulated analysis, we estimate the relation between accounting conservatism and covenant violations using a probit model where the dependent variable equals 1 if the firm reported a covenant violation within a year before the date of default, and 0 otherwise. Consistent with Zhang's (2008) findings, our results demonstrate that accounting conservatism is significantly positively associated with covenant violations in the year preceding default (coefficient = 0.221, p-value = 0.034, average marginal effect 6.0 percent), which indicates that conservative firms are more likely to transfer control rights to creditors.

TABLE 4

Accounting Conservatism and Creditor Recovery Rates Based on Covenant Violation

Panel A: Univariate Analysis

	(1) High Conservatism	(2) Low Conservatism	(3) Difference Column (1) − (2)
Covenant Violators			
Mean Recovery Rate	57.3	47.8	9.5**
Number Obs.	139	99	(0.012)
Non-Covenant Violators			
Mean Recovery Rate	54.4	51.3	3.1
Number Obs.	58	51	(0.599)

Panel B: Multivariate Analysis

	(1) *Recovery Rate*		(2) *Recovery Rate*	
	Coeff.	**p-value**	**Coeff.**	**p-value**
All Conservatism	3.474*	(0.073)	2.072	(0.708)
Size	0.948	(0.598)	3.923	(0.122)
Leverage	0.225	(0.809)	13.45***	(0.005)
ROA	2.082	(0.556)	−5.292	(0.788)
MTB	0.003	(0.989)	−0.067	(0.904)
Z-Score	0.462	(0.131)	−0.047	(0.959)
Interest Miss	1.806	(0.450)	−0.029	(0.996)
Distressed Exchange	21.32***	(0.001)	15.61*	(0.084)
Debt Concentration	5.367	(0.325)	−1.004	(0.910)
Bank_Share	−5.997	(0.596)	3.265	(0.849)
Secured Debt %	8.222	(0.234)	29.19***	(0.010)
Senior Debt %	−15.73*	(0.091)	4.582	(0.669)
Net Worth Ratio	4.808	(0.273)	−18.52*	(0.064)
Redeemable	−3.453	(0.523)	−2.899	(0.755)
Sinking Fund	9.113*	(0.060)	5.813	(0.740)
DIP Loan	−1.086	(0.766)	−10.78	(0.175)
S&P 500 Ret	33.46*	(0.086)	20.61	(0.759)
Spread	−0.996	(0.904)	−18.98**	(0.023)
GDP Growth	−37.20	(0.878)	186.9	(0.744)
Lag S&P 500 Ret	−16.96	(0.319)	6.515	(0.869)
Lag Spread	1.070	(0.930)	22.00	(0.191)
Lag GDP Growth	−62.34	(0.761)	−139.3	(0.760)
Lambda	8.420**	(0.039)	18.97***	(0.009)
Constant	34.24	(0.103)	19.44	(0.754)
Industry FE	Yes		Yes	
Year FE	Yes		Yes	
Number Obs.	238		109	
R^2	0.441		0.610	
Difference Column (1) − (2)		Difference	p-value	
All Conservatism		1.402	0.753	

(continued on next page)

TABLE 4 (continued)

***, **, * Indicate statistical significance at the 1 percent, 5 percent, and 10 percent levels, respectively.
This table examines the relation between accounting conservatism and creditor recovery rates of firms in bankruptcy based on whether the firm violated a covenant before the bankruptcy filing over the period from 1994–2011. Panel A provides univariate analysis. We independently sort firms into high and low conservatism groups based on the sample median of our composite measure, *All Conservatism*. We further partition the sample into covenant violators and non-covenant violators. Within each subset, we report the number of sample observations and average recovery rate. Column (3) reports the statistical significance (p-value) of the difference between Columns (1) and (2). Panel B reports the results of multivariate analysis testing the relation between accounting conservatism and creditor recovery rate based on whether the firm violated a covenant prior to bankruptcy. Column (1) estimates the relation for firms violating covenants, and Column (2) estimates the relation for firms that do not disclose a violation of covenants prior to bankruptcy. Model includes industry and year fixed effects, with standard errors clustered by year.
All variables are defined in Appendix C.

The Results of Testing the Relation between Accounting Conservatism and Ex Ante Performance

To further illuminate the mechanism through which accounting conservatism improves creditor collection, we examine whether more conservative firms have higher *ex ante* performance than less conservative firms before default. As argued previously, conservatism accelerates the transfer of control rights to creditors after a negative shock, which allows creditors to take actions to preserve firm value. Therefore, we expect conservative firms to have higher *ex ante* performance, as proxied by interest expense coverage and cash flows to total assets at default, both of which might contribute to higher creditor recovery rates. We estimate the following model to test this prediction:

$$\begin{aligned} Perform_{it-1,it-3} = {} & \alpha_0 + \omega_1 Conservatism_i + \omega_2 Size_{it} + \omega_3 Avg.\,Leverage_{it-1,it-3} \\ & + \omega_4 Avg.\,ROA_{it-1,it-3} + \omega_5 Avg.\,Capex_{it-1,it-3} + \omega_6 Avg.\,Dividend_{it-1,it-3} \\ & + \omega_7 MTB_{it-1} + \omega_8 Interest\ Miss_i + \omega_9 Distressed\ Exchange_i \\ & + \omega_{10} Debt\ Concentration_i + \omega_{11} Bank\_Share_i + \omega_{12} Secured\ Debt\ \%_i \\ & + \omega_{13} Senior\ Debt\ \%_i + \omega_{14} Net\ Worth\ Covenant_i + \omega_{15} Redeemable_i \\ & + \omega_{16} Sinking\ Fund_i + \omega_{17} Macroeconomic\ Controls + Industry\ fixed\ effects \\ & + Year\ fixed\ effects + \varepsilon_i \end{aligned} \tag{2}$$

We use two different dependent variables: the ratio of annual operating cash flows to total assets, averaged over the three years before bankruptcy (*CFO*) as a proxy for asset productivity before default, and an indicator variable equal to 1 if the firm's ratio of operating cash flows to annual interest expense, averaged over the three years before default, is greater than 1, and 0 otherwise.[25] We include control variables for firm size, market-to-book ratio, and capital structure variables from Model (1); we also control for leverage, profitability, capital expenditures, and dividends paid to shareholders, all averaged

[25] Accounting conservatism mechanically reduces earnings through recognition of unrealized losses, as indicated by the negative and significant correlation between our conservatism measures and ROA before bankruptcy filing in Table 2. We attempt to capture the firm's liquidity position before default and, therefore, we measure interest coverage as the ratio of annual operating cash flows to interest expense before default. We use the three-year average before default to mitigate timing problems inherent in cash flows. In untabulated analysis, we reestimate Model (2) using only financial information from the final period prior to default ($t-1$). We find evidence consistent with reported results in Table 5; specifically, we find a positive association between conservatism and both *CFO* (coefficient 0.052, p-value 0.012) and *Int Coverage* (coefficient 0.212, p-value 0.039).

TABLE 5

The Relation between Accounting Conservatism and *Ex Ante* Performance

		(1) *CFO*		(2) *Int Coverage*	
	Pred.	**Coeff.**	**p-value**	**Coeff.**	**p-value**
All Conservatism	+	0.041**	(0.011)	0.388***	(0.006)
Size		0.002	(0.776)	−0.162**	(0.041)
Avg. Leverage		0.056	(0.426)	−1.751***	(0.001)
Avg. ROA		0.360**	(0.026)	1.464**	(0.018)
Avg. Capex		0.082*	(0.078)	1.648***	(0.000)
Avg. Dividend		0.154	(0.177)	1.360	(0.126)
MTB		−0.001	(0.215)	−0.018	(0.189)
Interest Miss		0.016	(0.301)	−0.416***	(0.006)
Distressed Exchange		−0.028	(0.225)	0.051	(0.746)
Debt Concentration		0.057*	(0.062)	−0.174	(0.442)
Bank_Share		−0.065	(0.311)	0.398	(0.531)
Secured Debt %		0.010	(0.707)	−0.520	(0.264)
Senior Debt %		−0.116**	(0.035)	−0.405	(0.297)
Net Worth Covenant		0.003	(0.816)	0.171	(0.390)
Redeemable		−0.056**	(0.048)	0.064	(0.832)
Sinking Fund		−0.007	(0.590)	−0.411	(0.157)
S&P 500 Ret		0.026	(0.715)	2.275**	(0.047)
Spread		−0.073*	(0.052)	0.008	(0.980)
GDP Growth		−0.269	(0.781)	−5.666	(0.639)
Lag S&P 500 Ret		0.075	(0.146)	−0.368	(0.615)
Lag Spread		0.018	(0.671)	1.674***	(0.005)
Lag GDP Growth		−1.387**	(0.022)	2.868	(0.755)
Lambda		0.067***	(0.009)	0.119	(0.634)
Constant		−0.035	(0.797)	−1.402	(0.208)
Industry Fixed Effects		Yes		Yes	
Year Fixed Effects		Yes		Yes	
Number Obs.		347		347	
R^2/Pseudo R^2		0.464		0.308	

***, **, * Indicate statistical significance at the 1 percent, 5 percent, and 10 percent levels, respectively.
This table reports the results of testing the relation between accounting conservatism and firm performance in the three years before bankruptcy. In Column (1), the dependent variable is the ratio of annual operating cash flows to total assets, averaged over the three years before bankruptcy to determine the association between conservatism and asset productivity. In Column (2), the dependent variable is an indicator variable equal to 1 if the firm's ratio of annual operating cash flows to total interest expense over the three years before bankruptcy is greater than 1, and 0 otherwise; a probit model is estimated to determine whether the firm has sufficient cash flows to cover average annual interest expense before default. These tests use all sample firms in bankruptcy identified from Moody's URD over the period of 1994–2011. Model includes industry and year fixed effects, with standard errors clustered by year.
All variables are defined in Appendix C.

over the three years before default, matching the measurement of the dependent variable. We include year and Fama-French five industry fixed effects, with standard errors clustered by year.

The results of this analysis are presented in Table 5. In Column (1), *CFO* serves as the dependent variable. The coefficient on *All Conservatism* is positive and significant at the 5 percent level. A one-standard-deviation in conservatism increases operating cash flows to total assets by approximately 3.4 percent. In Column (2), the coefficient on *All Conservatism* is also positive and

significant at the 1 percent level, and the average marginal effect (marginal effect at the mean) of conservatism is 9.5 percent (9.8 percent). Overall, the results in Table 5 are consistent with our expectation that conservatism preserves firm value.

The Results of Testing H2

To test H2, positing as negative the relation between accounting conservatism and the duration of bankruptcy, we estimate the following hazard model:

$$\begin{aligned} ln\, h_i(T) = {} & h_0(T) + \gamma_1 Conservatism_i + \gamma_2 Size_{it} + \gamma_3 Leverage_{it-1} + \gamma_4 ROA_{it-1} + \gamma_5 MTB_{it-1} \\ & + \gamma_6 Interest\ Miss_i + \gamma_7 Debt\ Concentration_i + \gamma_8 Bank\_Share_i + \gamma_9 Secured\ Debt\ \%_i \\ & + \gamma_{10} Senior\ Debt\ \%_i + \gamma_{11} Net\ Worth\ Covenant_i + \gamma_{12} Redeemable_i \\ & + \gamma_{13} Sinking\ Fund_i + \gamma_{14} DIP\ Loan_i + \gamma_{15} Macroeconomic\ Controls \\ & + Industry\ fixed\ effects + Year\ fixed\ effects + \varepsilon_{it}, \end{aligned} \tag{3}$$

where $h_i(T)$ is the probability that a bankrupt firm i emerges from bankruptcy at T, given that the firm has survived up to T. $h_0(T)$ is the underlying hazard rate corresponding to the probability of emerging from bankruptcy when all the explanatory variables are set to 0. Because the dependent variable is the time to emergence, which is right-skewed due to the presence of censored observations, we estimate Model (2) using a hazard model.[26] The dependent variable is defined as the span in days between the bankruptcy filing date and the date of emergence. If the bankruptcy proceeding is incomplete, then we define the dependent variable as the number of days beginning with the bankruptcy filing date to the end of the sample period. We censor all observations that did not emerge from bankruptcy, and include Fama-French five industry and year fixed effects in the model.

Table 6 reports the results of estimating Model (3). Column (1) includes all sample firms, while Column (2) excludes firm observations that exist through either an acquisition or a liquidation because faster resolution in these cases might not reflect low agency conflicts.[27] The coefficient on *All Conservatism* is positive and statistically significant at the 1 percent level in both columns, which is consistent with our expectation that conservative financial reports mitigate agency conflict between stakeholders, facilitating agreement on a plan for reorganization. Evaluating the results from Column (1), a conservative debtor in default that has not yet reached the resolution is 1.42 percent more likely to resolve bankruptcy at a subsequent time interval, compared with less conservative debtors for each quintile rank difference in conservatism. We also find that firms with better profitability and larger market values tend to emerge more quickly, while firms with more bank debt or obtaining debt-in-possession financing tend to take longer.

V. FURTHER DISCUSSION AND ROBUSTNESS TESTS

Further Discussion

Conservatism and Efficiency

Our results suggest that accounting conservatism benefits lenders. Conservative financial reporting might empower creditors to force healthy firms into bankruptcy to achieve higher

[26] Specifically, we estimate the Cox (1972) proportional hazard model, where the hazard rate does not vary over time and the functional form of the baseline hazard is not required. Right censoring occurs when firms may emerge after the data-collection period or when firms never emerge from bankruptcy.

[27] For example, quick liquidation of debtors after debtor default might result from heightened conflicts between secured creditors and junior unsecured creditors.

TABLE 6

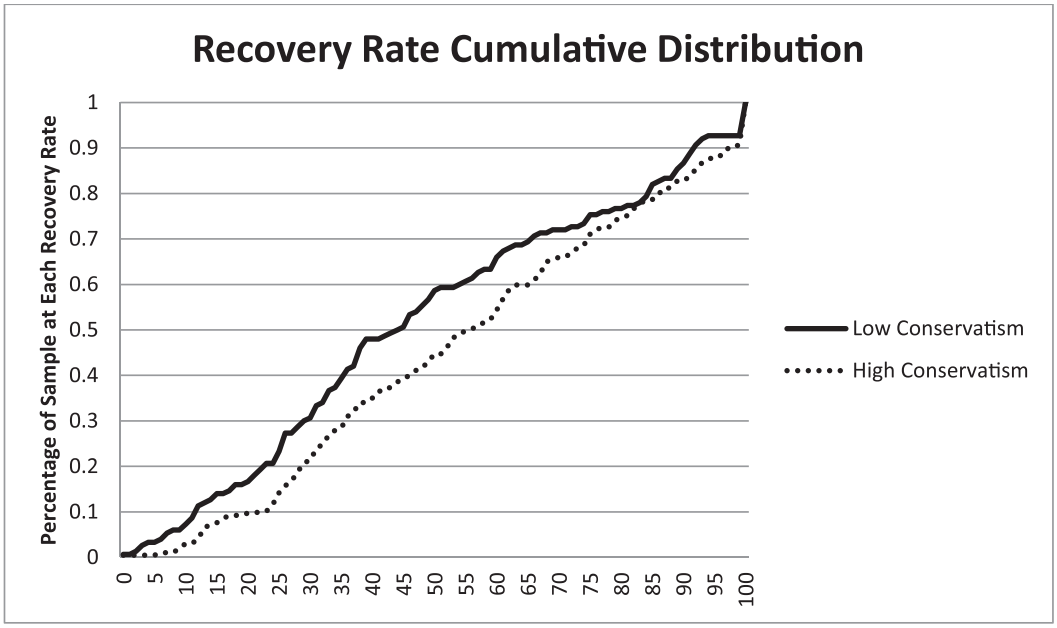
The Relation between Accounting Conservatism and Bankruptcy Resolution

	(1)			(2)		
	Coeff.	**p-value**	**Hazard Ratio**	**Coeff.**	**p-value**	**Hazard Ratio**
All Conservatism	0.348***	(0.000)	1.417	0.285***	(0.003)	1.330
Size	−0.084	(0.216)	0.920	−0.144*	(0.055)	0.866
Leverage	0.129	(0.251)	1.138	0.179	(0.255)	1.196
ROA	1.338***	(0.000)	3.813	1.337***	(0.001)	3.808
MTB	0.017***	(0.008)	1.017	0.016**	(0.012)	1.016
Debt Concentration	0.099	(0.674)	1.104	−0.010	(0.969)	0.990
Bank_Share	−1.001**	(0.013)	0.368	−1.040**	(0.023)	0.353
Secured Debt %	0.707**	(0.014)	2.028	0.692**	(0.018)	1.997
Senior Debt %	0.206	(0.496)	1.229	−0.080	(0.812)	0.923
Net Worth Covenant	−0.248	(0.108)	0.780	−0.149	(0.371)	0.862
Redeemable	−0.283	(0.154)	0.753	−0.425**	(0.044)	0.654
Sinking Fund	0.010	(0.965)	1.010	−0.048	(0.827)	0.953
DIP Loan	−0.862***	(0.000)	0.422	−0.881***	(0.000)	0.415
S&P 500 Ret	4.128***	(0.000)	62.041	2.461***	(0.003)	11.717
Spread	0.258	(0.333)	1.294	−0.233	(0.389)	0.792
GDP Growth	−37.867***	(0.000)	0.000	−27.766***	(0.003)	0.000
Lag S&P 500 Ret	0.739	(0.274)	2.094	1.263*	(0.058)	3.538
Lag Spread	0.394	(0.372)	1.483	0.375	(0.410)	1.455
Lag GDP Growth	−7.239	(0.381)	0.001	−6.745	(0.416)	0.001
Emerge Spread	−0.329	(0.689)	0.719	−0.125	(0.882)	0.882
Emerge S&P 500 Ret	−0.585*	(0.078)	0.557	−0.598*	(0.052)	0.550
Emerge GDP Growth	−15.114	(0.230)	0.000	−12.12	(0.379)	0.000
Lambda	0.284*	(0.066)	1.328	0.549***	(0.001)	1.732
Industry FE	Yes			Yes		
Year FE	Yes			Yes		
Number Obs.	347			247		
Model Likelihood Ratio	144.965			133.093		
Model p-value	<0.0001			<0.0001		

***, **, * Indicate statistical significance at the 1 percent, 5 percent, and 10 percent levels, respectively.
This table reports the results of testing the relation between accounting conservatism and the length of bankruptcy resolution. We estimate a Cox proportional hazard model, where $h(T)$ is the instantaneous risk of a bankrupt firm emerging from bankruptcy at time T, given that the firm survives to time T. All firms that do not emerge from bankruptcy are censored. Column (1) uses all sample firms in bankruptcy with available data identified from Moody's URD over the period of 1994–2011, and Column (2) excludes bankrupt firms existing through an acquisition or liquidation. Models include industry and year fixed effects, with standard errors clustered by year.
All variables are defined in Appendix C.

recovery. We illustrate this issue in Figure 1 by drawing the URD circle so that it is not a proper subset of the darker circle. Note that the Heckman (1979) two-stage procedures attempt to address this selection bias because accounting conservatism is included as a predictor in the first-stage regression. To further illuminate this issue, we investigate whether a disproportionally high percentage of conservative (less conservative) firms lies in the very high (low) creditor recovery rate region. Finding such evidence would suggest that conservatism induces unnecessary

FIGURE 2
Cumulative Distribution of Recovery Rates for High and Low Conservative Firms



This figure plots the cumulative distribution function of recovery rates of sample firms in bankruptcy over the period 1994–2011, identified from Moody's URD. The sample is partitioned into High Conservatism and Low Conservatism firms based on the sample median of the composite measure of accounting conservatism: *All Conservatism*. The composite measure is created based on the average quintile rank of the individual conservatism measures: *Cons_r2, CSCORE, Cons_BS, Skewness,* and *Special Items Ratio*. The distribution reflects the probability that a realized recovery rate is less than or equal to a specified threshold within each conservatism grouping. A difference in the distribution of recovery rates for High Conservatism and Low Conservatism firms, specifically, a discontinuity in the high end (i.e., above 80 percent) of the creditor recovery rate distribution for High Conservatism firms, is consistent with accounting conservatism forcing healthy firms into bankruptcy unnecessarily. The observed difference in the recovery rates for High Conservatism and Low Conservatism firms lies mainly in the lower end of the distribution, reflecting that accounting conservatism does not force healthy firms into unnecessary bankruptcy.

liquidation.[28] We partition our sample into high and low conservative firms based on the sample median of *All Conservatism* and plot the cumulative distribution of recovery rate of high and low conservative firms separately. Results are presented in Figure 2. The distribution reflects the probability that a realized recovery rate is less than or equal to a specified threshold. For example, approximately 40 percent of firms in the High Conservatism subsample have recovery rates less than 45 percent. If conservatism pushes healthy firms into bankruptcy unnecessarily, then we would expect the cumulative distribution of recovery rates of High Conservatism firms to experience a jump in the high creditor recovery rates region (i.e., above 80 percent). However, the figure shows that there is no difference in the frequency of distribution between high conservative and low conservative firms in the high creditor recovery rates region (i.e., above 80 percent). We perform a

[28] Competitive lending markets also limit unnecessary liquidation by allowing borrowers to renegotiate or switch lenders in the event of technical default.

Kruskal-Wallis test to determine whether the recovery rate distribution differs between high and low conservative firms. Untabulated results indicate a statistically significant difference between the two groups (p-value = 0.018), and the observed difference between the two groups mainly resides in the low recovery rate region. Thus, conservatism does not appear to push healthy firms into bankruptcy.

We also examine the relation between stock price reaction at bankruptcy filing announcements and accounting conservatism. If conservatism allows creditors to transfer wealth from shareholders, then we would expect a more negative stock price reaction to the bankruptcy announcement for conservative firms. We find an insignificantly positive relation between accounting conservatism and three-day cumulative abnormal stock returns, centered on the bankruptcy filing date (coefficient = 0.097, p-value = 0.629). This result suggests that shareholders are harmed by conservatism.[29,30]

To further illuminate the efficiency implication of accounting conservatism, we study the likelihood that a default firm successfully emerges from Chapter 11 as a going concern. If creditors hollow out the firm for their private benefit, then we expect a lower probability of emergence.[31] We test the relation between accounting conservatism and the likelihood of emergence from bankruptcy using the following probit model:

$$\begin{aligned} Prob(Emerge_i) = {} & \alpha_0 + \theta_1 Conservatism_i + \theta_2 Size_{it} + \theta_3 Leverage_{it-1} + \theta_4 ROA_{it-1} \\ & + \theta_5 MTB_{it-1} + \theta_6 Z\text{-}Score_{it-1} + \theta_7 Interest\ Miss_i + \theta_8 Distressed\ Exchange_i \\ & + \theta_9 Debt\ Concentration_i + \theta_{10} Bank\_Share_i + \theta_{11} Secured\ Debt\ \%_i \\ & + \theta_{12} Senior\ Debt\ \%_i + \theta_{13} Bankruptcy\ Period_i + \theta_{14} Net\ Worth\ Covenant_i \\ & + \theta_{15} Redeemable_i + \theta_{16} Sinking\ Fund_i + \theta_{17} DIP\ Loan_i \\ & + \theta_{18} Macroeconomic\ Controls + Industry\ fixed\ effects + Year\ fixed\ effects \\ & + \varepsilon_{it}. \end{aligned} \tag{4}$$

The dependent variable in this model, *Emerge,* is an indicator variable equal to 1 if a firm emerged from bankruptcy or completed its debt exchange or restructuring, and 0 otherwise. All other variables are defined in Appendix C. Table 7 presents the results of estimating Model (4) using a probit model. Column (1) includes all sample firms, while Column (2) excludes firm observations that entail acquisitions because being acquired might indicate that target assets have a higher value via continuation compared to liquidation. In both columns, the results indicate that conservatism significantly increases the likelihood of successfully emerging from Chapter 11. The coefficient estimates on other control variables indicate that larger firms have a higher likelihood of emergence, while firms with longer bankruptcy negotiation periods are less likely to emerge. Based on the first column, the average marginal effect (marginal effect at the mean) of accounting conservatism on the probability of emergence is 8.1 percent (9.3 percent).

Last, we exclude firms with creditor recovery rates above 80 percent from the sample and reestimate Model (1) based on this subsample. The firms excluded are healthier and, thus, may have

[29] We also find a positive relation between the bankruptcy filing stock return and creditor recovery rates (coefficient = 0.008, p-value = 0.002). This evidence reinforces the view that higher creditor recovery likely results from higher efficiency rather than wealth transfer from shareholders.

[30] Insignificant results can be due to investor anticipation of the default event.

[31] Table 1 presents descriptive statistics for firms emerging from bankruptcy in our sample. Approximately 71.2 percent of firms in our sample (247 firms) emerge from financial distress. Only 24 percent of sample firms in Hotchkiss (1995) emerge from bankruptcy, while 44 percent of firms reorganize and emerge from bankruptcy in Kalay et al. (2007).

TABLE 7

The Relation between Accounting Conservatism and the Likelihood of Emergence

		(1) *Emerge*		(2) *Emerge*	
	Pred.	**Coeff.**	**p-value**	**Coeff.**	**p-value**
All Conservatism	+	0.304**	(0.014)	0.253**	(0.045)
Size		0.150**	(0.028)	0.153***	(0.006)
Leverage		−0.030	(0.696)	−0.055	(0.513)
ROA		0.310	(0.282)	0.321	(0.437)
MTB		0.007	(0.277)	0.003	(0.747)
Z-Score		−0.012	(0.546)	−0.002	(0.881)
Interest Miss		0.280***	(0.004)	0.290**	(0.020)
Debt Concentration		−0.359*	(0.055)	−0.456*	(0.062)
Bank_Share		−0.787	(0.157)	−0.847	(0.140)
Secured Debt %		0.011	(0.967)	0.158	(0.638)
Senior Debt %		0.118	(0.718)	0.105	(0.709)
Bankruptcy Period		−0.000***	(0.000)	−0.000***	(0.000)
Net Worth Covenant		−0.154	(0.457)	−0.217	(0.404)
Redeemable		0.278*	(0.094)	0.347**	(0.037)
Sinking Fund		0.075	(0.726)	−0.019	(0.934)
DIP Loan		−0.034	(0.841)	0.040	(0.841)
S&P 500 Ret		1.739*	(0.057)	1.115	(0.264)
Spread		0.036	(0.892)	0.431	(0.188)
GDP Growth		−4.628	(0.732)	7.615	(0.625)
Lag S&P 500 Ret		−0.392	(0.624)	−0.586	(0.428)
Lag Spread		0.093	(0.874)	0.108	(0.873)
Lag GDP Growth		3.085	(0.766)	−2.488	(0.777)
Emerge S&P 500 Ret		−1.843***	(0.002)	−1.710**	(0.013)
Emerge Spread		0.247	(0.310)	0.266	(0.492)
Emerge GDP Growth		19.33***	(0.005)	15.01	(0.105)
Lambda		−0.222	(0.286)	−0.334	(0.181)
Constant		0.016	(0.989)	−0.297	(0.837)
Industry Fixed Effects		Yes		Yes	
Year Fixed Effects		Yes		Yes	
Number Obs.		347		323	
Pseudo R^2		0.207		0.203	

***, **, * Indicate statistical significance at the 1 percent, 5 percent, and 10 percent levels, respectively.
This table reports the results of testing the relation between accounting conservatism and the likelihood of emerging from bankruptcy using all sample firms in bankruptcy with available data identified from Moody's URD over the period 1994–2011. We estimate a probit model, where the dependent variable is a dummy variable coded as 1 if a firm emerges from bankruptcy, and 0 otherwise. Column (1) uses all sample firms in bankruptcy with available data identified from Moody's URD over the period of 1994–2011, and Column (2) excludes bankrupt firms existing through an acquisition. Models include industry and year fixed effects, with standard errors clustered by year.
All variables are defined in Appendix C.

been pushed by a creditor into bankruptcy inefficiently. Our results are qualitatively similar to those reported in Table 3. Collectively, our analysis in this section provides evidence that the alternative explanation of wealth transfer to the positive relation between accounting conservatism and creditor recovery is unlikely.

Voluntary versus Mandatory Choice of Conservatism

Conservatism might arise because borrowers find it in their interest to accede to lender demands or because regulators impose conservatism. In either case, the effect of conservatism on lender collections is the same. However, if conservatism is freely chosen by borrowers, then we would expect conservatism to benefit both lenders and shareholders. This is because lenders anticipate moral hazard and adverse selection problems and price protect (Myers 1977; Smith and Warner 1979; Barclay and Smith 1995), and shareholders bear the deadweight losses arising from unresolved moral hazard and adverse selection. Therefore, shareholders might prefer conservative accounting if it reduces deadweight losses.[32] If conservatism is imposed by regulation and its level exceeds the efficient level, then the shareholders can bear costs if bankruptcy occurs too often. To distinguish mandatory requirement from voluntary application of conservatism, we empirically compare the results based on Model (1) with and without industry fixed effects, assuming that generally accepted accounting principles' (GAAP) requirement of conservatism mainly varies across industries in the cross-section.[33] Untabulated results show that the inclusion of industry fixed effects does not change the sign of the coefficient estimate on conservatism, nor did the coefficient magnitude change significantly, suggesting that our findings largely come from voluntary adoption of conservatism.

Robustness Tests

Instrument-Level Analysis

As discussed in Section IV, we conduct a robustness check at the instrument level that is presented in Table 8. Columns (1) and (2) estimate the relation between accounting conservatism and creditor recovery rate based on all debt instruments and junior debt instruments only, respectively. The results hold for both samples after controlling for a set of instrument features. Moreover, consistent with our expectation discussed in Section IV, we find that the effect of conservatism on recovery rates is concentrated among junior debt holders at the issue level, as evidenced by the larger positive coefficient on *All Conservatism* in Column (2).

Sample Selection

To ensure the robustness of our results, all the empirical tests are conducted based on a constant sample—the same sample across all tests. However, different tests have different data requirements and, thus, the maximum sample size for each test differs. We rerun all tests based on the maximum sample for each test, and the untabulated results are both qualitatively and quantitatively similar. Finally, our results continue to hold when we cluster standard errors by industry or industry-year.

In untabulated analysis, we supplement our sample of bankrupt firms from the Moody's URD using the University of California, Los Angeles (UCLA) Bankruptcy Research Database (BRD) over the period from 1994–2011.[34] This database yields an additional 129 firms in bankruptcy with sufficient data available to calculate our conservatism measures, as well as each dependent and control variable used in previous analyses. All analyses performed using this sample of 476 bankrupt firms yield qualitatively similar results.[35] In addition, our sample of default firms

[32] Many papers show effects consistent with this behavior in loan amounts, collateral, maturities (Gormley, Kim, and Martin 2012), and yields (Ahmed et al. 2002; Zhang 2008; Garcia Lara, Garcia Osma, and Penalva 2011).

[33] For example, Christie and Zimmerman (1994) use industry to control for variation in accounting requirements to estimate the accruals model.

[34] We thank Lynn LoPucki for providing his Bankruptcy Research Database.

[35] Recovery rate data are only available for firms in Moody's URD and, therefore, no additional analysis is performed to analyze recovery rates using the UCLA BRD sample. All other results hold using the larger sample of Moody's URD and UCLA BRD firms.

TABLE 8

Accounting Conservatism and Creditor Recovery Rates
Debt Instrument Level Analysis

	(1) *Recovery Rate*		(2) *Recovery Rate*	
	Coeff.	**p-value**	**Coeff.**	**p-value**
All Conservatism	2.996**	(0.022)	3.074**	(0.024)
Size	2.462**	(0.036)	−1.935	(0.131)
Leverage	4.662**	(0.027)	1.539*	(0.091)
ROA	6.068	(0.266)	7.600	(0.209)
MTB	−0.074	(0.737)	−0.064	(0.771)
Z-Score	0.062	(0.849)	0.200	(0.570)
Interest Miss	−0.080***	(0.000)	−0.067*	(0.097)
Distressed Exchange	26.17***	(0.000)	19.58**	(0.049)
Debt Size	−0.002**	(0.048)	−0.000	(0.788)
Senior Debt	10.40***	(0.002)		
Bank Debt	34.06***	(0.000)	28.66**	(0.048)
Collateral	25.84***	(0.000)	31.33**	(0.020)
Net Worth Covenant	1.457	(0.424)	−2.756	(0.248)
Bank_Share	−25.77***	(0.000)	−32.70***	(0.000)
Debt Concentration	7.069	(0.170)	6.060	(0.227)
Redeemable	−6.983*	(0.076)	−3.559	(0.423)
Sinking Fund	7.869	(0.127)	6.603	(0.182)
DIP Loan	−7.730**	(0.031)	−3.533	(0.366)
S&P 500 Ret	7.736	(0.504)	−1.549	(0.903)
Spread	−3.993	(0.422)	−10.05**	(0.029)
GDP Growth	254.0	(0.203)	−161.0	(0.307)
Lag S&P 500 Ret	17.24	(0.185)	5.695	(0.621)
Lag Spread	9.655	(0.144)	3.239	(0.723)
Lag GDP Growth	−88.37	(0.603)	−55.87	(0.638)
Lambda	14.01***	(0.004)	12.36***	(0.000)
Constant	−14.52	(0.406)	47.79***	(0.000)
Industry FE	Yes		Yes	
Year FE	Yes		Yes	
Number Obs.	1,772		841	
R^2	0.532		0.538	

***, **, * Indicate statistical significance at the 1 percent, 5 percent, and 10 percent levels, respectively.
This table reports the results of testing the relation between accounting conservatism and creditor recovery rates of firms in bankruptcy at the debt instrument level over the period from 1994–2011. Column (1) estimates the relation using all available debt instruments. Column (2) limits the sample to junior debt instruments only. Models include industry and year fixed effects, and standard errors are clustered by year.
All variables are defined in Appendix C.

consists of both Chapter 11 bankruptcies (303 firms) and distressed debt exchanges (44 firms), although a majority of firms file for Chapter 11, and we control for distressed exchanges in the empirical tests. To check the sensitivity of our results to different types of distress resolution, we conduct sensitivity analysis using only Chapter 11 bankrupt firms, and the results are robust to this sample.

Control for Prepackaged Bankruptcy and Alternative Measures of Bankruptcy Risk

Under a prepackaged bankruptcy agreement, the firm and its creditors jointly determine the allocation of firm value to claimants and specify this allocation in a contract before the firm enters Chapter 11. Prepackaged aged bankruptcies may significantly improve the efficiency of resolution by eliminating negotiations during the proceedings and may result in higher creditor recovery rates than standard Chapter 11 proceedings. We include prepackaged bankruptcy as an indicator variable in estimating Model (1).[36] The untabulated results show that prepackaged bankruptcies are insignificantly positively associated with creditor recovery rates. Yet the impact of conservatism on recovery rates remains quantitatively and qualitatively similar after controlling for prepackaged bankruptcy. To provide robust control for credit risk, we include credit ratings in the year prior to default (using a smaller sample where this variable is available) as an additional explanatory variable. Sample size diminishes as many firms do not have ratings, but results do not alter (untabulated).

VI. CONCLUSION

We examine the relation between accounting conservatism and creditor recovery rates. We hypothesize that accounting conservatism preserves firm value by facilitating timely transfers of decision rights from shareholders to creditors through covenant violations. We also hypothesize that conservative financial reporting improves the efficiency in bankruptcy resolution by mitigating agency conflicts between stakeholders and facilitating agreement on a reorganization plan among these parties.

We find evidence that accounting conservatism is positively associated with creditor recovery rates. We also find that conservative firms have shorter bankruptcies. Next, we show that the positive relation between conservatism and creditor recovery rates exists for default firms that violated financial covenants prior to default only. This relation is nonexistent for firms that did not violate covenants. We also demonstrate that conservative firms have higher *ex ante* performance before default and higher likelihood of emergence from bankruptcy. Overall, our study provides evidence that conservative accounting improves creditor recollections by timely transferring control rights from shareholders to creditors, through which creditors take actions to preserve firm value before debtors default. Our study also suggests that accounting conservatism improves the efficiency of bankruptcy resolution, which benefits all stakeholders of the firm.

REFERENCES

Acharya, V., S. Bharath, and A. Srinivasan. 2007. Does industry-wide distress affect defaulted firms? Evidence from creditor recoveries. *Journal of Financial Economics* 85 (3): 787–821.

Ahmed, A., B. Billings, R. Morton, and M. Stanford-Harris. 2002. The role of accounting conservatism in mitigating bondholder-shareholder conflicts over dividend policy and in reducing debt costs. *The Accounting Review* 77 (4): 867–890.

Ayotte, K., and E. Morrison. 2009. Creditor control and conflict in Chapter 11. *Journal of Legal Analysis* 1 (2): 511–551.

Baird, D., and R. Rasmussen. 2006. Private debt and the missing lever of corporate governance. *University of Pennsylvania Law Review* 154: 1209–1251.

[36] We first identify prepackaged bankruptcy filings using the UCLA BRD. We can match 224 firms from our sample to the BRD data; for the remaining 123 firms in our sample, we assume a prepackaged filing if the firm's resolution period is less than four months (excluding successful distressed exchanges), following Ayotte and Morrison (2009).

Ball, R. 2001. Infrastructure requirements for an economically efficient system of public financial reporting and disclosure. *Brookings-Wharton Papers on Financial Services* (2001): 127–169.

Ball, R., and L. Shivakumar. 2005. Earnings quality in UK private firms: Comparative loss recognition timeliness. *Journal of Accounting and Economics* 39 (1): 83–128.

Ball, R., A. Robin, and J. Wu. 2003. Incentives versus standards: Properties of accounting income in four East Asian countries. *Journal of Accounting and Economics* 36 (1/3): 235–270.

Ball, R., A. Robin, and G. Sadka. 2008. Is financial reporting shaped by equity markets or by debt markets? An international study of timeliness and conservatism. *Review of Accounting Studies* 13 (2/3): 168–205.

Barclay, M., and C. Smith. 1995. The priority structure of corporate liabilities. *Journal of Finance* 50 (3): 899–917.

Basu, S. 1997. The conservatism principle and the asymmetric timeliness of earnings. *Journal of Accounting and Economics* 24 (1): 3–37.

Beatty, A., J. Weber, and J. Yu. 2008. Conservatism and debt. *Journal of Accounting and Economics* 45 (2/3): 154–174.

Bernanke, B., and M. Gertler. 1989. Agency costs, net worth, and business fluctuations. *American Economic Review* 79 (1): 14–31.

Bernstein, E. 2006. All's fair in love, war and bankruptcy? Corporate governance implications of CEO turnover in financial distress. *Stanford Journal of Law, Business and Finance* 11: 298–325.

Biddle, G., M. Ma, and F. Song. 2013. *Accounting Conservatism and Bankruptcy Risk*. Working paper, The University of Hong Kong and York University.

Bris, A., I. Welch, and N. Zhu. 2006. The costs of bankruptcy: Chapter 7 liquidation versus Chapter 11 reorganization. *Journal of Finance* 61 (3): 1253–1303.

Brockman, P., T. Ma, and X. Martin. 2012. *CEO Compensation Structure and Asymmetric Timely Loss Recognition: An Empirical Analysis from Debt Contracting Perspective*. Working paper, Washington University in St. Louis.

Capkun, V., and L. Weiss. 2008. *Bankruptcy Resolution and the Restoration of Priority of Claims*. American Law and Economics Association Annual Meetings, American Law and Economics Association 18th Annual Meeting. Working Paper 43. Available at: http://www.researchgate.net/publication/255997708_Bankruptcy_Resolution_and_the_Restoration_of_Priority_of_Claims

Carrizosa, R., and S. Ryan. 2013. *Conservatism, Covenants, and Recovery Rates*. Working paper, The University of Utah and New York University.

Caskey, J., and J. Hughes. 2012. Assessing the impact of alternative fair value measures on the efficiency of project selection and continuation. *The Accounting Review* 87 (2): 483–512.

Chatterjee, S., U. Dhillon, and G. Ramirez. 2004. Debtor-in-possession financing. *Journal of Banking and Finance* 28 (12): 3097–3111.

Chava, S., and M. Roberts. 2008. How does financing impact investment? The role of debt covenants. *Journal of Finance* 63 (5): 2085–2121.

Christie, A., and J. Zimmerman. 1994. Efficient and opportunistic choices of accounting procedures: Corporate control contests. *The Accounting Review* 69 (4): 539–566.

Covitz, D., S. Han, and B. A Wilson. 2006. *Are Longer Bankruptcies Really More Costly?* Working paper, Finance and Economics Discussion Series, Divisions of Research and Statistics and Monetary Affairs, Federal Reserve Board, Washington, D.C.

Cox, D. R. 1972. Regression models with life tables (with discussion). *Journal of the Royal Statistical Society* B34: 187–220.

Eckbo, E. B., and K. S. Thorburn. 2002. *Overbidding Versus Fire-Sales in Automatic Bankruptcy Auctions*. Working paper, Dartmouth College.

Francis, R., and X. Martin. 2010. Acquisition profitability and timely loss recognition. *Journal of Accounting and Economics* 49 (1/2): 161–178.

Franks, J., and W. Torous. 1994. A comparison of financial recontracting in distressed exchanges and Chapter 11 reorganizations. *Journal of Financial Economics* 35 (3): 349–370.

Garcia Lara, J., B. Garcia Osma, and F. Penalva. 2011. Conditional conservatism and cost of capital. *Review of Accounting Studies* 16 (2): 247–271.

Gertner, R., and D. Scharfstein. 1991. A theory of workouts and the effects of reorganization law. *Journal of Finance* 46: 1189–1222.

Giammarino, R. 1989. The resolution of financial distress. *Review of Financial Studies* 2: 25–47.

Gilson, S., K. John, and L. Lang. 1990. Troubled debt restructurings: An empirical study of private reorganization of firms in default. *Journal of Financial Economics* 27 (2): 315–353.

Givoly, D., and C. Hayn. 2000. The changing time-series properties of earnings, cash flows and accruals: Has financial reporting become more conservative? *Journal of Accounting and Economics* 29 (3): 287–320.

Gormley, T., B. Kim, and X. Martin. 2012. Do firms adjust their timely loss recognition in response to changes in the banking industry? *Journal of Accounting Research* 50 (1): 159–196.

Guay, W., and R. Verrecchia. 2006. Discussion of an economic framework for conservative accounting and Bushman and Piotroski (2006). *Journal of Accounting and Economics* 42 (1/2): 149–165.

Heckman, J. 1979. Sample selection bias as a specification error. *Econometrica* 47 (1): 153–161.

Ho, T., and R. Singer. 1984. The value of corporate debt with a sinking-fund provision. *Journal of Business* 57 (3): 315–336.

Hotchkiss, E. 1995. Post-bankruptcy performance and management turnover. *Journal of Finance* 50 (1): 3–21.

Hotchkiss, E., K. J. Thorburn, and R. Mooradian. 2008. Bankruptcy and the resolution of financial distress. In *Handbook of Corporate Finance: Empirical Corporate Finance, Volume 2:* Chapter 14. Oxford, U.K.: Elsevier North-Holland.

James, C. 1996. Bank debt restructurings and the composition of exchange offers in financial distress. *Journal of Finance* 51 (2): 711–727.

Jensen, M. 1991. Corporate control and the politics of finance. *Journal of Applied Corporate Finance* 4: 13–33.

Kalay, A., R. Singhal, and E. Tashjian. 2007. Is Chapter 11 costly? *Journal of Financial Economics* 84 (3): 772–796.

Khan, M., and R. Watts. 2009. Estimation and empirical properties of a firm-year measure of accounting conservatism. *Journal of Accounting and Economics* 48 (2/3): 132–150.

Mooradian, R. 1994. The effect of bankruptcy protection on investment: Chapter 11 as a screening device. *Journal of Finance* 49: 1403–1430.

Mooradian, R., and H. Ryan. 2005. Out-of-court restructurings and the resolution of financial distress: Section 3(a)(9) compared to investment-bank-managed exchange offer. *Journal of Business* 78: 1593–1624.

Myers, S. 1977. Determinants of corporate borrowing. *Journal of Financial Economics* 5 (2): 147–175.

Nikolaev, V. 2010. Debt covenants and accounting conservatism. *Journal of Accounting Research* 48 (1): 51–89.

Nini, G., D. Smith, and A. Sufi. 2009. Creditor control rights and firm investment policy. *Journal of Financial Economics* 92 (3): 400–420.

Nini, G., D. Smith, and A. Sufi. 2012. Creditor control rights, corporate governance, and firm value. *Review of Financial Studies* 25 (6): 1713–1761.

Noe, T., and M. Rebello. 2003. Reputation and the market for distressed-firm debt. *Journal of Financial and Quantitative Analysis* 38: 503–522.

Pulvino, T. 1998. Do asset fire sales exist? An empirical investigation of commercial aircraft sale transactions. *Journal of Finance* 53: 939–978.

Pulvino, T. 1999. Effects of bankruptcy court protection on asset sales. *Journal of Financial Economics* 52: 151–186.

Roberts, M., and A. Sufi. 2009. Control rights and capital structure: An empirical investigation. *Journal of Finance* 64 (4): 1657–1695.

Roychowdhury, S., and X. Martin. 2013. Understanding discretion in conservatism: An alternative viewpoint. *Journal of Accounting and Economics* 56 (2/3): 134–146.

Smith, C. W., and J. Warner. 1979. On financial contracting: An analysis of bond covenants. *Journal of Financial Economics* 7 (2): 117–161.

Tan, L. 2013. Creditor control rights, state of nature verification, and financial reporting conservatism. *Journal of Accounting and Economics* 55 (1): 1–22.

Thorburn, K. 2000. Bankruptcy auctions: Costs, debt recovery, and firm survival. *Journal of Financial Economics* 58 (3): 337–368.

Townsend, R. 1979. Optimal contracts and competitive markets with costly state verification. *Journal of Economic Theory* 21: 265–293.

Watts, R. 2003a. Conservatism in accounting Part I: Explanations and implications. *Accounting Horizons* 17 (3): 207–221.

Watts, R. 2003b. Conservatism in accounting Part II: Evidence and research opportunities. *Accounting Horizons* 17 (4): 287–301.

Weiss, L. 1990. Bankruptcy resolution: Direct costs and violation of priority of claims. *Journal of Financial Economics* 27 (2): 285–314.

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 (2/3): 240–260.

Zhang, J. 2008. The contracting benefits of accounting conservatism to lenders and borrowers. *Journal of Accounting and Economics* 45 (1): 27–54.

Zhang, Z. 2009. *Recovery Rates and Macroeconomic Conditions: The Role of Loan Covenants*. Working paper, Boston College.

APPENDIX A

Measures of Accounting Conservatism

This appendix describes the five individual measures of accounting conservatism in detail. Our first measure of conservatism, *Cons_r2,* is the relative explanatory power of bad news in earnings versus the explanatory power of good news in earnings, following Zhang (2008) and Basu (1997) and using the following firm-specific regression over the ten-year period prior to default:

$$Earn_{it} = \alpha_0 + \alpha_1 Ret_{it} + \varepsilon_{it}$$

where $Earn_{it}$ equals income before extraordinary items for firm i in period t, scaled by the firm's market value of equity at the end of the prior period; and Ret_{it} equals annual returns of firm i, measured over the period ending three months after the firm's fiscal year-end. $Cons\_r2 = R^2$ (bad news)/R^2 (good news). Positive returns represent good news, and negative returns represent bad news. R^2 measures the R^2 from an earnings-returns regression for the good and bad news subsamples. Thus, higher values of *Cons_r2* represent more conservative firms.

Our second measure of conservatism, *CSCORE,* estimates the sensitivity of earnings to bad news in the cross-section, following Basu (1997) and Khan and Watts (2009). Specifically, for each firm in our sample, we form a control group based on the bottom decile of CRSP annual stock returns ending on each sample firm's bankruptcy filing date. We then estimate the following regression in the fiscal year prior to the bankruptcy filing date:

$$\begin{aligned} Earn_i = {} & \alpha_0 + R_i(\mu_1 + \mu_2 MVE_i + \mu_3 MTB_i + \mu_4 Lev_i) \\ & + D_i R_i(\boldsymbol{\lambda}_1 + \boldsymbol{\lambda}_2 MVE_i + \boldsymbol{\lambda}_3 MTB_i + \boldsymbol{\lambda}_4 Lev_i) \\ & + (\delta_1 MVE_i + \delta_2 MTB_i + \delta_3 Lev_i + \delta_4 D_i MVE_i + \delta_5 D_i MTB_i + \delta_6 D_i Lev_i) + \varepsilon_i \end{aligned}$$

where $Earn_i$ equals income before extraordinary items for firm i, scaled by the firm's market value of equity at the end of the prior period; R_i equals annual returns of firm i, measured over the period ending three months after the firm's fiscal year-end; and D_i is an indicator variable equal to 1 if the

firm's returns are negative ($R_i < 0$), and 0 otherwise. *MVE* is equal to the natural log of the market value of equity. *MTB* is equal to the market-to-book ratio. *Lev* is equal to total debt (long-term and short-term), scaled by the market value of equity. *CSCORE* captures the sensitivity of earnings to bad news: $CSCORE = \lambda_1 + \lambda_2 MVE_i + \lambda_3 MTB_i + \lambda_4 Lev_i$, where higher values of *CSCORE* represent greater conservatism.

We employ two additional measures of conservatism that do not rely on stock returns. Following Ball and Shivakumar (2005), our third measure of conservatism, *Cons_BS,* estimates the extent to which firms record bad news in earnings through write-offs and losses in accruals. Ball and Shivakumar (2005) modify the Basu (1997) framework by regressing accruals on operating cash flows to determine the extent to which firms record losses. For each firm in our sample, we estimate the following firm-specific regression model over the ten-year period before default:

$$Accruals_{it} = \alpha_0 + \alpha_1 DCFO_{it} + \beta_0 CFO_{it} + \beta_1 CFO_{it} * DCFO_{it} + \varepsilon_{it}$$

where all variables are scaled by average total assets.[37] *DCFO* is an indicator variable equal to 1 if the firm's change in annual operating cash flows is negative in period *t,* and 0 otherwise. Ball and Shivakumar (2005) report that accrued losses are more likely to occur in periods of negative cash flows. Therefore, our measure of conservatism, *Cons_BS,* is equal to the β_1, where higher values of *Cons_BS* represent more conservative firms. Our fourth measure of conservatism, *Skewness,* captures the difference between the skewness of operating cash flows and earnings, following Beatty et al. (2008). We require at least three annual observations to compute *Skewness* and estimate this measure over a maximum of ten years before default. When bad news is recognized in earnings more quickly than good news, earnings will be negatively skewed relative to the firms' cash flows. Thus, higher levels of *Skewness* represent more conservative firms.

Our final individual measure of conservatism, *Special Items Ratio,* attempts to measure the recognition of large declines in operating performance before the bankruptcy filing. Conservative firms are more likely to record losses and asset write-downs as special items before bankruptcy. Therefore, we compute the average special items recorded in the income statement (SPI), scaled by the average total assets over the three years before default as a proxy for these recorded losses.[38] We then compute *Special Items Ratio* as the ratio of special items to cumulative firm stock returns on CRSP in the three years before default. We require negative stock returns over this period to ensure that higher values of *Special Items Ratio* represent greater conservatism.

APPENDIX B

Discussion of Control Variables in the Test of the Relation between Accounting Conservatism and Creditor Recovery Rates

Larger firms with more assets in the period of default can sell assets to improve liquidity; thus, we include *Size* equal to the natural log of the firm's total assets in the quarter of default as a control variable, and expect a positive relation between firm size and creditor recovery rates. Leverage plays an important role as a monitoring mechanism for creditors and other stakeholders of the firm (Zhang 2009). Highly levered firms also have fewer assets relative to the debt held by creditors and,

[37] We measure operating cash flows using the figures reported in the statement of cash flows, where available (OANCF). Otherwise, we measure operating cash flows as Total Funds from Operations − ΔCurrent Assets − ΔDebt in Current Liabilities − ΔCurrent Liabilities + ΔCash and Cash Equivalents. We measure total accruals as income before extraordinary items (IB) minus operating cash flows. All variables are scaled by average total assets.

[38] All results continue to hold if we compute the sum of special items recorded in the income statement scaled by the average total assets over the three years before default as a proxy for the recorded losses.

thus, have less ability to generate cash flows from assets to settle with creditors in bankruptcy. We measure *Leverage* (debt divided by total assets) in the quarter before default and expect a negative relation between firm leverage and creditor recovery rates. We also control for *ex ante* profitability and expect a positive relation between *ROA* and recovery rates. Additionally, we include the firm's market-to-book ratio (*MTB*) to control for the firm's growth opportunities and use *Z-Score* as an *ex ante* measure of default risk. We also include an indicator variable equal to 1 if the firm disclosed a missed interest payment in SEC filings before the bankruptcy filing (*Interest Miss*) to control for the firm's liquidity position.

We also consider the firm's capital structure. Zhang (2009) demonstrates that the nature and concentration of a firm's creditors have a significant impact on the recovery rates of creditors in bankruptcy. Successful resolution of financial distress through Chapter 11 requires the firm to develop a reorganization plan that specifies what each class of claimants will receive in exchange for their pre-bankruptcy claims (Hotchkiss, Thorburn, and Mooradian 2008). The bankruptcy courts require approval by at least one-half in number and two-thirds in value of the total creditors in each impaired class. Therefore, coordination among creditor classes and between creditors and the firm plays a critical role in the affirmation of the reorganization plan and bankruptcy resolution. We measure *Debt Concentration* as a proxy for coordination among bank lenders using the Herfindahl-Hirschman (HH) index of the face value of the firm's debt across different bank lenders. Following Zhang (2009), we measure *Debt Concentration* as:

$$HH_i = \frac{\sum_j D_{ij}^2}{\left(\sum_j D_{ij}\right)^2}$$

where D_{ij} is the face value of the *j*th bank loan of firm *i* at the date of default. The HH index captures the concentration of the firm's debt among bank lenders. It is equal to 1 when all of the firm's debt is maintained by a single loan, and approaches 0 as the number of lenders holding financial instruments with similar face values increases. We anticipate that better coordination among creditors increases recovery rates and, thus, we expect a positive relation between *Debt Concentration* and family recovery rates. Prior literature also indicates that bank monitoring and screening can increase creditor recovery. We measure the percentage of a firm's total debt held by banks to control for bank monitoring and screening (*Bank_Share*).

Prior literature suggests that secured creditors experience significantly higher recovery rates than other creditor classes in bankruptcy due to their ability to exert control over the bankruptcy proceedings (Capkun and Weiss 2008). Furthermore, secured creditors may have less demand for accounting conservatism, especially if the value of the assets securing their claims is significantly higher than the total value of the loan. Therefore, we include the total percentage of debt held by secured creditors (*Secure %*) at the date of default in estimating Model (1). Seniority of debt may also play a role in determining creditor recovery rates; therefore, we include the total percentage of debt held by senior creditors (*Senior %*) in the model. We also consider specific contract provisions that may affect recovery rates. Sinking fund debt provisions require borrowers to amortize a portion of the debt facility before maturity (Ho and Singer 1984). Furthermore, redeemable debt allows the borrower to redeem a certain portion of outstanding debt prior to loan maturity. These contract provisions may significantly affect creditor recovery rates in bankruptcy by altering the timing of repayment. We include two indicator variables (*Sinking Fund* and *Redeemable*) equal to 1 if the firm has a debt contract with these provisions, and 0 otherwise. We first identify these provisions using bond data available on Mergent FISD. For all remaining firms, we hand-collect the presence of these contract provisions from SEC filings using 10-K Wizard. Beatty et al. (2008) provide empirical evidence that accounting conservatism complements conservative adjustments to net

worth ratios in private debt contracts. We include an indicator variable for the presence of a net worth covenant in the firm's debt contracts to control for any effect that conservative contractual adjustments may have on our results. New lending is available to firms in bankruptcy through debtor-in-possession (DIP) financing under Section 364 of the U.S. Bankruptcy Code. Chatterjee, Dhillon, and Ramirez (2004) show that both stockholders and bondholders benefit from the presence of DIP financing in bankruptcy resolution, as indicated by the positive market reaction from both equity and debt holders at the DIP announcement date. Therefore, we control for the presence of DIP financing by hand-collecting an indicator variable equal to 1 if the firm obtains debt financing, and 0 otherwise.

Finally, Zhang (2009) indicates that factors such as improved business conditions (i.e., macroeconomic factors) lead to higher creditor recovery rates. Our tests include macroeconomic variables measured at default (period t) and measured at the loan inception (period τ) to control for this effect.[39]

APPENDIX C

Variable Definitions

Variable	Definition
All Conservatism	Average quintile rank of the *Cons_r2, CSCORE, Cons_BS, Skewness,* and *Special Items Ratio,* measures of conservatism. Refer to Appendix A for additional details.
Avg. Capex	Average capital expenditures scaled by total assets, measured over the three-year period before default. If capital expenditures are missing on Compustat, then we code *Avg. Capex* as 0.
Avg. Dividend	Average total dividends scaled by total assets, measured over the three-year period before default. If dividends are missing on Compustat, then we code *Avg. Dividend* as 0.
Avg. Leverage	Average leverage measured over the three-year period before default.
Avg. ROA	Average return on assets measured over the prior three-year period.
Bank_Share	Percentage of the firm's debt held by banks at the time of default, measured from Moody's Ultimate Recovery Database (URD).
Bankruptcy Period	Total time spent in financial distress, measured as the number of days from the date of obligor default to the date of emergence, as indicated in the Moody's URD.
Big N	Indicator variable equal to 1 if the firm has a Big N auditor (Compustat AU 1–8), and 0 otherwise.
CFO	Ratio of annual operating cash flows to total assets, averaged over the three-year period before bankruptcy filing.

(continued on next page)

[39] Zhang (2009) provides empirical evidence that creditor recovery rates are negatively associated with lagged macroeconomic control variables, measured at the date of the loan origination. We estimate lagged macroeconomic control variables for each firm at the inception date of the firm's largest loan (in dollars).

APPENDIX C (continued)

Variable	Definition
Cons_BS	Sensitivity of earnings to bad news relative to good news, following Ball and Shivakumar (2005). We regress accruals on positive and negative changes in operating cash flows, where our measure of conservatism captures the sensitivity of accruals to negative changes in operating cash flows. We measure operating cash flows using the figures reported in the statement of cash flows, where available (OANCF); otherwise, we measure operating cash flows as Total Funds from Operations − ΔCurrent Assets − ΔDebt in Current Liabilities − ΔCurrent Liabilities + ΔCash and Cash Equivalents. We measure total accruals as income before extraordinary items (IB) minus operating cash flows. All variables are scaled by average total assets. Higher values of *Cons_BS* represent more conservative firms. We estimate this firm-specific measure of conservatism over the ten-year period before default. Refer to Appendix A for additional details.
Cons_r2	Relative explanatory power of bad news in earnings versus the explanatory power of good news in earnings, following Zhang (2008) and Basu (1997): *Cons_r2* = R^2 (bad news)/R^2 (good news). Positive returns represent good news, and negative returns represent bad news. R^2 measures the R^2 from an earnings-returns regression for the good and bad news subsamples. Refer to Appendix A for additional details.
Credit Rating	Imputed credit rating, estimated from the fitted value of a regression of Compustat S&P Credit Rating on return on assets, leverage, size, indicator variables for loss firms, firms with subordinated debt, and dividends paid, and year and industry fixed effects. Measure scaled from 1 to 23, where higher values indicate lower credit ratings.
CSCORE	Cross-sectional measure of conservatism, following Khan and Watts (2009). For each firm in our sample, we form a control group based on the bottom decile of CRSP annual stock returns ending on each sample firm's bankruptcy filing date. We then estimate the Khan and Watts (2009) modified Basu (1997) regression, regressing earnings on the interaction of positive and negative annual stock returns with the natural log of the market value of equity, market-to-book ratio, and total debt scaled by the market value of equity. Refer to Appendix A for additional details.
Debt Concentration	Herfindahl-Hirschman index of the firm's debt concentration across bank lenders at the time of default from the Moody's URD.
DIP Loan	Indicator variable equal to 1 if the firm obtains debtor-in-possession financing in bankruptcy resolution, and 0 otherwise. We hand-collect data regarding DIP financing from SEC filings.
Distressed Exchange	Indicator variable equal to 1 if the firm completed a distressed exchange and 0 otherwise, based on the classification in the Moody's URD.
Emerge	Indicator variable equal to 1 if the firm successfully emerged from bankruptcy, and 0 otherwise, from the Moody's URD.
Emerge GDP Growth	Trailing four-quarter U.S. GDP growth rate, measured at the date of emergence.
Emerge S&P 500 Ret	Trailing 12-month returns of the S&P 500 index, measured at the date of emergence.
Emerge Spread	Bond yield spread between Moody's BAA-rated and AAA-rated corporate bonds, measured at the date of emergence.
GDP Growth	Trailing four-quarter U.S. GDP growth rate, measured at the date of default.

(continued on next page)

APPENDIX C (continued)

Variable	Definition
Int Coverage	Indicator variable equal to 1 if the firm's average ratio of annual operating cash flows to total interest expense over the three-year period before default is greater than 1, and 0 otherwise.
Interest Miss	Indicator variable equal to 1 if the firm discloses a missed interest payment in SEC filings prior to bankruptcy, and 0 otherwise. We hand-collect data regarding missed interest rates from SEC filings.
Lag GDP Growth	Trailing four-quarter U.S. GDP growth rate, measured at the inception of the firm's largest (in dollars) debt contract.
Lag S&P 500 Ret	Trailing 12-month returns of the S&P 500 index, measured at the inception of the firm's largest (in dollars) debt contract.
Lag Spread	Bond yield spread between Moody's BAA-rated and AAA-rated corporate bonds, measured at the inception of the firm's largest (in dollars) debt contract.
Leverage	Total debt divided by total assets in the quarter before default, from data available on Compustat.
Litigation	Indicator variable equal to 1 if the firm is in a high-litigation risk industry, and 0 otherwise. SIC codes 2833–2836, 3570–3577, 3600–3674, 5200–5961, 7370–7374 are deemed high-litigation risk industries, following Beatty et al. (2008).
MTB	Ratio of the market value of equity to the book value of equity in the fiscal year before default.
Net Worth Covenant	Indicator variable equal to 1 if the firm has a debt contract with a net worth ratio covenant, and 0 otherwise. We first identify net worth ratio usage based on financial covenant usage available in Dealscan and Mergent FISD. For all remaining firms, we hand-collect whether the firm discloses a debt contract with a net worth covenant in SEC filings.
Recovery Rate	Firm-wide recovery rate, calculated as the percentage of total value distributed to creditors in bankruptcy resolution relative to the total debt outstanding at the default date, available from the Moody's URD.
Redeemable	Indicator variable equal to 1 if the firm has redeemable debt, and 0 otherwise. We first identify redeemable debt based on the classification in Mergent FISD when possible. For all remaining firms, we hand-collect whether the firm discloses the existence of redeemable debt in SEC filings.
ROA	Income before extraordinary items divided by total assets, measured one year before default from data available on Compustat.
S&P 500 Ret	Trailing 12-month returns of the S&P 500 index, measured at the date of default.
Secured Debt %	Percentage of firm debt at default classified as secured in the Moody's URD.
Senior Debt %	Percentage of firm debt at default classified as senior in the Moody's URD.
Sinking Fund	Indicator variable equal to 1 if the firm has sinking fund debt, and 0 otherwise. We first identify sinking fund provisions based on the classification in Mergent FISD when possible. For all remaining firms, we hand-collect whether the firm discloses the existence of sinking fund debt in SEC filings.
Size	Natural log of total assets, measured in the quarter of default from data available on Compustat.
Skewness	The difference between the skewness of annual operating cash flows and earnings, following Beatty et al. (2008). We require at least three observations to compute *Skewness,* and estimate this measure over a maximum of ten years before default.

(continued on next page)

APPENDIX C (continued)

Variable	Definition
Spec_rate	Trailing 12-month Moody's speculative grade corporate default rates, measured at the date of default.
Special Items Ratio	Ratio of the average special items recorded in the income statement (Compustat SPI), scaled by the average total assets over the three-year period before default, to cumulative stock returns over the three-year period before default. We require negative total stock returns over the three-year period before default, to ensure that higher values of *Special Items Ratio* indicate more conservatism.
Spread	Bond yield spread between Moody's BAA-rated and AAA-rated corporate bonds, measured at the date of default.
STD_3	Percentage of the firm's debt with outstanding maturity less than three years (Compustat DLC, DXD2, and DXD3).
Violate	Indicator variable equal to 1 if the firm discloses a violation of a covenant in SEC filings in the year prior to bankruptcy, and 0 otherwise.
Z-Score	Z-Score $= 1.2 * X_1 + 1.4 * X_2 + 3.3 * X_3 + 0.6 * X_4 + 0.99 * X_5$, where $X_1 =$ current assets minus current liabilities scaled by total assets; $X_2 =$ retained earnings scaled by total assets; $X_3 =$ earnings before interest and taxes scaled by total assets; $X_4 =$ market value of equity scaled by total debt; and $X_5 =$ sales scaled by total assets. Higher values of *Z-Score* indicate lower bankruptcy risk.

This appendix provides variable definitions for all variables used in all tests.

APPENDIX D

Heckman (1979) First-Stage Estimation

	Bankrupt	
	Coeff.	**p-value**
All Conservatism	0.126**	(0.020)
Size	−0.241***	(0.000)
Leverage	1.998***	(0.000)
ROA	0.601**	(0.013)
MTB	−0.000	(0.908)
Net Worth Covenant	−0.011	(0.903)
Redeemable	−0.909***	(0.000)
Sinking Fund	0.048	(0.707)
Bank_Share	−0.027	(0.850)
Secure Debt %	−0.489***	(0.000)
Senior Debt %	0.869***	(0.000)
STD_3	0.681***	(0.000)
Litigation	−0.255**	(0.022)
Big N	0.312*	(0.053)
Credit Rating	−0.203***	(0.000)
S&P 500 Ret	0.689*	(0.093)
Spread	−1.645***	(0.000)
Spec Rate	23.12***	(0.000)
GDP Growth	−16.36***	(0.000)
Constant	3.828***	(0.000)
Number Obs.	2,054	
Pseudo R^2	0.489	

***, **, * Indicate statistical significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

This appendix reports the results of estimating the first stage of the Heckman (1979) two-stage procedure. We employ the Heckman (1979) two-stage estimation to control for potential selection bias if firms entering the URD differ systematically from other financially distressed firms. As a control group, we first select firms with negative annual return on assets in the intersection of Compustat, CRSP, Mergent FISD, and Capital IQ over the period from 1994–2011. Using this sample, we estimate a probit model where the dependent variable, *Bankrupt,* is an indicator variable coded as 1 if a firm is included in the URD dataset, and 0 otherwise.

All variables defined in Appendix C.