Journal of Financial Economics 89 (2008) 44–61

Contents lists available at ScienceDirect

Journal of Financial Economics

journal homepage: www.elsevier.com/locate/jfec

Corporate misreporting and bank loan contracting ☆

John R. Graham [a,b,*], Si Li [c], Jiaping Qiu [d]

[a] Fuqua School of Business, Duke University, Durham, NC 27708, USA
[b] NBER, MA, USA
[c] School of Business and Economics, Wilfrid Laurier University, Waterloo, ON, Canada, N2L 3C5
[d] DeGroote School of Business, McMaster University, Hamilton, ON, Canada, L8S 4M4

ARTICLE INFO

Article history:
Received 22 December 2006
Received in revised form
16 July 2007
Accepted 24 August 2007
Available online 15 May 2008

JEL classifications:
G21
G32
K22
K42

Keywords:
Corporate misreporting
Financial restatement
Corporate fraud
Bank loans
Cost of debt

ABSTRACT

This paper is the first to study the effect of financial restatement on bank loan contracting. Compared with loans initiated before restatement, loans initiated after restatement have significantly higher spreads, shorter maturities, higher likelihood of being secured, and more covenant restrictions. The increase in loan spread is significantly larger for fraudulent restating firms than other restating firms. We also find that after restatement, the number of lenders per loan declines and firms pay higher upfront and annual fees. These results are consistent with banks using tighter loan contract terms to overcome risk and information problems arising from financial restatements.

1. Introduction

In recent years, a number of high-profile financial restatements by companies such as Worldcom and Xerox have reduced previously reported earnings by billions of dollars.[1] According to the United States General Accounting Office (2002), the number of restatements grew by 145% from 1997 through 2002. From January 1997 through June 2002, about 10% of all listed companies restated one or more times. The size and visibility of restating companies also increased: the average market value of a restating company increased from $500 million in 1997 to $2 billion in 2002. Financial restatements are potentially very costly to the firms involved. They may shake investor confidence in the credibility of corporate disclosure, depress demand for a firm's securities, and constrain corporate opportunities thereby leading to a substantial loss in market value.

☆ We thank an anonymous referee, editor Bill Schwert, Arie Melnik, Avri Ravid, Michael Roberts, and participants in seminars at McMaster University, Wilfrid Laurier University, and the 2006 Northern Finance Association conference for helpful comments. Li acknowledges financial support from the Clarica Financial Services Research Center at Wilfrid Laurier University and Qiu acknowledges financial support from the Social Sciences and Humanities Research Council of Canada.

* Corresponding author at: Fuqua School of Business, Duke University, Durham, NC 27708, USA.
E-mail address: john.graham@duke.edu (J.R. Graham).

[1] As stated by the U.S. General Accounting Office, a financial restatement occurs when a company, either voluntarily or prompted by auditors or regulators, revises public financial information that has been previously reported.

0304-405X/$ - see front matter © 2008 Elsevier B.V. All rights reserved.
doi:10.1016/j.jfineco.2007.08.005

With the increasing importance of restatements, their effect on the welfare of shareholders has attracted a great deal of attention. Palmrose, Richardson, and Scholz (2004) document a −9.2% abnormal stock return over a 2-day event window around restatement announcements. Anderson and Yohn (2002) find a −3.5% cumulative abnormal return during a 7-day window. Hribar and Jenkins (2004) estimate that, depending on the model used, the relative percentage increase in the cost of equity capital averages between 10.8% and 19.5% in the month immediately following a restatement. These studies indicate that restatements lead to significant loss in shareholder value and an increase in the cost of equity.

The extant literature focuses on the consequences of restatements from the perspective of equity holders. To date there is no evidence on the reactions of debt holders. This paper attempts to fill this gap by analyzing the impact of financial restatements on debt contracting. We focus on a firm's bank loan contracting for two primary reasons. First, bank loans are an important source of corporate financing. The flow of funds data from the Federal Reserve System indicate that over the past decade, there have been $780 billion in net debt security issuances and only $2 billion for equities. Among the debt issues, bank loans play a significant role (about 54% of total debt since 1980). Given the significance of private bank debt as well as the growing number of financial restatements, it is important to understand how the structure and pricing of private debt change after a firm discloses financial misreporting.

The second reason that we study bank loan contracts is that they provide multi-dimensional information about debt, and the reactions of banks to restatements can be observed explicitly through various features of loan contracts. These contract terms allow us to investigate the effects of restatements on the direct (interest rate) and indirect (loan maturity, collateral requirements, and covenant restrictions) costs of debt. Moreover, loan contracts allow us to uniquely analyze the impact of restatements on the structure of bank loans, such as the number of lenders in a syndicate loan and loan transaction fees.

To analyze the impact of financial restatements on bank debt contracting, we begin by examining the effect on the loan spread. We measure loan spread as the amount the borrower pays in basis points over LIBOR (London Interbank Offered Rate) or LIBOR equivalent. After refiling financial statements, the loan spread increases by approximately one-half. Depending on the model specification, the magnitude of the increase is 65–72 basis points relative to a pre-restatement average spread of 141 basis points over LIBOR, indicating that the increase in the loan spread is economically significant.[2]

Corporate misreporting varies in severity. Because fraud-related misreporting is more egregious than error-related misreporting, we expect that the market will punish fraud more severely in terms of a larger increase in loan spread. We find that fraud-related restatements increase spreads nearly half-again more, relative to restatements not related to fraud. To determine whether the source of the restatement is important, we examine whether lenders respond differently to restatements motivated by various initiators such as auditors, the SEC, the company itself, or others. We do not find evidence that the loan spread increase varies significantly across these groups. The results indicate that in loan contracting, the content of restatements is more important than the identity of the prompter.

By examining nonprice terms of the contracts, we also study whether financial restatements have effects beyond increasing the price of bank debt. We find that loans contracted after restatement announcements have significantly shorter maturity, higher likelihood of being secured, and more covenant restrictions. The tighter nonprice contract terms potentially lead to additional costs borne by restating firms, such as incurring higher transaction costs that result from more frequent refinancing, giving up profitable investment opportunities to comply with more restrictive debt covenants, etc. Therefore, the economic effect of restatements on the effective cost of debt is likely even higher than that implied by the loan spread increase alone.

In addition to altering contract terms, restatements can also affect how lenders structure loans. We find evidence that on average, each loan has fewer lenders after restatement. This is consistent with more concentrated lending arrangements (i.e., fewer lenders) being formed to enhance monitoring in environment of increased risk and information problems after a financial restatement. We also find that the upfront and annual fees charged by lenders are higher for restating firms, presumably to compensate for additional monitoring activities.

This paper is related to both the financial misreporting and loan contracting literatures. First, the growing literature on the consequences of financial misreporting focuses on how restatement reduces market value and increases the cost of equity (Anderson and Yohn, 2002; Hribar and Jenkins, 2004; Palmrose, Richardson, and Scholz, 2004), and how misreporting distorts employment and investment in the economy (Kedia and Philippon, 2006). Our paper provides unique evidence on how restatement affects bank debt contract terms. Combining our result of a 50% increase in the loan spread after restatement with the previously documented increased cost of equity implies that the effect of restatement on total cost of capital could be dramatic. Further accounting for the indirect costs of restatement, such as stricter nonprice contract terms, suggests that restatement is quite costly to borrowing firms.

[2] The magnitude of the loan spread increase is similar to that identified in other settings. For example, Benmelech, Garmaise, and Moskowitz (2005) find that decreasing asset liquidation value translates into a 58 basis point increase in loan spread. Berger and Udell (1995) find that a firm with a 1-year banking relationship pays a spread 48 basis points higher than does a firm that has an 11-year relationship. Our finding that the spread increases by about one-half translates into about a one-tenth increase in the overall cost of debt, which is in line with Hribar and Jenkins' (2004) estimate of the effect of restatements on the cost of equity.

Second, our analysis is also related to the literature on bank loan contracting, which examines how loan contracts reflect risk and information asymmetry (see Section 2 for a detailed discussion on the related banking literature). Previous contracting research has not investigated how loan contracts are affected by the changes in credit risk and information asymmetry that follow a restatement, so we add to the literature in this dimension. A restatement implies that the information previously known to the lending bank is inaccurate; therefore, prior beliefs about loan risk need to be reevaluated. A restatement also creates uncertainty about the credibility of financial statements and increases the firm's perceived informational asymmetry from the bank's perspective. To deal with these issues, banks can attempt to enhance the efficiency of monitoring by using tighter contract terms and a more efficient lending structure. In this paper, we explore empirically how banks use price and nonprice terms as well as the lender structure of loan contracts to address these risk and information problems.

Third, we examine multiple dimensions (instead of a single dimension) of the loan contract, and this allows us to investigate creditors' reactions to corporate restatements more comprehensively. According to Melnik and Plaut (1986), bank loan contracts are a package of *n*-contract terms and these contract terms cannot be split and traded separately. The contract terms include not only the price term (the interest rate) but also nonprice terms such as maturity, collateral requirements, covenants, etc. By examining the multi-faceted features of loan contracts, we show that restatement affects not only the price but also the nonprice terms and lender structure of loan contracts. Only a few papers examine the impact of various factors on the multidimensional features of loan contracts and none examine the impact of corporate restatements. These papers investigate how the country-level creditor protection environment (Bae and Goyal, 2006; Qian and Strahan, 2007), asset liquidation value (Benmelech, Garmaise, and Moskowitz, 2005), abnormal accounting accruals (Bharath, Sunder, and Sunder, 2008), shareholder rights (Chava, Livdan, and Purnanandam, 2007), and firm risk characteristics (Strahan, 1999) impact loan contract terms.

To summarize, our paper makes three contributions. First, our paper is the first to provide evidence on how restatement affects the cost of raising bank debt, one of the primary financing sources to corporations. Second, our paper contributes to the loan contracting literature by highlighting how financial restatements act as a mechanism by which risk and information asymmetry can affect spreads, maturity, collateral, covenants, and other aspects of financial contracting. Third, we focus on various aspects of loan contracts that capture their multidimensional character, while most previous studies focus on a single dimension (e.g., interest rate).

The rest of the paper proceeds as follows. Section 2 discusses the relation between restatements and loan contracting, as well as the related literature. Section 3 describes the data and summary statistics. Results, implications, and robustness tests are given in Section 4. Section 5 concludes.

2. Financial restatement, bank loan contracting, and related literature

Financial restatement can affect a lender's evaluation of a company through revisions in beliefs about the firm's expected future cash flows (mean or wealth effect) or the uncertainty about the firm's financial information (variance or information effect). Regarding the mean effect, a restatement changes historic financial numbers, and thus changes forecasts that are based on these numbers.[3] A majority of restatement cases reduce earnings, revealing that companies are worse than they previously appeared.[4] In addition, some restatements are associated with significant legal liabilities, further worsening future prospects. A restatement may also harm a company's reputation, which has a real effect on firms' cash flows. This reputation effect refers to the decrease in present value of the firm's cash flows as investors, customers, and suppliers change the terms of trade on which they do business with the firm (Karpoff, Lee, and Martin, 2007). The decline in future expected earnings for restating companies has been documented in the literature, which finds a significant downward revision in mean values of analyst earnings forecasts following restatements (Palmrose, Richardson, and Scholz, 2004). The poorer prospects imply an increase in firm default risk and such an increase in risk is reflected in stricter loan contract terms.

Regarding the variance effect, misreporting creates uncertainty about the credibility of financial statements and signals low quality of disclosed company information. Although restatement might in some circumstance reduce uncertainty about one particular accounting item, the overall uncertainty of company financial information increases because restatement causes investors to question other aspects of the firm's operations and reported performance. As a result, the perceived information asymmetry between borrowers and lenders increases after restatement. The literature provides evidence of this effect. For example, Palmrose, Richardson, and Scholz (2004) document a significant increase in analyst earnings forecast dispersion after restatement announcements. Anderson and Yohn (2002) find an increase in bid ask spreads surrounding restatement announcements related to revenue recognition problems. The increased information asymmetry requires lenders to monitor the restating firms more intensely. The increase in monitoring costs is passed along to borrowers in the form of possibly higher interest rates and more stringent contract terms.

[3] This is what Karpoff, Lee, and Martin (2007) refer to as the readjustment effect, which reflects the market adjusting to a more accurate representation of the firm's financial situation. This is the adjustment to the value the firm would have obtained had it not misreported its financial numbers.

[4] In their sample, Kinney and McDaniel (1989) find that there are twice as many announcements about earnings overstatements as there are about earnings understatements. In our sample, overstatements outnumber understatements nine to one.

In short, the potential channels through which restatement affects loan contracting include both wealth and information effects. We attempt to disentangle the wealth effect from the information effect (in Table 5) but acknowledge that this part of the analysis is suggestive rather than conclusive. Therefore, for the most part, we focus on the overall effect of restatement on loan contracting.

The traditional banking literature (e.g., Freixas and Rochet, 1997) suggests that credit risk is the major lending risk faced by banks and is one of the primary determinants of loan pricing. Greater lending risk leads to higher loan interest rates. In addition, the theoretical findings in Barry and Brown (1984), Easley, Hvidkjaer, and O'Hara (2002), and Easley and O'Hara (2004) suggest that the systematic risk of securities is affected by the amount of available information, and limited information is a source of nondiversifiable risk that should be priced in securities. As a result, this literature argues that information disclosure lowers information risk and reduces the cost of capital. From a different angle, Diamond and Verrecchia (1991) show that information transparency can reduce a firm's cost of capital because a firm with less information asymmetry attracts increased demand from investors and thus increases the liquidity of its securities. The empirical literature documents that information opacity of borrowing firms increases loan spreads. This literature investigates the impact of such factors as duration of bank relationships (Petersen and Rajan, 1994; Berger and Udell, 1995), auditor assurance (Blackwell, Noland, and Winters, 1998; Pittman and Fortin, 2004), and analysts' evaluations of voluntary disclosure quality (Mazumdar and Sengupta, 2005) on loan spread. In short, the findings in this literature are consistent with our conclusion that restating firms, having larger credit risk and more severe information disclosure problems, face higher loan spreads.

Diamond's (1991) theory indicates that debt maturity is a nonmonotonic function of risk ratings. Low and high risk firms use short-term debt (low risk firms are able to roll over their debt and high risk firms may be refused long-term debt because of a high default probability) and intermediate risk firms use long-term debt (these firms avoid short-term debt to minimize refinancing risk). Stohs and Mauer (1996) and Scherr and Hulburt (2001) find results consistent with this theory.[5] Restating firms are on average riskier than non-restating firms,[6] and thus we expect our results to follow Diamond's (1991) implications for intermediate to high risk firms: after restatement, the firms are perceived to be very risky and are limited primarily to shorter-term debt. In addition, Barclay and Smith (1995), Ortiz-Molina and Penas (2008), and Rajan and Winton (1995) suggest that by forcing more frequent information disclosure and renegotiation of contract terms, shorter maturities may be useful in addressing information problems. This is because banks can periodically evaluate a firm's ability to pay off debt and maintain a stronger bargaining position through the short-term debt renewal processes. Our results that restating firms use shorter-maturity loans are consistent with Barclay and Smith (1995), Ortiz-Molina and Penas (2008), Rajan and Winton (1995), and the intermediate to high risk range of Stohs and Mauer (1996) and Scherr and Hulburt (2001).[7]

Previous research finds that riskier borrowers use more collateral (Berger and Udell, 1990; Jimenez, Salas, and Saurina, 2006). Rajan and Winton (1995) show that the presence of collateral enhances efficient monitoring. These implications are consistent with our finding that firms that have misstated financials are more likely to pledge collateral.

Smith and Warner's (1979) Costly Contracting Hypothesis (CCH) states that, when including covenants in debt contracts, firms trade off benefits of reducing agency costs of debt (which are higher when firms are closer to financial distress) with costs of reduced flexibility. Bradley and Roberts (2005) argue that an important implication of CCH is a negative relation between the financial health of a firm and the presence and intensity of covenants in debt contracts and they document this empirically. Additionally, Rajan and Winton (1995) suggest that covenants enhance banks' incentives to monitor the borrower. Hence, this literature suggests that covenants will be used more intensively in the loan contracts involving firms that are relatively distressed and in need of monitoring, such as restating firms. Our findings support this argument.

The loan syndicate literature indicates that firms with a high probability of financial distress will borrow from fewer lenders (Bolton and Scharfstein, 1996; Lee and Mullineaux, 2004). This is because a syndicate structure with fewer lenders facilitates renegotiation and collective decision-making, and thus enhances the prospects of successful loan restructuring in the event of financial distress.[8] In addition, the literature suggests that loans to borrowers with information problems involve fewer lenders (Sufi, 2007). Dennis and Mullineaux (2000) show that banks could decline to provide loans to borrowers whose information is opaque. Also, when there is limited information about a borrower, fewer lenders help reduce free riding in information gathering and monitoring. Consistent with this literature, we find that firms that have restated will borrow from syndicates comprised of fewer lenders. In addition, our results are consistent with the increased cost of monitoring activities being passed along to borrowers through increased fees.

[5] Guedes and Opler (1996) find that low risk firms borrow short-term and long-term debt while high risk firms borrow at the intermediate term, a result that appears to conflict with Diamond (1991).

[6] Burns and Kedia (2006) show that restating firms have significantly higher leverage and price-earnings ratios than nonrestating firms.

[7] The studies on debt maturity also include Berger, Espinosa-Vega, Frame, and Miller (2005) and Flannery (1986).

[8] The literature also suggests that the syndication structure can diversify banks' loan portfolios by spreading the credit risk among the participating banks. Therefore, more lenders help diversify the credit risk of a loan. However, in the case of restating firms, banks may refuse to provide loans because such borrowers are perhaps very distressed and have severe information problems. As a result, for restating firms, the risk diversification effect may be dominated by other effects.

3. Data

3.1. Sample selection

We use corporate misreporting data from the financial restatement database collected by the U.S. General Accounting Office (GAO). This database includes 919 restatements announced by around 800 public companies from January 1, 1997 to June 30, 2002. These restatements involve accounting irregularities that result in material misstatements of previously filed financial results. These events include material errors and fraud.

The bank loan data come from Dealscan, a Loan Pricing Corporation (LPC) database. This database contains detailed loan information for U.S. and foreign commercial loans made to corporations, starting in 1986. The data are primarily gathered from SEC filings. The rest of the data are from direct research by LPC through contacts with borrowers, lenders, and the credit industry at large. The basic unit of our empirical analysis is a loan, also referred to as a facility or tranche in Dealscan. Loans are grouped into deals, so a deal may have one or more loans. While each loan has only one borrower, loans can have multiple lenders due to syndication. In the case of syndication, a group of banks and/or other financial institutions (e.g., insurance companies) make a loan jointly to a borrower.

We use the following procedures to form the sample. First, for companies that restate their financial information more than once, we keep only the first restatement announcement. This is because the main purpose of this study is to compare the cost of debt before restatement with that after restatement. If we were to keep the second restatement announcement for a firm, the pre-announcement window of the second restatement could overlap with the post-announcement window of the first restatement and this overlap might confound the comparison.[9] Sixty-five companies restated twice and 11 companies restated three times in the original restatement database. We are left with 832 restatements by 832 firms after removing the second and third restatements. We then merge the restatement sample with the Dealscan and Compustat databases. Firms are removed if they have no loan information in Dealscan or have missing Compustat information, resulting in a sample of 437 firms. Finally, to permit fair comparison of the debt contract before and after restatement, we remove firms that only have pre-restatement loans or post-restatement loans. Including such firms in the analysis yields essentially the same results. Our final sample includes 237 restatement firms with 2,451 loans, of which 1,568 loans are initiated before the announcements of restatements and 883 are initiated after the announcements. These loans span the period 1989 through 2004.

We examine whether the final sample is representative of the original restatement sample. First, we compare the original sample (919 restatements) and the final sample (237) in terms of restatement announcement year, reason for restatement, restatement initiator, and whether fraud occurred. The distributions from these two samples are similar. We also compare the 832 restatements (that are left after removing the second and third restatements) with the final sample and again get similar distributions. Second, we compare 237 firms in the final sample with 437 firms, 200 of which have only pre-restatement loans or only post-restatement loans. Both samples have similar distributions by restatement announcement year, reason for restatement, prompter, fraud occurrence, and industry. These two samples also have similar firm characteristics such as market-to-book, asset tangibility, cash flow volatility, etc., and similar loan characteristics such as loan maturity, covenants, etc. Further, regression analyses using the 437 firms do not change our results. Therefore, we conclude that our final sample is not systematically different from the original restatement sample. The analysis of sample representativeness is available upon request.

3.2. Sample description and univariate comparisons

Table 1 contains information on the restating firms in our final sample. Panel A shows that 237 firms restated

Table 1
Restatement firms
The table presents the number and percentage of restatement firms in the final sample by reason for restatement (Panel A), prompter of restatement (Panel B), and whether restatement is related to fraud (Panel C)

	Number	Frequency (%)
Panel A: Reason for restatement		
Revenue recognition	94	39.7
Restructuring, assets or inventory	38	16.0
Cost of sales or operating expense	31	13.1
Other	19	8.0
Acquisitions and mergers	17	7.2
Related-party transactions	8	3.4
Securities related	8	3.4
In-process R&D	7	3.0
Reclassification	7	3.0
Unspecified	6	2.5
Loan-loss	2	0.8
Total	237	100
Panel B: Prompter of restatement		
Company	105	44.3
Uncertain	84	35.4
SEC	32	23.5
Auditor	11	4.6
Other (NASDAQ, FASB, IRS, OCC, CDFI/ FDIC, or any other external party)	5	2.1
Total	237	100
Panel C: Fraud vs. nonfraud		
Restatement related to fraud		
No	218	92.0
Yes	19	8.0
Total	237	100

[9] For companies that have multiple restatements, in unreported analysis we compare loans initiated between the first and the second restatement with those initiated after the second restatement and do not find a significant difference in contract terms. This implies that there is no significant incremental effect due to a second restatement.

Table 2
Summary statistics of loan contract terms for restatement firms

The table presents summary statistics of loan contract terms for sample firms. Number of observations (*N*), mean, and standard deviation (STD) of debt contract terms are reported for loans in the full sample, loans initiated before restatement, and loans initiated after restatement. The means of the differences between the variables before restatement and after restatement are also reported. The details of definitions and measurements of all the variables are reported in the Appendix. Significance at the 10%, 5%, and 1% level is indicated by *, **, and ***, respectively.

	Full sample			Before restatement		After restatement		Difference
	N	Mean	STD	Mean	STD	Mean	STD	Mean
Loan spread (basis points)	1,969	173	145	141	114	223	171	82***
Loan maturity (months)	2,189	41	30	45	33	35	24	−10***
Number of covenants	1,050	7.3	3.3	6.9	3.3	7.5	3.3	0.6***
Loan size ($million)	2,401	360	597	335	569	404	640	69***
Performance pricing dummy	2,401	0.34	0.47	0.32	0.46	0.40	0.49	0.08***
Security dummy	1,396	0.67	0.45	0.63	0.48	0.72	0.45	0.09***
Number of lenders	2,398	8.7	10.1	8.5	10.7	8.9	9.3	0.4
Upfront fee (basis points)	526	53	56	52	59	55	49	3
Annual fee (basis points)	704	16	12	15	11	18	14	3***

their financials for a variety of reasons. Issues involving improper revenue recognition (misreported or nonreported revenue) account for about 40% of the restatement cases. Restatements related to improper accounting treatment of restructuring activity, investments, timing of asset write-downs, inventory valuation, etc. account for 16% of the cases. About 13% of firms restate due to improperly recognizing costs or expenses. Panel B shows that a restatement can be prompted by different parties. About 44% of restatements are prompted by the restating companies themselves, 24% by the SEC, and 5% by external auditors. Panel C of Table 1 shows that about 8% of restatements occur in firms that allegedly committed fraud. We define corporate fraud as cases subject to fraud enforcement actions by the SEC. In these fraud cases, the SEC took action against companies for violating the SEC's antifraud rule 10b-5 because the firm made misstatements of material fact related to its financial condition.[10] Restatements may occur before or after SEC fraud enforcement because a restatement could trigger the SEC fraud investigation, or the SEC enforcement action may result in a restatement.

Table 2 presents summary statistics of debt contract terms for restating firms, and the univariate comparisons of these contract terms between pre-restatement and post-restatement loans. The price of the bank borrowing, loan spread, is measured as the Dealscan data item all-in spread drawn (*AIS drawn*), which is the amount the borrower pays in basis points over LIBOR or LIBOR equivalent for each dollar drawn.[11] This measure adds to the borrowing spread any annual fees paid to the bank group. The mean loan spread increases from 141 basis points over LIBOR before restatement to 223 basis points after restatement. The average loan maturity drops from 45 months before restatement to 35 months after restatement. We also compare the number of covenants before and after and find that each loan averages 6.9 before restatement and increases to 7.5 after restatement. After restatement, firms also have larger loan size,[12] their loans are more likely to have loan pricing tied to firm performance and are more likely to be secured, and they pay higher annual fees. All these changes are significant in the mean. There is no significant change in the number of lenders in a loan after restatement. We show in the regression analysis below that after controlling for other determinants of loan contracts, the number of lenders declines significantly after restatement.

4. Multivariate analysis

4.1. Effect of restatement on the cost of bank debt

In this section we use regression analysis to examine the effect of restatement on the cost of bank debt. The main empirical model is as follows:

$$\text{Log}(\textit{loan spread}) = f(\textit{Post} - \textit{restatement indicator}, \textit{Firm characteristics}, \textit{Loan characteristics}, \textit{Industry effects}, \textit{Macroeconomic factors}). \quad (1)$$

In the regression, each observation represents a single loan. The dependent variable is the natural logarithm of the cost of debt, *loan spread*. To capture the effect of

[10] Rule 10b-5 "Employment of Manipulative and Deceptive Devices" of the Securities Exchange Act of 1934 proscribes, among other things, "the intent to deceive, manipulate, or defraud with misstatements of material fact made in connection to financial condition, solvency and profitability." (SEC Administration Proceeding File ♯3-9588).

[11] AIS rates are quoted over LIBOR. For loans not based on LIBOR, LPC converts the spread into LIBOR terms by adding or subtracting a differential which is adjusted periodically.

[12] There are two reasons that the univariate analysis identifies an increase in loan size after restatement. First, due to time trends, firm size increases and larger firms borrow via larger loans. Second, post-restatement loans are more dominated by loans to larger firms than are pre-restatement loans in our sample. After restatement, the number of loans to smaller firms (i.e., firms with total assets less than the median assets in the final sample) drops by about 50%, while the number of loans to larger firms drops by only about 20%. Controlling for firm size, we find that loan size scaled by total assets decreases significantly after restatement.

Table 3
Effect of restatement on the cost of bank debt

The table presents the regression results on the effect of restatement on the cost of bank debt. The dependent variable is Log(*loan spread*). The dummy variable *post-restatement* is equal to one if the loan is initiated after the announcement of restatement and zero otherwise. The details of definitions and measurements of all the other variables are reported in the Appendix. Heteroskedasticity-robust *t*-statistics are in parentheses. Significance at the 10%, 5%, and 1% level is indicated by *, **, and ***, respectively.

	(1)	(2)	(3)	(4)	(5)
Post-restatement	0.497***	0.506***	0.511***	0.469***	0.462***
	(11.97)	(13.87)	(13.87)	(10.99)	(11.74)
Firm characteristics					
Log(assets)		−0.244***	−0.195***	−0.194***	−0.175***
		(−25.34)	(−10.05)	(−10.12)	(−9.03)
Market-to-book		−0.117***	−0.108***	−0.108***	−0.079***
		(−5.24)	(−4.82)	(−4.84)	(−3.81)
Leverage		1.129***	1.082***	1.049***	0.848***
		(11.52)	(10.61)	(10.30)	(8.78)
Profitability		−0.812***	−0.924***	−0.877***	−0.985***
		(−3.21)	(−3.41)	(−3.27)	(−4.11)
Tangibility		−0.482***	−0.490***	−0.479***	−0.475***
		(−5.25)	(−5.26)	(−5.17)	(−5.06)
Cash flow volatility		0.012***	0.012***	0.011***	0.009***
		(4.08)	(3.99)	(3.81)	(3.74)
Z-score		−0.104***	−0.095***	−0.093***	−0.053***
		(−7.32)	(−6.54)	(−6.38)	(−3.44)
Loan characteristics					
Log(loan maturity)			0.124***	0.138***	−0.039
			(4.73)	(5.25)	(−1.20)
Log(loan size)			−0.060***	−0.060***	−0.019
			(−2.59)	(−2.60)	(−0.08)
Performance pricing			0.008	0.0002	−0.015
			(0.24)	(0.00)	(−0.45)
Macroeconomic factors					
Credit spread				0.485***	0.561***
				(4.82)	(6.23)
Term spread				−0.040	−0.051
				(−1.14)	(−1.49)
$I(1996 \leqslant \text{year} \leqslant 2000)$				0.086	0.081
				(1.49)	(1.45)
Control for					
Loan type	No	No	No	No	Yes
Loan purpose	No	No	No	No	Yes
Industry effects	No	No	No	No	Yes
N	1,969	1,492	1,426	1,426	1,426
Adjusted R^2	0.068	0.503	0.522	0.531	0.589

restatement, we define a dummy variable, *post-restatement*, which is equal to one if the loan is activated after restatement announcement and zero otherwise.[13] We control for firm characteristics, loan characteristics, industry effects, and macroeconomic factors that may influence the cost of debt. Data definitions and measurement details for all the variables are reported in the Appendix.

The regression results are reported in Table 3. Column 1 analyzes the cost of debt with *post-restatement* dummy as the only independent variable. The estimated coefficient equals 0.497 and is significant at the 1% level, indicating that after firms announce restatements, loan spreads increase by approximately one-half.[14] Therefore, the effect of restatement on the cost of debt is economically significant.

The regression in column 2 of Table 3 includes firm characteristics that could influence the cost of bank loans.[15] These variables include Log(*assets*), the logarithm

[13] We use activation date to separate pre-restatement loans from post-restatement loans. Ideally, we would define post-restatement loans as those that have a contracting date after the restatement announcement date. However, Dealscan does not provide the information on the date a loan is contracted. Instead, the date a contract becomes active, which should be no earlier than the loan contracting date, is available. Therefore, the coefficient on the *post-restatement* dummy might be understated because we use the activation date.

[14] Because the dependent variable is expressed in logarithmic form, the coefficient estimates represent percentage change effects of the independent variables on the dependent variable.

[15] The financial restatement may of course result in altered financial numbers post-restatement. For the purpose of our study, we use company reported nonrestated financial information in the main regressions. (For each financial statement data item, Compustat contains a company's initially reported number and a restated number. We use the former.) The implications from our analysis do not change if we instead use restated financial information when analyzing the

of a firm's total assets, to measure firm size. Larger firms have easier access to external financing. They also are hypothesized to have less information asymmetry and are associated with smaller monitoring costs. Therefore, larger firms are likely to borrow from banks on better terms. We use *Market-to-book*, the ratio of the market value of assets (market value of equity plus book value of debt) to the book value of assets, to proxy for a firm's growth opportunities. All else equal, a firm recognized as having better growth opportunities can have a lower borrowing cost. Growth firms may be vulnerable to financial distress or subject to information asymmetry. However, given that we control for other characteristics like tangibility of book assets, market-to-book may affect the loan spread negatively if market-to-book represents the additional value over book assets that debt holders can access in the event of default.

We also control for *Leverage*, the ratio of long-term debt to total assets. Firms with higher leverage ratios, all else equal, have higher default risk and thus we expect them to face a higher cost of bank borrowing.[16] We also include *Profitability*, the ratio of earnings before interest, taxes, depreciation, and amortization (EBITDA) to total assets, because profitable firms generally have low default risk and thus can borrow at a lower cost. *Tangibility* is defined as the ratio of tangible assets to total assets. Because lenders may recover tangible assets should the firm default, we expect firms with more tangible assets to have lower borrowing costs. *Cash flow volatility*, measured as the standard deviation of quarterly cash flows from operations over the 16 fiscal quarters prior to the loan initiation year, scaled by total debt, is used to proxy for a firm's earnings risk and is expected to be positively correlated with the cost of debt.[17] Finally, Altman's (1968) *Z*-score is included to further control for default risk. A higher *Z*-score indicates better financial health and thus lower default risk. All of the above variables are measured as of the year prior to the loan initiation date.

The results in column 2 show that after controlling for firm characteristics, the effect of restatement on the loan spread continues to be significant. The results also indicate that small, volatile, highly levered, distressed firms with few tangible assets and few growth options are associated with a higher cost of debt.

We further control for loan characteristics that might be correlated with the price of debt and report the results in column 3 of Table 3. We control for Log(*maturity*), the natural logarithm of loan maturity in months, because the lender requires a liquidity premium for longer-term debt and this liquidity premium translates into a higher loan spread. We also include Log(*loan size*), the natural logarithm of the amount of a loan, which may capture economies of scale in bank lending and thus is expected to be inversely related to the loan rate. Alternatively, this same negative relation might occur if riskier borrowers are granted smaller loans with higher interest rates. The variable *Performance pricing* is a dummy variable equal to one if a loan contract has the performance pricing feature.[18] This is to control for the possibility that lenders price loans differently if they contain performance pricing clauses. The regression results show that further controlling for loan characteristics has little effect on the magnitude and significance of the impact of restatement on the loan spread. The results also show that larger loans and loans with shorter maturity have smaller spreads, while performance pricing is not significantly related to the loan spread.

Macroeconomic conditions can affect debt pricing. In column 4 of Table 3, we use three different variables to control for macroeconomic cycles: *Credit spread* is the difference between the yields of BAA and AAA corporate bonds, *Term spread* is the difference between the yields of 10-year Treasury bonds and 2-year Treasury bonds, and $I(1996 \leqslant year \leqslant 2000)$ is an indicator variable equaling one if the loan is initiated between 1996 and 2000. The literature suggests that credit spread and term spread are good proxies of macroeconomic conditions and help explain stock and bond returns (Chen, Roll, and Ross, 1986; Fama and French, 1993). Specifically, credit spreads tend to widen in recessions and shrink in expansions (Collin-Dufresne, Goldstein, and Martin, 2001). This is because investors require more compensation for increased default risk in bad economic times. High (low) term spreads are often used as an indicator of good (bad) economic prospects. In the regressions, we measure credit spread and term spread 1 month before the time the loan becomes active. The results show that credit spread is positively related to loan spread, suggesting that marketwide default risk is reflected in the individual loan rate.

Finally, in column 5 of Table 3, we control for loan type, loan purpose, and industry effects. Loans are of different types, such as 364-day loans, term loans, and revolving loans. Loans can also be declared for different uses such as corporate purposes, debt repayment, takeovers, working capital, etc. Because loans with different types and

(*footnote continued*)
post-restatement loans. We use reported nonrestated financials when analyzing pre-restatement loans because when loans are contracted before restatement, banks rely on reported information when setting up the loan contracts. It is possible that banks also have private information about the firm before a restatement is announced. In such a case, the complete effect of restatement is attenuated due to the leakage of information to lenders, and the regression coefficient on the *post-restatement* dummy may measure a partial effect and be understated.

[16] Alternatively, lower ex ante costs of debt could enable a firm to take on more debt and thus the cost of debt and leverage could be negatively correlated. To deal with this potential endogeneity, in the regressions leverage is measured 1 year prior to the loan initiation year and is therefore pre-determined.

[17] Our definition of *cash flow volatility* follows Bharath, Sunder, and Sunder (2008). This measure represents earnings risk relative to the total debt commitment of the firm. In unreported analysis, we also use cash flow volatility scaled by total assets, and the results are qualitatively unchanged.

[18] Performance pricing is a relatively new provision in bank debt contracts. A traditional bank loan is priced using a fixed spread over a floating benchmark such as LIBOR or prime. Performance pricing explicitly varies the loan spread with the borrower's credit rating or financial performance measured with financial ratios like debt-to-EBITDA, leverage, interest coverage, etc.

purposes are associated with different risks, they may be priced differently. In addition, we employ one-digit SIC dummies to control for the potential differences in risks and debt pricing structures across industries. After adding all the control variables, the results indicate that the effect of restatement is still economically and statistically significant with a coefficient that indicates a 46.2% increase in the loan spread after restatement. The average loan spread of sample firms is 141 basis points before restatement. Therefore, a 46.2% increase implies that, other things being equal, loan spreads increase by approximately 65 basis points after restatement.[19] Since the average loan size for the sample firms after restatement is $404 million, the post-restatement increase in the loan spread implies an average increase of $2.6 million per loan in annual post-restatement interest payments.[20,21]

In sum, the results in this section are consistent with restatements signalling worse and/or more uncertain future prospects. The resulting increases in the credit risk and monitoring costs cause lenders to require a higher price of debt. It is worth highlighting that the restatement dummy proxies for the increase in risk above and beyond any risk or information effects captured by the other right-hand-side variables. For example, profitability, *Z*-score, and market-to-book could partially capture the effect of firm performance on credit risk (i.e., wealth effect), and cash flow volatility could partially capture information uncertainty. Finding a significant coefficient on the dummy variable indicates that the other right-hand-side variables do not fully capture the increase in risk due to restatement. Moreover, the restatement dummy remains significant even when we include forward-looking variables like analyst earnings forecast and forecast dispersion (see Table 4) as explanatory variables. Assuming that our linear model is adequate, and that our specification includes all the relevant publicly available information, this implies that the post-restatement dummy coefficient captures the effect of private information that banks use to reassess the risk of the firm after restatement.

Table 4
Effect of restatement and analyst forecast variables on the cost of bank debt

The table presents the regression results on the effect of restatement on the cost of bank debt, controlling analyst consensus earnings forecast and forecast dispersion. *Analyst earnings forecast* (*analyst forecast dispersion*) is the mean (standard deviation) of all analyst forecasts extant the month prior to the loan activation date. The dependent variable is Log(*loan spread*). The dummy variable *post-restatement* is equal to one if the loan is initiated after the announcement of restatement and zero otherwise. The details of definitions and measurements of all the other variables are reported in the Appendix. Heteroskedasticity-robust *t*-statistics are in parentheses. Significance at the 10%, 5%, and 1% level is indicated by *, **, and ***, respectively.

	(1)	(2)	(3)	(4)
Post-restatement	0.453***	0.529***	0.459***	0.491***
	(9.89)	(12.76)	(10.21)	(10.88)
Analyst earnings forecast	−0.031***	−0.013**	−0.014***	−0.013***
	(−5.04)	(−2.40)	(−2.92)	(−2.69)
Analyst forecast dispersion	0.308***	0.080	0.173***	0.148**
	(5.74)	(1.13)	(4.12)	(2.33)
Firm characteristics				
Log(assets)		−0.273***		−0.205***
		(−23.44)		(−10.85)
Market-to-book		−0.098***		−0.079***
		(−4.42)		(−3.74)
Leverage		1.445***		1.224***
		(12.98)		(11.15)
Profitability		−1.017***		−0.935***
		(−3.67)		(−3.50)
Tangibility		−0.630***		−0.613***
		(−6.38)		(−5.93)
Cash flow volatility		0.011***		0.007*
		(2.62)		(1.91)
Z-score		−0.130***		−0.056***
		(−9.55)		(−3.69)
Loan characteristics				
Log(loan maturity)			−0.060*	−0.036
			(−1.81)	(−1.05)
Log(loan size)			−0.176***	−0.039*
			(−12.98)	(−1.80)
Performance pricing			0.049	0.014
			(1.29)	(0.36)
Macroeconomic factors				
Credit spread			0.524***	0.578***
			(5.14)	(5.86)
Term spread			0.021	−0.040
			(0.62)	(−1.18)
$I(1996 \leqslant \text{year} \leqslant 2000)$			0.183***	0.117**
			(3.41)	(2.11)
Control for				
Loan type	No	No	Yes	Yes
Loan purpose	No	No	Yes	Yes
Industry effects	No	No	Yes	Yes
N	1,571	1,245	1,495	1,184
Adjusted R^2	0.083	0.488	0.465	0.605

[19] The average 1-year LIBOR rate is 4.94% during our 1989–2004 sample period (historic LIBOR rates from the British Bankers' Association's Interest Rate Settlements). In our sample, the average total loan rate before restatement is therefore about 6.35% (1.41%+4.94%). A 50% increase in the loan spread implies that the average spread increases by 71 (141% × 50%) basis points after restatement, and the average total loan rate increases to 7.06% (6.35%+0.71%). The resulting increase in the total loan rate is 11.18% ((7.06%−6.35%)/6.35%), which is in line with the 10.8% to 19.5% relative percentage increase in the cost of equity capital found in Hribar and Jenkins (2004).

[20] About 50–60% of loans in Dealscan are revolving loans, in which the borrower may draw on funds at any time up to an established maximum limit and does not have to exhaust the credit limit. In these revolving loans, the drawn loan spread (i.e., the spread on the amount drawn) is about 197 basis points, and is much higher than the undrawn loan spread (i.e., the spread on the amount undrawn), which is about 24 basis points. An upper bound estimate of the increase in the annual interest payments post-restatement, based on the full loan size and the drawn spread, is $2.6 million per loan. Under the alternative assumption that firms on average draw down 50% of the credit limit in revolving loans, a more conservative estimate of the increase in the annual interest payments per post-restatement loan would be $1.3 million, which is still economically important.

[21] To investigate the possibility that the impact of restatement could be short-lived and fade over time, we conduct a regression to separately estimate the effects of restatement on loans that were issued in each post-restatement year. The results indicate that there are no significant differences in the increase in loan spreads for post-restatement loans initiated in any year *t*+1, *t*+2, *t*+3, *t*+4, or *t*+5. In separate analysis, when we restrict the sample to years between *t*−2 to *t*+2 and perform a regression using the main loan spread specification, we find some evidence of a loan rate run-up effect prior to the restatement, which we conjecture is a result of banks using their private information prior to the public restatement announcement.

Besides providing the evidence that loan spreads are higher after restatement, we examine why borrowers are viewed as being riskier after restatement. In unreported analysis, we find that after restatement there is an increase in leverage and a decline in profitability, *Z*-score, net income, return on assets, earnings per share, sales scaled by assets, operating cash flows scaled by assets, market-to-book, and analyst consensus forecasted earnings. An unreported regression shows that changes in net income, market value, profitability, *Z*-score, and consensus earnings are negatively associated with changes in loan spreads, while changes in leverage, cash flow volatility, and analyst forecast dispersion are positively related to changes in loan spreads. These results suggest that changes in firm characteristics and analyst forecasts caused by restatement reflect changes in firm risk and such changes in risk are reflected in changed loan spreads.

4.1.1. *Wealth effect versus information effect of restatement*

As discussed above, there are two ways that restatement may affect the cost of borrowing. The first is a wealth effect, in which a restatement affects estimates of the expected future cash flows of the firm. The second is an information effect, in which a restatement affects the degree of certainty that lenders have in their estimates of future cash flows. Although it is difficult to disentangle the two effects, in this section we make an attempt to isolate the extent to which loan spreads change due to reduced earnings versus increased uncertainty.

Using I/B/E/S data, we identify firms that have increased analyst forecast dispersion after restatement. These firms have increased information uncertainty due to restatement, while the other firms do not. Both groups have mean (wealth) effects. This allows us to estimate the extent to which loan spreads change due to the information effect, above and beyond the wealth effect.

We estimate the following regression:

$$\text{Log}(\textit{loan spread}) = \alpha + \beta\, \textit{Post-restatement} + \gamma\, \textit{Post-restatement} \times \textit{DispIncrease} + \delta X + \varepsilon, \quad (2)$$

where the dummy variable, *DispIncrease*, is equal to one if analyst forecast dispersion increases after restatement, and zero otherwise. The term *X* represents control variables. Thus, to the extent that analyst forecast dispersion reflects information uncertainty, γ is expected to capture the information effect and β is expected to capture the wealth effect, above any wealth and/or information effects controlled by *X*. As in Diether, Malloy, and Scherbina (2002), we define dispersion as the standard deviation of analysts' current-fiscal-year EPS forecasts, scaled by the absolute value of the mean forecast. For each restating firm, we include only the dispersion of forecasts that are made within one year surrounding restatement announcements and representing the same-fiscal-year EPS forecasts. We alternatively define dispersion as the standard deviation scaled by fiscal year-end share price preceding restatement announcement; the results from this alternative definition are essentially unaffected.

In column 1 of Table 5, we include only the post-restatement dummy and the interaction term and do not

Table 5
Wealth effect versus information effect of restatement

The table presents the regression results on the wealth effect and information effect of restatement on the cost of bank debt. The dependent variable is Log(*loan spread*). The dummy variable *post-restatement* is equal to one if the loan is contracted after the announcement of restatement and zero otherwise. *Analyst earnings forecast* (*analyst forecast dispersion*) is the mean (standard deviation) of all analyst forecasts extant the month prior to the loan activation date. The *DispIncrease* dummy is equal to one if for a restating company, the analyst forecast dispersion after restatement is greater than that before restatement, and zero otherwise. The *DispIncreaseSig* dummy is equal to one if for a restating company, the analyst forecast dispersion after restatement is significantly greater than that before restatement, and zero otherwise. The details of definitions and measurements of all the other variables are reported in the Appendix. Heteroskedasticity-robust *t*-statistics are in parentheses. Significance at the 10%, 5%, and 1% level is indicated by *, **, and ***, respectively.

	(1)	(2)	(3)	(4)
Post-restatement	0.453***	0.408***	0.470***	0.407***
	(9.85)	(8.32)	(10.67)	(8.54)
Analyst earnings forecast		−0.012**		−0.012**
		(−2.56)		(−2.45)
Analyst forecast dispersion		0.149**		0.136**
		(2.35)		(2.16)
Post-restatement × DispIncrease	0.165**	0.260***		
	(2.23)	(4.14)		
Post-restatement × DispIncreaseSig			0.173*	0.367***
			(1.94)	(5.00)
Firm characteristics				
Log(assets)		−0.207***		−0.207***
		(−11.01)		(−11.03)
Market-to-book		−0.076***		−0.082***
		(−3.64)		(−3.95)
Leverage		1.266***		1.245***
		(11.57)		(11.45)
Profitability		−0.865***		−0.852***
		(−3.26)		(−3.22)
Tangibility		−0.592***		−0.596***
		(−5.76)		(−5.82)
Cash flow volatility		0.007**		0.007*
		(1.99)		(1.90)
Z-score		−0.052***		−0.057***
		(−3.43)		(−3.80)
Loan characteristics				
Log(loan maturity)		−0.040		−0.030
		(−1.20)		(−0.90)
Log(loan size)		−0.033		−0.038*
		(−1.52)		(−1.78)
Performance pricing		−0.003		0.007
		(−0.07)		(0.18)
Macroeconomic factors				
Credit spread		0.581***		0.596***
		(5.94)		(6.11)
Term spread		−0.030		−0.024
		(−0.89)		(−0.71)
I(1996 ⩽ year ⩽ 2000)		0.120**		0.124**
		(2.20)		(2.27)
Control for				
Loan type	No	Yes	No	Yes
Loan purpose	No	Yes	No	Yes
Industry effects	No	Yes	No	Yes
N	1,969	1,184	1,969	1,184
Adjusted R^2	0.069	0.611	0.068	0.613

control for any other variables. The results show that loan spreads increase by 45.3% (i.e., $\beta = 0.453$) after restatement for companies without increased forecast dispersion. Companies that experience increased dispersion have an additional 16.5% increase in loan spreads (i.e., $\gamma = 0.165$), for a total loan spread increase of 61.8% after restatement. In other words, for firms that exhibit increased information uncertainty, the information effect accounts for about 1/4th (16.5/61.8) of the total effect of restatement, and the wealth effect accounts for the remaining 3/4th.

In column 2 of Table 5, we control for various factors in *X*. In this case, the wealth effect contributes to a loan spread increase of about 40.8% after restatement, and the information effect contributes an additional 26.0%. As a result, for firms with increased information uncertainty, after controlling for observable factors, the residual information effect accounts for about 40% (26.0/66.8) and the wealth effect accounts for 60% of the total effect of restatement. We find similar results if we define *DispIncrease* to equal one only if the increase in dispersion is statistically significant (reported in columns 3 and 4 of Table 5). In column 4, the wealth and information effects each contribute about one-half of the overall increase in loan spreads due to financial restatement. The results on disentangling the two effects should be interpreted with caution. Banks could have different perceptions from analysts, and therefore analysts' forecast dispersion is not a perfect proxy for information uncertainty.

4.1.2. The effect of fraud on the cost of bank debt

In this section, we examine whether fraud-related restatements lead to a larger increase in the cost of debt than do other restatements. Compared with nonfraudulent firms, fraud firms have more severe risk and information problems and thus are expected to experience a greater increase in loan rates after restatement. We include an interaction term *post-restatement* × *fraud*, where *fraud* is a dummy variable equal to one if the restating company is found to have committed fraud. The results reported in Table 6 indicate that fraud increases the restatement effect on the cost of debt. The coefficient on *post-restatement* is 0.426 and the coefficient on *post-restatement* × *fraud* is 0.263, and both coefficients are significant. Thus, nonfraudulent restatements lead to a 42.6% increase in the loan spread, while fraudulent restatements have a much greater effect: a 68.9% (42.6%+26.3%) increase in the spread.

Table 6
Effect of fraudulent restatement on the cost of bank debt

The table presents the regression results on the effect of fraud-related restatement on the cost of bank debt. The dependent variable is Log(*loan spread*). The dummy variable *post-restatement* is equal to one if the loan is contracted after the announcement of restatement and zero otherwise. The *fraud* dummy is equal to one if the restating company is identified as having committed fraud and zero otherwise. The definitions of the other variables are reported in the Appendix. Heteroskedasticity-robust *t*-statistics are in parentheses. Significance at the 10%, 5%, and 1% level is indicated by *, **, and ***, respectively.

Post-restatement	0.426***
	(10.42)
Post-restatement × Fraud	0.263***
	(3.55)
Firm characteristics	
Log(assets)	−0.180***
	(−9.32)
Market-to-book	−0.082***
	(−3.99)
Leverage	0.801***
	(8.40)
Profitability	−0.875***
	(−3.60)
Tangibility	−0.461***
	(−4.92)
Cash flow volatility	0.009***
	(3.57)
Z-score	−0.057***
	(−3.72)
Loan characteristics	
Log(loan maturity)	−0.037
	(−1.17)
Log(loan size)	−0.017
	(−0.72)
Performance pricing	−0.014
	(−0.41)
Macroeconomic factors	
Credit spread	0.568***
	(6.32)
Term spread	−0.042
	(−1.49)
$I(1996 \leqslant \text{year} \leqslant 2000)$	0.084
	(1.49)
Control for	
Loan type	Yes
Loan purpose	Yes
Industry effects	Yes
N	1,426
Adjusted R^2	0.615

4.1.3. The identity of the restatement initiator and the cost of bank debt

In this section, we study whether the identity of the party that prompts the restatement differentially affects the cost of debt. Restatement initiated by outside parties such as the external auditor and the SEC may signal that a company's internal monitoring failed not only to prevent, but also to correct, a material misstatement. Conversely, detection and revelation by the company provides some indication of relatively stronger internal governance. This may mitigate the adverse signal about the company's future prospects and the uncertainty generated by the restatement. Therefore, we suspect that the effect of restatement prompted by external monitors might be a stronger negative reaction than the effect of restatement prompted by the company.

To examine the potential difference in the effects of prompter identity on loan spread, we first create four dummy variables, *Company, Auditor, SEC,* and *Uncertain*. These dummies are respectively equal to one if a restatement is initiated by the company itself, the external auditor, the SEC, or any unknown party. These dummies are interacted with the *Post-restatement* variable. Each of these interaction terms captures the change in the loan spread after a restatement attributed to a specific prompter, compared to the loan spread before the restatement.

The results (available upon request) show that all interaction terms between *Post-restatement* and prompter dummies are significantly positive, implying that the cost of debt goes up after restatement no matter who initiates the refiling. The point estimates of the coefficients of the cross-terms are highest for cases prompted by external auditors (0.612), followed by the SEC (0.535), and then the company (0.457). However, none of the estimated coefficients differs statistically from the others.

4.2. Effect of restatement on other loan contract terms

If restatements convey information about a company's future prospects and the quality of information disclosure, lenders might incorporate this information into debt contracts by altering not only the loan rate but also other contract terms, such as maturity, collateral, and covenants. In this section, we focus on how restatement impacts the three major nonprice debt contract features: loan maturity, collateral, and total number of covenants.

4.2.1. Debt maturity

Column 1 of Table 7 reports the results on the impact of restatement on debt maturity, controlling for other variables that could correlate with maturity. The coefficient on the post-restatement dummy indicates that after restatement, firms use loans that have a maturity that is 17.1% (7.7 months) shorter than before restatement,

Table 7
Effect of restatement on nonspread loan contract terms

The table presents the regression results on the effects of restatement on nonprice loan contract terms. (1) is an OLS regression with log(debt maturity) as the dependent variable, (2) is a Probit regression with debt security as dependent variable, and (3)–(5) are Poisson regressions with covenant intensity, general covenant intensity, and financial covenant intensity, respectively, as dependent variables. The dummy variable *post-restatement* is equal to one if the loan is contracted after the announcement of restatement and zero otherwise. *Log(maturity)* is the natural logarithm of debt maturity measured in months. *Security* is a dummy variable that is equal to one if the loan is secured by collateral and zero otherwise. *Number of covenants* is the total number of covenants included in the debt agreement. *Number of general (financial) covenants* is the total number of general (financial) covenants in the debt agreement. The details of definitions and measurements of all the other variables are reported in the Appendix. Heteroskedasticity-robust *t*-statistics for OLS regression and heteroskedasticity-robust *z*-statistics for Probit and Poisson regressions are reported in parentheses. Significance at the 10%, 5%, and 1% level is indicated by *, **, and ***, respectively.

	(1) Log(maturity)	(2) Security	(3) Number of covenants	(4) Number of general covenants	(5) Number of financial covenants
Post-restatement	−0.171***	0.316**	0.066*	0.217***	−0.033
	(−4.31)	(2.26)	(1.95)	(5.31)	(−0.95)
Firm characteristics					
Log(assets)	−0.016	−0.167***	−0.001	−0.026	−0.010
	(−0.91)	(−2.81)	(−0.09)	(−1.43)	(−0.59)
Market-to-book	−0.008	0.043	−0.045***	−0.084***	−0.037**
	(−0.46)	(0.69)	(−2.75)	(−3.54)	(−2.34)
Leverage	0.257***	1.532***	0.306***	0.441***	0.047
	(2.75)	(4.79)	(4.25)	(5.07)	(0.63)
Profitability	0.459*	−1.841**	0.431**	0.419*	0.467**
	(1.93)	(−2.26)	(2.08)	(1.67)	(2.17)
Tangibility	0.265***	−0.763**	−0.183**	−0.281***	−0.040
	(2.89)	(−2.07)	(−2.26)	(−2.66)	(−0.49)
Cash flow volatility	−0.001	0.009	0.002	0.001	0.002
	(−0.34)	(0.82)	(0.53)	(0.22)	(0.60)
Z-score	0.025*	−0.336***	−0.035***	−0.019	−0.034***
	(1.71)	(−4.52)	(−3.05)	(−1.48)	(−2.88)
Loan characteristics					
Log(loan maturity)	–	0.125	0.086***	0.070**	0.058**
		(1.20)	(3.10)	(2.19)	(2.27)
Log(loan size)	0.105***	−0.298***	−0.018	0.053**	−0.062***
	(5.08)	(−3.82)	(−1.01)	(2.47)	(−3.16)
Performance pricing	0.128***	−0.126	0.054*	0.074*	0.104***
	(4.02)	(−1.04)	(1.74)	(1.89)	(3.24)
Macroeconomic factors					
Credit spread	−0.136	0.353	0.314***	0.377***	0.340***
	(−1.57)	(1.17)	(4.10)	(3.94)	(4.32)
Term spread	0.038	0.064	−0.026	0.060	−0.080***
	(1.33)	(0.57)	(−0.83)	(1.61)	(−2.63)
$I(1996 \leqslant \text{year} \leqslant 2000)$	−0.025	−0.332*	0.016	0.255***	−0.080*
	(−0.51)	(−1.85)	(0.33)	(4.43)	(−1.66)
Control for					
Loan type	Yes	Yes	Yes	Yes	Yes
Loan purpose	Yes	Yes	Yes	Yes	Yes
Industry effects	Yes	Yes	Yes	Yes	Yes
N	1,635	986	809	966	863
R^2	0.439	0.443	0.113	0.134	0.042

implying that shortened maturity helps address risk and information problems arising from restatement.

The regression results also document the following relations between the control variables and debt maturity. First, leverage is positively related to loan maturity, which is consistent with the empirical evidence presented in Barclay and Smith (1995), Johnson (2003), and Stohs and Mauer (1996). In addition, a profitable firm with more tangible assets and better financial health has access to loans with longer maturity. Further, loan size is positively related to loan maturity. Loans without performance pricing have shorter maturity, possibly because banks use short maturity to adjust loan terms instead of linking loan pricing with firm performance dynamically. This suggests that performance pricing could substitute for shorter debt maturity in corporate monitoring.

4.2.2. Loan securitization

We study the impact of restatement on the likelihood of a loan being secured because collateralization is an important feature of financial contracts. We estimate a probit model where the dependent variable is one if the loan is secured and zero otherwise and report the result in column 2 of Table 7. The restatement dummy coefficient of 0.316 translates into an 8.6% marginal effect in the Probit model. This indicates that the probability of a loan being secured increases by 8.6% after restatement, holding other variables at their means. This is consistent with the view that firms with restated financials are more likely to be required to provide collateral against their loans.

The effects of control variables on the likelihood of a loan being secured are intuitive. Large, profitable, low leverage firms with more tangible assets and better financial health likely have lower default risk and thus are associated with a lower probability of the loan being secured. Loan size is negatively correlated with the likelihood of a loan being secured likely because loan size is positively related to credit quality, while credit quality is negatively related to collateral. Finally, in good years, marketwide default risk declines and the likelihood of a loan being secured decreases.

4.2.3. Covenant intensity

Covenants play an important role in private debt contracts. To estimate the impact of restatement on the covenant intensity of a loan, we follow Bradley and Roberts (2005) and track the total number of covenants included in the loan agreement, in the context of a Poisson regression. The goodness-of-fit chi-squared statistic of the Poisson regression has a p-value of 0.11 and the null hypothesis that the dependent variable is Poisson distributed cannot be rejected, which indicates that Poisson specification is suitable. The results, reported in column 3 of Table 7, indicate that lenders impose more restrictions on loans to restating firms. The incidence ratio from the Poisson regression shows that on average, the number of covenants increases from an average of 6.9 in a pre-restatement loan to 7.6 in a post-restatement loan, after controlling for other characteristics.

To further investigate the type of covenants added to loan contracts after restatement, we separately study financial covenants and general covenants. Financial covenants place limits, which must be maintained while the debt is outstanding, on accounting variables and ratios. General covenants are restrictions on prepayment, dividends, and voting rights. Prepayment covenants usually specify that a loan must be repaid from a specific source such as equity issuance, excess cash flow, excess asset sales, excess debt issuance, or insurance proceeds related to collateral. The dividend covenant limits the payment of dividends. The covenants on voting rights mandate the percentage of lenders required to approve the changes of the items in the loan agreement, such as term changes and collateral release.

Columns 4 and 5 in Table 7 show that the new covenants added after restatement are general instead of financial covenants. Financial covenants are often violated after restatement. Therefore, tightening financial covenant ratios or increasing the number of financial covenants might be less efficient in solving the monitoring problems, relative to increasing the general restrictions on prepayment of loans, dividend payout, etc.

The relations between other variables and covenant intensity are interesting. The loan contracts of growth firms have fewer covenant restrictions, consistent with the finding of Nash, Netter, and Poulsen (2003) that firms with more growth opportunities seek to preserve flexibility by including fewer restrictive covenants in their financial contracts. Highly levered, low asset tangibility, distressed firms have more covenants, which is consistent with these firms having higher agency costs of debt. Profitable firms are associated with more covenants, as are performance pricing loans. The latter might occur because a high credit risk firm is more likely to have debt priced conditional on credit improvements, and lenders impose more covenant restrictions on high credit risk firms. Loan maturity and covenant intensity are positively related, possibly because more covenants are required to control potential agency problems arising from longer-term debt. Finally, covenant intensity is positively related to credit spread, consistent with firm default risk increasing with marketwide default risk, and more covenants being written in loans to firms with higher default risk.

4.3. Effect of restatement on lender structure

Restating firms have increased credit risk and heightened informational issues, and these problems may affect the structure of lenders in a loan. In this section we investigate the effects of restatement on two aspects of the lender structure: the total number of lenders in a loan, and the transaction fees charged by lenders.

4.3.1. Number of lenders

Column 1 of Table 8 shows that the number of lenders declines significantly in loans activated after restatement. The incidence ratio from the Poisson regression suggests that after controlling for other variables, the number of lenders in a post-restatement loan is about three-fourths that in a pre-restatement loan: 6.5 post-restatement versus 8.5 pre-restatement.

Table 8
Effect of restatement on lender structure

The table presents the regression results on the effects of restatement on loan syndicate structure. The dependent variable in Poisson regression (1) and OLS regression (2) and (3) is the number of lenders, Log(upfront fee), and Log(annual fee), respectively. The dummy variable *post-restatement* is equal to one if the loan is contracted after the announcement of restatement and zero otherwise. *Number of lenders* is the total number of lenders in one single loan. *Upfront fee* is a fee paid by the borrower upon loan closing. *Annual fee* is the annual charge against the entire loan commitment amount, whether used or unused. The details of definitions and measurements of all the other variables are reported in the Appendix. Heteroskedasticity-robust *t*-statistics for OLS regression and heteroskedasticity-robust *z*-statistics for Poisson regression are reported in parentheses. Significance at the 10%, 5%, and 1% level is indicated by *, **, and ***, respectively.

	(1) Number of lenders	(2) Log(upfront fee)	(3) Log(annual fee)
Post-restatement	−0.301***	0.223**	0.267***
	(−5.91)	(1.98)	(4.11)
Firm characteristics			
Log(assets)	0.139***	−0.048	−0.083**
	(5.99)	(−0.87)	(−2.43)
Market-to-book	−0.019	−0.131**	−0.090***
	(−0.69)	(−2.33)	(−3.63)
Leverage	0.676***	0.671**	0.432**
	(5.25)	(2.27)	(2.26)
Profitability	0.889***	0.528	−0.672*
	(2.65)	(0.77)	(−1.79)
Tangibility	−0.125	−0.388	−0.502***
	(−1.05)	(−1.45)	(−3.55)
Cash flow volatility	0.002	0.003	0.010***
	(0.55)	(0.38)	(3.72)
Z-score	0.021	−0.209***	−0.049**
	(−0.93)	(−4.65)	(−2.03)
Loan characteristics			
Log(loan maturity)	0.032	0.241***	−0.015
	(0.75)	(2.60)	(−0.26)
Log(loan size)	0.319***	−0.073	−0.095***
	(11.29)	(−1.25)	(−2.62)
Performance pricing	0.290***	0.025	0.127**
	(6.61)	(0.23)	(2.56)
Macroeconomic factors			
Credit spread	−0.035	0.631***	0.239*
	(−0.31)	(2.76)	(1.72)
Term spread	0.074**	−0.084	−0.136***
	(2.01)	(−0.96)	(−2.81)
$I(1996 \leqslant \text{year} \leqslant 2000)$	−0.164**	−0.130	−0.138*
	(−2.53)	(−0.89)	(−1.80)
Control for			
Loan type	Yes	Yes	Yes
Loan purpose	Yes	Yes	Yes
Industry effects	Yes	Yes	Yes
N	1,633	384	555
R^2	0.409	0.338	0.426

The estimated coefficients on the control variables provide ambiguous evidence on the relation between syndicate size and credit risk. On the one hand, highly levered firms have more lenders, possibly to help the lenders diversify their loan portfolios. Loan size is positively correlated with the number of lenders, probably because more lenders are needed to assume loans with larger amounts. In addition, performance pricing and the number of lenders are positively related, perhaps because high risk firms are more likely to have performance loans and at the same time require more lenders to diversify the risk. The economic boom dummy is negatively related to the number of lenders, implying that a more diffuse lender structure is used when marketwide default risk is high. Taken together, this evidence is consistent with the classic diversification motive for syndication: by opting for relatively small portions, participants limit their exposure to high default risk loans.

In contrast, we also find that firm size is positively related to the number of lenders. Larger firms typically have less severe asymmetric information problems and require less monitoring, and therefore can borrow from syndicates that involve more lenders. We also find evidence that lower profitability and lower term spreads are related to fewer lenders, possibly because of a higher default risk for such firms. The result that syndicate size decreases with credit risk is consistent with the monitoring motive for syndication: when borrowing firms are riskier, a more concentrated lender structure enhances group monitoring and increases the prospects of successful restructuring in the event of default.

4.3.2. Transaction fees

We further examine whether lenders charge higher transaction costs for borrowers that have restated financial results. The lead bank in a syndicate arranges and manages the syndicated loan, and typically also acts as the agent bank that monitors the firm, governs the terms of the loan, administers the drawdown of funds, calculates interest payments, and enforces covenants. The fee the borrower pays for this service increases with the complexity and riskiness of the loan. Fees are often tiered, with the lead arranger receiving a larger amount in consideration of its structuring and/or underwriting the loan. Co-underwriters typically receive lower fees, and the general syndicate members likely receive fees tied to their commitment.

We examine upfront fees and annual fees charged by banks. An upfront fee is a one-time fee paid to lenders at the closing of the deal. It is analogous to an original-issue discount in the bond market. This upfront payment from the borrower to the lead arranger can be shared by the lead arranger with the other syndicate members, and it varies between 25 and 175 basis points of the total loan amount. An annual fee is simply an annual charge against the entire commitment amount, whether used or unused, and is also called the facility fee. The fee information is limited in our sample and our regressions are based on 384 and 555 nonmissing observations for upfront fees and annual fees, respectively. Columns 2 and 3 of Table 8 show that after restatement, both upfront and annual fees increase, suggesting that lenders charge higher fees to compensate for the increased costs of monitoring after restatement.

The other coefficients indicate that small firms with high default risk and few growth options are required to pay higher fees, possibly due to the high cost of monitoring such firms. Longer-term debt requires a greater upfront fee, but not a greater annual fee. In addition, larger loans are associated with lower fees,

probably because fees are measured as the percentage of loan amount and larger loans have the benefit of economies of scale. Loans with performance pricing have higher annual fees perhaps because such loans tie the pricing of loans with firm credit quality and financial performance dynamically, and it is more costly to administer such loans. Finally, lower fees are associated with lower credit spreads, higher term spreads, and boom years. This is likely because firm default risk decreases in good years and monitoring costs decrease with default risk.

4.4. Robustness tests

In previous regressions, we control for various observable firm characteristics. It is possible that unobservable firm characteristics could also affect loan contract terms. Since each firm in our sample has at least two loans at different points in time (at least one pre-restatement loan and one post-restatement loan), our sample is a panel, which we now exploit to control for potential unobservable time-invariant firm-specific effects. In addition, loans borrowed by the same firm could potentially correlate with each other, and this correlation may lead to biased standard errors. To deal with these two issues, we conduct a firm fixed effect regression with standard errors adjusted for heteroskedasticity and within-firm clustering (see column 1 of Table 9). After controlling for firm fixed effects, the *post-restatement* effect on loan spread decreases to 0.370 from 0.462 (from the specification in column 5, Table 3) but it remains economically and statistically significant.

Unobservable time-series changes (such as macroeconomic or industry shocks) contemporaneous with restatements could also affect the estimated influence of restatements. To remove the effect of contemporaneous shocks, we employ a matched sample differences-in-differences methodology (see, e.g., Bertrand and Mullainathan, 1999, 2003; Heckman, Ichimura, and Todd, 1997, 1998). We first create a matched sample, which consists of firms in the same two-digit SIC industry as a given restating firm and with sales within $\pm 10\%$ of the restating firm's sales. Then we estimate the following regression using a sample that pools the restating and matched firms:

$$\begin{aligned}\text{Log}(\textit{loan spread})_{j,i,t} = {} & \alpha_t + \beta_i + \gamma X_{j,i,t} \\ & + \delta \textit{Restating firm}_i \\ & \times \textit{Post-restatement}_{i,t} + e_{j,i,t}, \end{aligned} \tag{3}$$

where $\text{Log}(\textit{loan spread})_{j,i,t}$ is the logarithm of loan spread for loan j borrowed by firm i in year t, α_t and β_i are year and firm fixed effects, $X_{j,i,t}$ represents control variables defined in Eq. (1), $\textit{Post-restatement}_{i,t}$ is a dummy variable that equals one after restatement, and $\textit{Restating firm}_i$ equals one (zero) for a restatement (matched) firm. This methodology controls for aggregate fluctuations via year dummies as well as unobservable differences between restating and matched firms via firm fixed effects. Our estimate of δ captures the restatement effect, which represents the change in the log loan spread specific to firms that have restated. The results, as reported in column 2 of Table 9, show that the impact of restatements on loan spread is statistically significant and is estimated to be 0.182. Based on this coefficient, the post-restatement increase in the loan spread implies an average increase of $1.02 million in the annual interest payments per post-restatement loan.[22]

Another potential issue is that, in the loan spread regression, one of the independent variables, loan maturity, may be endogenous because loan spread and maturity are sometimes simultaneously determined in a debt contract. To deal with this potential simultaneity, we employ a two-stage least square regression. In the first stage, we regress debt maturity on a firm's asset maturity. The predicted value of debt maturity is then used on the right-hand side of the second-stage regression.[23] The result from the two-stage regression, reported in column 3 of Table 9, shows that the *post-restatement* dummy remains statistically and economically significant after controlling for the endogeneity of loan maturity.

We also investigate whether our results could be driven by a few loans that have extremely high post-restatement loan spreads. We perform a median regression that estimates the effect of explanatory variables on the median loan spread, conditional on the values of explanatory variables. The results from the median regression in column 4 of Table 9 are similar to those from the OLS (mean) regression in column 5 of Table 3, suggesting that our results are not driven by outliers.

Finally, the basic unit of our empirical analysis is a loan. However, a loan may be part of a multiple loan deal and the loan contract terms are the outcome of deal-level negotiations. As a result, contract terms of the loans in a deal may not be independent, and treating these loans independently may affect the results and overstate statistical significance. To address this issue, for each deal, we aggregate individual loans into a deal-level

[22] Two difficulties arise with the differences-in-differences estimation. First, when some firms restate financials, banks may alter the loan contract terms of nonrestating firms that have similar size or industry to the restating firms (i.e., the contract terms of the matched firms). This could potentially weaken our results. Second, missing Dealscan data in some nonprice contract terms may lead to insufficient within-firm variation and reduce the reliability of firm fixed effect estimation. If we assume that firms on average draw down 50% of the credit limit in revolving loans, the 0.182 coefficient implies an increase in annual interest payments of $0.51 million per post-restatement loan. See footnote 20.

[23] Asset maturity meets the requirements to be an appropriate instrument for debt maturity in the loan spread regression. First, the literature shows that asset maturity is positively correlated with debt maturity. Myers (1977) argues that by matching debt maturity to asset maturity, firms ensure that the schedule of debt repayments corresponds with the decline in the value of assets in place. Stohs and Mauer (1996) and Johnson (2003) empirically show that debt maturity and asset maturity are significantly positively correlated. Graham and Harvey (2001) note that CFOs rank matching loan and asset maturity as one of the most important factors in the choice of debt maturity. Second, it can be reasonably argued that asset maturity does not affect loan spread or the residual of the loan spread regression (see, for example, Bharath, Sunder, and Sunder, 2008).

Table 9
Robustness tests

The table presents the robustness tests of the effect of restatement on the cost of bank debt. The dependent variable in all the regressions in the table is *Log*(*loan spread*). Regression (1) is the firm fixed effect regression with standard errors being adjusted for heteroskedasticity and clustering within firms. (2) is the matched sample differences-in-differences regression. (3) is the two-stage least square regression, with asset maturity as the instrument variable to control for the potential endogeneity of debt maturity. A median regression robust to outliers is reported in (4). (5) is the deal level regression, in which individual loan terms in a deal are aggregated into a deal level observation using loan amount as weights. The dummy variable post-restatement is equal to one if the loan is contracted after the announcement of restatement and zero otherwise. The definitions of the other variables are reported in the Appendix. *t*-statistics are in parentheses. Significance at the 10%, 5%, and 1% level is indicated by *, **, and ***, respectively.

	(1) Firm fixed effects with robust and clustering adjusted standard errors	(2) Matched sample differences-in-differences regression	(3) Instrument for loan maturity (two-stage least square regression)	(4) Median regression	(5) Deal level regression
Post-restatement	0.370***	0.182***	0.401***	0.460***	0.497***
	(4.34)	(5.10)	(3.53)	(7.91)	(10.14)
Firm characteristics					
Log(assets)	0.013	−0.124***	−0.178***	−0.178***	−0.233***
	(0.17)	(−5.68)	(−8.92)	(−7.35)	(−10.20)
Market-to-book	−0.020	−0.072***	−0.067**	−0.134***	−0.115***
	(−0.46)	(−4.66)	(−2.23)	(−4.70)	(−4.66)
Leverage	0.644**	0.693***	0.928***	0.871***	1.092***
	(2.47)	(7.34)	(5.11)	(6.49)	(8.45)
Profitability	−0.592	−0.398**	−0.891***	−1.051***	−1.081***
	(−1.52)	(−2.03)	(−2.94)	(−3.05)	(−3.63)
Tangibility	−0.806***	−0.268*	−0.387*	−0.529***	−0.620***
	(−2.62)	(−1.77)	(−1.92)	(−3.92)	(−5.26)
Cash flow volatility	0.005	−0.003	0.009***	0.012**	0.012***
	(1.21)	(−1.12)	(2.58)	(2.39)	(3.81)
Z-score	−0.090**	−0.076***	−0.058***	−0.058***	−0.070***
	(−2.18)	(−5.22)	(−4.52)	(−3.07)	(−3.30)
Loan characteristics					
Log(loan maturity)	−0.025	−0.056***	−0.459	−0.063	0.079**
	(−0.85)	(−3.11)	(−0.61)	(−1.47)	(2.31)
Log(loan size)	−0.047	−0.088***	−0.015	−0.018	−0.025
	(−1.30)	(−7.80)	(−0.23)	(−0.66)	(−0.83)
Performance pricing	−0.077	−0.052**	0.053	−0.041	0.052
	(−1.48)	(−2.32)	(0.41)	(−0.82)	(1.26)
Macroeconomic factors					
Credit spread	0.405***	0.263**	0.516***	0.606***	0.325***
	(3.30)	(2.08)	(4.57)	(4.77)	(2.95)
Term spread	0.021	0.038	−0.047	−0.112**	−0.010
	(0.41)	(0.97)	(−1.38)	(−2.52)	(−0.28)
$I(1996 \leqslant year \leqslant 2000)$	−0.017	N.A.	0.045	−0.035	0.022
	(0.22)		(0.52)	(−0.47)	(0.34)
Control for					
Loan type	Yes	Yes	Yes	Yes	N.A.
Loan purpose	Yes	Yes	Yes	Yes	N.A.
Industry effects	N.A.	N.A.	Yes	Yes	Yes
N	1,426	3,074	1,421	1,426	1,000
R^2	0.402	0.775	0.547	0.415	0.567

observation by computing weighted (by loan amount) average loan terms such as spread, maturity, etc. We then estimate the regressions at the deal level and find that the deal-level regression results are similar to the loan-level results. We report the deal-level regression results on loan spreads in column 5 of Table 9; they are quite similar to what we report throughout the paper. Though not shown in the table, the results are also similar for deal-level analysis of the nonspread contract terms.

In sum, the effect of restatement on the cost of debt is robust to a variety of specifications and remains economically and statistically significant.

5. Conclusion

The number and size of companies that restate financial statements has grown significantly over the last decade. Financial misreporting has severe ex post consequences on financial securities, investors, and firms, resulting in a substantial loss of market value and investor confidence and an increase in the cost of capital. The extant literature focuses on the impact of misreporting from the equity holder's perspective. In this paper, we examine misreporting from the debt holder's perspective by investigating how the contracting of bank debt changes as a result of financial restatement.

We find that compared to loans initiated before the disclosure of corporate misreporting, loans initiated after restatement have significantly higher loan spreads, shorter maturities, higher likelihood of being secured, and more covenant restrictions. We also find that loan syndicates contain fewer lenders and firms pay higher upfront and annual fees after misreporting announcements.

The increase in the cost of debt caused by restatement is an ex post cost borne by the restatement firms. The implications for ex ante social welfare, however, are more nuanced. Kedia and Rajgopal (2005) find that the ex ante costs of anticipated misreporting are negatively associated with the likelihood of misreporting. To the extent that the ex post cost of misreporting is reflected in a firm's subjective ex ante cost, the prohibitive increase in the cost of capital ex post could be effective in curbing misreporting ex ante.

In sum, the evidence provided in this paper is consistent with the following view. Restatement lowers the perception of companies' future prospects and increases the uncertainty about reported financial information. The resulting increase in risk is priced incremental to other known sources of credit risk. Our study provides unique evidence on how financial restatement influences the design of financial contracts and affects the cost and terms of debt.

Appendix

Definition of variables (See Table A1).

Table A1

Variable names	Variable definitions and corresponding Compustat data items
Firm characteristics	
Leverage	(Long-term debt+debt in current liabilities)/total assets = (data9+data34)/data6.
Log(assets)	Natural log of total assets = log(data6).
Tangibility	Net property, plant and equipment/total assets = data8/data6.
Profitability	EBITDA/total assets = data13/data6.
Market-to-book	(Market value of equity plus the book value of debt)/total assets = (data25*data199+data6-data60)/data6.
Z-score	Modified Altman's (1968) *Z*-score = (1.2 working capital+1.4 retained earnings+3.3 EBIT+0.999sales)/total assets = (1.2 data179+1.4data36+3.3data170+0.999data12)/data6. We use a modified *Z*-score, which does not include the ratio of market value of equity to book value of total debt, because a similar term, market-to-book, enters the regressions as a separate variable.
Cash flow volatility	Standard deviation of quarterly cash flows from operations (Δ quarterly data108) over the four fiscal years prior to the loan initiation year scaled by the total debt (data9+data34).
Asset maturity	Asset maturity is the book value-weighted maturity of long-term assets and current assets, where the maturity of long-term assets is computed as gross property, plant, and equipment divided by depreciation expense, and the maturity of current assets is computed as current assets divided by the cost of goods sold (see Barclay and Smith, 1995; Billett, King, and Mauer, 2007). In other words, asset maturity = [PPE /(CA+PPE)] × [PPE/Depreciation]+[CA/(CA+PPE)] × [CA/COGS] = [data7/(data4+data7)] × [data7/data14]+[data4/(data4+data7)] × [data4/data41], where PPE = gross property, plant, and equipment, CA = current assets, and COGS = cost of goods sold.
Loan characteristics	
Loan spread	Loan spread is measured as all-in spread drawn in the Dealscan database. All-in spread drawn is defined as the amount the borrower pays in basis points over LIBOR or LIBOR equivalent for each dollar drawn down. (For loans not based on LIBOR, LPC converts the spread into LIBOR terms by adding or subtracting a differential which is adjusted periodically.) This measure adds the borrowing spread of the loan over LIBOR with any annual fee paid to the bank group.
Log(loan maturity)	Natural log of the loan maturity. Maturity is measured in months.
Log(loan size)	Natural log of the loan facility amount. Loan amount is measured in millions of dollars.
Security dummy	A dummy variable that equals one if the loan facility is secured by collateral and zero otherwise.
Performance pricing dummy	A dummy variable that equals one if the loan facility uses performance pricing.
Number of lenders	Total number of lenders in a single loan.
Upfront fee	A fee paid by the borrower upon closing of a loan (measured in basis points).
Annual fee	Also called facility fee, is the annual charge against the entire loan commitment amount, whether used or unused (measured in basis points).
Loan type dummies	Dummy variable for loan types, including term loan, revolver greater than one year, revolver less than 1 year, and 364-day facility.
Loan purpose dummies	Dummy variable for loan purposes, including corporate purposes, debt repayment, working capital, takeover, etc.
Macroeconomic factors	
Credit spread	The difference between AAA corporate bond yield and BAA corporate bond yield (data source: Federal Reserve Board of Governors).
Term spread	The difference between the 10-year Treasury yield and the 2-year Treasury yield (data source: Federal Reserve Board of Governors).

References

Altman, E.I., 1968. Financial ratios, discriminant analysis and the prediction of corporate bankruptcy. Journal of Finance 23, 589–609.

Anderson, K., Yohn, T., 2002. The effect of 10-K restatements on firm value, information asymmetries, and investors' reliance on earnings. Unpublished working paper, Georgetown University.

Bae, K.H., Goyal, V., 2006. Creditor rights, contract enforcement, and costs of loan financing. Journal of Finance, forthcoming.

Barclay, M.J., Smith, C.W., 1995. The maturity structure of corporate debt. Journal of Finance 50, 609–631.

Barry, C.B., Brown, S.J., 1984. Differential information and the small firm effect. Journal of Financial Economics 13, 283–294.

Benmelech, E., Garmaise, M.J., Moskowitz, T.J., 2005. Do liquidation values affect financial contracts? Evidence from commercial loan

contracts and zoning regulation. Quarterly Journal of Economics 120, 1121–1154.
Berger, A.N., Udell, G.F., 1990. Collateral, loan quality, and bank risk. Journal of Monetary Economics 25, 21–42.
Berger, A.N., Udell, G.F., 1995. Relationship lending and lines of credit in small firm finance. Journal of Business 68, 351–381.
Berger, A.N., Espinosa-Vega, M.A., Frame, W.S., Miller, N.H., 2005. Debt maturity, risk, and asymmetric information. Journal of Finance 60, 2895–2923.
Bertrand, M., Mullainathan, S., 1999. Is there discretion in wage setting? A test using takeover legislation. Rand Journal of Economics 30, 535–554.
Bertrand, M., Mullainathan, S., 2003. Enjoying the quiet life? Corporate governance and managerial preferences. Journal of Political Economy 111, 1043–1075.
Bharath, S.T., Sunder, J., Sunder, S.V., 2008. Accounting quality and debt contracting. Accounting Review 83, 1–28.
Billett, M.T., King, T.D., Mauer, D.C., 2007. Growth opportunities and the choice of leverage, debt maturity, and covenants. Journal of Finance 62, 697–730.
Blackwell, D.W., Noland, T.R., Winters, D.B., 1998. The value of auditor assurance: evidence from loan pricing. Journal of Accounting Research 36, 57–70.
Bolton, P., Scharfstein, D.S., 1996. Optimal debt structure and the number of creditors. Journal of Political Economy 104, 1–25.
Bradley, M., Roberts, M.R., 2005. The structure and pricing of corporate debt covenants. Unpublished working paper, Duke University and University of Pennsylvania.
Burns, N., Kedia, S., 2006. The impact of performance-based compensation on misreporting. Journal of Financial Economics 79, 35–67.
Chava, S., Livdan, D., Purnanandam, A., 2007. Do shareholder rights affect the cost of bank loans? Review of Financial Studies, forthcoming.
Chen, N., Roll, R., Ross, S.A., 1986. Economic forces and the stock market. Journal of Business 59, 383–403.
Collin-Dufresne, P., Goldstein, R.S., Martin, J.S., 2001. The determinants of credit spread changes. Journal of Finance 56, 2177–2207.
Dennis, S., Mullineaux, D.J., 2000. Syndicated loans. Journal of Financial Intermediation 9, 404–426.
Diamond, D.W., 1991. Debt maturity structure and liquidity risk. Quarterly Journal of Economics 106, 709–737.
Diamond, D.W., Verrecchia, R.E., 1991. Disclosure, liquidity, and the cost of capital. Journal of Finance 46, 1325–1359.
Diether, K., Malloy, C.J., Scherbina, A., 2002. Differences of opinion and the cross-section of stock returns. Journal of Finance 57, 2113–2141.
Easley, D., Hvidkjaer, S., O'Hara, M., 2002. Is information risk a determinant of asset returns? Journal of Finance 57, 2185–2221.
Easley, D., O'Hara, M., 2004. Information and the cost of capital. Journal of Finance 59, 1553–1583.
Fama, E.F., French, K.R., 1993. Common risk factors in the return on stocks and bonds. Journal of Financial Economics 33, 3–56.
Flannery, M.J., 1986. Asymmetric information and risky debt maturity choice. Journal of Finance 41, 19–37.
Freixas, X., Rochet, J., 1997. Microeconomics of Banking. The MIT Press, Cambridge, MA.
Graham, J.R., Harvey, C.R., 2001. The theory and practice of corporate finance: evidence from the field. Journal of Financial Economics 60, 187–243.
Guedes, J., Opler, T., 1996. The determinants of the maturity of corporate debt issues. Journal of Finance 51, 1809–1834.
Heckman, J.J., Ichimura, H., Todd, P.E., 1997. Matching as an econometric evaluation estimator: evidence from evaluating a job training programme. Review of Economic Studies 64, 605–654.
Heckman, J.J., Ichimura, H., Todd, P.E., 1998. Matching as an econometric evaluation estimator. Review of Economic Studies 65, 261–294.
Hribar, P., Jenkins, N.T., 2004. The effect of accounting restatements on earnings revisions and the estimated cost of capital. Review of Accounting Studies 9, 337–356.
Jimenez, G., Salas, V., Saurina, J., 2006. Determinants of collateral. Journal of Financial Economics 81, 255–281.
Johnson, S., 2003. Debt maturity and the effects of growth opportunities and liquidity risk on leverage. Review of Financial Studies 16, 209–236.
Karpoff, J.M., Lee, D.S., Martin, G.S., 2007. The cost to firms of cooking the books. Journal of Financial and Quantitative Analysis, forthcoming.
Kedia, S., Philippon, T., 2006. The economics of fraudulent accounting. Review of Financial Studies, forthcoming.
Kedia, S., Rajgopal, S., 2005. Geography and the incidence of financial misreporting. Unpublished working paper, Rutgers Business School and University of Washington.
Kinney, W.R., McDaniel, L.S., 1989. Characteristics of firms correcting previously reported quarterly earnings. Journal of Accounting and Economics 11, 71–93.
Lee, S.W., Mullineaux, D.J., 2004. Monitoring, financial distress, and the structure of commercial lending syndicates. Financial Management 33, 107–130.
Mazumdar, S.C., Sengupta, P., 2005. Disclosure and the loan spread on private debt. Financial Analysts Journal 61, 83–95.
Melnik, A., Plaut, S., 1986. Loan commitment contracts, terms of lending, and credit allocation. Journal of Finance 41, 425–435.
Myers, S.C., 1977. Determinants of corporate borrowing. Journal of Financial Economics 5, 147–175.
Nash, R.C., Netter, J.M., Poulsen, A.B., 2003. Determinants of contractual relations between shareholders and bondholders: investment opportunities and restrictive covenants. Journal of Corporate Finance 9, 201–232.
Ortiz-Molina, H., Penas, M.F., 2008. Lending to small businesses: the role of loan maturity in addressing information problems. Small Business Economics 30, 361–383.
Palmrose, Z., Richardson, V.J., Scholz, S., 2004. Determinants of market reactions to restatement announcements. Journal of Accounting and Economics 37, 59–89.
Petersen, M.A., Rajan, R.G., 1994. The benefits of lending relationships: evidence from small business data. Journal of Finance 49, 3–37.
Pittman, J.A., Fortin, S., 2004. Auditor choice and the cost of debt capital for newly public firms. Journal of Accounting and Economics 37, 113–136.
Qian, J., Strahan, P.E., 2007. How laws and institutions shape financial contracts: the case of bank loans. Journal of Finance 62, 2803–2834.
Rajan, R., Winton, A., 1995. Covenants and collateral as incentives to monitor. Journal of Finance 50, 1113–1146.
Scherr, F.C., Hulburt, H.M., 2001. The debt maturity structure of small firms. Financial Management 30, 85–111.
Smith, C.W., Warner, J.B., 1979. On financial contracting: an analysis of bond covenants. Journal of Financial Economics 7, 117–161.
Stohs, M., Mauer, D.C., 1996. The determinants of corporate debt maturity structure. Journal of Business 69, 279–312.
Strahan, P.E., 1999. Borrower risk and the price and nonprice terms of bank loans. Unpublished working paper, Federal Reserve Bank of New York.
Sufi, A., 2007. Information asymmetry and financing arrangements: evidence from syndicated loans. Journal of Finance 62, 629–668.
United States General Accounting Office, 2002. Financial statement restatements: trends, market impacts, regulatory responses, and remaining challenges (GAO-03-138).