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## **Real Earnings Management and Loan Contract Terms\***

Kostas Pappas  
Assistant Professor of Accounting  
School of Business and Economics  
Loughborough University  
Epinal Way, Loughborough,  
LE11 3TU, UK  
E-mail: [k.pappas@lboro.ac.uk](mailto:k.pappas@lboro.ac.uk)

Eamonn Walsh  
PwC Professor of Accounting  
Michael Smurfit Business School  
University College Dublin  
Carysfort Avenue, Blackrock,  
Co. Dublin, Ireland  
E-mail: [eamonn.walsh@ucd.ie](mailto:eamonn.walsh@ucd.ie)

Alice Liang Xu  
Assistant Professor of Accounting  
Alliance Manchester Business School  
University of Manchester  
Booth Street West, Manchester  
M15 6PB, UK  
Tel: +44 (0)161-275-0428  
E-mail: [liang.xu@manchester.ac.uk](mailto:liang.xu@manchester.ac.uk)  
(Correspondence author)

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## **Real Earnings Management and Loan Contract Terms**

**Abstract:** We examine the design of loan contract terms in the presence of borrower pre-issuance real earnings management (REM). Unlike other measures of earnings quality, REM is particularly difficult for outsiders to detect. However, lenders possess some private information which may allow them to correctly identify REM. Our empirical findings show that greater REM is associated with higher interest spreads, shorter maturities, a higher likelihood of imposing collateral requirements, and more intensive financial covenants, suggesting that lenders are likely to detect and penalise the borrower firm's REM activities. These findings are robust to a series of sensitivity tests. In an additional test, we examine the impact of REM on bond terms and document that greater REM is related to higher bond yield spreads and more intensive covenants, but does not affect the maturity term or the collateral requirement. The findings in this paper can alert firms about the increase in borrowing costs when they use REM to boost current-period earnings.

**Keywords:** Real Earnings Management, Syndicated Loan, Debt Contract

## 1. Introduction

In this study, we examine whether loan providers are able to detect and how they respond to the borrower firm's real earnings management (REM) activities. Specifically, we study the impact of borrower REM on the design of loan contract terms, including interest rate, maturity, collateral requirement, and financial covenant intensity. Accounting earnings are important components of debt contracts. They play both an informational role in assisting lenders' assessments of the firm's creditworthiness and a contracting role whereby accounting numbers are used as a performance measure in contract terms (e.g., debt covenants and performance pricing provisions). However, it is well documented in the literature that managers have incentives to manipulate earnings numbers (e.g., DeAngelo, 1986; Dechow & Skinner, 2000; Dechow, Sloan, & Sweeney, 1996; Efendi, Srivastava, & Swanson, 2007; Teoh, Welch, & Wong, 1998a, 1998b). Earnings management obscures the true performance of the firm and impairs the usefulness of accounting numbers as an evaluation and monitoring tool. Therefore, lenders are likely to seek to identify and penalise signs of earnings management. For example, Francis, LaFond, Olsson, and Schipper (2005) show that firms with poorer accruals quality report higher interest costs in their financial statements; Bharath, Sunder, and Sunder (2008) find that poorer accruals quality is associated with higher interest spreads, shorter maturities, and a higher likelihood of collateral requirements being posted. These papers focus exclusively on accrual-based earnings management (AEM). However, managers can distort the bottom line not only by exerting discretion over accruals but also by adjusting the timing and structuring of real economic activities. The latter phenomenon has been described as REM.<sup>1</sup>

Unlike other measures of accounting quality, REM is especially hard to detect for outsiders. It is difficult for lenders to interpret whether the borrower firm's real activities

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<sup>1</sup> Examples of REM include reducing R&D expenditures to cut expenses, offering limited-time price discounts to temporarily boost sales, overproducing to reduce the cost of goods sold (COGS), changing shipment schedules to accelerate the recognition of revenue, and selling fixed assets to inflate reported earnings.

reflect business arrangements, economic fundamentals, or earnings manipulation (Bartov & Cohen, 2009; Cohen, Dey, & Lys, 2008; Graham, Harvey, & Rajgopal, 2005; Roychowdhury, 2006; Zang, 2012). However, compared with other stakeholders, lenders possess some private information about the borrower, gained through conducting due diligence on the borrower and their previous monitoring experience with the borrower or the borrower's peer firms (Best & Zhang, 1993; Billett, Flannery, & Garfinkel, 1995; Diamond, 1984, 1991; Esty, 2001; Fama, 1985; James, 1987; Wight, Cooke, & Gray, 2009). This private information may enable the lenders to detect and respond to the borrower's REM when negotiating the loan contract terms. If lenders are able to detect REM, they are likely to respond with stricter loan terms. That is because REM not only increases a firm's information risk but also has a real impact on its default risk as REM impairs future cash flows and long-term firm value (Bens, Nagar, & Wong, 2002; Bhojraj, Hribar, Picconi, & McInnis, 2009; Bushee, 1998; Cohen & Zarowin, 2010; Osma & Young, 2009; Roychowdhury, 2006). Since there is no a priori evidence indicating whether the private information possessed by lenders is sufficient for them to correctly detect REM, we treat the relationship between a borrower's REM and its loan contract terms as an empirical question.

Following Roychowdhury (2006), we use the abnormal levels of cash flow from operations (*Ab.CFO.neg*), discretionary expenditures (*Ab.Disc.Exp.neg*), and production costs (*Ab.Prod.Cost*) to capture REM. We also construct a combined measure of REM (*REM*) by taking the sum of the three individual measures. Higher values of these measures indicate greater REM. We empirically test the impact of REM on four types of loan contract terms: interest spread, maturity, the likelihood of the lender imposing a collateral requirement, and the number of financial covenants. The results show that all three individual REM measures, as well as the combined measure, are significantly positively associated with the interest spread. Two out of three individual REM measures (i.e., *Ab.Disc.Exp.neg* and *Ab.Prod.Cost*)

and the combined measure exhibit significantly negative relations with the maturity. The likelihood of the lender imposing collateral requirements increases significantly with two out of three individual REM measures (i.e., *Ab.CFO.neg* and *Ab.Prod.Cost*) and the combined measure. Finally, all three individual REM measures, as well as the combined measure, are significantly positively related to the number of financial covenants. These findings are generally consistent with lenders being able to detect REM and using both the price and the non-price loan terms to address the incremental information and default risks induced by REM.

In the robustness test sections, we perform a three-stage least squares (3SLS) estimation to control for the joint determination among the examined loan terms. We also conduct a suspect-sample analysis to address the common critique of REM measures which questions their ability to capture earnings management per se rather than the fundamental business risks. Specifically, we constrain the test sample to firm-years that are suspected of the management of earnings. In this way, we are more confident that the documented impact of the REM measures on the loan terms can be attributed to the borrower's earnings management rather than its economic fundamentals. We continue to document significantly positive impacts of REM variables on the interest spread, collateral requirement, and financial covenant intensity in these robustness tests. However, the results for the maturity are weakened. In addition, we adopt alternative measures of covenant tightness, including two covenant index measures based on Bradley and Roberts (2015) and Fields, Fraser, and Subrahmanyam (2012) respectively and an aggregated probability of violation measure based on Demerjian and Owens (2016). *Ab.Disc.Exp.neg* no longer shows any significant impact in this robustness test, but the results for *Ab.CFO.neg*, *Ab.Prod.Cost*, and *REM* are largely consistent with those in the main analysis. Therefore, applying alternative measures of covenant tightness does not alter our conjecture that lenders impose more restrictive covenants in the presence of REM.

Finally, we examine the impact of REM on bond terms and find that greater REM is associated with higher yield spreads and more intensive covenants. However, the bond maturity and collateral requirement are not affected. This finding supports the argument in Bharath et al. (2008) that bond contracts use fewer terms to address the information risk than loan contracts due to the bondholders' disadvantages in monitoring and renegotiation compared with the loan providers.

This study extends the literature studying the link between earnings quality and debt contracting. The debt covenant hypothesis of positive accounting theory (Watts & Zimmerman, 1986, 1990) proposes that debt contracting provides the borrower firms with an incentive to conduct earnings management in order to avoid covenant violations. Consistent with this theory, Franz, HassabElnaby, and Lobo (2014) and Kim, Lisic, Myers, and Pevzner (2011) provide empirical evidence that firms close to debt covenant violation or in technical default engage in greater earnings management, particularly REM, than firms distant from a violation. Unlike these studies, our paper investigates the reverse side of the relation, which is the impact of the borrower firm's pre-issuance earnings quality on debt contracting. This topic is also examined by some other prior research, focusing on AEM (Bharath et al., 2008; Francis et al., 2005), timely loss recognition (Callen, Chen, Dou, & Xin, 2016; Zhang, 2008), audit quality (Francis, Hunter, Robinson, Robinson, & Yuan, 2016; Robin, Wu, & Zhang, 2017), internal control weakness (Costello & Wittenberg-Moerman, 2011; Kim, Song, & Zhang, 2011), restatement (Chen, 2016; Graham, Li, & Qiu, 2008), earnings predictability (Hasan, Park, & Wu, 2012), financial statement comparability (Fang, Li, Xin, & Zhang, 2016), and the ability of the borrower's accounting numbers to capture credit quality deterioration in a timely fashion (Ball, Bushman, & Vasvari, 2008). Our study complements this line of research by looking into a unique attribute of earnings quality, i.e., REM. Unlike other measures of earnings quality, REM is particularly difficult for outsiders to detect.

Although lenders possess some private information about the borrower firm, it is unclear from the extant literature whether this information is enough for them to correctly identify REM activities. In addition, REM is one of the main methods by which managers can exert discretion over earnings numbers (Cohen et al., 2008; Cohen & Zarowin, 2010; Graham et al., 2005). It is therefore important to understand how lenders design debt contracts in the presence of REM.

The paper most closely related to ours is that of Ge and Kim (2014), who examine the impact of REM on the bond yields of newly issued bonds. Our study differs from theirs along several important dimensions. First, their study is based on the public bond market while ours focuses on private loans. Private loans are mainly funded by a concentrated group of professional lenders, such as banks or other large financial institutions, while public bonds are often held by the dispersed general public. Loan providers typically possess superior information-gathering and analytic techniques to bondholders (Altman, Brady, Resti, & Sironi, 2005; Fama, 1985). It is, therefore, more likely that loan providers will correctly identify REM than bondholders. Second, we use a constrained sample to address the measurement error of REM models in a robustness test, whereas Ge and Kim (2014) do not. Linking to the above point, since REM is especially difficult for public bondholders to uncover, it is reasonable to question whether Ge and Kim (2014)'s results are really driven by earnings management or just capture lenders' reactions to fundamental business risks. Third, Ge and Kim (2014) only discuss the price term, i.e., bond yield. In contrast, we examine not only the price term (i.e., interest spread) but also other non-price terms, namely the maturity, collateral requirement, and financial covenant intensity. Prior literature provides evidence that lenders use both price and non-price contract terms to address risk factors and they consider these contract terms simultaneously as a package (Bharath, Dahiya, Saunders, & Srinivasan, 2011; Chan, Chen, & Chen, 2013; Costello & Wittenberg-Moerman, 2011; Fang



et al., 2016; Melnik & Plaut, 1986). In other words, the setting of various contract terms may influence each other. Focusing only on the price term fails to provide a comprehensive picture of the lenders' response to REM. Finally, in addition to the tests on loan terms, we investigate the impact of REM on both the price and non-price terms of bonds and examine whether the institutional differences between public bonds and private loans give rise to different responses to REM in the two markets.

A concurrent study by Kim, Kim, and Yi (2017) investigates the impact of a variety of earnings management measures on loan pricing, including REM. They also document that greater REM is associated with higher interest spreads. However, like Ge and Kim (2014), they only focus on the price term and disregard the non-price terms. In addition, they only show results for the combined measures of REM, obscuring the effect of each individual type of REM activity.

In addition, our study contributes to the REM literature by providing insights into the cost of engaging in REM from a loan-contracting perspective. With the presence of strong incentives to conduct REM (e.g., to influence share prices, to meet certain earnings benchmarks, and to satisfy contract terms or targets related to reported earnings), and due to the fact that REM is less likely to draw regulators' scrutiny than are other methods of earnings manipulation, REM is frequently adopted by firms (Cohen et al., 2008; Cohen & Zarowin, 2010; Graham et al., 2005). The findings in this paper imply that firms need to consider a trade-off between satisfying the incentives to conduct REM and bearing an increase in their borrowing costs. Given the critical importance of loan financing to many firms, incurring less favourable price and non-price loan terms should be regarded as a non-trivial cost for them.<sup>2</sup>

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<sup>2</sup> In 2017, the total volume of U.S. loans amounted to \$2.4 trillion. In comparison, the volume for corporate bonds issuance over the same period was \$1.8 trillion and that for stocks issuance \$0.14 trillion. (Data collected from the Bloomberg 2017 Global Syndicated Loans League Tables, available at <https://www.bloomberg.com/professional/blog/global-syndicated-loans-league-tables/>)

The remainder of this paper proceeds as follows. Section 2 reviews the relevant literature and develops the testable hypothesis. Section 3 describes our research methodology and sample. Section 4 presents the empirical results. Section 5 concludes the study.

## **2. Literature Review and Hypothesis Development**

### **2.1 Accounting Quality and Debt Contracting**

Prior literature documents that lenders take accounting quality into account when setting contract terms. For example, a number of studies (Anagnostopoulou, 2017; Bharath et al., 2008; De Meyere, Vander Bauwhede, & Van Cauwenberge, 2018; Francis et al., 2005; Garcia-Teruel, Martinez-Solano, & Sanchez-Ballesta, 2010; Spiceland, Yang, & Zhang, 2016) show that lenders impose stricter contract terms on borrowers with greater AEM to protect themselves from the incremental information risk. Some studies (Ahmed, Billings, Morton, & Stanford-Harris, 2002; Callen et al., 2016; Li, 2015; Zhang, 2008) argue that lenders are more concerned about the borrower's downside risk than upside potential. Therefore, they prefer conservative financial reporting, which commits managers to recognizing bad news in a timely manner, and facilitates the timely transfer of control rights through covenant violations when the borrower's performance deteriorates. Consistent with these arguments, it is documented that firms reporting more conservatively are able to secure lower interest rates. A sizable literature (Chin, Yao, & Liu, 2014; Chu, Mathieu, & Mbagwu, 2013; B. B. Francis et al., 2016; Ghoul, Guedhami, Pittman, & Rizeanu, 2016; Kim & Song, 2011; Kim, Song, & Tsui, 2013; Robin et al., 2017) also looks into the role of audit quality in debt contracting. This research shows that lenders value the assurance of accounting quality provided by better-quality auditing and therefore offer more favourable contract terms to borrowers with it.

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[loans-league-tables-full-year-2017/](https://www.federalreserve.gov/econresdata/releases/corpsecure/current.htm); and the Federal Reserve Economic Research & Data, available at <http://www.federalreserve.gov/econresdata/releases/corpsecure/current.htm>.)

In addition, internal control weakness and restatement of financial reports are regarded as indicators of poor accounting quality. Costello and Wittenberg-Moerman (2011), Dhaliwal, Hogan, Trezevant, and Wilkins (2011), and J.-B. Kim et al. (2011) find that borrowers disclosing internal control weaknesses incur stricter debt contract terms, and lenders reduce their reliance on accounting numbers in debt contracting with these borrowers. Similarly, borrowers restating their financial reports are subject to less favourable debt contract terms (Chen, 2016; Files & Gurn, 2018; Graham et al., 2008; Park & Wu, 2009). Some other research documents that debt contracting is also affected by the borrower's earnings predictability (Hasan et al., 2012), financial statement comparability (Fang et al., 2016), and the ability of the borrower's accounting numbers to capture credit-quality deterioration in a timely fashion (Ball et al., 2008).

## **2.2 The Prevalence of REM**

Graham et al. (2005) state in their survey report that:

“[W]e find strong evidence that managers take real economic actions to maintain accounting appearances. In particular, 80% of survey participants report that they would decrease discretionary spending on R&D, advertising, and maintenance to meet an earnings target. More than half (55.3%) state that they would delay starting a new project to meet an earnings target, even if such a delay entailed a small sacrifice in value.” (pp. 32, 35)

Consistent with the survey results of Graham et al. (2005), Roychowdhury (2006) finds empirical evidence of firms engaging in sales manipulation, overproduction, and aggressive reduction of discretionary expenditures to avoid losses. Cohen et al. (2008) and Bartov and Cohen (2009) document that firms shifted away from AEM and switched to REM after the passage of the Sarbanes-Oxley Act. Similarly, Cohen and Zarowin (2010) show that firms use REM to inflate earnings prior to seasoned equity offerings (SEOs). Bens et al. (2002) document that, in order to avoid earnings per share dilution caused by employee stock option

exercises, firms cut R&D to finance share repurchases. Dechow and Sloan (1991) find a significant reduction in R&D expenditures when CEOs are about to retire and have incentives to boost short-term earnings. Baber, Fairfield, and Haggard (1991) and Bushee (1998) also provide evidence consistent with firms reducing investments in R&D to meet certain earnings benchmarks. Bartov (1993) shows that firms attempt to avoid negative earnings growth and debt covenant violations by selling fixed assets.

### **2.3 The Consequences of REM**

Prior literature posits that REM is an opportunistic activity that increases both a firm's information risk and its default risk. First, REM obscures a firm's true performance and increases the information asymmetry between lenders and managers. In addition, it sacrifices a firm's future cash flows in exchange for current reported earnings. Roychowdhury (2006) points out that using aggressive price discounts to increase sales volume can lead customers to expect such discounts in future periods as well. If the original price is restored in the future, there is a risk that the sales volume will fall below even the original level and, if the price discounts are sustained, the sales margin will decline. Both circumstances will be detrimental to long-term cash flows. Overproduction generates greater inventory storage and maintenance costs and, if the inventories become obsolete, firms have to pay disposal expenses. Reducing investments in discretionary expenditures could save current cash outflows, but probably at the expense of future cash inflows. For example, forgoing R&D projects may impede the firm's ability to launch new products and improve existing products in the future, thereby causing it to lose market share to its competitors. Lenders rely on firms' future cash flows to collect interest payments and recover their principal. Therefore, REM's detrimental effect on a firm's future cash flows should be of particular concern to lenders.

Moreover, a number of studies provide empirical evidence that REM impairs long-term firm value. In particular, Cohen and Zarowin (2010) find that REM conducted around SEOs is associated with post-SEO earnings declines. Bhojraj et al. (2009) document that firms beating analyst forecasts through REM exhibit poorer operating performance and stock market returns in the subsequent three-year period than firms not engaging in REM that miss analyst forecasts. Similarly, Osma and Young (2009) report that UK firms beating last year's earnings by reducing R&D investments have lower returns than firms achieving earnings growth without cutting R&D. Bens et al. (2002) show that firms that cut R&D investments to finance share repurchases are subject to future earnings declines. In addition, Bushee (1998) and Roychowdhury (2006) document a negative relation between institutional ownership and REM. Since institutional investors are more sophisticated and capable of assessing firm performance, the negative association between their presence and REM suggests that REM is detrimental to firm value.

## **2.4 Hypothesis Development**

On the one hand, unlike other attributes of accounting quality, REM is an earnings management activity that is especially hard to detect for outsiders. It is costly for lenders to analyse a firm's complex operating system and judge whether sub-optimal business practices are carried out deliberately with the object of manipulating earnings. Even if lenders manage to detect unusual activities, they may not interpret them as REM. For example, lenders may regard the aggressive reduction of discretionary expenditures as cost saving. It is also hard for lenders to rely on the external monitoring forces to detect REM since REM is unlikely to draw auditors' or regulators' scrutiny (Roychowdhury, 2006). Alhadab and Clacher (2018) provide evidence that the presence of high-quality auditors is not sufficient to constrain all forms of REM around initial public offerings (IPOs).

On the other hand, there are reasons to believe that lenders may possess private information which allows them to detect REM. The initiation of syndicated loans is a lengthy process which involves intensive communication between the lead banks and the borrowers. The lead bank needs to conduct due diligence on the borrower and prepare a confidential memorandum for the potential participant lenders, which contains descriptive and financial information about the borrower. The lead bank may require private information during this process, for example, monthly financial reports and projected cash flow statements (Esty, 2001; Wight et al., 2009). This information should assist the lenders in assessing the accounting quality of the borrower. In addition, after the initiation of the loan, banks play a delegated monitoring role, even outside of default situations, and they are likely to collect private information through this monitoring (Best & Zhang, 1993; Billett et al., 1995; Diamond, 1984, 1991; Fama, 1985; James, 1987). When a bank initiates a new loan and needs to evaluate the borrower's accounting quality, it should be able to use the information collected from its previous monitoring experience with the borrower or the borrower's peer firms.<sup>3, 4</sup>

There is extensive research providing empirical evidence on lenders' ability to gather private information. For example, Ivashina and Sun (2011) find that institutional investors that participate in syndicated loans trade in the stock of the borrower company subsequent to loan renegotiations and outperform trading by other managers and trading in other stocks by approximately 5.4% in annualized terms. Similarly, Bushman, Smith, and Wittenberg - Moerman (2010), Massa and Rehman (2008), and Massoud, Nandy, Saunders, and Song (2011) also document that lenders exploit privileged insider information on borrowers and

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<sup>3</sup> In our sample, 53.1% of loans are led by banks which have arranged loans to the same borrower over the previous five years. 89.2% of loans are led by banks which have arranged loans to firms in the same industry as the current borrower over the previous five years.

<sup>4</sup> Although the U.S. Securities and Exchange Commission (SEC) implemented the Regulation Fair Disclosure (FD) on 23 October 2000 to prohibit firms from privately disclosing value-relevant information to select securities markets professionals without simultaneously disclosing the same information to the public, sharing private information with lenders is exempted from the regulation.

use this information to trade in the equity market. Moreover, Chen and Martin (2011) and Ergungor, Madureira, Nayar, and Singh (2015) argue that bank-affiliated analysts benefit from the private information obtained through the lending activities of the banks. They show evidence that the forecast accuracy of bank-affiliated analysts increases after the followed firm borrows from the affiliated bank. Carrizosa and Ryan (2017) look into the mechanisms by which lenders obtain private information and the types of information obtained through covenants. They identify two types of financial reporting covenants that commit borrowers to disclose accounting-related private information: (1) projected financial statements for future periods and (2) more frequent than quarterly (usually monthly) and not yet publicly available historical financial statements. Almost half of the loan contracts in their sample include one or both of these covenants. They find that these covenants enhance the lenders' loan contract monitoring and amendment and enable the lenders to trade on such information.

We randomly review 50 loan agreements from our sample.<sup>5</sup> All these loan agreements include a requirement in their affirmative covenant section that the borrower should satisfy any reasonable information requirements (both financial and otherwise) of the lenders. Some of the most commonly requested private information includes monthly financial statements, unaudited financial statements, projections of financial statements, budgets for future periods, schedules of inventory, and copies of invoices and purchase orders.<sup>6</sup> Some examples of these covenants are provided in Appendix A.

Danos, Holt, and Imhoff Jr (1989) examine the use of accounting information in bank lending decisions. They describe a three-phase process: (a) examination of publicly available information; (b) personal contact with the borrower (generally at the place of business) to inspect physical operations; and (c) detailed credit analysis based upon additional historical

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<sup>5</sup> The loan agreements are obtained from the firms' 10-K/10-Q filings.

<sup>6</sup> These covenants facilitate lenders' collection of information during the ex-post monitoring. As mentioned earlier, when a bank initiates a new loan and needs to evaluate the borrower's accounting quality, it should be able to use the information collected from its previous monitoring experience with the borrower or the borrower's peer firms. Although lenders also collect private information during the ex-ante screening, we are not able to observe from loan contracts what type of information the lenders gather at that stage.

and prospective information obtained from the borrower. The third phase includes an examination of the quality of publicly available accounting data using non-publicly available information. Specifically, with the private information discussed above, lenders may achieve a comprehensive understanding of the borrower firm's operating system and business strategy. They are likely to form a sensible judgement on the firm's normal level of cash flow from operations (CFO), discretionary expenditures, and production costs based on the sales level. REM which causes these items to deviate from their normal levels may therefore be detected.

If the lenders are able to detect REM, they are likely to penalise this opportunistic behaviour by imposing stricter contract terms. In a reasonably efficient loan market, borrowers engaging in REM should anticipate this increase in their borrowing costs. However, they still conduct REM due to several reasons, for example, to influence share prices during overvaluation periods, IPOs, SEOs, and share repurchases (Badertscher, 2011; Bens et al., 2002; Cohen & Zarowin, 2010; Francis, Hasan, & Li, 2016; Kothari, Mizik, & Roychowdhury, 2015; Wongsunwai, 2013), to meet certain earnings benchmarks (Athanasakou, Strong, & Walker, 2011; Baber et al., 1991; Bushee, 1998; Roychowdhury, 2006), and to satisfy contract terms or targets related to reported earnings such as earnings-based covenants and executive compensation contracts (Bartov, 1993; Duellman, Ahmed, & Abdel-Meguid, 2013; Franz et al., 2014; Park, 2017). Firms need to make a trade-off between these incentives and the increase in their borrowing costs.

In summary, firms have strong incentives to engage in REM. REM increases both a firm's information risk and its default risk. If lenders are able to uncover the borrower's REM activities, they should protect themselves with stricter contract terms. However, REM is especially hard to detect for outsiders. Although there are reasons to believe that lenders possess some private insider information, there is no a priori evidence indicating whether the



private information they possess is sufficient for them to correctly detect REM. Therefore, the relation between a borrower's REM activities and its loan contract terms is ultimately an empirical question. Based on the above arguments, we specify the following testable hypothesis:

*H1a (b): Lenders are able (unable) to detect the borrower's REM activities and (do not) penalise these activities by imposing stricter contract terms (i.e., higher interest spreads, shorter maturities, a higher likelihood of requiring collateral, and tighter covenants).*

### **3. Research Design**

#### **3.1 Proxies for REM**

Following prior literature (Bartov & Cohen, 2009; Cohen et al., 2008; Cohen & Zarowin, 2010; Roychowdhury, 2006; Zang, 2012), we focus on three REM activities, namely providing price discounts or more lenient credit terms to boost sale volumes temporarily, cutting discretionary expenditures to reduce expenses, and overproduction to decrease COGS. These activities are likely to cause a firm's CFO, discretionary expenditures, and production costs (defined as COGS plus changes in inventory) to deviate from those of its peers in the same industry and year. In particular, providing price discounts or more lenient credit terms reduces sales margins, leading to abnormally low cash inflows and high production costs relative to the sales level. Discretionary expenditures include R&D, advertising expenses, and selling, general and administrative (SG&A) expenses. Reducing the investments in these activities gives rise to abnormally low discretionary expenditures. Given these activities are generally paid in cash, cutting these investments also lowers cash outflows and therefore has a positive impact on the current CFO. Producing more goods than necessary allows fixed overhead costs to be spread over a larger number of units, lowering fixed costs per unit. This

reduction brings down the reported COGS as long as the reduction in fixed costs per unit is not offset by an increase in marginal costs per unit. However, incremental marginal costs incurred, e.g., additional inventory storage cost, result in abnormally high production costs and a low CFO relative to the sales level.

According to these arguments, the direction and amount of abnormal CFO, discretionary expenditures, and production costs could indicate the existence and scale of REM. To capture the abnormal CFO, discretionary expenditures, and production costs, we rely on the models developed by Dechow, Kothari, and Watts (1998) and implemented in Roychowdhury (2006) which express the normal levels of these variables as linear regressions of sales and changes in sales. We estimate these regressions for each industry and year, requiring at least 20 observations for each estimate. The extreme values of all variables are winsorized at the 1<sup>st</sup> and 99<sup>th</sup> percentiles. The abnormal levels of CFO, discretionary expenditures, and production costs are captured by the error terms of these regressions.

Specifically, we estimate the normal level of CFO using the following regression:

$$\frac{CFO_{i,t}}{Sales_{i,t}} = \frac{1}{Sales_{i,t}} + \frac{Dis_{i,t}}{Sales_{i,t}} + \frac{\Delta Sales_{i,t}}{Sales_{i,t}} + \epsilon_{i,t} \quad (1)$$

where  $CFO_{i,t}$  is firm  $i$ 's cash flow from operations before discretionary expenditures in year  $t$ . Since both sales manipulation and overproduction have a negative impact on CFO, but the reduction of discretionary expenditures has a positive impact on CFO, to avoid this offsetting effect, we follow McInnis and Collins (2011) and add discretionary expenditures back into CFO.  $Asset_{i,t}$  is firm  $i$ 's total assets at the end of year  $t$ .  $Sales_{i,t}$  is firm  $i$ 's sales revenue during year  $t$  and  $\Delta Sales_{i,t}$  is the change in firm  $i$ 's revenue between years  $t-1$  and  $t$ . The abnormal level of CFO ( $Ab.CFO$ ) is computed as the difference between the actual CFO and the

predicted CFO from Eq. (1). We multiply *Ab.CFO* by -1 (*Ab.CFO.neg*) such that a higher value of *Ab.CFO.neg* indicates a greater level of REM.

We estimate the normal level of discretionary expenditures as follows:

$$\frac{Disc.Exp_{i,t}}{Asset_{i,t-1}} = \frac{1}{Asset_{i,t-1}} + \frac{Sales_{i,t}}{Asset_{i,t-1}} + \frac{\hat{e}Sales_{i,t}}{Asset_{i,t-1}} + \frac{\hat{e}Sales_{i,t-1}}{Asset_{i,t-1}} + \epsilon_{i,t} \quad (2)$$

where *Disc.Exp<sub>i,t</sub>* represents firm i's discretionary expenditures in year t, defined as the sum of R&D, advertising, and SG&A expenses. Other variables are defined as in Eq. (1). Abnormal discretionary expenditures (*Ab.Disc.Exp*) are estimated using the residuals from Eq. (2). We multiply *Ab.Disc.Exp* by -1 (*Ab.Disc.Exp.neg*) such that a higher value of *Ab.Disc.Exp.neg* implies a greater level of REM.

The normal level of production costs is modelled with the following regression:

$$\frac{Prod.Cost_{i,t}}{Asset_{i,t-1}} = \frac{1}{Asset_{i,t-1}} + \frac{Sales_{i,t}}{Asset_{i,t-1}} + \frac{\hat{e}Sales_{i,t}}{Asset_{i,t-1}} + \frac{\hat{e}Sales_{i,t-1}}{Asset_{i,t-1}} + \epsilon_{i,t} \quad (3)$$

where *Prod.Cost<sub>i,t</sub>* represents firm i's production costs in year t, defined as the sum of COGS and the changes in inventory. Other variables are defined as in Eq. (1). Abnormal production costs (*Ab.Prod.Cost*) are captured by the residuals from Eq. (3) with a higher value of *Ab.Prod.Cost* indicating a greater level of REM.

We combine the three REM measures (i.e., *Ab.CFO.neg*, *Ab.Disc.Exp.neg*, and *Ab.Prod.Cost*) into one comprehensive proxy, *REM*, by taking their sum. The level of REM increases in this combined measure.<sup>7</sup>

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<sup>7</sup> In a robustness test, in order to control for outliers and non-linearities with the REM variables, following prior literature (Chen, Dhaliwal, & Trombley, 2008; Core, Guay, & Verdi, 2008; Francis et al., 2005; Kim & Sohn, 2013), we divide the REM variables into decile ranks, with D1 representing the lowest values and D10 the highest, and use them instead of the

### 3.2 Hypothesis Tests

We empirically test the impact of REM on loan contract terms by estimating the following regressions:

$$\begin{aligned}
\log & , \quad = \\
& + \quad . \quad . \quad / \quad . \quad . \quad . \quad / \quad . \quad . \quad / \quad , \\
& + \quad , \quad + \quad , \\
& + \quad + \quad + \quad + \quad , \quad (4)
\end{aligned}$$

$$\begin{aligned}
& \log \left( \frac{1}{\Gamma(\frac{1}{2})} \right) = \\
& + \frac{1}{2} \log \left( \frac{1}{\Gamma(\frac{1}{2})} \right) / \frac{1}{2} \log \left( \frac{1}{\Gamma(\frac{1}{2})} \right) / \frac{1}{2} \log \left( \frac{1}{\Gamma(\frac{1}{2})} \right), \\
& + \frac{1}{2} \log \left( \frac{1}{\Gamma(\frac{1}{2})} \right), + \frac{1}{2} \log \left( \frac{1}{\Gamma(\frac{1}{2})} \right), \\
& + \frac{1}{2} \log \left( \frac{1}{\Gamma(\frac{1}{2})} \right) + \frac{1}{2} \log \left( \frac{1}{\Gamma(\frac{1}{2})} \right) + \frac{1}{2} \log \left( \frac{1}{\Gamma(\frac{1}{2})} \right) + \frac{1}{2} \log \left( \frac{1}{\Gamma(\frac{1}{2})} \right). \quad (5)
\end{aligned}$$

$$\begin{aligned}
& , = 1 = ( \\
& + \quad . \quad . \quad / \quad . \quad . \quad . \quad / \quad . \quad . \quad / \quad , \\
& + \quad , \quad + \quad , \\
& + \quad + \quad + \quad ). \quad (6)
\end{aligned}$$

raw REM values. Our main conclusions do not change. The results of this robustness test are not presented for brevity sakes but are available upon request.



intensive covenants. Eq. (4) and (5) are estimated using OLS, Eq. (6) using a Probit regression, and Eq. (7) by means of a Poisson regression.

The test variables are *Ab.CFO.neg*, *Ab.Disc.Exp.neg*, *Ab.Prod.Cost*, and *REM* in Eq. (4)-(7). Hypothesis H1a predicts positive coefficients on the REM variables when the dependent variable is *log(IntSpread)/Collateral/Fin Cov* and negative coefficients when the dependent variable is *log(Maturity)*. In contrast, Hypothesis H1b predicts insignificant coefficients on the REM variables in all four loan-term regressions.

We also control for a set of firm-specific and loan-specific characteristics which are likely to affect the loan terms. Our choice of control variables follows the previous literature investigating the determinants of loan terms (Bharath et al., 2008; Costello & Wittenberg-Moerman, 2011; Graham et al., 2008; Hasan et al., 2012; Zhang, 2008). We first control for AEM (*AEM*), measured using the modified Jones model (Dechow, Sloan, & Sweeney, 1995).<sup>8</sup> AEM impairs the ability of accounting earnings to predict future cash flows and therefore increases the information asymmetry between lenders and borrower firms. We expect higher AEM to be associated with tighter loan terms. We then control for the size of the borrower firm (*log(Firm Size)*), measured by the natural logarithm of the firm's total assets. Smaller firms are more informationally opaque, less capable of accessing external financing, and more vulnerable to distress. Loans issued to smaller firms should have tighter terms. We also control for the default risk of the borrower firm using a set of variables capturing the firm's leverage ratio (*Leverage*), interest coverage ratio (*IntCov*), current ratio (*CurRatio*), return on assets (*ROA*), earnings volatility (*\*TQC+*), and Altman (1968) Z-score (*Z-score*). Firms with a higher leverage ratio and earnings volatility, and a lower interest coverage ratio, current ratio, return on assets, and Z-score, are subject to a higher risk of default. We expect them to borrow with tighter terms. Tangible assets can be sold more easily

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<sup>8</sup> Our results are not sensitive to using AEM measured using alternative models, e.g., the FLOS model (Francis et al., 2005).

to recover the loan in the event of default than intangible assets. We control for the borrower firm's tangibility (*Tangibility*) since firms with lower tangibility are likely to incur tighter loan terms. The borrower firm's market-to-book ratio (*Mar to Book*) is also included as a control variable. The market-to-book ratio captures a firm's growth opportunities. Firms with more growth potential are less willing to be constrained by covenants. The market-to-book ratio also captures the additional value over book assets that debt holders can access in the event of default. In this regard, a higher market-to-book ratio should also be associated with more favourable loan terms.

In addition to the above variables reflecting the borrower firm's characteristics, we also control for a set of variables related to the loan characteristics. The natural logarithm of the loan amount ( $\log(\text{Loan Size})$ ) is controlled for to address the possibility that larger loans enjoy more favourable terms due to the economies-of-scale effect in lending and the stronger incentives of the lead arrangers to carry out screening and monitoring efforts. *InstLoan* is a dummy variable indicating whether the loan is funded by institutional investors. Institutional loans are generally riskier than bank loans, thus we expect them to incur tighter loan terms. *Revolver* is a dummy variable indicating whether the loan is a revolving loan. Revolving loans allow the borrowers to use credit available under the commitment in a flexible way and only pay interest on the part of the loan that is utilised. Prior research (Asquith, Beatty, & Weber, 2005; Costello & Wittenberg-Moerman, 2011; Harjoto, Mullineaux, & Yi, 2006; Zhang, 2008) finds that revolving loans have lower interest spreads. The association between *Revolver* and other loan terms is unclear. We also control for whether the loan contains a performance pricing provision (*PPP*). With PPPs, interest spreads can fluctuate after loan issuance according to changes in a pre-agreed measure of borrower credit quality. Asquith et al. (2005) and Panyagometh, Roberts, Gottesman, and Beyhaghi (2013) argue that the presence of PPP attenuates agency problems. The presence of PPP also signals better

borrower credit quality since borrowers expecting deterioration in their credit quality are unlikely to accept PPPs that would increase their future interest costs (Manso, Strulovici, & Tchistyi, 2010). Therefore, the presence of PPP should lead to lower interest spreads, longer maturities, and a lower likelihood of collateral being required. Prior literature (e.g., Chan et al., 2013; Costello & Wittenberg-Moerman, 2011; Graham et al., 2008; J.-B. Kim et al., 2011) documents a complementary *rather* than substitute relation between PPP and financial covenants. Therefore, we predict a positive sign on the coefficient of *PPP* in the *Fin Cov* regression. *PreRelation* captures whether the lead arranger of the loan has led any prior loans of the borrower within the previous five years. Lenders with a previous lending relation with the borrower are more familiar with them and likely to offer more favourable loan terms. However, the impact of *PreRelation* on *Fin Cov* is less clear. Although information asymmetry theory predicts a negative impact, financial covenants play a more efficient role in monitoring when the lender is familiar with the borrower. The natural logarithm of the number of lenders involved in a loan syndicate ( $\log(Lender\ No.)$ ) is also included as a control variable. Higher-quality borrowers are able to attract more lenders. Moreover, with more lenders, the risk is spread over a larger group of participants. Hence, a larger number of lenders should be associated with more favourable loan terms.

We also control for  $\log(Maturity)$ , *Collateral*, and  $\log(1+Fin\ Cov)$  in the  $\log(IntSpread)$  regression. Loans with longer maturities are subject to higher risk and should therefore be charged higher interest rates. Agency theory predicts a negative impact of collateral on interest spreads since collateral reduces the loss for the bank in the event of default. However, most empirical work (e.g., Berger & Udell, 1990, 1995; Dennis, Nandy, & Sharpe, 2000; Godlewski & Weill, 2011; Gottesman & Roberts, 2007) documents a positive association between collateral and interest spreads, probably because lenders often require collateral on riskier loans. Therefore, the relationship between collateral and interest spreads is unclear.



We expect loans with more intensive financial covenants to enjoy lower interest spreads, since covenants reduce the agency problem between lenders and borrowers (Jensen & Meckling, 1976; Myers, 1977; Smith & Warner, 1979). In the  $\log(\text{Maturity})$  regression, we control for *Collateral* and  $\log(1+\text{Fin Cov})$ . Lenders may be more willing to offer loans with longer maturities if collateral is provided. We do not have a prediction on the impact of financial covenant intensity on maturity. In the *Collateral* regression, we control for  $\log(\text{Maturity})$  and  $\log(1+\text{Fin Cov})$ . We expect a positive sign on the coefficient of  $\log(\text{Maturity})$ , but we are uncertain about the sign on the coefficient of  $\log(1+\text{Fin Cov})$ . In the *Fin Cov* regression,  $\log(\text{Maturity})$  and *Collateral* are included as control variables. Loans with longer maturities are likely to be subject to more intensive covenants. The impact of collateral on financial covenant intensity is expected to be positive, since the presence of collateral may require the use of financial covenants to monitor its value.

Finally, we control for loan-purpose fixed effects based on seven purposes, namely acquisition lines, LBO/MBO/SBO, takeover, debt repayment/recapitalization, corporate purpose, working capital, and other purposes. We also control for year fixed effects and industry fixed effects using the two-digit SIC code. All loan variables are estimated at loan initiation (year  $t$ ) and all firm variables are estimated at the end of the fiscal year immediately prior to loan initiation (year  $t-1$ ). A more detailed description of the definition and measurement of the variables is presented in Table 1.

[Insert Table 1]

### 3.3 Sample Selection

Our starting sample consists of 161,299 dollar-denominated loans issued to U.S. companies recorded in the Thomson Reuters LPC DealScan Database. We eliminate loans issued before 1996 since the data collection for the DealScan Database commenced in 1996.

The loan information for the previous years (1985-1995) was recorded retroactively and the data coverage for this period may be incomplete. The remaining sample contains 129,349 loans. The financial information of the borrower firm is obtained from Compustat. Loan variables are matched with firm variables using the link file provided by Chava and Roberts (2008).<sup>9</sup> After the matching process, 60,767 loans remain in the sample. We further remove 35,351 loans with missing data on the test and control variables. Finally, we exclude 2,498 loans issued to financial (SIC code 6000-6999) and regulated (SIC code 4400-4999) firms. The final sample consists of 22,918 loans issued to 3,723 companies with an issuance date between January 1996 and December 2017.<sup>10</sup> The number of observations in different tests may vary with the data availability of the variables used in the test. The sample selection procedure is described in Table 2.

[Insert Table 2]

## 4. Empirical Results

### 4.1 Summary Statistics and Correlation Analysis

Table 3 reports the summary statistics for the test sample. The mean (median) values of the REM variables, i.e., *Ab.CFO.neg*, *Ab.Disc.Exp.neg*, *Ab.Prod.Cost*, and *REM*, are 0.028 (-0.003), 0.069 (0.049), -0.036 (-0.053), and 0.060 (-0.003) respectively. *AEM* has a mean of 0.064 and a median of 0.040. These distributions are generally comparable to those documented in prior studies (Cohen et al., 2008; Ge & Kim, 2014; Zhao, Chen, Zhang, & Davis, 2012).

The distribution of total assets of the borrower firms has a mean of \$5,028.029 million, a median of \$929.654 million, and a standard deviation of \$15,619.054 million, suggesting that

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<sup>9</sup> We assume that there is a two-month interval between the fiscal year end date and the financial statements issue date.

<sup>10</sup> The basic unit of observation in our study is the loan. However, several loans may be packed together into a deal. The loan contract is negotiated, signed, and monitored at the deal level. We choose to perform loan-level instead of deal-level analysis because each loan within a deal will often have a different interest rate, maturity, and collateral requirement. Our main findings do not change if we perform a deal-level analysis.

the distribution is skewed and widely dispersed. The average ratio of long-term debt to total assets is 0.307. The interest coverage ratio varies substantially across the borrower firms, with a mean (median) of 17.275 (4.278) and a large standard deviation of 73.022. The mean (median) current ratio is 1.910 (1.658) and the mean (median) market-to-book ratio is 1.727 (1.451). On average, the borrower firms' tangible assets account for 43.9% of their total assets. We document a positive ROA of 0.022 and a small ROA volatility of 0.066 for the average borrower firm. The average Z-score is 3.232, indicating that the likelihood of our sample firms going bankrupt is generally low.

With respect to loan characteristics, the mean (median) interest spread and maturity are 204.123 (175.000) basis points and 47.465 (59.000) months respectively. 56.8% of the sample loans have collateral. Each loan imposes about two financial covenants on average (mean = 1.680). The loans have a mean (median) amount of \$415.275 (\$175.000) million, with a large standard deviation of \$913.455 million. 9.9% of the sample loans are institutional term loans and 65.4% are revolving loans. 42.5% have PPPs. 53.1% are led by banks which have past lending relations with the borrower firm. Each loan is funded by seven or eight lenders on average (mean = 7.571).

[Insert Table 3]

Table 4 provides the Pearson correlation matrix for the variables in the main tests. We document strong correlations among the three individual REM variables, suggesting that firms implement various REM tactics simultaneously. Furthermore, all REM variables are significantly positively related to *log(IntSpread)*. Two out of three individual REM variables (i.e., *Ab.CFO.neg* and *Ab.Disc.Exp.neg*) and the combined REM measure (i.e., *REM*) reveal significantly positive associations with *Collateral*. *Ab.Prod.Cost* and *REM* are significantly positively related to *Fin Cov*. These findings lend some preliminary support for hypothesis

H1a. However, *Ab.CFO.neg*, *Ab.Prod.Cost*, and *REM* reveal significantly positive associations with  $\log(Maturity)$ , which are inconsistent with our predictions. To show more accurately the relations between REM and the loan terms, we carry out multivariate analyses in the following sections.

[Insert Table 4]

## 4.2 The Impact of REM on Loan Terms

### 4.2.1 Interest Spread

Table 5 Panel A presents the estimation results for the impact of REM on the interest rate. In Column 1, we document a significantly positive coefficient on *Ab.CFO.neg* (coef. = 0.088, t-stat. = 5.85). Column 2 shows a significantly positive coefficient on *Ab.Disc.Exp.neg* (coef. = 0.069, t-stat. = 3.63). The coefficient on *Ab.Prod.Cost* reported in Column 3 is also positive and significant at the 1% level (coef. = 0.109, t-stat. = 5.58). Since higher values of these three individual REM measures all imply greater REM, the results in Columns 1-3 suggest that firms incur higher interest costs when they engage in greater REM. These results are consistent with lenders detecting and penalising borrowers' REM activities. In Column 4, we use the combined measure of REM as the test variable. Again, we find a significantly positive association between *REM* and  $\log(IntSpread)$  (coef. = 0.034, t-stat. = 5.17). Collectively, the findings for both the individual and combined measures of REM in Table 5 Panel A indicate that firms engaging in greater REM have to pay higher interest rates, consistent with the prediction in hypothesis H1a.

We control for the effect of AEM. The coefficients on *AEM* are positive and significant at the 1% level across Columns 1-4, consistent with the findings in Francis et al. (2005) and Bharath et al. (2008) that greater AEM is associated with higher interest spreads. With respect to other firm-specific control variables, we find that smaller firms with higher

leverage and ROA volatility and lower market-to-book ratio, tangibility ratio, and ROA are subject to higher interest spreads. However, the coefficients on the interest coverage ratio, current ratio, and Z-score are either insignificantly different from zero or inconsistent with our predictions. With respect to the loan-specific control variables, our results show that  $\log(IntSpread)$  is significantly negatively related to  $\log(Loan\ Size)$ . Institutional loans incur higher costs while revolving loans are less costly. The presence of PPP reduces interest spreads. Lead arrangers with prior lending relations with the borrower offer lower interest rates. However, we do not document a significant impact of the number of lenders on interest rates. Financial covenant intensity, maturity, and the presence of collateral are all significantly positively associated with interest spreads. The positive coefficients on  $\log(1+Fin\ Cov)$  are inconsistent with our prediction.

#### 4.2.2 Maturity

Table 5 Panel B examines the relation between REM and loan maturity. In Column 1, the coefficient on *Ab.CFO.neg* is negative (coef. = -0.019, t-stat. = -1.54) but does not reach significance at conventional levels. In Column 2, the coefficient on *Ab.Disc.Exp.neg* is negative and significant at the 1% level (coef. = -0.044, t-stat. = -2.86). Column 3 shows a significantly negative association between *Ab.Prod.Cost* and maturity (coef. = -0.031, t-stat. = -1.98). The result for the combined measure of REM in Column 4 (coef. = -0.012, t-stat. = -2.62) also indicates that REM is significantly negatively related to maturity. These findings are generally consistent with borrowers engaging in greater REM incurring shorter loan maturities, lending support to hypothesis H1a.

With regard to the control variables, we document that borrowers with a higher current ratio, higher ROA, and lower ROA volatility enjoy longer loan maturities. In addition, loans with larger amounts, of the term loan type instead of the revolving loan type, featuring the

presence of PPP, with more lenders in the syndicate, and having collateral requirements have longer maturities. The results on the other control variables are either insignificant or inconsistent with our predictions.

#### **4.2.3 Collateral**

Table 5 Panel C shows the relation between REM and the likelihood of imposing collateral requirements. In Column 1, the coefficient on *Ab.CFO.neg* is positive and significant at the 1% level (coef. = 0.229, t-stat. = 3.22). In Column 2, the coefficient on *Ab.Disc.Exp.neg* is also positive (coef. = 0.044, t-stat. = 0.45) but does not reach significance at conventional levels. In Column 3, we document a significantly positive relation between *Ab.Prod.Cost* and *Collateral* (coef. = 0.366, t-stat. = 5.48). Using the combined measure of REM in Column 4, we continue to find a significantly positive relation between *REM* and *Collateral* (coef. = 0.081, t-stat. = 2.69), implying that REM increases the likelihood of collateral requirements being put into loan contracts. The findings in Panel C are generally consistent with the prediction in hypothesis H1a.

The results on the firm-specific control variables show that AEM, leverage, and ROA volatility are significantly positively associated with the likelihood of imposing collateral requirements, and firm size, the market-to-book ratio, and ROA are significantly negatively associated with this likelihood. In terms of the loan-specific control variables, smaller loans, institutional loans, revolving loans, and loans with more intensive financial covenants and longer maturities are more likely to have collateral requirements. The coefficients on the other control variables are insignificant.

#### **4.2.4 Financial Covenant Intensity**

Table 5 Panel D reports the regression results for the impact of REM on the number of financial covenants. As shown in Columns 1-3, the coefficients on the three individual REM measures are all significantly positive (coef. = 0.051, t-stat. = 2.82 for *Ab.CFO.neg*, coef. = 0.035, t-stat. = 2.09 for *Ab.Disc.Exp.neg*, coef. = 0.057, t-stat. = 2.57 for *Ab.Prod.Cost*). In Column 4, the combined measure of REM also reveals a significantly positive relationship with the number of financial covenants (coef. = 0.020, t-stat. = 3.11). These results lend further support to hypothesis H1a.

With regard to the control variables, *log(Firm Size)*, *Mar to Book*, and *log(Loan Size)* are significantly negatively associated with *Fin Cov*. *InstLoan*, *PPP*, *PreRelation*, and *Collateral* are significantly positively associated with *Fin Cov*. The results for the other control variables are either insignificant or inconsistent with our predictions.

[Insert Table 5]

### 4.3 3SLS Estimation of the Loan Contract Terms

In our previous analysis, we examined the impact of REM on four loan contract terms in separate regressions. However, Melnik and Plaut (1986) suggest that bank loans are a package of multiple contract terms, which cannot be split and treated separately. Dennis et al. (2000) and Bharath et al. (2011) provide empirical evidence on the simultaneous relations among the interest rate, maturity, and collateral requirements. Specifically, Bharath et al. (2011) argue that the non-price loan terms influence each other (in a bidirectional relationship), while the interest rate is affected by the non-price terms but not vice versa (in a unidirectional relationship).<sup>11</sup> To the extent that the loan terms examined in our previous analysis are jointly determined, the real effects of REM may be obscured in the separate regressions. To address this issue, we adopt a 3SLS approach and re-estimate our models

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<sup>11</sup> Bharath et al. (2011) come up with this argument through discussions with industry professionals.

simultaneously, allowing the interest spread, maturity, collateral, and financial covenant intensity to be jointly determined.<sup>12</sup>

In the 3SLS system, the jointly determined loan terms are substituted with their instruments. Our choice of instruments follows Bharath et al. (2011), Costello and Wittenberg-Moerman (2011), and Li, Tuna, and Vasvari (2014). Specifically, we use the natural logarithm of the average interest spreads of loans completed over the previous six months ( $\log(\text{Avg IntSpread})$ ) and the natural logarithm of the difference between the yields on Moody's seasoned corporate bonds with a Baa rating and ten-year U.S. government bonds in the month of loan origination ( $\log(\text{Term Spread})$ ) as instruments for  $\log(\text{IntSpread})$ . Both  $\text{Avg IntSpread}$ , which captures the recent evolution in loan pricing, and the contemporaneous  $\text{Term Spread}$  should play significant roles in the pricing of new loans, but they are unlikely to affect the new loan's non-price terms directly. We use the natural logarithm of the median maturity of all loans (except for the current loan) issued to firms within the same industry group and calendar year ( $\log(\text{Indy Maturity})$ ) as an instrument for  $\log(\text{Maturity})$ . We also use  $\log(\text{Asset Maturity})$  as an additional instrument for  $\log(\text{Maturity})$ , since firms tend to match their debt maturity to the maturity of their assets (Barclay & Smith, 1995; Hart & Moore, 1994). The instruments for *Collateral* are the median tangibility within the same industry group and calendar year ( $\text{Indy Tangibility}$ ) and the ratio of the loan amount to the sum of existing debt and the loan amount ( $\text{Loan Concn}$ ). The likelihood of collateral requirements being included in a loan contract will be greater if the borrower firm is in an industry with greater amounts of tangible assets and if the current loan size is greater relative to the size of the borrower firm's total debt (Berger & Udell, 1990). The natural logarithm of one plus the median number of financial covenants of all loans (except for the current loan) issued to

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<sup>12</sup> 3SLS extends 2SLS by taking into account the covariances of the disturbance terms in the equations system. We perform a Hausman test against the null hypothesis that all exogenous variables are uncorrelated with all disturbance terms. A documented p-value of 1 fails to reject the null hypothesis, indicating that both the 2SLS and 3SLS estimators are consistent but only the 3SLS estimator is asymptotically efficient.



firms within the same industry group and calendar year ( $\log(1+Indy\ Fin\ Cov)$ ) is employed as an instrument for  $\log(1+Fin\ Cov)$ .<sup>13</sup> We also use the lead arranger's reputation (*LeadRep*) as an additional instrument for  $\log(1+Fin\ Cov)$ . Costello and Wittenberg-Moerman (2011) argue that loans arranged by more reputable lenders have less intensive financial covenants.<sup>14</sup>

The results of the 3SLS estimation are presented in Table 6. Panels A/B/C/D report the results for the estimations using *Ab.CFO.neg/Ab.Disc.Exp.neg/Ab.Prod.Cost/REM* as measures of REM, respectively. For brevity reasons, we only present coefficients on the key variables and instrumental variables. In Panel A, we find that *Ab.CFO.neg* is significantly positively associated with interest spread, collateral requirement, and financial covenant intensity, but does not have a significant impact on maturity, consistent with the results in Table 5. In Panel B, we find that *Ab.Disc.Exp.neg* still shows a significantly positive impact on interest spread and financial covenant intensity and still does not have a significant impact on collateral. However, the coefficient on *Ab.Disc.Exp.neg* loses the significance in the maturity regression that it had in Table 5. In Panel C, the results indicate that firms with greater *Ab.Prod.Cost* incur significantly higher interest spreads, shorter maturities, higher chances of collateral being required, and more intensive financial covenants, consistent with the findings in Table 5. In Panel D, the coefficients on the combined measure of REM remain significantly positive in the interest spread, collateral, and financial covenant intensity regressions, but cease to be significant in the maturity regression compared with Table 5. Collectively, after allowing for simultaneities among the examined loan terms, we continue to document that firms with greater REM are subject to higher interest spreads, a higher likelihood of having collateral requirements, and more intensive financial covenants. These

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<sup>13</sup> We require at least three observations to calculate the sample medians for *Indy Maturity*, *Indy Tangibility*, and *Indy Fin Cov*.

<sup>14</sup> In estimating the 3SLS system we make an adjustment to the financial covenant intensity equation. Each of the interest spread, maturity, and collateral equations contains the endogenous variable  $\log(1+Fin\ Cov)$ . Typically, the endogenous variables are dependent variables in other equations in the system. In order to satisfy this criterion we replace *Fin Cov* with  $\log(1+Fin\ Cov)$  as the dependent variable to account for the simultaneity of the equations.

findings corroborate the inference that lenders are able to detect the borrower firm's REM and protect themselves with stricter loan terms. However, the results for maturity become weaker, with only one REM measure, *Ab.Prod.Cost*, being marginally significant in the maturity tests. The table also shows that all our instruments are statistically significant with the expected signs.<sup>15</sup>

[Insert Table 6]

#### 4.4 Suspect-Sample Analysis

Since the REM proxies are measured with the deviations from the predicted values in each regression model, run by industry and year, they represent deviations from the industry-year mean. However, deviations from other firms in the same industry and year do not necessarily imply earnings management. For example, a relatively low CFO given the sales level might be due to obsolete products that force the managers to offer aggressive discounts or due to a business strategy aimed at beating competitors with cheap prices; a relatively low R&D investment might be caused by decreasing returns on R&D projects or a lack of relevant personnel; and a relatively high production cost might be attributed to inefficient logistics or poor relations with suppliers. These economic fundamentals are likely to affect a firm's credit risk as well. As a result, the impact of the REM proxies on the loan terms documented in the main tests might be driven by lenders' responses to these economic fundamentals rather than REM.

In order to address the above issue and to increase the power of our tests, we follow prior literature (e.g., Abernathy, Beyer, & Rapley, 2014; Cohen & Zarowin, 2010; Zang, 2012; Zhao et al., 2012) and constrain our sample to loans issued to firm-years suspected of involving earnings management. Suspect firm-years are defined as those with reported

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<sup>15</sup> Partial F-tests confirm that our instruments are strong instruments.

earnings that just meet/beat important earnings benchmarks. We adopt three earnings benchmarks: zero earnings, last year's earnings, and the analyst forecast consensus. Suspect firm-years just meeting/beating zero (last year's) earnings are defined as those with earnings before extraordinary items (changes in earnings before extraordinary items) scaled by lagged total assets falling within the interval  $[0, 0.005)$ . Suspects just meeting/beating the analyst forecast consensus are those with actual EPS minus the last analyst forecast consensus before the fiscal year-end date falling within the interval  $[0, 0.01)$ . In order to control for the self-selection bias caused by differences between the suspect firm-years and the non-suspect firm-years, we estimate a two-stage Heckman (1979) selection model. In the first stage, we estimate a Probit model derived from Zang (2012) which explains the earnings management suspect firm-years, and calculate the inverse Mills ratio (*IMR*). In the second stage, we re-estimate Eq. (4)-(7) using the suspect sample and include the inverse Mills ratio obtained from the first stage as an additional control variable.

The results of the Heckman (1979) second-stage regressions are presented in Table 7. In Panel A, the coefficients on all REM variables are positive and significant at the 1% level, suggesting that lenders charge higher interest rates to firms engaging in greater REM. In Panel B, however, we do not find a significant impact of REM on maturity. In Panel C, we document significantly positive relations between *Ab.CFO.neg/Ab.Prod.Cost/REM* and collateral requirements. The coefficient on *Ab.Disc.Exp.neg* is also positive but does not reach significance at conventional levels. In Panel D, all REM variables are significantly positively associated with *Fin Cov*, implying that lenders impose more restrictive financial covenants on firms engaging in greater REM. Overall, the results for interest spread, collateral, and financial covenant intensity are largely consistent with those documented in Table 5, but the results for maturity no longer hold in the suspect-sample analysis. The

coefficients on *IMR* are only significant in the financial covenant intensity tests, suggesting that it is important to address the sample selection bias in those tests.

[Insert Table 7]

#### 4.5 Alternative Measures of Covenant Tightness

In the main analysis, we use the number of financial covenants to proxy for covenant tightness. In this section, we re-examine the relation between *REM* and covenant tightness using alternative covenant tightness measures. The results are reported in Table 8.

In Table 8 Panel A, we adopt a covenant index based on Bradley and Roberts (2015), which takes into account the presence of both financial and certain general covenants. Specifically, the index assigns one point (up to a maximum of six) for each of the following covenants existing in a loan: security provision, dividend restriction, more than two restrictions on financial ratios, asset sweep, debt sweep, and equity sweep. We document that *Ab.CFO.neg*, *Ab.Prod.Cost*, and *REM* are significantly positively associated with this alternative measure of covenant tightness. However, *Ab.Disc.Exp.neg* does not show a significant impact.

In Panel B, we adopt another covenant index based on Fields et al. (2012), which is similar to the Bradley and Roberts (2015) index. Specifically, the index assigns one point (up to a maximum of three) for each of the following covenant categories existing in a loan: security provision, more than two restrictions on financial ratios, and whether the loan covenants include asset, debt, and/or equity sweeps. Similarly to Panel A, the results indicate that lenders penalise firms with greater *Ab.CFO.neg*, *Ab.Prod.Cost*, and *REM* by imposing tighter covenants. *Ab.Disc.Exp.neg* again does not show a significant impact.

In Panel C, we apply the Demerjian and Owens (2016) measure of aggregated probability of covenant violation. This measure combines a variety of features that determine

the tightness of financial covenants in a loan package, including the number of financial covenants (intensity), the distance between the actual values of financial ratios underlying covenants and the covenant thresholds (slack), the volatility of the underlying financial ratios (volatility), and the correlations among the underlying financial ratios (correlation).<sup>16</sup> Since this measure is only applicable to loans with financial covenants (i.e., the number of financial covenants > 0), the number of observations in this test is smaller. We find significantly positive coefficients on *Ab.Prod.Cost* and *REM*. The coefficients on *Ab.CFO.neg* and *Ab.Disc.Exp.neg* are also positive but do not reach statistical significance at conventional levels.

Taken together, using alternative measures of covenant tightness, we provide evidence that two out of three individual REM measures (i.e., *Ab.CFO.neg* and *Ab.Prod.Cost*) and the combined REM measure generally exhibit a positive impact on covenant tightness. This evidence suggests that lenders at least penalise some REM activities by imposing tighter covenants, consistent with the inference drawn from Table 5 Panel D.

[Insert Table 8]

#### **4.6 The Impact of REM on Bond Terms**

In this section, we carry out some additional tests on the impact of REM on bond terms. Ge and Kim (2014) study the relation between REM and the cost of new bond issues. They find that REM firms incur higher yield spreads. However, their study only looks at the price term of bonds and ignores non-price terms. In order to provide a more complete picture of how bond contracts address REM, we examine the relation between REM and both price and non-price terms of bonds.

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<sup>16</sup> A loan package is deemed to have tighter covenants when it includes more financial covenants, when the actual values of financial ratios underlying covenants are closer to the covenant thresholds, when the underlying financial ratios are more volatile, and when the correlations among the underlying financial ratios are lower.

Consistent with the tests on loan terms, we investigate four types of bond terms: yield spread ( $\log(Yield\ Spread)$ ), maturity ( $\log(Maturity)$ ), collateral requirement (*Collateral*), and the total number of covenants (*Cov*).<sup>17</sup> We also include a set of firm-specific and bond-specific control variables. The firm-specific controls are the same as those adopted in the loan term tests. The bond-specific controls are derived from Ge and Kim (2014), including the natural logarithm of the bond offering amount (*Bond Size*), whether the bond includes a put option (*Put*), and whether the bond includes a call option (*Call*). We also control for the non-price terms in the  $\log(Yield\ Spread)$  regression and control for the other non-price terms when one of the examined non-price terms is the dependent variable. Year fixed effects and industry fixed effects are also included.

The data on bond variables are collected from the Mergent Fixed Income Securities Database (FISD). We start with all bonds issued by U.S. industrial companies during 1996-2017 (which is identical to the data period for the loan sample). We exclude private placements, preferred securities, mortgage-backed securities, asset-backed securities, and bonds with special features such as pay-in-kind or insured. Consistent with the loan sample, we also exclude bonds issued to financial and regulated firms and require data availability on REM and all control variables. The final sample includes 7,251 bonds. The number of observations is smaller in the  $\log(Yield\ Spread)$  regression due to the extra missing values for *Yield Spread*.

The results are reported in Table 9. In Panel A, we document significantly positive coefficients on *Ab.CFO.neg*, *Ab.Prod.Cost*, and *REM*, suggesting that REM firms incur a higher cost of new corporate bonds. This finding is consistent with that in Ge and Kim (2014). In Panels B and C, we do not find any significant impact of REM on maturity or the collateral requirement. In Panel D, the results show significantly positive relations between all REM

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<sup>17</sup> We are unable to distinguish financial from general bond covenants using the data provided by Mergent FISD.

variables and the total number of covenants. In summary, the results in Table 9 imply that the bond contracts address the incremental risk induced by REM through higher yield spreads and more restrictive covenants, but neither the maturity terms nor the collateral requirements are affected. Comparing these to the results of the loan term tests reported in Table 5, which show a significant impact of REM on both price and all non-price loan terms, the bondholders' different responses to REM are consistent with the argument in Bharath et al. (2008) that loan contracts address the borrower's earnings quality in a more flexible and customised manner than bond contracts do, due to the institutional differences between the loan and bond markets.

[Insert Table 9]

## 5. Conclusion

This study investigates whether lenders are able to detect, and how they respond to, borrower firms' REM activities in loan contracting. Following Roychowdhury (2006), we adopt three individual measures of REM (i.e., *Ab.CFO.neg*, *Ab.Disc.Exp.neg*, and *Ab.Prod.Cost*) and also combine these three individual measures into an overall measure (i.e., *REM*). Higher values of REM measures indicate greater REM. We examine the impact of REM on four loan contract terms, namely interest spread, maturity, collateral requirement, and financial covenant intensity. The results in the main analysis show that all individual and the overall REM measure are significantly positively associated with the interest spread and financial covenant intensity. Two out of three individual REM measures (*Ab.Disc.Exp.neg* and *Ab.Prod.Cost* for the maturity test; *Ab.CFO.neg* and *Ab.Prod.Cost* for the collateral test), as well as the overall REM measure, are significantly negatively (positively) related to maturity (the likelihood of imposing collateral requirements). These results are robust to the controlling of AEM and other determinants of loan contract terms that have been identified in

the prior literature. We infer from these results that the loan providers are likely to identify the borrower firms' REM activities. They view these activities as detrimental to firm value and require higher interest rates, shorter maturities, the presence of collateral, and more intensive financial covenants to mitigate the increased information and default risks induced by REM.

We also perform a 3SLS analysis to address the joint determination of the examined loan terms and use a suspect sample to improve the confidence that our findings are driven by REM per se rather than firm fundamentals. The results for interest spread, collateral requirement, and financial covenant intensity largely continue to hold in these robustness tests, but the results for maturity are weakened. In addition, we adopt alternative proxies for covenant tightness and still find evidence suggesting that borrowers with greater REM incur more restrictive covenants. Finally, we examine the role of REM in bond contracting and document significant impacts of REM on bond yield and covenant intensity, but not on either maturity or collateral requirements.

This study adds to the earnings quality-debt contracting literature by shedding light on how the price and non-price loan terms are affected by the borrower firms' REM activities. In addition, our study extends the REM literature by providing novel evidence on the cost of engaging in REM from a loan-contracting perspective. A key implication of this study is that it alerts firms that REM can be detected and penalised by creditors. Firms using REM to boost current-period earnings should bear in mind the increase in their borrowing cost. Future studies could investigate the real impact of REM on firms' ability to serve their debt, for example, whether firms engaging in pre-issuance REM have more covenant violations, credit-rating downgrades, or even defaults after loan issuance.



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**Table 1**  
**Definition and Measurement of Variables**

<i>Variables</i>	<i>Definition and Measurement</i>
<b>REM Variables (Source: Compustat)</b>	
<i>Ab.CFO</i>	<p>Abnormal CFO, measured as the error terms from the annual cross-sectional regression model:</p> $\text{Ab.CFO}_i = \text{CFO}_i - \beta_0 - \beta_1 \text{Sales}_i - \beta_2 \text{Ucngu}_i - \beta_3 \text{Asset}_i$ <p>where <i>CFO</i> is cash flow from operations (<i>OANCF</i>) before discretionary expenditures (defined below); <i>Sales</i> is sales revenue (<i>SALE</i>); <i>Ucngu</i> is change in sales revenue; <i>Asset</i> is total assets (<i>AT</i>).</p>
<i>Ab.CFO.neg</i>	<i>Ab.CFO</i> multiplied by -1.
<i>Ab.Disc.Exp</i>	<p>Abnormal discretionary expenditures, measured as the error terms from the annual cross-sectional regression model:</p> $\text{Ab.Disc.Exp}_i = \text{Disc.Exp}_i - \beta_0 - \beta_1 \text{Sales}_i - \beta_2 \text{Ucngu}_i - \beta_3 \text{Asset}_i$ <p>where <i>Disc.Exp</i> is discretionary expenditures, measured as the sum of R&amp;D expense (<i>XRD</i>), advertising expense (<i>XAD</i>), and selling, general and administrative expenses (<i>SGA</i>); following Roychowdhury (2006), we set missing R&amp;D and advertising to zero as long as SG&amp;A is available; <i>Sales</i> and <i>Asset</i> are defined as above.</p>
<i>Ab.Disc.Exp.neg</i>	<i>Ab.Disc.Exp</i> multiplied by -1.
<i>Ab.Prod.Cost</i>	<p>Abnormal production costs, measured as the error terms from the annual cross-sectional regression model:</p> $\text{Ab.Prod.Cost}_i = \text{Prod.Cost}_i - \beta_0 - \beta_1 \text{Sales}_i - \beta_2 \text{Ucngu}_i - \beta_3 \text{Asset}_i$ <p>where <i>Prod.Cost</i> is production costs, measured as cost of goods sold (<i>COGS</i>) plus change in inventory (<i>INVT</i>); <i>Ucngu</i>, <i>Ucngu</i>, and <i>Asset</i> are defined as above.</p>
<i>REM</i>	A combined measure of <i>REM</i> , calculated as the sum of <i>Ab.CFO.neg</i> , <i>Ab.Disc.Exp.neg</i> , and <i>Ab.Prod.Cost</i> .
<b>Firm Variables (Source: Compustat, I/B/E/S)</b>	
<i>(ROA)</i>	Standard deviation of <i>ROA</i> (defined below) estimated over the previous three to five years as available.
<i>AEM</i>	<p>Accruals-based earnings management, measured as the absolute value of the error terms from the annual cross-sectional regressions of the modified Jones model (Dechow et al., 1995):</p> $\text{AEM}_i = \frac{1}{\text{TA}_i} \left( \text{CEV}_i - \text{NEV}_i - \text{EJG}_i + \text{FNE}_i - \text{DP}_i \right) + \text{Tge}_i + \text{PPE}_i$ <p>where <i>TA</i> is total accruals, calculated as change in current assets – change in current liabilities – change in cash + change in short-term debt – depreciation ( <i>CEV</i> – <i>NEV</i> – <i>EJG</i> + <i>FNE</i> – <i>DP</i>); <i>Tge</i> is change in net receivables; <i>PPE</i> is the gross value of property, plant, and equipment (<i>PPEGT</i>); <i>Ucngu</i> and <i>Asset</i> are defined as above.</p>
<i>Asset Maturity</i>	The weighted average of the maturity of current assets and net PPE, computed as $\text{ACT} / (\text{ACT} + \text{PPENT}) \times \text{ACT} / \text{COGS} + \text{PPENT} / (\text{ACT} + \text{PPENT}) \times \text{PPENT} / \text{DP}$ , used as the instrument for <i>Maturity</i> in the 3SLS analysis.
<i>CurRatio</i>	Current ratio, calculated as the ratio of current assets ( <i>ACT</i> ) to current liabilities ( <i>LCT</i> ).
<i>Firm Size</i>	The firm's total assets ( <i>AT</i> ) in millions of dollars.
<i>IMR</i>	<p>Inverse Mills ratio calculated based on the Probit regression (Zang, 2012): <math>\text{Prob}(\text{Suspect}_i = 1) = (\beta_0 + \beta_1 \text{HabBeater}_i + \beta_2 \text{NumAnalyst}_i + \beta_3 \text{New Issue}_{i+1} + \beta_4 \text{Shares}_i + \beta_5 \text{Mar to Book}_{i-1} + \beta_6 \text{ROA}_i + \text{Year Effects} - \epsilon_i)</math>. <i>Suspect</i> is an indicator variable equal to one if the firm just meets/beats zero earnings (<i>IB</i>), last-year earnings (<i>IB</i>) or the analyst forecast consensus in a particular year; <i>HabBeater</i> is the number of times a firm meets/beats the analyst forecast consensus in the past four quarters; <i>NumAnalyst</i> is the natural logarithm of 1 plus the number of analysts following the firm; <i>New Issue</i> is an indicator variable equal to one if the change in log split-adjusted shares outstanding (<math>\text{CSHO} \times \text{AJEX}</math>) compared with the prior</p>

**Table 1**  
**Definition and Measurement of Variables**

<i>Variables</i>	<i>Definition and Measurement</i>
	year is greater than 10% (Fama & French, 2008; Greenwood & Hanson, 2012); <i>Shares</i> is the natural logarithm of the number of shares outstanding ( <i>CSHO</i> ); <i>Mar to Book</i> and <i>ROA</i> are defined below.
<i>Indy Tangibility</i>	The median <i>Tangibility</i> (defined below) within the same industry group and calendar year, used as an instrument for <i>Collateral</i> in the 3SLS analysis.
<i>IntCov</i>	Interest coverage rate, measured by the ratio of operating income ( <i>OIBDP</i> - <i>DP</i> ) to interest expense ( <i>XINT</i> ).
<i>Leverage</i>	Ratio of long-term debt ( <i>DLTT</i> ) to total assets ( <i>AT</i> ).
<i>Mar to book</i>	Ratio of the market value of equity plus the book value of debt ( $PRCC \times CSHO + LT$ ) to total assets ( <i>AT</i> ).
<i>ROA</i>	Return on assets, calculated as net income before extraordinary items ( <i>IB</i> ) divided by average assets ( <i>AT</i> ).
<i>Tangibility</i>	Ratio of net PPE plus inventory ( $PPENT + INVT$ ) to total assets ( <i>AT</i> ).
<i>Z-Score</i>	Altman (1968) Z-score for the likelihood of bankruptcy, computed as $(1.2 \text{ Working capital} + 1.4 \text{ Retained earnings} + 3.3 \text{ EBIT} + 0.999 \text{ Sales}) / \text{Total assets} + 0.6 (\text{Market value of equity} / \text{Book value of total liabilities}) = (1.2 \text{ } WCAP + 1.4 \text{ } RE + 3.3 (PI + XINT - IINT) + 0.999 \text{ } SALE) / AT + 0.6 (PRCC \times CSHO) / LT$ .
<b>Loan Variables (Source: DealScan, Federal Reserve Bank of St. Louis Database)</b>	
<i>Avg IntSpread</i>	The average <i>IntSpread</i> (defined below) of loans completed over the previous six months, used as the instrument for <i>IntSpread</i> in the 3SLS analysis.
<i>Collateral</i>	An indicator variable equal to one if the loan agreement contains collateral requirements, and zero otherwise.
<i>Cov_Ind_BR</i>	An index that assigns one point (up to a maximum of six) for each of the following covenants existing in a loan: security provision, dividend restriction, more than two restrictions on financial ratios, asset sweep, debt sweep, and equity sweep (Bradley & Roberts, 2015).
<i>Cov_Ind_FFS</i>	An index that assigns one point (up to a maximum of three) for each of the following covenant categories existing in a loan: security provision, more than two restrictions on financial ratios, and whether the loan covenants include asset, debt, and/or equity sweeps (Fields et al., 2012).
<i>Fin Cov</i>	The total number of financial covenants included in a loan contract.
<i>Indy Fin Cov</i>	The median number of financial covenants of all loans (except for the current loan) issued to firms within the same industry group and calendar year, used as the instrument for <i>Fin Cov</i> in the 3SLS analysis.
<i>Indy Maturity</i>	The median maturity of all loans (except for the current loan) issued to firms within the same industry group and calendar year, used as the instrument for <i>Maturity</i> in the 3SLS analysis.
<i>InstLoan</i>	An indicator variable equal to one for loans with type of term loan B, C, D, E, F, G or H (institutional term loans), and zero otherwise.
<i>IntSpread</i>	Interest spread, measured by All in Spread Drawn ( <i>AISD</i> ) which is the annual spread paid over LIBOR for each dollar drawn down from the loan. The commitment fee, annual fee, upfront fee, etc. are all included in the calculation of <i>AISD</i> .
<i>LeadRep</i>	An indicator variable equal to one if deal <i>i</i> is syndicated by one of the top 25 lead arrangers in the U.S. syndicated loan market, and zero otherwise, used as the instrument for <i>Fin Cov</i> in the 3SLS analysis. The ranking of lead arrangers is based on their previous-year market shares, in terms of the total amount of deals they syndicated. In calculating market share, the deal amount is split equally among all lead arrangers if a deal involves multiple leads. For deal <i>i</i> , <i>LeadRep</i> is determined based on the highest ranking of all its lead arrangers (Ball et al., 2008).

**Table 1**  
**Definition and Measurement of Variables**

<i>Variables</i>	<i>Definition and Measurement</i>
<i>Lender No.</i>	The number of lenders in the loan syndicate, including both lead arrangers and participant lenders.
<i>Loan Concn</i>	Ratio of loan amount to the sum of existing debt ( $DLTT+DLC$ ) and loan amount, used as the instrument for <i>Collateral</i> in the 3SLS analysis.
<i>Loan Purpose</i>	Loans are divided into seven groups according to their primary purpose: acquisition lines, LBO/MBO/SBO, takeover, debt repay/recapitalization, corporate purpose, working capital, and other purposes.
<i>Loan Size</i>	The loan amount in millions of dollars.
<i>Maturity</i>	Loan maturity in months.
<i>PPP</i>	An indicator variable equal to one if the loan agreement contains performance pricing provisions, and zero otherwise.
<i>PreRelation</i>	An indicator variable equal to one if at least one of the lead arrangers of deal <i>i</i> has led any prior deals of the borrower firm within the previous five years, and zero otherwise (Ivashina, 2009).
<i>PViol_DO</i>	An aggregated measure of the probability of financial covenant violation as described in Demerjian and Owens (2016), calculated at the initiation of each loan agreement.
<i>Revolver</i>	An indicator variable equal to one for revolving loans, and zero otherwise. A revolving loan is a loan of any of the following types: "Revolver/Line < 1 Yr.", "Revolver/ Line >= 1 Yr.", "Revolver/Term Loan", "364-Day Facility", "Demand Loan", or "Limited Line".
<i>Term Spread</i>	The difference between the yields on Moody's seasoned corporate bonds with a Baa rating and ten-year U.S. government bonds in the month of loan origination, used as the instrument for <i>IntSpread</i> in the 3SLS analysis.
<b>Bond Variables (Source: Mergent FISD)</b>	
<i>Bond Size</i>	The bond offering amount in millions of dollars.
<i>Call</i>	An indicator variable equal to one if the bond contains a call option, and zero otherwise.
<i>Collateral</i>	An indicator variable equal to one if the bond includes collateral requirements, and zero otherwise.
<i>Cov</i>	The total number of covenants included in a bond contract, following the measurement of Billett, King, and Mauer (2007).
<i>Maturity</i>	Bond maturity in months.
<i>Put</i>	An indicator variable equal to one if the bond contains a put option, and zero otherwise.
<i>Yield Spread</i>	The difference between the yield to maturity at the bond issuance date and the Treasury bond yield with similar maturity, expressed in bps.

**Table 2**  
**Sample Selection Procedure**

Selection Procedure	No. of Loans
Dollar-denominated loans issued to U.S. companies in the <i>DealScan</i> database up until 2017	161,299
- Loans issued before 1996	(31,950)
- Loans that cannot be matched with financial data in <i>Compustat</i>	(68,582)
- Loans missing data on test and control variables	(35,351)
- Loans issued to financial or regulated firms	(2,498)
Test Sample	22,918

Notes: This table presents the sample selection procedure of the main sample.



**Table 3**  
**Summary Statistics**

<i>Variables</i>	<i>Mean</i>	<i>Std. Dev.</i>	<i>25%</i>	<i>Median</i>	<i>75%</i>	<i>N</i>
<b><i>REM Variables</i></b>						
<i>Ab.CFO.neg</i>	0.028	0.314	-0.132	-0.003	0.145	22,918
<i>Ab.Disc.Exp.neg</i>	0.069	0.294	-0.058	0.049	0.189	22,918
<i>Ab.Prod.Cost</i>	-0.036	0.253	-0.168	-0.053	0.068	22,918
<i>REM</i>	0.060	0.795	-0.333	-0.003	0.380	22,918
<b><i>Firm Variables</i></b>						
<i>AEM</i>	0.064	0.081	0.018	0.040	0.079	22,918
<i>Firm Size (\$m)</i>	5,028.029	15,619.054	251.421	929.654	3,302.600	22,918
<i>Leverage</i>	0.307	0.218	0.154	0.278	0.421	22,918
<i>IntCov</i>	17.275	73.022	1.559	4.278	11.016	22,918
<i>CurRatio</i>	1.910	1.127	1.181	1.658	2.334	22,918
<i>Mar to Book</i>	1.727	0.974	1.124	1.451	1.980	22,918
<i>Tangibility</i>	0.439	0.235	0.257	0.428	0.614	22,918
<i>ROA</i>	0.022	0.125	0.002	0.042	0.078	22,918
<i>*TQC<sub>+</sub></i>	0.066	0.085	0.019	0.037	0.077	22,918
<i>Z-Score</i>	3.232	2.852	1.750	2.830	4.276	22,918
<b><i>Loan Variables</i></b>						
<i>IntSpread (bps)</i>	204.123	136.627	112.500	175.000	275.000	19,399
<i>Maturity (month)</i>	47.465	23.413	33.000	59.000	60.000	22,918
<i>Collateral</i>	0.568	0.495	0	1	1	22,918
<i>Fin Cov</i>	1.680	1.544	0.000	2.000	3.000	22,918
<i>Loan Size (\$m)</i>	415.275	913.455	112.500	175.000	275.000	22,918
<i>InstLoan</i>	0.099	0.298	0	0	0	22,918
<i>Revolver</i>	0.654	0.476	0	1	1	22,918
<i>PPP</i>	0.425	0.494	0	0	1	22,918
<i>PreRelation</i>	0.531	0.499	0	1	1	22,918
<i>Lender No.</i>	7.571	7.864	2.000	5.000	10.000	22,918

Notes: Our sample contains 22,918 loans issued to 3,723 U.S. public firms with an issuance date between January 1996 and December 2017. Refer to Table 1 for definition and measurement of variables.

**Table 4**  
**Pearson Correlation Matrix**

	1	2	3	4	5	6	7	8	9	10	11	12
1 <i>Ab.CFO.neg</i>												
2 <i>Ab.Disc.Exp.neg</i>	0.840***											
3 <i>Ab.Prod.Cost</i>	0.780***	0.699***										
4 <i>REM</i>	0.952***	0.903***	0.901***									
5 <i>log(IntSpread)</i>	0.121***	0.112***	0.064***	0.108***								
6 <i>log(Maturity)</i>	0.042***	0.008	0.062***	0.043***	0.214***							
7 <i>Collateral</i>	0.054***	0.057***	-0.010	0.036***	0.566***	0.136***						
8 <i>Fin Cov</i>	0.035***	0.009	0.000	0.017***	0.202***	0.068***	0.358***					
9 <i>AEM</i>	0.130***	0.122***	-0.092***	0.055***	0.099***	-0.057***	0.116***	0.069***				
10 <i>log(Firm Size)</i>	0.024***	0.036***	0.118***	0.065***	-0.387***	0.027***	-0.384***	-0.316***	-0.253***			
11 <i>Leverage</i>	0.054***	0.035***	0.028***	0.042***	0.256***	0.069***	0.167***	0.020***	0.042***	0.028***		
12 <i>IntCov</i>	-0.047***	-0.105***	-0.008	-0.053***	-0.053***	0.041***	-0.056***	-0.016**	-0.029***	0.003	-0.242***	
13 <i>CurRatio</i>	-0.071***	-0.101***	-0.087***	-0.092***	0.021***	0.054***	0.019***	0.059***	0.028***	-0.174***	-0.298***	0.190***
14 <i>Mar to Book</i>	-0.210***	-0.293***	-0.193***	-0.250***	-0.300***	-0.050***	-0.167***	-0.087***	0.096***	0.046***	-0.115***	0.215***
15 <i>Tangibility</i>	0.042***	0.121***	0.053***	0.074***	-0.025***	-0.018***	0.016**	0.001	0.005	-0.042***	0.134***	-0.069***
16 <i>ROA</i>	-0.003	-0.150***	0.111***	-0.003	-0.325***	0.139***	-0.224***	0.008	-0.165***	0.229***	-0.227***	0.259***
17 <i>*TQC+</i>	-0.069***	-0.028***	-0.155***	-0.096***	0.246***	-0.097***	0.224***	0.039***	0.264***	-0.365***	0.072***	-0.067***
18 <i>Z-Score</i>	-0.016**	-0.116***	0.009	-0.038***	-0.307***	0.014**	-0.189***	0.000	-0.007	0.003	-0.513***	0.392***
19 <i>log(Loan Size)</i>	0.013*	0.001	0.110***	0.046***	-0.346***	0.147***	-0.331***	-0.251***	-0.220***	0.831***	0.024***	0.034***
20 <i>InstLoan</i>	0.019***	0.001	0.020***	0.016**	0.285***	0.221***	0.272***	0.056***	-0.020***	0.038***	0.183***	-0.017**
21 <i>Revolver</i>	-0.031***	-0.015**	-0.011	-0.021***	-0.349***	-0.181***	-0.165***	-0.026***	-0.029***	0.060***	-0.171***	0.030***
22 <i>PPP</i>	-0.010	-0.035***	-0.001	-0.016**	-0.118***	0.126***	0.062***	0.424***	-0.042***	0.027***	-0.076***	0.033***
23 <i>PreRelation</i>	0.040***	0.012*	0.078***	0.048***	-0.124***	0.022***	-0.123***	-0.090***	-0.101***	0.364***	0.059***	-0.038***
24 <i>log(Lender No.)</i>	0.033***	0.006	0.106***	0.054***	-0.291***	0.166***	-0.246***	-0.030***	-0.186***	0.634***	0.027***	-0.002

	13	14	15	16	17	18	19	20	21	22	23	24
13 CurRatio												
14 Mar to Book	0.067***											
15 Tangibility	-0.122***	-0.156***										
16 ROA	0.135***	0.204***	-0.021***									
39" (ROA)	-0.009	0.113***	-0.063***	-0.404***								
18 Z-Score	0.426***	0.558***	-0.078***	0.544***	-0.200***							
19 log(Loan Size)	-0.127***	0.095***	-0.020***	0.271***	-0.343***	0.064***						
20 InstLoan	-0.036***	-0.051***	-0.045***	-0.026***	0.010	-0.106***	0.084***					
21 Revolver	0.028***	0.048***	0.049***	0.053***	-0.043***	0.112***	0.107***	-0.455***				
22 PPP	0.024***	0.011	0.012*	0.138***	-0.117***	0.097***	0.123***	-0.121***	0.165***			
23 PreRelation	-0.077***	0.033***	-0.035***	0.106***	-0.136***	-0.025***	0.345***	0.044***	0.043***	-0.007		
24 log(Lender No.)	-0.117***	0.055***	-0.035***	0.235***	-0.310***	0.044***	0.680***	-0.007	0.111***	0.271***	0.335***	

Notes: This table presents the Pearson correlation coefficients among the variables used in the main tests. Refer to Table 1 for definition and measurement of variables. \*, \*\*, and \*\*\* denote significance at the 10%, 5%, and 1% levels, respectively (two-tailed).

**Table 5**  
**Real Earnings Management and Loan Contract Terms**

**Panel A: REM and Interest Spread**

	Pred.Sign	<i>Dependent Variable: log(IntSpread)</i>			
		<i>Ab.CFO.neg</i> (1)	<i>Ab.Disc.Exp.neg</i> (2)	<i>Ab.Prod.Cost</i> (3)	<i>REM</i> (4)
<i>REM variables</i>	+	0.088*** (5.85)	0.069*** (3.63)	0.109*** (5.58)	0.034*** (5.17)
<i>AEM</i>	+	0.315*** (5.24)	0.382*** (5.98)	0.322*** (4.80)	0.338*** (5.44)
<i>log(Firm Size)</i>	-	-0.101*** (-9.65)	-0.101*** (-9.61)	-0.103*** (-9.63)	-0.102*** (-9.64)
<i>Leverage</i>	+	0.473*** (11.43)	0.479*** (11.52)	0.481*** (11.60)	0.476*** (11.50)
<i>IntCov</i>	-	0.000*** (3.10)	0.000*** (2.99)	0.000*** (3.10)	0.000*** (3.09)
<i>CurRatio</i>	-	0.012** (2.31)	0.010* (2.00)	0.012** (2.22)	0.012** (2.26)
<i>Mar to Book</i>	-	-0.114*** (-11.62)	-0.117*** (-11.84)	-0.112*** (-11.40)	-0.113*** (-11.67)
<i>Tangibility</i>	-	-0.082* (-1.91)	-0.085* (-1.96)	-0.086* (-1.96)	-0.085* (-1.96)
<i>ROA</i>	-	-0.817*** (-8.32)	-0.831*** (-8.52)	-0.785*** (-8.23)	-0.812*** (-8.33)
<i>*TQC+</i>	+	0.527*** (6.20)	0.531*** (6.21)	0.526*** (6.06)	0.527*** (6.15)
<i>Z-Score</i>	-	-0.005 (-1.08)	-0.003 (-0.77)	-0.005 (-1.07)	-0.005 (-1.06)
<i>log(Loan Size)</i>	-	-0.053*** (-9.67)	-0.054*** (-9.77)	-0.053*** (-9.59)	-0.053*** (-9.70)
<i>InstLoan</i>	+	0.130*** (5.07)	0.131*** (5.09)	0.130*** (5.06)	0.131*** (5.08)
<i>Revolver</i>	-	-0.250*** (-18.35)	-0.251*** (-18.25)	-0.251*** (-18.34)	-0.251*** (-18.27)
<i>PPP</i>	-	-0.102*** (-7.04)	-0.102*** (-7.03)	-0.102*** (-6.99)	-0.102*** (-7.01)
<i>PreRelation</i>	-	-0.045*** (-4.19)	-0.044*** (-4.10)	-0.044*** (-4.08)	-0.044*** (-4.14)
<i>log(Lender No.)</i>	-	-0.001 (-0.11)	-0.001 (-0.08)	-0.000 (-0.06)	-0.001 (-0.10)
<i>log(1+Fin Cov)</i>	-	0.066*** (5.74)	0.066*** (5.78)	0.066*** (5.82)	0.066*** (5.77)
<i>log(Maturity)</i>	+	0.027* (1.84)	0.026* (1.84)	0.027* (1.85)	0.027* (1.85)
<i>Collateral</i>	?	0.416*** (10.50)	0.417*** (10.54)	0.416*** (10.49)	0.416*** (10.51)
<i>Intercept</i>		5.271*** (44.60)	5.261*** (44.01)	5.272*** (44.58)	5.266*** (44.43)
Loan Purpose		Yes	Yes	Yes	Yes
Industry Effects		Yes	Yes	Yes	Yes
Year Effects		Yes	Yes	Yes	Yes
No. of Observations		19,399	19,399	19,399	19,399
Adjusted R <sup>2</sup>		66.17%	66.13%	66.17%	66.16%
Method		OLS	OLS	OLS	OLS

**Panel B: REM and Maturity**

		<i>Dependent Variable: log(Maturity)</i>			
	Pred.Sign	<i>Ab.CFO.neg</i> (1)	<i>Ab.Disc.Exp.neg</i> (2)	<i>Ab.Prod.Cost</i> (3)	<i>REM</i> (4)
<i>REM variables</i>	-	-0.019 (-1.54)	-0.044*** (-2.86)	-0.031* (-1.98)	-0.012** (-2.62)
<i>AEM</i>	-	-0.078 (-0.80)	-0.095 (-0.98)	-0.077 (-0.79)	-0.078 (-0.79)
<i>log(Firm Size)</i>	+	-0.089*** (-11.65)	-0.089*** (-11.73)	-0.089*** (-11.57)	-0.089*** (-11.64)
<i>Leverage</i>	-	0.160*** (3.89)	0.162*** (3.85)	0.159*** (3.81)	0.161*** (3.86)
<i>IntCov</i>	+	0.000 (0.11)	0.000 (0.10)	0.000 (0.08)	0.000 (0.08)
<i>CurRatio</i>	+	0.030*** (6.49)	0.029*** (6.23)	0.030*** (6.08)	0.029*** (6.23)
<i>Mar to Book</i>	+	-0.030*** (-3.53)	-0.032*** (-3.74)	-0.031*** (-3.37)	-0.032*** (-3.62)
<i>Tangibility</i>	+	0.018 (0.60)	0.022 (0.74)	0.019 (0.66)	0.020 (0.67)
<i>ROA</i>	+	0.517*** (9.27)	0.523*** (9.29)	0.506*** (8.91)	0.514*** (9.12)
<i>*TQC+</i>	-	-0.210*** (-2.87)	-0.211*** (-2.88)	-0.209*** (-2.85)	-0.210*** (-2.86)
<i>Z-Score</i>	+	-0.001 (-0.22)	-0.000 (-0.11)	-0.001 (-0.17)	-0.001 (-0.12)
<i>log(Loan Size)</i>	+	0.064*** (3.36)	0.064*** (3.37)	0.064*** (3.36)	0.064*** (3.36)
<i>InstLoan</i>	-	0.269*** (6.71)	0.269*** (6.70)	0.269*** (6.70)	0.269*** (6.70)
<i>Revolver</i>	?	-0.184** (-2.59)	-0.184** (-2.60)	-0.184** (-2.59)	-0.184** (-2.60)
<i>PPP</i>	+	0.150*** (6.39)	0.149*** (6.37)	0.150*** (6.38)	0.150*** (6.37)
<i>PreRelation</i>	+	-0.091*** (-4.21)	-0.091*** (-4.20)	-0.091*** (-4.22)	-0.091*** (-4.21)
<i>log(Lender No.)</i>	+	0.124*** (5.99)	0.124*** (6.00)	0.123*** (5.98)	0.124*** (5.98)
<i>log(1+Fin Cov)</i>	?	-0.022 (-1.20)	-0.022 (-1.19)	-0.022 (-1.21)	-0.022 (-1.20)
<i>Collateral</i>	+	0.103*** (3.52)	0.102*** (3.52)	0.103*** (3.52)	0.103*** (3.53)
<i>Intercept</i>		3.608*** (40.30)	3.613*** (40.61)	3.607*** (40.33)	3.609*** (40.31)
Loan Purpose		Yes	Yes	Yes	Yes
Industry Effects		Yes	Yes	Yes	Yes
Year Effects		Yes	Yes	Yes	Yes
No. of Observations		22,918	22,918	22,918	22,918
Adjusted R <sup>2</sup>		27.78%	27.80%	27.78%	27.78%
Method		OLS	OLS	OLS	OLS

**Panel C: REM and Collateral Requirement**

	Pred.Sign	Dependent Variable: Collateral			
		<i>Ab.CFO.neg</i> (1)	<i>Ab.Disc.Exp.neg</i> (2)	<i>Ab.Prod.Cost</i> (3)	<i>REM</i> (4)
<i>REM variables</i>	+	0.229*** (3.22)	0.044 (0.45)	0.366*** (5.48)	0.081*** (2.69)
<i>AEM</i>	+	0.872** (2.42)	1.031*** (2.87)	0.858** (2.44)	0.941*** (2.65)
<i>log(Firm Size)</i>	-	-0.331*** (-8.07)	-0.330*** (-7.97)	-0.336*** (-8.17)	-0.332*** (-8.06)
<i>Leverage</i>	+	1.919*** (10.38)	1.947*** (10.44)	1.940*** (10.42)	1.930*** (10.41)
<i>IntCov</i>	-	0.000 (0.72)	0.000 (0.64)	0.000 (0.78)	0.000 (0.71)
<i>CurRatio</i>	-	-0.026 (-1.06)	-0.034 (-1.41)	-0.024 (-0.99)	-0.027 (-1.11)
<i>Mar to Book</i>	-	-0.274*** (-9.15)	-0.296*** (-9.26)	-0.263*** (-9.26)	-0.275*** (-8.88)
<i>Tangibility</i>	-	-0.013 (-0.08)	-0.011 (-0.07)	-0.033 (-0.20)	-0.023 (-0.14)
<i>ROA</i>	-	-3.091*** (-7.49)	-3.124*** (-7.68)	-2.958*** (-7.08)	-3.084*** (-7.45)
<i>*TQC+</i>	+	3.777*** (7.62)	3.776*** (7.60)	3.773*** (7.60)	3.774*** (7.64)
<i>Z-Score</i>	-	0.006 (0.31)	0.014 (0.71)	0.005 (0.23)	0.007 (0.36)
<i>log(Loan Size)</i>	-	-0.237*** (-5.87)	-0.237*** (-5.87)	-0.235*** (-5.85)	-0.237*** (-5.88)
<i>InstLoan</i>	+	3.777*** (15.75)	3.779*** (15.71)	3.774*** (15.76)	3.777*** (15.74)
<i>Revolver</i>	?	0.206*** (2.94)	0.204*** (2.91)	0.204*** (2.91)	0.205*** (2.93)
<i>PPP</i>	-	0.067 (1.38)	0.066 (1.35)	0.068 (1.40)	0.068 (1.38)
<i>PreRelation</i>	-	-0.038 (-0.50)	-0.037 (-0.49)	-0.036 (-0.48)	-0.037 (-0.49)
<i>log(Lender No.)</i>	-	-0.096 (-1.57)	-0.095 (-1.56)	-0.096 (-1.56)	-0.096 (-1.56)
<i>log(1+Fin Cov)</i>	?	1.314*** (20.23)	1.315*** (20.29)	1.314*** (20.08)	1.314*** (20.25)
<i>log(Maturity)</i>	+	0.316*** (3.32)	0.315*** (3.31)	0.316*** (3.31)	0.316*** (3.32)
<i>Intercept</i>		0.334 (0.49)	0.337 (0.49)	0.345 (0.50)	0.329 (0.48)
Loan Purpose		Yes	Yes	Yes	Yes
Industry Effects		Yes	Yes	Yes	Yes
Year Effects		Yes	Yes	Yes	Yes
No. of Observations		22,918	22,918	22,918	22,918
Pseudo R <sup>2</sup>		36.53%	36.49%	36.55%	36.52%
Method		Probit	Probit	Probit	Probit

**Panel D: REM and the Number of Financial Covenants**

	Pred.Sign	Dependent Variable: <i>Fin Cov</i>			
		<i>Ab.CFO.neg</i> (1)	<i>Ab.Disc.Exp.neg</i> (2)	<i>Ab.Prod.Cost</i> (3)	<i>REM</i> (4)
<i>REM variables</i>	+	0.051*** (2.82)	0.035** (2.09)	0.057** (2.57)	0.020*** (3.11)
<i>AEM</i>	+	0.001 (0.01)	0.042 (0.84)	0.011 (0.22)	0.016 (0.33)
<i>log(Firm Size)</i>	-	-0.097*** (-16.77)	-0.097*** (-16.39)	-0.098*** (-16.52)	-0.097*** (-16.54)
<i>Leverage</i>	+	0.027 (0.62)	0.031 (0.69)	0.032 (0.73)	0.029 (0.65)
<i>IntCov</i>	-	0.000 (0.18)	0.000 (0.10)	0.000 (0.19)	0.000 (0.17)
<i>CurRatio</i>	-	0.020* (1.87)	0.019* (1.75)	0.020* (1.79)	0.020* (1.83)
<i>Mar to Book</i>	-	-0.045*** (-3.29)	-0.047*** (-3.16)	-0.045*** (-3.13)	-0.044*** (-3.13)
<i>Tangibility</i>	-	-0.042 (-0.86)	-0.043 (-0.88)	-0.044 (-0.91)	-0.044 (-0.91)
<i>ROA</i>	-	0.399*** (4.16)	0.390*** (4.07)	0.416*** (4.37)	0.401*** (4.19)
<i>*TQC+</i>	+	-0.199** (-1.97)	-0.198* (-1.95)	-0.199** (-1.98)	-0.198** (-1.96)
<i>Z-Score</i>	-	0.003 (0.49)	0.003 (0.62)	0.003 (0.54)	0.003 (0.48)
<i>log(Loan Size)</i>	-	-0.075*** (-6.44)	-0.075*** (-6.52)	-0.075*** (-6.48)	-0.075*** (-6.47)
<i>InstLoan</i>	+	0.205*** (5.14)	0.205*** (5.14)	0.205*** (5.14)	0.205*** (5.15)
<i>Revolver</i>	?	-0.022 (-0.82)	-0.022 (-0.83)	-0.022 (-0.83)	-0.022 (-0.83)
<i>PPP</i>	+	0.659*** (24.82)	0.660*** (24.80)	0.659*** (24.82)	0.660*** (24.79)
<i>PreRelation</i>	?	0.059*** (2.68)	0.060*** (2.71)	0.060*** (2.70)	0.060*** (2.69)
<i>log(Lender No.)</i>	-	0.152*** (10.39)	0.152*** (10.38)	0.153*** (10.38)	0.152*** (10.38)
<i>log(Maturity)</i>	+	-0.006 (-0.31)	-0.006 (-0.31)	-0.006 (-0.31)	-0.006 (-0.30)
<i>Collateral</i>	+	0.459*** (13.13)	0.460*** (13.22)	0.459*** (13.10)	0.459*** (13.16)
<i>Intercept</i>		0.623*** (4.70)	0.617*** (4.63)	0.624*** (4.69)	0.620*** (4.68)
Loan Purpose		Yes	Yes	Yes	Yes
Industry Effects		Yes	Yes	Yes	Yes
Year Effects		Yes	Yes	Yes	Yes
No. of Observations		22,918	22,918	22,918	22,918
Pseudo R <sup>2</sup>		17.10%	17.09%	17.09%	17.09%
Method		Poisson	Poisson	Poisson	Poisson

Notes: This table presents the regression results for the impact of REM on loan contract terms, including interest spreads, maturity, collateral requirement, and the number of financial covenants. All loan variables are estimated at loan initiation and all firm variables are estimated at the end of the fiscal year immediately prior to loan initiation. T-statistics/Z-statistics reported in parentheses are based on standard errors corrected for heteroskedasticity, and clustered by year. The extreme values of all continuous variables are winsorized at the 1st and 99th percentiles. Definition and measurement of variables are presented in Table 1. \*, \*\*, and \*\*\* denote significance at the 10%, 5%, and 1% levels, respectively (two-tailed).

**Table 6**  
**3SLS Estimation of the Loan Contract Terms**

<b>Panel A: Ab.CFO.neg</b>				
<i>Dependent variable:</i>	<i>log(IntSpread)</i>	<i>log(Maturity)</i>	<i>Collateral</i>	<i>log(1+Fin Cov)</i>
	(1)	(2)	(3)	(4)
<i>Ab.CFO.neg</i>	0.056*** (2.89)	-0.035 (-1.58)	0.053*** (5.08)	0.042** (2.09)
<i>log(1+Fin Cov)</i>	0.110** (2.32)	-0.206*** (-3.40)	0.101*** (3.38)	
<i>log(Maturity)</i>	0.020 (0.38)		0.058* (1.75)	-0.015 (-0.35)
<i>Collateral</i>	0.916*** (3.70)	0.963*** (3.51)		0.014 (0.05)
<i>log(Avg IntSpread)</i>	1.222*** (12.44)			
<i>log(Term Spread)</i>	0.253*** (8.02)			
<i>log(Asset Maturity)</i>		0.029*** (4.00)		
<i>log(Indy Maturity)</i>		0.395*** (15.87)		
<i>Indy Tangibility</i>			0.064*** (3.39)	
<i>Loan Concn</i>			0.154*** (6.55)	
<i>LeadRep</i>				-0.050*** (-4.17)
<i>log(1+ Indy Fin Cov)</i>				0.115*** (17.54)
No. of Observations	19,375	19,375	19,375	19,375
Method	3SLS	3SLS	3SLS	3SLS
<b>Panel B: Ab.Disc.Exp.neg</b>				
<i>Dependent variable:</i>	<i>log(IntSpread)</i>	<i>log(Maturity)</i>	<i>Collateral</i>	<i>log(1+Fin Cov)</i>
	(1)	(2)	(3)	(4)
<i>Ab.Disc.Exp.neg</i>	0.064*** (4.68)	0.005 (0.26)	0.012 (1.04)	0.031* (1.81)
<i>log(1+Fin Cov)</i>	0.118*** (2.87)	-0.197*** (-3.24)	0.056* (1.87)	
<i>log(Maturity)</i>	0.047 (1.03)		0.059* (1.77)	0.034 (0.66)
<i>Collateral</i>	0.645*** (3.10)	1.164*** (4.27)		-0.748*** (-2.69)
<i>log(Avg IntSpread)</i>	1.207*** (12.46)			
<i>log(Term Spread)</i>	0.251*** (8.04)			
<i>log(Asset Maturity)</i>		0.033*** (4.34)		
<i>log(Indy Maturity)</i>		0.389*** (15.50)		
<i>Indy Tangibility</i>			0.048** (2.54)	
<i>Loan Concn</i>			0.110*** (4.75)	
<i>LeadRep</i>				-0.048*** (-3.79)
<i>log(1+ Indy Fin Cov)</i>				0.122***



				(16.11)
No. of Observations	19,375	19,375	19,375	19,375
Method	3SLS	3SLS	3SLS	3SLS

**Panel C: Ab.Prod.Cost**

<i>Dependent variable:</i>	<i>log(IntSpread)</i>	<i>log(Maturity)</i>	<i>Collateral</i>	<i>log(1+Fin Cov)</i>
	(1)	(2)	(3)	(4)
<i>Ab.Prod.Cost</i>	0.065*** (2.80)	-0.051* (-1.91)	0.067*** (5.19)	0.047* (1.90)
<i>log(1+Fin Cov)</i>	0.102** (2.21)	-0.198*** (-3.27)	0.095*** (3.18)	
<i>log(Maturity)</i>	0.018 (0.35)		0.058* (1.73)	-0.009 (-0.20)
<i>Collateral</i>	0.905*** (3.80)	0.955*** (3.51)		-0.107 (-0.41)
<i>log(Avg IntSpread)</i>	1.220*** (12.45)			
<i>log(Term Spread)</i>	0.252*** (8.00)			
<i>log(Asset Maturity)</i>		0.028*** (3.90)		
<i>log(Indy Maturity)</i>		0.396*** (15.90)		
<i>Indy Tangibility</i>			0.065*** (3.39)	
<i>Loan Concn</i>			0.152*** (6.45)	
<i>LeadRep</i>				-0.051*** (-4.16)
<i>log(1+ Indy Fin Cov)</i>				0.117*** (17.29)
No. of Observations	19,375	19,375	19,375	19,375
Method	3SLS	3SLS	3SLS	3SLS

**Panel D: REM**

<i>Dependent variable:</i>	<i>log(IntSpread)</i>	<i>log(Maturity)</i>	<i>Collateral</i>	<i>log(1+Fin Cov)</i>
	(1)	(2)	(3)	(4)
<i>REM</i>	0.025*** (4.22)	-0.005 (-0.75)	0.013*** (3.15)	0.016** (2.43)
<i>log(1+Fin Cov)</i>	0.122*** (2.80)	-0.192*** (-3.22)	0.079*** (2.64)	
<i>log(Maturity)</i>	0.045 (0.92)		0.063* (1.90)	0.005 (0.11)
<i>Collateral</i>	0.770*** (3.32)	0.981*** (3.61)		-0.223 (-0.84)
<i>log(Avg IntSpread)</i>	1.212*** (12.42)			
<i>log(Term Spread)</i>	0.258*** (8.10)			
<i>log(Asset Maturity)</i>		0.031*** (4.25)		
<i>log(Indy Maturity)</i>		0.390*** (15.63)		
<i>Indy Tangibility</i>			0.060*** (3.10)	
<i>Loan Concn</i>			0.143*** (6.01)	

<i>LeadRep</i>				-0.051***
				(-4.10)
<i>log(1+ Indy Fin Cov)</i>				0.117***
				(17.04)
No. of Observations	19,375	19,375	19,375	19,375
Method	3SLS	3SLS	3SLS	3SLS

Notes: This table presents the regression results for the impact of REM on loan contract terms, including interest spreads, maturity, collateral requirement, and the number of financial covenants. We use a 3SLS approach to address the joint determination of loan contract terms. *Avg IntSpread* and *Term Spread* are used as instruments for *IntSpread*; *Asset Maturity* and *Indy Maturity* are used as instruments for *Maturity*; *Indy Tangibility* and *Loan Conc* are used as instruments for *Collateral*; and *LeadRep* and *Indy Fin Cov* are used as instruments for *Fin Cov*. All estimations include intercept, control variables, and loan purpose, industry, and year fixed effects. All loan variables are estimated at loan initiation and all firm variables are estimated at the end of the fiscal year immediately prior to loan initiation. T-statistics/Z-statistics reported in parentheses are based on standard errors corrected for heteroskedasticity, and clustered by year. The extreme values of all continuous variables are winsorized at the 1st and 99th percentiles. Definition and measurement of variables are presented in Table 1. \*, \*\*, and \*\*\* denote significance at the 10%, 5%, and 1% levels, respectively (two-tailed).

**Table 7**  
**Suspect-Sample Analysis**

**Panel A: REM and Interest Spread**

	<i>Dependent Variable: log(IntSpread)</i>				
	Pred. Sign	<i>Ab.CFO.neg</i> (1)	<i>Ab.Disc.Exp.neg</i> (2)	<i>Ab.Prod.Cost</i> (3)	<i>REM</i> (4)
<i>REM variables</i>	+	0.200*** (4.69)	0.199*** (3.63)	0.246*** (5.38)	0.081*** (4.58)
<i>IMR</i>		0.143 (1.06)	0.141 (1.05)	0.144 (1.08)	0.144 (1.07)
No. of Observations		2,552	2,552	2,552	2,552
Adjusted R <sup>2</sup>		71.31%	71.26%	71.31%	71.34%
Method		OLS	OLS	OLS	OLS

**Panel B: REM and Maturity**

	<i>Dependent Variable: log(Maturity)</i>				
	Pred. Sign	<i>Ab.CFO.neg</i> (1)	<i>Ab.Disc.Exp.neg</i> (2)	<i>Ab.Prod.Cost</i> (3)	<i>REM</i> (4)
<i>REM variables</i>	-	-0.055 (-1.07)	-0.036 (-0.60)	-0.041 (-0.48)	-0.018 (-0.78)
<i>IMR</i>		0.114 (1.28)	0.115 (1.30)	0.115 (1.30)	0.114 (1.28)
No. of Observations		2,867	2,867	2,867	2,867
Adjusted R <sup>2</sup>		32.88%	32.85%	32.85%	32.87%
Method		OLS	OLS	OLS	OLS

**Panel C: REM and Collateral Requirement**

	<i>Dependent Variable: Collateral</i>				
	Pred. Sign	<i>Ab.CFO.neg</i> (1)	<i>Ab.Disc.Exp.neg</i> (2)	<i>Ab.Prod.Cost</i> (3)	<i>REM</i> (4)
<i>REM variables</i>	+	0.752*** (3.47)	0.436 (1.50)	1.117*** (3.58)	0.282*** (3.01)
<i>IMR</i>		0.647 (1.04)	0.643 (1.02)	0.674 (1.09)	0.656 (1.05)
No. of Observations		2,867	2,867	2,867	2,867
Pseudo R <sup>2</sup>		43.78%	43.54%	43.92%	43.75%
Method		Probit	Probit	Probit	Probit

**Panel D: REM and the Number of Financial Covenants**

	<i>Dependent Variable: Fin Cov</i>				
	Pred. Sign	<i>Ab.CFO.neg</i> (1)	<i>Ab.Disc.Exp.neg</i> (2)	<i>Ab.Prod.Cost</i> (3)	<i>REM</i> (4)
<i>REM variables</i>	+	0.104** (2.33)	0.095** (2.34)	0.075* (1.66)	0.036** (2.35)
<i>IMR</i>		0.465*** (4.09)	0.461*** (4.14)	0.458*** (4.13)	0.462*** (4.10)
No. of Observations		2,867	2,867	2,867	2,867
Pseudo R <sup>2</sup>		21.31%	21.29%	21.28%	21.30%
Method		Poisson	Poisson	Poisson	Poisson

Notes: This table presents the regression results for the impact of REM on loan contract terms, including interest spreads, maturity, collateral requirement, and the number of financial covenants, using a suspect sample. All estimations include intercept, control variables, and loan purpose, industry, and year fixed effects. All loan variables are estimated at loan initiation and all firm variables are estimated at the end of the fiscal year immediately prior to loan initiation. T-statistics/Z-statistics reported in parentheses are based on standard errors corrected for heteroskedasticity, and clustered by year. The extreme values of all continuous variables are winsorized at the 1st and 99th percentiles. Definition and measurement of variables are presented in Table 1. \*, \*\*, and \*\*\* denote significance at the 10%, 5%, and 1% levels, respectively (two-tailed).

**Table 8**  
**Alternative Measures of Covenant Tightness**

**Panel A: REM and the Covenant Index based on Bradley and Roberts (2015)**

<i>Dependent Variable: Cov_Ind_BR</i>					
	Pred. Sign	<i>Ab.CFO.neg</i> (1)	<i>Ab.Disc.Exp.neg</i> (2)	<i>Ab.Prod.Cost</i> (3)	<i>REM</i> (4)
<i>REM variables</i>	+	0.049*** (3.23)	0.005 (0.20)	0.061** (2.43)	0.015** (2.07)
No. of Observations		15,036	15,036	15,036	15,036
Pseudo R <sup>2</sup>		10.83%	10.82%	10.83%	10.83%
Method		Poisson	Poisson	Poisson	Poisson

**Panel B: REM and the Covenant Index based on Fields et al. (2012)**

<i>Dependent Variable: Cov_Ind_FFS</i>					
	Pred. Sign	<i>Ab.CFO.neg</i> (1)	<i>Ab.Disc.Exp.neg</i> (2)	<i>Ab.Prod.Cost</i> (3)	<i>REM</i> (4)
<i>REM variables</i>	+	0.064*** (4.37)	0.007 (0.29)	0.095*** (4.38)	0.022*** (2.80)
No. of Observations		22,918	22,918	22,918	22,918
Pseudo R <sup>2</sup>		13.55%	13.53%	13.55%	13.54%
Method		Poisson	Poisson	Poisson	Poisson

**Panel C: REM and the Aggregated Probability of Violation based on Demerjian and Owens (2016)**

<i>Dependent Variable: PViol_DO</i>					
	Pred. Sign	<i>Ab.CFO.neg</i> (1)	<i>Ab.Disc.Exp.neg</i> (2)	<i>Ab.Prod.Cost</i> (3)	<i>REM</i> (4)
<i>REM variables</i>	+	0.036 (1.55)	0.029 (1.54)	0.070** (2.82)	0.018** (2.11)
No. of Observations		13,218	13,218	13,218	13,218
Adjusted R <sup>2</sup>		27.26%	27.24%	27.33%	27.29%
Method		OLS	OLS	OLS	OLS

Notes: This table presents the regression results for the impact of REM on alternative covenant measures. All estimations include intercept, control variables, and loan purpose, industry, and year fixed effects. We do not control for collateral in Panels A and B, because *Cov\_Ind\_BR* and *Cov\_Ind\_FFS* include collateral as an element in their calculations. All loan variables are estimated at loan initiation and all firm variables are estimated at the end of the fiscal year immediately prior to loan initiation. T-statistics/Z-statistics reported in parentheses are based on standard errors corrected for heteroskedasticity, and clustered by year. The extreme values of all continuous variables are winsorized at the 1st and 99th percentiles. Definition and measurement of variables are presented in Table 1. \*, \*\*, and \*\*\* denote significance at the 10%, 5%, and 1% levels, respectively (two-tailed).

**Table 9**  
**Real Earnings Management and Bond Terms**

**Panel A: REM and Yield Spread**

	Pred.Sign	<i>Dependent Variable: log(Yield Spread)</i>			
		<i>Ab.CFO.neg</i> (1)	<i>Ab.Disc.Exp.neg</i> (2)	<i>Ab.Prod.Cost</i> (3)	<i>REM</i> (4)
<i>REM variables</i>	+	0.238*** (4.59)	0.082 (1.52)	0.286*** (4.06)	0.075*** (3.62)
<i>AEM</i>	+	0.434*** (2.90)	0.548*** (3.54)	0.442** (2.60)	0.489*** (3.08)
<i>log(Firm Size)</i>	-	-0.261*** (-15.74)	-0.261*** (-15.27)	-0.263*** (-15.76)	-0.263*** (-15.69)
<i>Leverage</i>	+	0.668*** (7.77)	0.691*** (7.82)	0.693*** (8.05)	0.680*** (7.83)
<i>IntCov</i>	-	0.001* (1.92)	0.001 (1.72)	0.001* (2.04)	0.001* (1.86)
<i>CurRatio</i>	-	0.000 (0.05)	-0.001 (-0.15)	-0.001 (-0.12)	0.000 (0.01)
<i>Mar to Book</i>	-	-0.163*** (-6.46)	-0.182*** (-6.97)	-0.165*** (-6.73)	-0.168*** (-6.52)
<i>Tangibility</i>	-	0.076 (1.17)	0.079 (1.21)	0.072 (1.08)	0.072 (1.08)
<i>ROA</i>	-	-0.620*** (-3.45)	-0.711*** (-3.91)	-0.506** (-2.64)	-0.628*** (-3.39)
<i>*TQC+</i>	+	0.601** (2.31)	0.622** (2.34)	0.595** (2.30)	0.613** (2.33)
<i>Z-Score</i>	-	-0.025* (-1.81)	-0.019 (-1.36)	-0.024* (-1.74)	-0.023 (-1.67)
<i>Bond Size</i>	-	0.171*** (14.71)	0.172*** (15.00)	0.172*** (15.09)	0.171*** (14.89)
<i>Put</i>	+	-1.253*** (-12.92)	-1.256*** (-12.67)	-1.252*** (-12.75)	-1.254*** (-12.82)
<i>Call</i>	-	0.380*** (6.01)	0.380*** (6.09)	0.381*** (6.07)	0.380*** (6.05)
<i>log(1+Cov)</i>	-	0.207*** (4.74)	0.206*** (4.68)	0.205*** (4.69)	0.207*** (4.71)
<i>log(Maturity)</i>	+	0.390*** (7.86)	0.391*** (7.85)	0.395*** (8.02)	0.391*** (7.83)
<i>Collateral</i>	?	-0.056*** (-3.41)	-0.054*** (-3.27)	-0.055*** (-3.39)	-0.055*** (-3.36)
<i>Intercept</i>		4.677*** (15.53)	4.667*** (15.13)	4.687*** (15.65)	4.687*** (15.51)
Industry Effects		Yes	Yes	Yes	Yes
Year Effects		Yes	Yes	Yes	Yes
No. of Observations		4,492	4,492	4,492	4,492
Adjusted R <sup>2</sup>		60.02%	59.75%	60.00%	59.92%
Method		OLS	OLS	OLS	OLS

**Panel B: REM and Maturity**

		<i>Dependent Variable: log(Maturity)</i>			
	Pred.Sign	<i>Ab.CFO.neg</i> (1)	<i>Ab.Disc.Exp.neg</i> (2)	<i>Ab.Prod.Cost</i> (3)	<i>REM</i> (4)
<i>REM variables</i>	-	-0.040 (-1.67)	-0.038 (-1.28)	-0.008 (-0.25)	-0.012 (-1.25)
<i>AEM</i>	-	-0.310** (-2.33)	-0.335** (-2.42)	-0.329** (-2.43)	-0.321** (-2.38)
<i>log(Firm Size)</i>	+	0.010 (0.61)	0.010 (0.64)	0.010 (0.60)	0.010 (0.62)
<i>Leverage</i>	-	-0.046 (-1.26)	-0.046 (-1.26)	-0.050 (-1.36)	-0.047 (-1.30)
<i>IntCov</i>	+	-0.000 (-1.46)	-0.000 (-1.42)	-0.000 (-1.49)	-0.000 (-1.46)
<i>CurRatio</i>	+	0.010 (1.64)	0.010 (1.67)	0.010 (1.71)	0.010 (1.67)
<i>Mar to Book</i>	+	0.003 (0.23)	0.003 (0.32)	0.006 (0.55)	0.003 (0.31)
<i>Tangibility</i>	+	0.084* (1.73)	0.086* (1.75)	0.082 (1.68)	0.085* (1.74)
<i>ROA</i>	+	0.273*** (4.04)	0.288*** (4.42)	0.277*** (3.70)	0.275*** (4.06)
<i>*TQC+</i>	-	-0.066 (-0.84)	-0.068 (-0.86)	-0.066 (-0.83)	-0.067 (-0.85)
<i>Z-Score</i>	+	-0.001 (-0.26)	-0.001 (-0.33)	-0.002 (-0.44)	-0.001 (-0.32)
<i>Bond Size</i>	+	0.051** (2.13)	0.051** (2.14)	0.051** (2.13)	0.051** (2.13)
<i>Put</i>	?	0.880*** (26.74)	0.880*** (26.74)	0.880*** (26.94)	0.880*** (26.79)
<i>Call</i>	?	0.488*** (10.76)	0.488*** (10.74)	0.487*** (10.74)	0.488*** (10.75)
<i>log(1+Cov)</i>	?	-0.277*** (-8.54)	-0.276*** (-8.52)	-0.277*** (-8.57)	-0.277*** (-8.54)
<i>Collateral</i>	+	-0.024*** (-3.40)	-0.025*** (-3.49)	-0.025*** (-3.47)	-0.025*** (-3.44)
<i>Intercept</i>		4.395*** (44.99)	4.390*** (45.75)	4.399*** (44.90)	4.394*** (45.30)
Industry Effects		Yes	Yes	Yes	Yes
Year Effects		Yes	Yes	Yes	Yes
No. of Observations		7,251	7,251	7,251	7,251
Adjusted R <sup>2</sup>		27.30%	27.30%	27.29%	27.30%
Method		OLS	OLS	OLS	OLS

**Panel C: REM and Collateral Requirement**

	Pred.Sign	Dependent Variable: Collateral			
		<i>Ab.CFO.neg</i> (1)	<i>Ab.Disc.Exp.neg</i> (2)	<i>Ab.Prod.Cost</i> (3)	<i>REM</i> (4)
<i>REM variables</i>	+	0.230 (1.47)	0.219 (0.87)	0.085 (0.36)	0.077 (1.06)
<i>AEM</i>	+	0.616 (1.01)	0.715 (1.25)	0.659 (1.13)	0.640 (1.09)
<i>log(Firm Size)</i>	-	-0.256*** (-4.84)	-0.257*** (-4.96)	-0.255*** (-4.87)	-0.257*** (-4.91)
<i>Leverage</i>	+	0.926*** (3.11)	0.927*** (3.07)	0.947*** (3.17)	0.930*** (3.12)
<i>IntCov</i>	-	0.002*** (2.71)	0.002** (2.49)	0.002*** (2.76)	0.002*** (2.70)
<i>CurRatio</i>	-	-0.058 (-1.19)	-0.054 (-1.04)	-0.058 (-1.19)	-0.057 (-1.14)
<i>Mar to Book</i>	-	-0.675*** (-4.99)	-0.679*** (-4.97)	-0.688*** (-5.24)	-0.676*** (-5.01)
<i>Tangibility</i>	-	0.103 (0.33)	0.081 (0.28)	0.120 (0.40)	0.097 (0.32)
<i>ROA</i>	-	-0.232 (-0.48)	-0.292 (-0.60)	-0.257 (-0.53)	-0.235 (-0.48)
<i>*TQC+</i>	+	2.376*** (3.60)	2.386*** (3.59)	2.377*** (3.61)	2.378*** (3.60)
<i>Z-Score</i>	-	-0.127** (-2.43)	-0.123** (-2.26)	-0.120** (-2.28)	-0.125** (-2.36)
<i>Bond Size</i>	-	0.183** (2.52)	0.180** (2.48)	0.181** (2.49)	0.182** (2.51)
<i>Put</i>	?	-0.672 (-1.24)	-0.674 (-1.24)	-0.677 (-1.25)	-0.675 (-1.24)
<i>Call</i>	?	0.804*** (5.65)	0.798*** (5.56)	0.803*** (5.67)	0.802*** (5.65)
<i>log(1+Cov)</i>	?	-0.806*** (-8.06)	-0.804*** (-8.10)	-0.802*** (-7.94)	-0.805*** (-8.06)
<i>log(Maturity)</i>	+	-0.110* (-1.78)	-0.110* (-1.78)	-0.110* (-1.77)	-0.110* (-1.78)
<i>Intercept</i>		2.351*** (3.79)	2.358*** (3.98)	2.286*** (3.58)	2.339*** (3.83)
Industry Effects		Yes	Yes	Yes	Yes
Year Effects		Yes	Yes	Yes	Yes
No. of Observations		7,251	7,251	7,251	7,251
Pseudo R <sup>2</sup>		34.82%	34.80%	34.74%	34.79%
Method		Probit	Probit	Probit	Probit

**Panel D: REM and the Number of Covenants**

	Pred.Sign	Dependent Variable: Cov			
		<i>Ab.CFO.neg</i> (1)	<i>Ab.Disc.Exp.neg</i> (2)	<i>Ab.Prod.Cost</i> (3)	<i>REM</i> (4)
<i>REM variables</i>	+	0.122*** (3.34)	0.080* (1.75)	0.112** (2.04)	0.041** (2.53)
<i>AEM</i>	+	0.083 (0.49)	0.155 (1.01)	0.099 (0.61)	0.110 (0.68)
<i>log(Firm Size)</i>	-	-0.057*** (-7.11)	-0.057*** (-6.95)	-0.057*** (-7.09)	-0.057*** (-7.10)
<i>Leverage</i>	+	0.416*** (7.72)	0.418*** (7.77)	0.426*** (7.97)	0.419*** (7.80)
<i>IntCov</i>	-	0.000 (1.53)	0.000 (1.45)	0.000 (1.54)	0.000 (1.50)
<i>CurRatio</i>	-	-0.003 (-0.50)	-0.003 (-0.48)	-0.004 (-0.61)	-0.003 (-0.49)
<i>Mar to Book</i>	-	-0.050*** (-2.67)	-0.055*** (-2.97)	-0.053*** (-2.81)	-0.051*** (-2.70)
<i>Tangibility</i>	-	0.028 (0.44)	0.027 (0.42)	0.030 (0.46)	0.026 (0.40)
<i>ROA</i>	-	0.359*** (2.70)	0.317** (2.34)	0.395*** (2.97)	0.357*** (2.65)
<i>*TQC+</i>	+	-0.350*** (-2.62)	-0.347** (-2.56)	-0.356*** (-2.69)	-0.349*** (-2.62)
<i>Z-Score</i>	-	-0.005 (-0.75)	-0.004 (-0.53)	-0.004 (-0.60)	-0.005 (-0.67)
<i>Bond Size</i>	-	0.046*** (3.70)	0.046*** (3.68)	0.047*** (3.76)	0.046*** (3.70)
<i>Put</i>	?	-0.558*** (-9.37)	-0.558*** (-9.32)	-0.558*** (-9.28)	-0.558*** (-9.34)
<i>Call</i>	?	0.479*** (10.20)	0.479*** (10.22)	0.481*** (10.25)	0.479*** (10.23)
<i>log(Maturity)</i>	+	-0.033*** (-2.86)	-0.033*** (-2.91)	-0.034*** (-2.95)	-0.033*** (-2.89)
<i>Collateral</i>	+	-0.114 (-1.14)	-0.115 (-1.15)	-0.113 (-1.14)	-0.115 (-1.15)
<i>Intercept</i>		1.686*** (16.17)	1.693*** (15.73)	1.683*** (16.05)	1.690*** (15.96)
Industry Effects		Yes	Yes	Yes	Yes
Year Effects		Yes	Yes	Yes	Yes
No. of Observations		7,251	7,251	7,251	7,251
Pseudo R <sup>2</sup>		6.61%	6.59%	6.59%	6.60%
Method		Poisson	Poisson	Poisson	Poisson

Notes: This table presents the regression results for the impact of REM on bond terms, including yield spreads, maturity, collateral requirement, and the number of covenants. All bond variables are estimated at bond initiation and all firm variables are estimated at the end of the fiscal year immediately prior to bond initiation. T-statistics/Z-statistics reported in parentheses are based on standard errors corrected for heteroskedasticity, and clustered by year. The extreme values of all continuous variables are winsorized at the 1st and 99th percentiles. Definition and measurement of variables are presented in Table 1. \*, \*\*, and \*\*\* denote significance at the 10%, 5%, and 1% levels, respectively (two-tailed).



## Appendix A. Examples of private information requested by lenders through loan agreements.

Company/ Contract Date	URL	Extract of Loan Agreements
AGCO Corp, 22/12/2003	<a href="https://www.sec.gov/Archives/edgar/data/880266/0000950144-04-000089.txt">https://www.sec.gov/Archives/edgar/data/880266/0000950144-04-000089.txt</a>	<p><i>Section 5.6 Visitation Rights. AGCO shall permit, and shall cause its Subsidiaries to permit, representatives of the Agents, each Issuing Bank and each Lender to (a) visit and inspect the properties of AGCO and its Subsidiaries during normal business hours, (b) inspect and make extracts from and copies of AGCO's and its Subsidiaries' books and records, (c) inspect the Collateral, and (d) discuss with its respective principal officers, directors and accountants its businesses, assets, liabilities, financial positions, results of operations, and business prospects; ...</i></p> <p><i>Section 6.2 Access to Accountants. Each Borrower hereby authorizes the Agents to discuss the financial condition of such Borrower and its Subsidiaries with such Borrower's independent public accountants upon reasonable notification to such Borrower of such Agent's intention to do so. Each Borrower shall be given the reasonable opportunity to participate in any such discussion.</i></p>
Cantel Medical Corp, 23/02/2001	<a href="https://www.sec.gov/Archives/edgar/data/19446/0000912057-01-519912.txt">https://www.sec.gov/Archives/edgar/data/19446/0000912057-01-519912.txt</a>	<p><i>SECTION 5.02 REPORTING AND INFORMATION REQUIREMENTS. (ii) ANNUAL OPERATING PLAN. As soon as available, but in any event within ninety (90) days after the close of each Fiscal Year of the Borrowers, a copy of the Borrowers' and their Subsidiaries' annual operating plan for the then current Fiscal Year.</i></p> <p><i>(v) MONTHLY ACCOUNTS RECEIVABLE AGING REPORTS, ETC. As soon as available, but in any event within twenty (20) days after the close of each month during each Fiscal Year, a monthly accounts receivable aging report in summary form only, setting forth the amounts due and owing to each of the Borrowers and their Subsidiaries, respectively, as of the close of the preceding month.</i></p>
Chesapeake Energy, 28/01/2005	<a href="https://www.sec.gov/Archives/edgar/data/895126/0000895126-05-000014.txt">https://www.sec.gov/Archives/edgar/data/895126/0000895126-05-000014.txt</a>	<p><i>6.2. CERTIFICATES; OTHER INFORMATION. (c) concurrently with the delivery of any financial statements pursuant to SECTION 6.1, a detailed consolidated budget for the following fiscal year (including a projected consolidated balance sheet of the Company and its Subsidiaries as of the end of the following fiscal year, the related consolidated statements of projected cash flow, projected changes in financial position and projected income) ...</i></p> <p><i>(e) concurrently with the delivery of the budgets and projections referred to in SECTION 6.2(C), a report of the Budget Basis Projected Production on a month by month basis for each of the next 36 months, together with such supporting detail as Co-Administrative Agents may request, which report shall in each case be accompanied by a certificate of a Responsible Officer stating that such Budget Basis Projected Production is based on reasonable estimates, information and assumptions and that such Responsible Officer has no reason to believe that such Budget Basis Projected Production is incorrect or misleading in any material respect;</i></p>
K2 Inc, 25/03/2003	<a href="https://www.sec.gov/Archives/edgar/data/6720/0000898430-03-002192.txt">https://www.sec.gov/Archives/edgar/data/6720/0000898430-03-002192.txt</a>	<p><i>Section 6.1 Reporting. (p) as soon as available but in any event within twenty days of the end of each calendar month, as of the calendar month then ended: (i) a summary aged trial balance of the Accounts of each Obligated Party including the name and balance due for each Account Debtor and reconciled to the Borrowing Base Certificate delivered as of such date, and upon request by the Agent, a detailed aged trial balance of the Accounts of each Obligated Party specifying the name, address, and balance due for each Account Debtor; (ii) a</i></p>

*schedule in form reasonably satisfactory to the Agent summarizing each Obligated Party's Inventory (A) presented with respect to location, product type, volume on hand, and cost and (B) reconciled to the Borrowing Base Certificate delivered as of such date, and upon request by the Agent such schedule detailing such items for each Obligated Party; (iii) in form reasonably satisfactory to the Agent, a schedule of each Obligated Party's Inventory located with a third party under any consignment, bailee arrangement, or warehouse agreement; (iv) a worksheet of calculations by the Borrowers to determine Eligible Accounts and Eligible Inventory, such worksheets detailing the Accounts and Inventory excluded from Eligible Accounts and Eligible Inventory; (v) upon request by the Agent, a schedule and aging of each Obligated Party's accounts payable; and (vi) a schedule of all new deposit accounts opened by the Obligated Parties since the date of the last such schedule;*

KCS Energy  
Inc,  
14/01/2003  
[https://www.sec.gov/  
Archives/edgar/data  
/832820/0000950129  
-03-001749.txt](https://www.sec.gov/Archives/edgar/data/832820/0000950129-03-001749.txt)

*Section 7.01 Affirmative Covenants. (a) Reporting Requirements. Furnish to each Agent and each Lender: (iii) as soon as available, and in any event within 30 days after the end of each fiscal month of the Borrower and its Subsidiaries, internally prepared consolidated balance sheets, consolidated statements of operations and retained earnings and consolidated statements of cash flows as at the end of such fiscal month, and for the period commencing at the end of the immediately preceding Fiscal Year and ending with the end of such fiscal month, all in reasonable detail and certified by an Authorized Officer of the Borrower as fairly presenting, in all material respects ...*

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