Earnings Management and Bank Loan Contracting

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Abstract

This study investigates the implications of earnings management (EM) on corporate loan pricing. Between two competing hypotheses—signaling hypothesis and managerial opportunism hypothesis, we find that banks price earnings management of the borrowing firm and increase loan spread, as the level of EM increases. Banks view EM as a value-destroying process (managerial opportunism hypothesis) that hampers the borrower's capacity to repay loan ex post and therefore, demand a marginal increase in loan spread, in order to compensate for the future uncertainty and ex post monitoring cost. The result is robust, using a variety of earning management measurements such as (1) accounting accruals (Jones, 1991); (2) real activities manipulation (Roychowdhury, 2006); and (3) cash flow and earnings volatility and accrual component of earnings volatility (Jayaraman, 2008). While this study also confirm the finding from prior literatures that lender certification and relationship strength have a mitigating effect on information frictions between the lender and borrower, reputable banks and relationship lenders still view active earnings management risk-increasing activities.

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1. Introduction

The relation between the cost of capital and information quality of the firm seeking external financing is undoubtedly a critical issue in corporate finance and accounting. In an influential survey study, Graham et al. (2005) document that firm managers make efforts to smooth earnings in order to maintain earnings predictability even in the face of longer-term cost. One such cost is an increase in cost of raising external financing. Easley and O'Hara (2004) argue (pp. 1578) that "Firms can influence their cost of capital by affecting the precision and quantity of information available to investors. This can be accomplished by a firm's selection of its accounting standards, as well as through its corporate disclosure policies." Although there seems a strong theoretical argument for the relation between accounting quality and the cost of capital, academic studies provide the mixed results. McInnis (2010) finds no causal link between earnings management practices and the cost of capital, while Bharath et al. (2008) find a strong impact of the use of accounting accruals on the cost of debt (see also Kim, Song, and Zhang, 2011; Ge and Kim, 2014; Francis et al, 2004, 2005; Graham, Li and Qju, 2008; Kim and Sohn 2013; Costello and Wittenberg-Moerman, 2011; Lambert et al. 2007).

While information effects for corporate financing is persuasive, academic studies focus on public financing such as stocks and public bonds, the direct empirical study about the impact of accounting quality on private debt (like bank loan contract) is rare. We focus on private debt because banks are special. Banks are considered as "information specialists" because of their ability to extract private information through lending process and efficient ex post monitoring role in mitigating information asymmetries (Diamond, 1984, 1991; Fama, 1985). Diamond (1984) stresses that banks can act as effective "insiders" who can exert influence on the borrowing firm's critical decision makings including capital structure and dividend policy as well as investment decisions. If managerial discretions over earnings quality truly undermine the firm's value-increasing goal, bankers would be the first external entity who can detect such harmful behavior because of banks' monitoring role. Private debt holders are in a superior position to the diffusely owned, arm's length debt holders in accessing private information because of banks' intimate relation with the borrowing firms.

However, the ill-minded manager's "manipulation" story can be disputable. Earnings management, particularly, income smoothing does not necessarily reflect manager's selfish motive. Rather, it could be outcome of manager's strategic plan or confidence on the firm's future operating performance. A survey study documents that a majority of CFOs, using their reporting discretion as a part of risk management strategy, would reduce cash flow volatility to improve earning predictability (Bodnar et al., 2014), which can even contribute to increase in firm value (Kirschenheiter and Melumad, 2002) and can also be beneficial

to shareholders (Arya, Glover, and Sunder, 1998). If banks view earning management irrelevant to future capability of the borrower's debt payment, the cost of loan should not be sensitive to reporting discretion. In this study, we raise the following two simple but critical questions regarding the cost of private debt capital and earnings managements:

(1) Do banks price earnings management activities on new credit agreements?
(2) Do banks also perceive earnings management practices as manager's opportunistic behavior to maximize his or her personal gain, or manager's optimistic view toward the firm's future operating performance?

In this study, we focus on the manipulation of accounting information, since the quality of financial statement are central for the bank to evaluate riskiness of the borrower upon loan contracting, and also to estimate future cash flows that satisfy debt repayment requirement upon maturity. Therefore, we posit that lender actively evaluate quality of earnings and price it into loan origination process. After controlling for other confounding factors from loan pricing literatures, we test whether two important EM measures (accruals earnings manipulation and real earnings manipulation) are factored into the cost of loan. If banks perceive reporting flexibility from financial statements as manager's egoistic moves, the cost of loan should rise, as banks would demand compensation for uncertain debt repayment.

Our initial results show that a group of syndicated lenders are keenly aware of opportunistic behavior of management surrounding loan agreements. Lenders view quality of accounting statements as one of key pricing metrics and price them into loan valuation. As the level of accruals and real earnings management increase, loan spread becomes larger cross-sectionally, controlling for other loan and firm characteristics. Lenders perceive earnings management as proxy for moral hazard that increases monitoring cost ex-post and hampers repayment capacity of the borrowing company. The results are not sensitive to the various measure of earnings management: real earnings management or accruals based earnings management.

Next, we ask a question of which loan contracting terms plays a role in mitigating information frictions between lender and borrower. Following the literature, we investigate whether lender reputation and prior lending relationship can alleviate information problem in the presence of manager's intention to manage earnings. Although earnings management is associated with loan spread, reputable lenders and prior lending relationship tend to play an opposing role and thereby imposing a lesser effect on loan spread. The result is consistent with prior findings from literatures in that reputable lenders with a large market share can better evaluate creditworthiness of the borrower than other small competitors in syndicated loan

market. Similarly, knowledge obtained from prior lending relationship can be instrumental to loan contracting process.

The results of previous earnings management studies are mixed and are not conclusive, and also they are sensitive to the choice of accrual measurements. We measure the level of the firm's earnings management with several estimation methods. While previous studies mainly rely on accounting accruals, we employ several alternative measurements, in addition to (1) accounting accruals (Jones, 1991), such as (2) real earnings management (Roychowdhury, 2006), and (3) cash flow volatility, earnings volatility, and accrual component of earnings volatility (Jayaraman, 2008). This study separates divergent types of earnings management and investigates their ramifications on bank loan financing.

Furthermore, we focus on private debt (i.e., bank loan) contracting to investigate whether earnings quality affects the cost of capital with several reasons. First, if managerial discretions truly undermine the firm's value-increasing goal, bankers would be the first external entity who can detect such harmful behavior because of banks' monitoring role ex post. Private debt holders (i.e., banks) are in a superior position to the diffusely owned arm's length debt holders in accessing private information because of banks' intimate relation with the borrowing firms. Second, while several studies shed light on the cost of debt in the context of public bond market, studies on private debts are rare. Recent studies on earnings management and financing contracting use samples of bond or equity issues, but it is difficult to know whether their results can be generalized. Although bonds and loans share some commonalities, bank loans and bonds have different characteristics. For instance, bank loans are more likely to be secured than bonds, and secured lenders recover more, on average, than unsecured creditors (Acharya et al., 2007; Cantor and Varma, 2004; Khieu, Mullineaux, and Yi, 2012). Bank loans are also typically senior to bonds in a firm's capital structure.

In addition, a majority of loan agreements are renegotiated before their maturity (Roberts and Sufi, 2009) due to changes in profiles of the borrower such as changes to the credit quality of the borrower during the loan duration. Renegotiation usually involves with alteration of loan maturity, loan amount, and interest rates on loan, and loan covenants. As a majority of newly originated loans will undergo renegotiation process eventually before loan reaches maturity, a close monitoring by the lender must precede renegotiation to better re-value the prospects of borrower. Conversely, public debts are difficult to alter terms of debt agreements before maturity because of the diffused ownership by a large number of creditors, and therefore, renegotiations are often not suitable. We argue that loans are more conducive than bonds to test information effect on the cost of capital because of its frequent scrutiny by creditors. By testing our hypothesis with loan data, we can shed light on how a lender's information access and renegotiation flexibility play an important role to the quality of accounting information in loan origination process.

Syndicated loans are medium- or large-sized loans extended to firms by a group of lenders.[1] In a typical syndicated loan contract, a small number of lenders, called as lead lenders or arrangers, other participating banks to issue a relatively large-sized loan package for the purpose of risk sharing and meeting capital requirements. The loan contracting process is very similar to that of the equity IPO process. Lead banks commit to composing loan syndicates using their private network and assume a risky position by retaining a portion of the loan and allocating remaining loan shares to participating banks. The role of lead lenders is to bridge borrowers participating banks and serve both sides of the table; for the borrower, the lead bank secures financing, and for the participating banks, it exercises credit-screening on borrowers with due diligence and offers ex-post monitoring on the borrowers. As such, the syndicated loan market is a good laboratory for testing our hypotheses that address informational frictions between the borrower and lender.

Practices of earnings management can reflect the managers' opportunistic behavior to expand their egoistic motive (managerial opportunism hypothesis), or their confidence on future operating performance (signaling hypothesis). In order to investigate the viability of these two competing arguments, we draw s sample of syndicated loans from medium-to-large corporate borrowers (i.e., private debts) to test whether banks price the firm's earnings management. We find that banks are able to price earnings management of the borrowing firm and increase loan spread, as the level of EM increase (managerial opportunism hypothesis). Banks view EM as a value-destroying process that hampers the borrower's capacity to repay loan ex post and therefore, demand a marginal increase in loan spread, in order to compensate for the future uncertainty—increase in monitoring cost.

This study also finds that lender certification has a material effect on mitigating information frictions not only between the lender and borrower, but also between the lead lenders and participating banks. The reputable lead lender(s) certifies the borrower's creditworthiness and mitigates information asymmetry in increasing the probability of future debt repayment, and this assurance can draw concession from participating banks to a lower rate on syndicated credits.

In addition, we utilize the loan collateral as a proxy factor for the firm's credit risk in order to provide additional evidence that banks view earnings management as an increasing cost of monitoring ex post. The result shows that more risky firms pledge collateral that is correlated with the level of earning management.

[1] According to Depository Trust and Clearing Corporation (DTCC), global syndicated loan markets totaled more than $4.5 trillion in 2007, an increase of 13% over 2006. The largest syndicated loan market is the U.S. market which grew to $2.1 trillion in 2007, an increase of more than 20% over 2006.

The remainder of this paper is organized as follows. In Section 2, we review the related literature and develop hypotheses. Section 3 discusses the empirical design. Section 4 provides the sample selection. Main results are presented in Section 5. Section 6 summarizes alternative ways to support main results, and Section 7 concludes.

2. Literature Review and Hypotheses Development

2.1 What drives earnings management?

In Jensen and Meckling (1976) framework where agency conflicts arise due to information asymmetry within firms, literatures have identified financial transparency as one of internal mechanisms to alleviate conflicts. The trouble is that the quality of financial reporting suffers when its preparers exercise reporting flexibility allowed by the current GAAP, not alone engaging outright manipulations. Earnings management is generally referred to a situation when managers or insiders alter financial reports to "influence contractual outcomes that depend on reported accounting numbers" (Healy and Wahlen, 1999).[2] A typical practice of earnings management practice is income smoothing. It includes deferring revenue during a good year if the following year is expected to be a challenging one, or delaying the recognition of expenses in a difficult year or "borrowing" earnings from the future because the firm's operating performance is expected to improve in the near future. One such example is that General Electric (GE) has had a history of long, consecutive quarters of increased earnings from continuing operation. GE's superb performance can be attributed to successful management in an upward trend of business cycle, but the media asserts that it is a well-planned timing of gains and losses to smooth out earning streams (Birger, 2000).

A strand of literatures categorizes two types of earnings management: accruals based earnings management (AM hereafter) and real activities earnings management (RM hereafter). Accruals based earnings management is practices with no direct cash flow consequences, often named as accruals manipulation. Examples include under-provisioning for bad debt expenses by financial institutions and delaying asset write-offs by capital-intensive industry. Real earnings manipulation entails with direct cash flow consequences to meeting earnings target. Roychowdhury (2006) defines (p.337) RM as "departures from normal operational practices, motivated by managers' desire to mislead at least some stakeholders into believing certain financial reporting goals have been met in the normal course of operations." [3] Some examples include reduction in R&Ds in investing activities (Dechow and Sloan, 1991; Bushee, 1998), an

[2] According to Healy and Wahlen (1999, pp. 368), "Earnings management occurs when managers use judgment in financial reporting and in structuring transactions to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company or to influence contractual outcomes that depend on reported accounting practices."

[3] Zang (2011) defines real earnings management as "a purposeful action to alter reported earnings in a particular direction, which is achieved by changing the timing or structuring of an operation, investment or financing transaction, and which has sub-optimal business consequences."

increase in price discounts to inflate sales, overproduction to lower cost of goods sold, reduction in discretionary expenditures to improve margins in operating activities (Roychowdhury, 2006), and stock repurchase to avoid earning dilution arising from employee stock option.

Graham, Harvey, and Rajgopal (2005) surveyed CFOs and documented that 80% of CFOs would decrease R&D, advertising, and maintenance expenditures in order to deliver targeted earnings. This is surprising because managers are willing to engage in RM more as opposed to AM. A smaller but sizable respondent state that they would even postpone a new positive NPV project to meet near-term earnings target. Roychowdhury (2006) attributes manager's bias toward RM to the notion that accrual earnings managements entails a higher risk of getting caught by auditor and SEC scrutiny, and therefore, a costly class action lawsuits may follow. The trend seems more visible surrounding the Sarbanes-Oxley Act (SOX) in 2002 due to an increase in likelihood of "getting detected" in a post-SOX environment (Cohen, Dey, and Lys, 2008). Accrual manipulation alone is also not sufficient to meet manager's personal objectives (Zang, 2011). It is no surprise that real earnings manipulation has an economically significant cost on subsequent operating performance in the form of lower return on assets and/or lower future cash flow (Gunny, 2010; Cohen and Zarowin, 2010).

Literatures provide competing arguments to demonstrate the managerial incentives of earnings managements. On one hand, the opportunistic managers tend to engage in earnings management because of personal benefits tied up with earnings. Bergstresser and Philippon (2006) document that a significant increase in the use of accruals is related to the increase in stock-based CEO compensation in the period of 1990-2000. Authors state (p.528) that "CEO undertake socially wasteful but personally beneficial projects, was an archetype of the 1970s and 1980s, then a highly incentivized CEO, manipulating reported earnings, have become an archetype of the late 1990s." Similarly, Chen and Warfield (2005) find that egoistic managers tend to reserve current earnings to support the future earnings deficiency in order to maximize gain from exercising stock options.

On the other hand, earnings management is often associated with major corporate events beyond executives' personal gains. For example, the inflated earnings surrounding major corporate events to mislead investors are common practice to derive the desired outcome. Using accruals based earnings management, Teoh et al. (1998b) find that opportunistic managers intentionally inflate earnings to influence SEO pricing (also see Rangan, 1998, Shivakumar, 2000 for SEO pricing; Louis, 2004 for M&As; Chou et al., 2006 for reverse leveraged buyouts; Fields, Gupta, and Wilkins, 2012 for bank loan agreements).[4] Teoh et al. (1998b) find that SEO firms *outperform* their industry peers in the pre-SEO period and *underperform* their peers in post-SEO period. A price reversal surrounding event announcements is related to

[4] There is a mixed result from other studies, however. Ball and Shivakumar (2006) directly distort the findings of Teoh et al. (1998a) and argue that IPO firms report earnings more conservatively.

opportunistic behavior of managers, who are equipped with earnings smoothing, in order to persuade the external investors to draw favorable terms. In debt financing case, firms with refinancing needs tend to increase discretionary accruals prior to bank loan agreements to influence credit evaluations by banks (Fields, Gupta, Wilkins, 2012). We call the manager's opportunistic behaviors *Managerial Opportunism Hypothesis*, whether the action is triggered by personal greed or corporate objective.

The opposing view does not focus on the managers' personal egoistic motives but consider the practices of earnings management from the perspectives of shareholder wealth maximization. For example, Louis and Robinson (2005) suggest, using a stock split sample that managers attempt to convey private information through earning accruals to pass manager's *optimism* onto investors. External investors may perceive earnings smoothing as risk reduction because it improves earnings predictability through lower volatility, and therefore, supporting the stock price. A lower earnings volatility reduces outside claimants' perceptions about the firm's probability of bankruptcy, thereby lowering the cost of capital that leads to increase in market value of the firm (Trueman and Titman, 1988; Francis, LaFond, Olsson and Schipper, 2005; and Verdi, 2006).We call the effect of manager's optimism on the cost of capital *Signaling Hypothesis*. The signaling hypothesis dictates that manager's incentives to manage earnings reflect *optimistic* view rather than *opportunistic* behavior. Although both hypotheses predict that managers are incentivized to engage in earnings management prior to corporate events such as capital acquisitions, external parities (such as lenders) may not consider the firm's action harmful to their interests, if earnings management is not directly related to their future expected income.

We conjecture that our sample firms from the syndicated loan market show the similar pattern of abnormal earnings managements surrounding private debt agreements in order (1) to persuade syndicated lenders to evaluate creditworthiness positively and to obtain favorable loan contracting terms (e.g., lower interest rate, longer maturity, lower fees, and/or less strict covenants) (*Managerial Opportunism Hypothesis*); Or, (2) to signal lenders with manager's optimism or confidence on the future operating performance and creditors understand the borrowing firm's motive to manage earnings positively (*Signaling Hypothesis*).

2.2 Quality of accounting information and its effect on financing decision

As our *Signaling Hypothesis* suggests, one line of literature documents the non-negative effect of earnings management on the cost of external capital, or even suggest a positive effect of earnings management on information transparency. For example, the corporate debt yields are negatively related to real earnings management (Ge and Kim, 2014) or abnormal accruals (Liu, Ning, and Davidson, 2010), suggesting that bondholders do not perceive earnings management as opportunistic but simply reflect the management's view on future operating performance. Similarly, Bouwman (2014) reports that earning

smoothing reflects information transparency and confidence on the future operating performance. Using a survey approach, Graham et al. (2005) document that firm managers make efforts to smooth earnings in order to maintain earnings predictability even in the face of longer-term cost. Overall, this line of literature maintains that earnings management is far from the manager's self-serving, egoistic motive. Rather, earnings predictability has an effect of reducing earnings volatility and improving information transparency and therefore making firms less risky. Information transparency argument is consistent with the view of *Signaling Hypothesis* because managers are motivated to engage in earnings management to positively signal to external reviewers their optimism toward the future operating performance. Banks have access to private information about the borrowing firms through intimate relationship built with repeated transactions (Petersen and Rajan, 1994), and therefore banks, equipped with private information, can comprehend the firm's efforts to signal the manager's optimistic view on future operating performance. Holding other risk variables (such as ratings, leverage, loan purposes and others) constant, earnings management can be positively associated with loan spread. Thus, our first hypothesis can be summarized as follows:

H1a (Signaling Hypothesis):

After controlling for firm and loan characteristics, the loan spread is negatively related to or unrelated to the abnormal AM and/or RM on bank loan contracting.

Contrary to the prediction made by *Signaling Hypothesis*, the other line of literature provides the mixed results on the effects of earnings management on financing cost. If the lender views earnings manipulation as opportunistic ex ante (*Managerial Opportunism Hypothesis*), the borrower is penalized with a higher interest rate, reduction in loan limit, and/or shorter maturities on loans in contracting stage. This potential punitive consequence of practicing earnings management encourages the borrower to exercise accounting conservatism (Zhang, 2008; Watts and Zimmerman, 1986). For example, Zhang (2008) argues that more conservative use of accounting information triggers ex post violation of debt covenants in a timely manner following a negative price shock, and lenders share ex post benefits with the borrower by offering lower interest rates to more conservative borrowers. Timely loss recognition allows lenders to more rapidly employ their decision in the right timing, and therefore increasing debt contracting efficiency (Watts and Zimmerman, 1986; Watts, 2003).[5] Easley and O'Hara (2004) succinctly note that an important role for precise accounting information is to reduce the cost of capital by decreasing the information-based

[5] Also, using secondary loan trading sample, Wittenberg-Moerman (2008) argues that conservative reporting decreases information asymmetry and therefore increases the efficiency of the loan trading. Similarly, Ball, Bushman, and Vasvari (2008) argue that as informativeness of borrower's accounting information increases, it mitigates information asymmetry, and as a result, potential adverse selection and moral hazard problems are also mitigated. Interestingly, authors measure the informativeness of accounting information with how accurately the credit rating downgrade can be predicted using lagged seasonally adjusted accounting earnings.

systematic risk to uninformed investors. Simply speaking, more liberal accounting practices will be penalized and more conservative ones can be rewarded. If an argument of practicing accounting conservatism is valid, we expect a positive relation between earnings management and the cost of loan because banks downgrade creditworthiness of the borrowing firm with more active earnings management. The essential part of the argument is that lenders screen out the active earnings management firm because accounting flexibility makes the lender's due diligence difficult, not alone that liberal accounting practices make the ex post monitoring more challenging. This view is consistent with *Managerial Opportunism Hypothesis* and can be summarized as follows:

H1b (Managerial Opportunism Hypothesis):

After controlling for firm and loan characteristics, the loan spread is positively related to the abnormal AM and/or RM on bank loan contracting.

A strand of academic studies on the cost of capital show the mixed results. Bharath et al. (2008) find a strong impact of the use of accounting accrual on the cost of debt and show that accounting quality affect the choice of debt financing and find that the poor accounting quality borrowers tend to issue loans more likely than bonds. Francis et al. (2005) document that poor accounting quality is associated with a larger cost of debt and equity. Conversely, McInnis (2010) finds no relation between earnings smoothness (defined as earnings volatility relative to cash flow volatility) and average stock returns from 1975 to 2006. Because of the mixed results from prior studies, we leave a final conclusion on empirical tests using bank loan samples.

Syndicated loans provide an interesting laboratory for studying information asymmetry as it exists both between lenders and borrower and between lead and participating lenders. By examining the effect of earnings management on information asymmetry, we can disentangle a potential economic cost of accounting practices from typical bank loan pricing. The following section describes the syndicated loan market in detail and demonstrate the merit of loan market to study earnings management in the scope of asymmetry information.

2.3 Monitoring, bank certification, and relationship lending in syndicated loan market

In syndicated loan markets where multiple banks jointly issue credit, information asymmetry between the lead and participating banks (lead bank moral hazard problem) play a role in setting price of loans, not alone information asymmetry between the borrower and lenders (borrower moral hazard problem). Moral hazard issue can be loosely termed as future uncertainties because it is an issue occurred ex post loan grants. After having closed the contract, if the participants delegate monitoring to a lead

arranger, moral hazard problem arises—that is, lead banks may shirk from due diligence of optimal monitoring (Holmstrom,1979; Holmstrom and Tirole, 1997) because monitoring efforts are costly. The lack of monitoring is typically aggravated, as the bank's monitoring efforts are not visible and the lead banks retain the small portion of loans (Sufi, 2007; Ivashina, 2009).[6] Recognizing this potential of moral hazard, participating lenders have an incentive to press the lead arrangers to adjust price of loan ex ante, although participating banks supplement their future monitoring with the third party information such as credit ratings.

In this "double moral hazard" environment, previous studies identified two mechanisms to mitigate information problem. They are the lead banks' reputation and the relationship strength between the lead banks and borrower. For example, the lead banks with a dominant market shares can truthfully certify the creditworthiness of the borrower and share information with participating banks (Bushman and Wittenberg-Moerman, 2012; Champagne and Kryzanowski, 2007). We call this *Lender Certification Hypothesis.* The bank-borrower relationship also consolidates the bank's perception on creditworthiness of the borrower and as a result, a lower interest is applied in contracting (Brick and Palia, 2007; Bharath et al., 2011; Schenone, 2010; Berger and Udell, 1990). We call this *Relationship Strength Hypothesis*. If lender certification and relationship strength are valid factors in mitigating information frictions, we conjecture that these two variables should play an important role in setting the loan spread even in the presence of active earnings management. In our empirical design, we will test whether two factors interact with measures of earnings management. Our two supporting hypotheses can be summarized as follows:

H2 (Lender Certification Hypothesis):

After controlling for firm and loan characteristics, the effect of earnings management on the loan spread is sensitive to the degree of lender reputation on bank loan contracting.

H3 (Relationship Strength Hypothesis):

After controlling for firm and loan characteristics, the effect of earnings management on the loan spread is sensitive to the degree of relationship strength on bank loan contracting.

3. Empirical Design

In this section, we summarize two types of earnings managements to measure the degree of earnings management at a firm level. Later, we specify the bank loan pricing model with details of pricing factors.

[6] Conversely, a larger portion of the loan retained by the lead banks not only signals a credible commitment in due diligence and ex post monitoring efforts, but also signal of borrower quality ex ante.

3.1 Accruals-based earnings management

First, to measure the degree of accruals-based earnings management, we employ abnormal discretionary accruals as a proxy used in a number of previous studies, notably Davidson et al. (2004), Xie et al. (2003), and Teoh et al. (1998 a, b). Since earnings management is an important issue for academics and practitioners to study managerial behavior, we estimate the discretionary current accruals that are considered as being "unexpected" or "abnormal," using the modified Jones (1991) model. The model has been found to have "the most power in detecting earnings management" (Dechow et al., 1995). Guay et al. (1996) and Bartov et al. (2001) also provide the evidence of reliability of the modified Jones model to identify earnings management.

The flexibility of earnings management through accounting items can be used to artificially inflate reported earnings. Thus, we focus on the firm's current working capital accruals or discretionary current accruals that are considered abnormal compared to industry peers. These abnormal discretionary current accruals are utilized as a proxy for earnings management. Since the modified Jones (1991) model has been used in many studies and presented in Teoh et al. (1998 a, b), for the sake of conciseness, we will simply summarize it here.

To capture the earnings management and managerial behavior, we use discretionary current accruals. Total current accruals are the sum of both discretionary and non-discretionary accruals. Since total current accruals are associated with changing the industry and economic conditions, we identify the non-discretionary component of accruals using the OLS regression-based estimates of the current accruals on the change in sales from the previous year for all non-sample firms in the same 2-digit SIC code, industry *j*, listed on Compustat for the year. Since the error terms of this regression exhibit heteroskedasticity, we deflate each variable in the model by the book value of total assets from the prior year:

$$\frac{TA_{j,t}}{Asset_{j,t-1}} = k_{0,t}\frac{1}{Assets_{j,t-1}} + k_{1,t}\frac{(\Delta REV_{j,t} - \Delta AR_{j,t})}{Asset_{j,t-1}} + k_{2,t}\frac{PPE_{j,t}}{Asset_{j,t-1}} + \varepsilon_{j,t}, \qquad (1)$$

where TA is total accruals in year t, Asset is firm j's total asset in year t, $\Delta REV_{j,t}$ is firm j's change in revenues in year t from year t-1, $\Delta AR_{j,t}$ is firm j's change in accounts receivable in year t from year t-1, and $PPE_{j,t}$ denotes firm j's gross value of property, plant, and equipment in year t. Then, the parameters from equation (1) are used to estimate the normal level of accruals (NA) as follows:

$$NA_{j,t} = \hat{k}_{0,t}\frac{1}{Asset_{j,t-1}} + \hat{k}_{1,t}\frac{(\Delta REV_{j,t} - \Delta AR_{j,t})}{Asset_{j,t-1}} + \hat{k}_{2,t}\frac{PPE_{j,t}}{Asset_{j,t-1}} \qquad (2)$$

Lastly, abnormal accruals (Abnormal AM) for firm j in year t are the difference between the actual value of total accruals and normal accruals from equation (2):

$$AbnormalAM_{j,t} = \frac{TA_{j,t}}{Asset_{j,t-1}} - NA_{j,t}. \quad (3)$$

A larger value of Abnormal AM means more earnings management and lower financial reporting quality.

3.2. Real earnings management

In addition to abnormal accruals, we estimate a firm's real earnings management (RM). Real earnings management refers to activities that deviate from daily operations in order to satisfy certain earnings goals. Following Roychowdhury (2006), we estimate normal cash flows from operations from the following model:

$$\frac{CFO_{j,t}}{Asset_{j,t-1}} = \alpha_0 + \alpha_1 \frac{1}{Asset_{j,t-1}} + \alpha_2 \frac{Sales_{j,t}}{Asset_{j,t-1}} + \alpha_3 \frac{\Delta Sales_{j,t}}{Asset_{j,t-1}} + \varepsilon, \quad (4)$$

where $CFO_{j,t}$ is cash flows from operations for a firm j in year t, $Asset_{j,t-1}$ is prior-year total assets, and $\Delta Sales_{j,t}$ is a change in sales from t-1 to t for a firm j. The estimated value of normal cash flows from operations in equation (4) is then subtracted from the actual value of cash flows from operations to obtain abnormal cash flows (Abnormal CFO).

The firm may decide to lower production costs by producing more units. Then, the firm can hide fixed costs in inventory and lower costs of goods sold, resulting in an increase in net income for the period. We estimate the cost of goods sold (COGS) and changes in inventory based on the following two regressions for each industry (2-digit SIC code) and for each year:

$$\frac{COGS_{j,t}}{Asset_{j,t-1}} = \alpha_0 + \alpha_1 \frac{1}{Asset_{j,t-1}} + \alpha_2 \frac{Sales_{j,t}}{Asset_{j,t-1}} + \varepsilon, \quad (5)$$

$$\frac{\Delta INV_{j,t}}{Asset_{j,t-1}} = \alpha_0 + \alpha 1 \frac{1}{Asset_{j,t-1}} + \alpha_2 \frac{\Delta Sales_{j,t}}{Asset_{j,t-1}} + \alpha_3 \frac{\Delta Sales_{j,t-1}}{Asset_{j,t-1}} + \varepsilon, \quad (6)$$

where COGS is the cost of goods sold in year t, ΔINV is the change in inventory in year t from year t-1, ΔS_{t-1} is the change in sales from year t-2 to t-1, and A_{t-1} is the total assets at t-1. Production costs (PROD) are sum of the cost of goods sold (COGS) and changes in inventory (ΔINV). From equations (5) and (6), we estimate the expected level of production costs (PROD) as follows:

$$\frac{\Delta PROD_{j,t}}{Asset_{j,t-1}} = \alpha_0 + \alpha_1 \frac{1}{Asset_{j,t-1}} + \alpha_2 \frac{Sales_{j,t}}{Asset_{j,t-1}} + \alpha_3 \frac{\Delta Sales_{j,t}}{Asset_{j,t-1}} + \alpha_4 \frac{\Delta Sales_{j,t-1}}{Asset_{j,t-1}} + \varepsilon, \quad (7)$$

We subtract an estimated value from equation (7) from the actual production costs to compute the abnormal production costs (Abnormal PROD).

A firm may decide to cut discretionary expenses or postpone R&D expenditures. Discretionary expenses (DISEXP) include selling, general, and administrative expenses, R&D expenses, and advertising expenses (Roychowdhury, 2006). We estimate the normal level of discretionary expense from equation (8) and compute the abnormal discretionary expense (Abnormal DISEXP):

$$\frac{DISEXP_{j,t}}{Asset_{j,t-1}} = \alpha_0 + \alpha_1 \frac{1}{Asset_{j,t-1}} + \alpha_2 \frac{Sales_{j,t}}{Asset_{j,t-1}} + \varepsilon, \quad (8)$$

Firms may decide to engage in several real activities management. We consider an aggregate measure of real earnings management, which is the sum of abnormal cash flows, abnormal production costs, and abnormal discretionary expense. For easy interpretation, we multiply abnormal cash flows and abnormal discretionary expense by -1 such that higher values of our real earnings management indicate income-increasing earnings management.

3.3 Loan pricing model

Because the cost of bank loans is affected by both firm- and loan-specific factors, we include these control variables in estimating the empirical model, in addition to our main test variables related to a firm's earnings management. Putting together all these variables, we examine the association between the firm's earnings management practice and loan spreads in the following general form of the regression model:

Loan spread = f (Earnings management variables, loan characteristics, firm characteristics, macroeconomic variables, year-fixed variables, industry-fixed variables)

Details of our test variables (i.e., earnings management) are provided in the earlier section, and other descriptions and measurements of key variables are summarized in Appendix A. We estimate OLS regressions and calculate White's (1980) heteroskedasticity robust *t*-statistics after clustering at the firm level for repeated firms in our sample over the sample period. All OLS regressions include industry and year dummies to control for industry and year fixed effects. Below, we offer rationales and measurements for some of the key variables included in our regression models.

Dependent variable: loan spread

The dependent variable is loan spread, or the cost of bank loan, measured by the amount that the borrower pays in basis points over a benchmark rate for each loan dollar drawn down. The loan spread is the initial all-in-drawn rate minus the London Interbank Offered Rate (LIBOR) as reported in the LPC's *DealScan* database and enters the regression in log form. It includes the spread of the loan and any annual or facility fees paid to the bank group.

Loan characteristics: loan size, collateral, loan maturity, syndication status, facility type, loan purpose, performance pricing, previous lending (or relation status)

Krishnaswami, Spindt, and Subramaniam (1999) use firm size and average debt issue size as proxies for economies of scale in flotation costs. Also, larger loans tend to be associated with large public borrowers that are covered by many analysts, and as a result, there is more public, transparent information available on such borrowers to assess their creditworthiness. Thus, default risk may be lower on larger loans, and larger loans are more likely to have a lower yield.

The impact of loan collateral on spread is uncertain, since secured loans may be a signal of either "safe" or "risky" loans. One line of literature finds that safer borrowers are more likely to pledge collateral (Besanko and Thakor, 1987; Chan and Kanatas, 1985). When borrowers have informational advantages about their default probabilities, the lowest risk borrowers will pledge collateral. Berger and Udell (1990), however, find the opposite results, arguing that riskier loans tend to be collateralized (See also Berger and Udell, 1995; John, Lynch, and Puri, 2003). Because of the mixed results from the literature, the effect of collateral on the loan risk premium is subject to further empirical testing.

Loan maturity is measured by months to the maturity of a loan. Literatures provide inconclusive evidence on debt maturity, and the impact of maturity on credit spread likewise is uncertain. One line of argument is that long-term debt is more likely to be used by larger, less risky firms with relatively poor growth opportunities (Stohs and Mauer, 1996), and that risky firms are screened out of the long-term debt market because of the prospect of moral hazard problems like risky asset substitution (Diamond, 1984, 1991). This implies that there will be a negative relationship between maturity and credit spreads. An alternative argument is that risky firms do not issue short-term debt to avoid inefficient liquidation (Guedes and Opler, 1996). Risky firms will not be able to rollover debt in case of deteriorating financial conditions, so they desire to lengthen the debt maturity, implying a positive relationship between maturity and credit spreads. In sum, the sign on maturity variable in determining credit spreads also remains indeterminate.

Finance theory suggests that as borrowers become less information problematic, the characteristics of the lenders and the underlying debt contracts vary systematically. Diamond (1991) develops a formal model which involves borrowers shifting from private sources (financial intermediaries) to public debt markets as the quality of information about the firm improves and the borrower develops a reputation in the form of a successful history of debt repayments. When firms require less monitoring, debt becomes more saleable and more likely to be syndicated. We expect syndication dummy to have a negative sign.

Banks may price loans with the performance pricing clause differently from the loans without this contingent pricing clause. For example, Asquith, Beatty and Weber (2005) argue that performance pricing loans provides financing options to the borrowing firm contingent upon future financial performance, and thereafter reduce loan cost in debt contracts.

Types of loan facilities and loan purposes are associated with differing level of credit risk. Revolvers are essentially lines of credit that can be drawn on demand. Revolvers are typically priced higher than term loans for the *same* borrower because of their flexibility to the borrower and uncertainty of cash requirements to the lender. However, an average load spread of term loans across borrowers is higher than that of revolvers, reflecting that term loans are lower in payment priority in liquidation upon default. Similarly, loans issued for takeover carry a higher level of credit risk than those issued for working capital or general corporate purposes.

As Boot and Thakor (2000) emphasize, the relationship lending with private finance (bank loans and private placements) must be distinguished from transactions lending with public finance (capital market debt). Diamond (1991) develops a formal model that stresses the role of banks as producing quality information about the firm and developing a reputation in the form of a history of successful debt repayments. Existing studies show that a prior relationship lending is an important factor in bank loan pricing (Bharath *et al*., 2008; Bharath *et al*., 2011; Dass and Massa, 2011; Diamond, 1984, 1991; Fama, 1985; Rajan, 1992; Schenone, 2010). Bank-firm relationship is beneficial to the borrowing firm in the form of reduced moral hazard (Steffen, 2008). Informational advantage of relationship banks contributes to increased probability of obtaining future businesses from the borrowing firms (Bharath et al, 2008).

Finally, year dummies are used to control for year fixed effects over the 18-year sample period, and industry dummies are employed to control for industry fixed effects and represent Fama-French 12 industries.

Firm characteristics: firm size, leverage, credit rating, profitability, coverage, firm age, Z-score

Firm size is the logarithm of a firm's total assets and used as proxy for firm size. Leverage is measured by the sum of total debt (Compustat item code, sum of dlc and dltt) divided by total assets and used as proxy variable for observable default risk, with a hypothesized positive sign (Merton, 1974; Carey, Post and Sharpe, 1998). The market-to-book ratio represents Tobin's q ratio, measured by (Compustat item code, at - ceq + (prccf*csho)) divided by total assets, and is used as proxy for a firm's growth potential. ROA is measured as net income divided by total assets and used as proxy for a firm's profitability. It is hypothesized to have a negative sign. Coverage is measured by a firm's cash & cash-equivalent divided by total assets and used as proxy for a firm's liquidity position and it captures the capacity of the firm to repay bank loans in a timely fashion. It is hypothesized to have a negative sign. *Stret* represents standard deviation of daily stock returns for the last two years and is used as proxy for a firm's volatility.

In case of severe agency problems between the borrower and lender, the borrower's reputation can be a mitigating factor, according to Diamond (1991). Firms with good reputations are concerned about maintaining continued access to public markets. They would not damage their reputation by defaulting. In

addition, borrowers with higher credit ratings have lower costs of capital and firms value such savings as an important source of future profits. We use firm age as our proxy variable for reputation. Firm age is the number of years the borrower appears in the Compustat. The assumption is that firms with a long history in the public market have better reputations than those with equity outstanding for a short period, leading to lower default risk. Young firms have not had sufficient time to build a reputation by repaying a large number of loans (Berger and Udell, 1995).

4. Sample and Data

We collect our bank loans sample from Thomson Reuters LPC *DealScan* database over the period of 1987-2012. The *DealScan* database cumulates loan data, mostly syndicated loan data, from various sources including SEC filings and public financial documents such as 10Ks and 10Qs starting since 1981. In some cases, LPC directly searches for the data with borrowers, lenders, and other sources. The coverage of U.S firms in Dealscan increased in 1987 and its coverage is improved to cover about 65% the number of Compustat firms in latest years. We screen *DealScan* for loan facilities originated in U.S and match loan samples with firm-level financial information from *Compustat* using DealScan-Compustat matching table provided by Chava and Roberts (2008). The basic unit of our sample is an individual loan, also referred to as a facility or tranche in *DealScan*, although loans are packaged into deals. The sample initially contains information on 73,331 loan facilities from 10,043 firms. We exclude financial (SIC code from 6000 to 6999) and regulatory firms (SIC code from 4900 to 4949). After deleting observations with missing data in Compustat, we have a final sample of 25,172 loans (19,697 deals) from 5,175 firms from 1987 to 2012.[7]

5. Empirical Results

5.1 Descriptive Statistics

Table 1 presents distributions of sample bank loans by different set of characteristics: loan type, and credit ratings. A typical syndicated loan is usually originated in multiple loans or tranches, where a "deal" or "loan package" is structured to include both a line(s) of credit (or revolvers) and term loan(s). A revolver is a credit-line with which the borrowing firm can draw funds within a pre-specified limit at the borrower's discretion until a loan reaches maturity, while a term loan is a simple interest plus principal loan. Revolvers are essentially lines of credit that can be drawn on demand. Table 1, Panel A shows descriptive statistics by credit ratings. Loans originated by investment graded firm have a lower loan spread than speculative grade or not-rated firms. Speculative loans are more syndicated by more concentrated lenders

[7] We estimate some regressions with fewer than 25,172 facility-year observations depending on the availability of earnings attribute data.

issued as term loans rather than revolvers, have a higher level of earnings volatility, and are associated with a higher level of abnormal accruals.

Table 1, Panel B shows descriptive statistics on revolvers versus term loans. Revolvers are typically priced higher than term loans for the *same* borrower because of their flexibility to the borrower and uncertainty of cash requirements to the lender. However, an average loan spread of term loans across borrowers is higher than that of revolvers, reflecting that term loans are lower in payment priority in liquidation upon default. Multiple tranches in a syndicated loan package is related to the borrower's tradeoff between short-term and long-term financing and also related to the riskiness of the borrowing firm. The most common loan type in our sample is long-term revolvers (61%), followed by term loans and short-term revolvers. About half of loan facilities are issued for general corporate purposes, and a half of the borrowing firms are from manufacturing, wholesales, and business equipment sectors.

[Insert Table 1]

Table 2 shows the results of correlation analyses. Generally, loan spreads are positively associated with earnings management variables. Signs of correlation coefficients are generally consistent with findings of previous studies.

[Insert Table 2]

5.2 Multivariate Analyses

In this empirical section, we present the regression analyses to investigate if earnings management activities are priced in loan origination. First, as detailed in hypotheses development section, we test two competing hypotheses (Signaling Hypothesis and Managerial Opportunism Hypothesis). Later in the robustness test section, we provide additional evidence of loan pricing by introducing alternative measures of earnings management.

5.2.2 The effect of earnings management on the price terms of bank credits

Using both accruals and real earnings management measures in several model specifications, Table 3 presents our baseline regression results on the effect of earnings management on the cost of bank loans, and variable descriptions and their measurement details are provided in Appendix A. Two types of earnings management measures are included in regression analyses: Accrual earnings management (AM) and real earnings manipulations (RM). If banks have an ability to detect a borrowing firm's practices of earnings management surrounding loan agreement and have an good understanding on divergent consequences of

choices between AM and RM, we will observe that bank loans are priced differently, depending on types of earnings management.[8] Therefore, along with main regression specification, we test whether the effect of earnings management on the cost of loan is sensitive to type of earnings management (AM or RM) engaged by the borrowing firm.

In Table 3, the Column 1 through Column 3 analyze the cost of bank loan with real earnings manipulations as defined by Roychowdhury (2006), along with loan and firm characteristics and other control variables. Colum 4 shows the result of regression on effect of all composite real earnings management on the cost of bank loan. In these four regression results, the estimated coefficients are significant at the 1% level, except for *Abnormal DISEXP* case, indicating that lenders price the borrowing firm's real earnings manipulations, whether earnings management is measured at specific accounting dimension (Abnormal CFO and PROD) or at aggregate level (Abnormal RM). Colum 5 shows that abnormal accrual earnings are also positively related to loan spread at 1% significance level.

In general, the result shows that firms with more active earnings management activities are associated with a higher loan spread. We align this result with the Jensen and Meckling's (1976) framework that creditors demand higher returns as compensation for potential loss due to manager's incentives to engage in actions that benefit the shareholder at the creditor's expense. Francis *et al.* (2005) show that the firm's accounting report may exacerbate or mitigate the agency cost, and Ahmed *et al.* (2002) shows that accounting conservatism is associated with improvements in credit rating and therefore lowering the cost of debt. This result supports managerial opportunism that dictates that lenders value accounting conservatism in evaluating creditworthiness. Earnings predictability enhanced by income smoothing does not appear to be major interest to creditors. The positive signs on coefficients of earnings management variables suggest that banks penalize those borrows with earnings manipulations and recognize the benefits of precise accounting practices. In most of regressions, firm and loan characteristics are also generally significant, consistent with the findings of previous loan pricing studies.

[Insert Table 3]

In order to test whether the results are spurious or not, depending on model specification, we divide a whole sample into two groups by credit ratings. Loan spread are largely determined by default risk, and therefore, running separate regressions by ratings differentials can provide more insights on cross-sectional variations of loan spreads, conditioned on other firm and loan characteristics. Table 4 shows regression

[8] Banks are not the only external group who willingly recognize the extent of earnings management. For example, Gunny (2010) reports that analysts' forecasted earnings appear to reflect the extent of real earnings manipulations.

results of two-sub samples: investment grade loans versus speculative grade loans including unrated loans. The results show the consistent findings. A higher level of earnings management is associated with a higher loan spread especially when earnings management are measured at aggregate level shown in Regression (4), (5), (9), and (10). Overall, the results show that the investment grade loans are penalized more than speculative loans. One potential explanation is that investment grade firms suffer less from information scarcity, since more public information is available with the firm with better creditworthiness, longer history, and larger firm. Banks are not the only external group who willingly recognize the extent of earnings management. Analysts' forecasted earnings appear to reflect the extent of real earnings manipulations. Table 4 also show that investment grade loan are penalized with higher spread, regardless of types of earnings management, while a speculative loan is penalized more severely with AM.

[Insert Table 4]

5.2.3 The interaction effect of lender reputation and lending relationship on loan spread

Then, the question arises. What mitigating factors potentially contribute to reducing concerns of lenders—moral hazard undermining future debt repayment from the borrowing firm? Literatures point out several mechanisms, including lender certification, collaterals, and the borrower-lender relationship strength, help mitigate information frictions. For example, the lead banks with a dominant market share can truthfully certify creditworthiness of the borrower and share information with participating banks (Bushman and Wittenberg-Moerman, 2012; Champagne and Kryzanowski, 2007; Ross, 2010). Diamond (1991) develops a formal model that stresses the role of banks as producing quality information about the firm and developing a reputation in the form of a history of successful debt repayments. If lead banks accumulate reputation through successful completion of prior loan syndications, even in the case of exacerbating earnings management practices by the borrowing firm, participating banks may agree to relaxing terms of loan contracting. In this scenario, the effect of earnings management on loan spread will be lessened due to lender reputation effect.

Similarly, a prior relationship with the borrowing firms is also an important pricing metrics. The bank-borrower relationship consolidates the bank's perception on creditworthiness of the borrower and as a result, a lower interest is applied upon loan contracting (Brick and Palia, 2007; Bharath et al., 2011; Schenone, 2010; Berger and Udell, 1995). Banks are considered as "information specialists" because of their ability to extract private information through lending process and efficient ex post monitoring role in mitigating information asymmetries (Diamond, 1984 and 1991; Fama, 1985). Diamond (1984) stresses that banks act as delegated monitors with respect to their loan portfolios because of moral hazard behavior of borrowers potentially increasing default probability. In syndicated loan market, the lead bank(s) have access

to the borrower's private information as a part of due diligence to serve participating banks and as a result, the bank builds repeated lending relationship. This intimate relationship with the borrowing firm distinguishes bank capital from "arm's length" capital in which public debt is diffusely owned by numerous investors (Rajan, 1992). Interestingly, private information on the borrowing firm extracted by institutional investors during loan origination process is used in subsequent equity trading of the same borrower's stocks (See, Massoud et al., 2011; Ivashina and Sun, 2011; Dass and Massa, 2011).

Does the effect on loan spread of increasing earnings management depend on whether a loan is syndicated by reputable lead banks and relationship banks? One way to answer this question is to use a specification that allows for two different regression lines, depending on whether lead arrangers are reputable banks or not, and lead arrangers are relationship lenders or not. Following Ross (2010), we define reputable banks as a top 5 banks who hold most of loan volume for a given year. For lending relationship, we include an indicator variable that is equal to one if a loan is from the same lead lender as one who arranged loans for last three years.

Table 5 presents interaction effects of lead lender reputation and relationship strength on loan spread. This lender certification argument suggests a negative sign on *Reputation* variable, as shown consistently in Table 5, Column (1) through (4). Similar to Bushman and Wittenberg-Moerman (2012), [9] we capture top five banks as reputable banks. The result from Column (1) and (3) suggests that top five banks have a certification or reputation effect in that they can provide a lower spread, holding everything else constant including earnings management, through a better ex ante credit screen and/or ex post monitoring role. With a more rigorous pre-screening and evaluating creditworthiness of the borrowers, the reputable banks can achieve a high reputation via a track record of successfully re-paid loans in their transaction history. The similar interpretation is made by Ross (2010) and Bushman and Wittenberg-Moerman (2012).[10] Similarly, Ball, Bushman, and Vasvari (2008) define the debt-contracting value the ability of accounting reporting to capture deterioration in credit quality on a timely manner. As debt contracting value of accounting information increases, information asymmetry between lead banks and participating banks are mitigated and therefore, participating banks can be persuaded to agree on a lower spread.

[Insert Table 5]

[9] Authors classify J.P. Morgan Chase, J.P. Morgan (before M&A), Bank of America, Citigroup, Wachovia (before M&A), Credit Suisse First Boston, Bank One (before M&A), and Fleet Boston (before M&A), and Deutsche Bank as reputable arrangers. Together, these banks syndicated over 65% of the loan volume. The remaining syndicated loans were arranged by more than 1,000 banks, the vast majority of which had a market share of less than 0.02%. The dominant effect of top five seems evident in many aspects.

[10] One counter-argument is that these top lenders are not only compensated by interest rates but also by higher fees attached to each loan packages. Unfortunately, this argument cannot be verified due to limitations in DealScan data covering fee structures.

When we include an interaction term between earnings management and reputation variable as shown in Colum (2) and (4), all interaction terms and *Reputation* dummy are statistically significant and positive at least 10% level. This suggests that the effect of earnings management on loan spread varies by reputation of lead banks. With a reputation dummy variable only, the regression results shows that on average, loans originated by reputable banks are associated with lower rates, holding earnings management factor constant, while a positive interaction term suggest that the borrowers tend to pay a higher rate on loans syndicated by top 5 banks. For each unit increase in earnings management, reputable banks penalize the borrowing firms more—the coefficient on *Abnormal RM*Reputation* for the regression line (Reputation = 1) is positive. Reputable banks have a large market share and retain more sophisticated screening technology to detect earnings management of the borrowing firms. We conjecture that they can effectively detect the firm's opportunistic behaviors through sophisticated screening technology, they increase loan rates proportionately to protect their reputation in syndicated loan market.

In Table 5, Column (5) and (6), we report the similar results of relationship strength as reputation effect, and our interpretations are similar. As discussed earlier, information asymmetry between lenders and borrowers is a critical component of loan pricing. Lenders must invest a significant resources with due diligence to assess the creditworthiness of potential borrowers and to screen poor quality borrowers with unfavorable repayment potential. Even after the loan is granted, lenders must monitor the borrower to check its moral hazard behavior. However, these information frictions can be mitigated if the lending banks has a strong, durable relationship with the borrower. This past information enable the lending banks to produce the borrower-specific information efficiently and therefore, a lower rate can be granted (Boot and Thakor, 2000). Following this banking theory, we include a dummy variable capturing a prior relationship with the borrower that have any loans granted to the same borrower from the same lead banks in last five years. Column (5) from Table 5 suggest that relationship banking is valuable to the borrower through reduction in interest. Coefficients on Previous Lending variable are statistically significant at 1% level and are negative. However, an interaction term between relationship and earnings management from Column (6) suggests that relationship lenders have more private or soft information on the borrowers and find earnings management opportunistic, and therefore, penalizing their relationship borrowers. Lead lenders have a due diligence obligation to serve their participating banks by providing extra return on opportunistic behaviors of the borrowers, and also to protect their own interests to secure future participations from other lenders for the future deals.

6. Robustness Tests

6.1 Alternative measures for earnings management

Our baseline regression results suggest that lenders price practice of the borrower's earnings management in private debt contracting. In order to test whether these results presented above is an outcome of chance, we introduce alternative way to measure the practice of the borrower's earnings management as a test of robustness. Recent literatures use deviation of earnings from cash flows to gauge the level of manager's desire to smooth incomes (Leuz, Nanda, and Wysocki, 2003; Kirschenheiter and Melumad, 2002). While managers are often incentivized to smooth earnings and thus its volatility is lower than cash flow volatility, it is also common that managers' accounting conservatism allows earnings to be more volatile than cash flows—for example, a practice of timely gain and loss recognition (Ball and Schivakumar, 2006). Whether volatilities of both cash flow and earnings are proxy measure of manager's discretion over financial reporting, these volatilities are critically associated with the level of the firm's critical investments and therefore hamper earnings power. A volatile cash flow often defers capital expenditures, makes capital budgeting process difficult, delays debt service, and hinders other productive operations. As a result, the negative nature of volatilities is embedded into firm valuation negatively and the cost of obtaining external capital rises (Minton, Schrand, Walther, 2002).

Using the methodology of Jayaraman (2008), we measure accrual component of earnings volatility (*ACEV*) as the difference between earning volatility (*Earnings Vol*) and cash flow volatility (*Cash Flow Vol*), where earnings volatility is defined as standard deviation of three years' earnings before extraordinary items, scaled by assets, and cash flow volatility as standard deviation of three years' annual cash flow from operations, scaled by assets. Our conjecture is that earnings that either smoother or more volatile than cash flows are associated with the manager's proactive discretionary choices that may prompt the lenders to price it upon bank loan contracting.

[Insert Figure 1, 2, and 3]

Figure 1 through 3 shows a graphical presentation of the measures used in cash flow and earnings volatilities, as defined in Jayaraman (2008). The graphs shows a linear relationship between loan spread reported in *DealScan* and volatilities of both earnings and cash flows. Figure 1 and 2 also confirm linearity between volatilities and loan spreads. However, the accrual component of earnings volatility (*ACEV*) appears to be significantly associated with higher loan spread in both ends of loan spread spectrum. Results of Figure 3 indicate a U-shaped relation between earnings that are smoother or more volatile than cash flows and loan spread. Earnings that are smoother than cash flows appear to be associated with larger loan spreads. Loan spread is the lowest at the center of the distribution, where *ACEV* is close to zero (i.e., where earnings volatility is equal to cash flow volatility). As earnings become more volatile than cash flows, loan

spread increases. Thus, earnings that are more volatile than cash flows also appear to be associated with larger loan spreads.

Table 6 presents reports regression results on the relationship between various earnings attributes and corporate loan spread. Results show that the firms with a higher level of cash flow volatility and earnings volatility, a higher level of negative cash flows, and a higher volatility of accrual component, are associated with higher loan spreads. They are all consistently significant at 1 percent level, suggesting that lenders perceive volatility and other measures of earnings attribute as risky factor, and demand a higher credit spread ex ante. This is also consistent with the survey results by Graham, Campbell, and Rajgopal (2005) that many CFOs fears that earning volatility, holding cash flow volatility constant, depresses the P/E ratio, and therefore, maintaining the stock prices at a desired level is manager's top priority. Similarly, Minton et al. (2002) find that firms with high volatility should have lower future earnings, and Dichev and Tang (2009) argue that earnings volatility hampers earnings predictability.

[Insert Table 6]

Table 7 presents the result of quintile analysis by the level of accrual component of earnings volatility (ACEV). From Group (1) where the earnings are smoothest relative to cash flows to Group (5) where earnings are most volatile, we regress loan spread on ACVE. Result shows that the banks charge higher loan spreads when the borrower's earnings are more volatile than cash flows. This result supports managerial opportunism hypothesis.

[Insert Table 7]

6.2 Collaterals as a mechanism to test whether the lender prices earnings management

In this section, we continue providing additional evidence of earnings management as a risky factor priced in loan contracting. Among those loan pricing factors identified as theoretically and empirically critical factors, we pay a closer attention on loan collateral. In our loan sample, as shown in Table 1, Panel A, approximately 9 percent of investment grade and 65 percent of speculative loans (including loans not rated) are secured in some form of collateral.

Collaterals have been a central issue in debt contracting studies. The first set of studies find collateral as a way for good borrowers to signal their quality under conditions of ex ante private information. The lowest risk borrowers will pledge collateral when borrowers have informational advantages about their default probabilities. Since collateral could also impose opportunity costs on borrowers by tying up assets that might otherwise be utilized into more productive uses, this signaling story predicts that safer borrowers

are more likely to pledge collateral (Besanko and Thakor, 1987; Chan and Kanatas, 1985). Furthermore, the opportunity costs of providing collateral force borrowers to reveal the true value of their assets, where borrowers have an incentive to offer collateral in exchange for a lower loan rate.

However, these theoretical findings are not generally consistent with empirical studies revealing that riskier loans tend to be collateralized. The alternative set of studies explains collateral as an optimal response to ex post contract frictions such as moral hazard—that is, the collateral as a mechanism to overcome borrower/lender incentive conflicts. For example, Berger and Udell (1990) find a positive relation between loan rates and the existence of collateral in credit contracts, consistent with the moral hazard issue (see also Berger and Udell, 1995; Jimenex, Salas, and Saurina, 2006; John, Lynch, and Puri, 2003; Battacharya and Thakor, 1993; Ahn and Choi, 2009). Using accounting data, Kim, Song, and Zhang (2011) find that the likelihood of a loan being secured by collateral is higher for borrowers with a high level of internal control issues than for borrowers with a low level of issues.

Loan collateral is pledged for risky borrowers upon loan origination. We test whether the lenders require collateral upon loan contracting for ex post moral hazard. The lender is more likely to demand collaterals if the lender perceives the practice of earnings management as potentially correlated with ex post moral hazard. We specify the likelihood of pledging loan collateral in a logistic regression where cash flow and earnings volatility are test variables.

Table 8 presents the results of logistic regression to investigate the relation between accrual component of earnings volatility and the use of collateral by banks. Collateral is decided at the deal level, not at the facility level. Thus, we exclude loan types and loan purposes in this logistic regression. Results show that borrowers with more volatile earnings, negative cash flows, and higher amount of accruals component of earnings volatility are more likely to supply collaterals in loan contracting.

Table 9 reports results for quintile analysis by the level of accrual component of earnings volatility (ACEV). From Group (1) where the earnings are smoothest relative to cash flows to Group (5) where earnings are most volatile, we run a logistic regression modeling collateral dummy as a dependent variable. Result shows that lenders demand collaterals when the borrowing firm's accounting information show a higher level of earnings volatility.

[Insert Table 8]

[Insert Table 9]

6.3 Endogeneity issue

If both earnings management measures and loan spreads are determined jointly by some unobservable omitted variables, the OLS regression estimates may be unreliable. It is possible that unobservable omitted variables that are correlated with both firm-level risk and EM engagement may drive the regression results. For example, board quality or corporate governance of the borrowing firm may influence both its earnings management and loan spread; a borrower with a higher quality board is more likely to engage in moderate EM activities, and lenders may incorporate the borrower's board quality when they set its loan price. In addition, another concern is the possible simultaneity or feedback effect between the loan spread and EM engagement. A high EM engagement may bring the spread higher but it is also conceivable that a low risk firm with a better loan rate, which happens to have stable earnings stream, may induce less EM engagements. Simultaneity yields biased and inconsistent estimates when the OLS model is applied.

Several studies of bank loans address various endogeneity issues, including shareholder rights affecting the cost of loan (Chava et al., 2008); board characteristics affecting loan covenants (Chakravarty and Rutherford, 2011); and board quality affecting the cost of loan (Francis et al., 2012; Fields et al., 2012). Considering the potential for bias due to the endogeneity problem recognized in existing bank loan studies, we conduct several robustness tests to ensure the validity of our empirical results. Regression analysis with instrumental variables is a commonly-used way to obtain a consistent estimator of the unknown coefficients of the population functions when the regressor is correlated with the error term. In this approach, two key criteria that an instrumental variable must meet are relevance and validity. Relevance suggests the instrument to be correlated with the endogenous variable, whereas validity suggests the instrument to affect the dependent variable only through the endogenous variable. Hence, an effective instrumental variable in our paper must be related to the suspected endogenous EM variable but unrelated to the dependent variable of loan spread directly. Alternative approaches use the first differences of variables as done in Ivashina (2009) or lagged variables.

In summary, if loan spread and earnings management is jointly determined, then ordinary least squares estimation can lead to a biased. To address this concern, we estimate a simultaneous equation model that loan spread and earnings management as jointly endogenous. We conduct the Hausman specification test (Hausman, 1978) that rejects the null hypothesis at 1% level in both model specification in Columns (1) and (3), as shown in Table 10. The results shows that earnings management raise loan spread on average, after considering endogenous nature of loan spread-earnings management feedback effect, and coefficients in Column (1) and Column (3) are statistically significant at 10% for real earnings manipulation sample and 1% level for accrual earnings management.

[Insert Table 10]

7. Conclusions

This study investigates the implications of earnings management (EM) on corporate loan pricing. Practices of earnings management can reflect the managers' opportunistic behavior to expand their egoistic motive (managerial opportunism hypothesis), or can signal their optimism (or confidence) on future operating performance (signaling hypothesis). In order to investigate the viability of these two competing arguments, we draw a sample of syndicated loans from medium-to-large corporate borrowers (i.e., private debts) to test whether banks price the firm's earnings management. Between two competing hypotheses, we find that banks are able to price earnings management of the borrowing firm and increase loan spread, as the level of EM increase (managerial opportunism hypothesis). Banks view EM as a value-destroying process that hampers the borrower's capacity to repay loan ex post and therefore, demand a marginal increase in loan spread, in order to compensate for the future uncertainty—increase in monitoring cost. The result is robust, using a variety of earning management measurements such as (1) accounting accruals (Jones, 1991); (2) real earnings management (Roychowdhury, 2006); and (3) cash flow volatility, earnings volatility, and accrual component of earnings volatility (Jayaraman, 2008).

The study also enhances the argument that banks are superior in digesting private information gained through intimidate interactions with the borrowing firm. Lender certification and relationship strength have a material effect on mitigating information frictions not only between the lender and borrower, but also between the lead lenders and participating banks. The reputable and relationship lender(s) certifies the borrower's creditworthiness and mitigates information asymmetry in increasing the probability of future debt repayment, and this assurance can draw concession from participating banks to a lower rate on syndicated credits. However, interaction analysis using lead lender-borrower matching scheme shows that these same lead lenders demand proportionately higher loan rates for firms with active earnings manipulations than non-reputable lenders do. Similarly, if the lending banks has built a durable but reusable relationship through prior engagement with the borrower, relationship lenders can produce the borrower-specific information more efficiently, and therefore, a lower rate can be granted, holding other factors constant, including earnings management. However, in the case of earnings manipulation, lenders can detect such active earnings management efficiently through intimate past relationship, and penalize the borrowers more than non-relationship lenders in order to protect their future interests and secure loan syndicate integrity.

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TABLE 1. Descriptive Statistics

Panel A: By credit ratings

	Investment Grade		None-investment & None-rated		Mean Diff.	Median Diff.
Variable	Mean	Median	Mean	Median	t-stat	z-stat
Loan Spread (bps)	76.465	50	237.346	225	80.87***	87.23***
Maturity (Month)	40.877	48	45.705	48	13.08***	12.15***
Loan Size (m$)	864.619	500	168.825	60	62.57***	81.83***
Previous	0.363	0	0.164	0	33.62***	32.95***
Performance Pricing	0.448	0	0.377	0	9.74***	9.73***
Total Lender	13.198	11	5.823	3	61.99***	64.43***
Collateral	0.087	0	0.647	1	83.63***	74.73***
Term Loan	0.135	0	0.330	0	29.05***	28.62***
Revolver	0.529	1	0.592	1	8.42***	8.41***
364 Facilities	0.284	0	0.030	0	66.68***	61.90***
CF Volatility	0.031	0.02	0.056	0.04	33.84***	39.63***
Earnings Volatility	0.026	0.02	0.067	0.03	30.18***	39.10***
Negative CF	0.021	0	0.173	0	38.25***	39.61***
Accruals Volatility	-0.005	-0.01	0.011	0.00	14.25***	4.80***
Abnormal CFO	-0.036	-0.025	0.002	-0.001	17.95***	25.43***
Abnormal PROD	-0.009	-0.003	0.013	0.014	6.96***	8.80***
Abnormal DISEXP	0.040	0.038	0.018	0.038	5.90***	3.07***
Abnormal RM	-0.016	0.005	0.032	0.050	6.75***	11.43***
Abnormal AM	0.052	0.030	0.098	0.054	25.72***	36.38***
Firm Size	8.845	8.762	5.959	5.995	120***	96.25***
ROA	0.063	0.061	0.009	0.032	26.48***	33.43***
Leverage	0.278	0.270	0.348	0.324	21.38***	18.93***
Market-to-Book	3.378	2.556	2.281	1.702	18.81***	36.99***
Coverage	8.862	4.851	6.442	1.498	5.92***	40.39***
Z-Score	3.303	2.942	2.765	2.435	14.57***	22.62***
Firm Age	34.021	38	17.642	13	788.35***	61.43***

Panel B. Loan Size and Loan Spread by Loan Type

Loan Size (million $)

	Total Sample			High RM			Low RM		
	No. of Obs.	Mean	Median	No. of Obs.	Mean	Median	No. of Obs.	Mean	Median
Term Loan	6,441	208.83	70	3,440	212.40	72	3,001	204.75	69
Revolver	15,342	274.10	100	7,659	269.96	100	7,683	278.23	100
364 Facilities	2,445	661.29	300	1,123	712.16	300	1,322	618.08	300
Other	944	484.96	60	466	507.65	63	478	462.84	60
Total	25,172	302.91	100						

Loan Spread (bps)

	Total Sample			High RM			Low RM		
	No. of Obs.	Mean	Median	No. of Obs.	Mean	Median	No. of Obs.	Mean	Median
Term Loan	6,441	277.48	250	3,440	287.14	275	3,001	266.40	250
Revolver	15,342	183.88	175	7,659	195.86	175	7,683	171.94	150
364 Facilities	2,445	77.27	50	1,123	86.09	62.5	1,322	69.78	45
Other	944	243.20	60	466	263.20	250	478	223.72	200
Total	25,172	199.70	175						

TABLE 2. Correlations Matrix

Panel A. Correlations among loan characteristics

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Loan Size	(1)	1										
Covenant Intensity	(2)	0.329*	1									
Maturity	(3)	0.003	0.138*	1								
Loan Size	(4)	-0.478*	-0.172*	0.178*	1							
Previous	(5)	-0.181*	-0.079*	0.003	0.249*	1						
Performance Pricing	(6)	-0.114*	0.003	0.124*	0.228*	0.052*	1					
Total Lender	(7)	-0.314*	-0.100*	0.133**	0.582*	0.189*	0.215*	1				
Collateral	(8)	0.541*	0.297*	0.071*	-0.325*	-0.130*	0.085*	-0.175*	1			
Syndication	(9)	-0.193*	0.050*	0.173*	0.531*	0.149*	0.284*	0.327*	0.095*	1		
Term Loan	(10)	0.257*	0.201*	0.357*	-0.147*	-0.048*	-0.101*	-0.034*	0.167*	-0.024*	1	
Revolver Loan	(11)	-0.060*	-0.103*	-0.044*	0.041*	-0.007	0.153*	-0.032*	0.715	0.026*	-0.752*	1
364 Facility	(12)	-0.347*	-0.163*	-0.393*	0.200*	0.110*	-0.017*	0.160*	0.244*	0.096*	-0.191*	-0.349*

Panel B. Correlations among earnings management variables and firm characteristics

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
Loan Spread	(1)	1																	
Covenant Intensity	(2)	0.329*	1																
CF Volatility	(3)	0.226*	0.009	1															
Earnings Volatility	(4)	0.276*	-0.010	0.441*	1														
Negative CF	(5)	0.296*	0.0267*	0.440*	0.352*	1													
Accruals Volatility	(6)	0.185*	-0.0196**	-0.084*	0.847*	0.150*	1												
Abnormal CFO	(7)	0.170*	0.012	0.114*	0.145*	0.354*	0.096*	1											
Abnormal PROD	(8)	0.084*	0.0229*	-0.005	-0.002	0.138*	0.000	0.325*	1										
Abnormal DISEXP	(9)	0.010	0.0380*	-0.108*	-0.105*	-0.056*	-0.055*	-0.131*	0.574*	1									
Abnormal RM	(10)	0.100*	0.0314*	-0.021*	-0.007	0.147*	0.006	0.395*	0.885*	0.792*	1								
Abnormal AM	(11)	0.153*	0.0422*	0.265*	0.315*	0.232*	0.196*	0.079*	0.054*	-0.081*	0.009	1							
Firm Size	(12)	-0.509*	-0.188*	-0.382*	-0.291*	-0.390*	-0.102*	-0.122*	0.041*	0.072*	0.015†	-0.186*	1						
ROA	(13)	-0.285*	-0.007	-0.177*	-0.254*	-0.319*	-0.194*	-0.261*	-0.151*	0.024*	-0.147*	-0.118*	0.216*	1					

Leverage	(13)	0.245*	0.191*	-0.052*	0.040*	0.043*	0.085*	0.056*	0.043*	0.067*	0.070*	-0.01	0.916	-0.218*	1				
Market-to-Book	(13)	-0.146*	-0.0551*	0.0018	0.003	-0.031*	-0.006	-0.083*	-0.112*	-0.090*	-0.125*	0.004	0.070*	0.119*	-0.096*	1			
Coverage	(13)	-0.171*	-0.0500*	-0.033*	-0.098*	-0.160*	-0.095*	-0.179*	-0.133*	-0.029*	-0.136*	-0.033*	0.043*	0.446*	-0.278*	0.101*	1		
Z-score	(13)	-0.283*	-0.088*	-0.01	-0.179*	-0.157*	-0.202*	-0.190*	-0.182*	-0.111*	-0.205*	-0.031*	0.068	0.534*	-0.490*	0.252*	0.524*	1	
Firm Age	(13)	-0.319*	-0.165*	-0.182*	-0.149*	-0.181*	-0.058*	-0.048*	0.001	0.049*	0.01	-0.141*	0.424*	0.099*	-0.077*	0.027*	0.014†	0.020*	1

*, †, and ‡ indicate 1%, 5%, and 10% significance.

TABLE 3. The Effect of Earnings Management on Loan Spread

The table presents the regression results on the effect of earnings management on the cost of bank loan. The dependent variable is *Loan Spread*. The variable definitions are provided in the Appendix A. The standard errors are adjusted for facility clustered and adjusted t-statistics are in parenthesis. Significance at the 10%, 5%, and 1% levels is indicated by *, **, and ***, respectively.

	Dependent var. = Loan Spread				
VARIABLES	(1)	(2)	(3)	(4)	(5)
Abnormal CFO	0.176***				
	(7.10)				
Abnormal PROD		0.086***			
		(5.23)			
Abnormal DISEXP			0.019		
			(1.34)		
Abnormal RM				0.044***	
				(5.57)	
Abnormal AM					0.163***
					(6.37)
Maturity	-0.002***	-0.002***	-0.002***	-0.002***	-0.002***
	(-8.62)	(-8.54)	(-8.19)	(-8.77)	(-8.78)
Loan Size	-0.070***	-0.069***	-0.072***	-0.070***	-0.070***
	(-16.19)	(-15.89)	(-15.78)	(-16.21)	(-16.42)
Previous Lending	-0.031***	-0.034***	-0.030***	-0.032***	-0.032***
	(-3.95)	(-4.33)	(-3.63)	(-4.13)	(-4.14)
Performance Pricing	-0.124***	-0.126***	-0.137***	-0.125***	-0.123***
	(-17.47)	(-17.36)	(-18.20)	(-17.60)	(-17.33)
No. of Lender	0.001	0.000	0.000	0.001	0.000
	(1.29)	(0.82)	(0.65)	(1.18)	(0.98)
Collateral Dummy	0.391***	0.391***	0.387***	0.393***	0.392***
	(45.48)	(45.46)	(43.76)	(45.88)	(45.91)
Syndication Dummy	-0.082***	-0.082***	-0.087***	-0.082***	-0.081***
	(-6.34)	(-6.23)	(-6.61)	(-6.34)	(-6.27)
Term Loan	0.035*	0.018	0.034	0.034*	0.037*
	(1.74)	(0.91)	(1.62)	(1.71)	(1.82)
Revolver Loan	-0.220***	-0.238***	-0.209***	-0.220***	-0.218***
	(-11.92)	(-12.87)	(-10.77)	(-11.98)	(-11.80)
364 Facilities	-0.523***	-0.539***	-0.539***	-0.524***	-0.522***
	(-25.41)	(-25.77)	(-23.89)	(-25.49)	(-25.34)
Firm Size	-0.056***	-0.056***	-0.050***	-0.057***	-0.055***
	(-12.65)	(-12.50)	(-10.34)	(-12.88)	(-12.51)
ROA	-0.236***	-0.261***	-0.280***	-0.264***	-0.247***
	(-7.41)	(-8.11)	(-8.65)	(-8.31)	(-7.65)
Leverage	0.287***	0.283***	0.275***	0.289***	0.285***
	(15.07)	(14.66)	(14.13)	(15.09)	(15.02)
Coverage	-0.000	-0.000	-0.000	-0.000	-0.000
	(-0.76)	(-1.58)	(-1.18)	(-0.97)	(-1.33)
Z-Score	-0.032***	-0.034***	-0.032***	-0.031***	-0.033***
	(-16.52)	(-16.69)	(-15.95)	(-16.11)	(-16.96)
Firm Age	-0.001***	-0.001***	-0.002***	-0.001***	-0.001***
	(-5.86)	(-5.39)	(-5.88)	(-5.77)	(-5.01)
Market-to-Book	-0.000	-0.001	-0.000	-0.000	-0.000
	(-0.17)	(-0.61)	(-0.13)	(-0.00)	(-0.40)
AAA	-1.082***	-1.069***	-1.086***	-1.078***	-1.099***
	(-13.85)	(-13.54)	(-12.35)	(-13.71)	(-14.16)
AA	-1.079***	-1.077***	-1.150***	-1.078***	-1.089***
	(-32.60)	(-32.39)	(-34.11)	(-32.52)	(-33.06)

A	-0.792***	-0.797***	-0.840***	-0.791***	-0.794***
	(-41.11)	(-41.27)	(-38.57)	(-41.00)	(-41.50)
BBB	-0.241***	-0.243***	-0.271***	-0.241***	-0.239***
	(-16.83)	(-16.82)	(-17.40)	(-16.82)	(-16.78)
BB	0.135***	0.132***	0.121***	0.134***	0.136***
	(12.69)	(12.24)	(11.10)	(12.62)	(12.84)
B	0.271***	0.269***	0.254***	0.272***	0.274***
	(24.32)	(23.70)	(22.05)	(24.43)	(24.69)
Constant	7.433***	6.792***	6.804***	7.669***	6.751***
	(116.53)	(106.47)	(103.16)	(113.62)	(107.55)
Observations	24,836	23,954	21,985	24,863	25,034
R-squared	0.678	0.685	0.679	0.678	0.679

TABLE 4: The Effect of Earnings Management on Loan Pricing by Credit Ratings

The table presents the regression results on the effect of earnings management on the cost of bank loan by credit ratings. The dependent variable is *Loan Spread*. The variable definitions are provided in the Appendix A. The standard errors are adjusted for facility clustered and adjusted t-statistics are in parenthesis. Significance at the 10%, 5%, and 1% levels is indicated by *, **, and ***, respectively.

	Dependent var. = Loan Spread									
	Investment Grade					Non-investment Grade (including non-rated)				
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Abnormal CFO	0.414***					0.103***				
	(4.16)					(3.80)				
Abnormal PROD		0.390***					0.019			
		(6.97)					(0.99)			
Abnormal DISEXP			0.177***					0.017		
			(3.62)					(1.03)		
Abnormal RM				0.170***					0.025***	
				(6.42)					(2.80)	
Abnormal AM					0.282***					0.212***
					(2.79)					(7.89)
Maturity	-0.003***	-0.003***	-0.004***	-0.003***	-0.003***	-0.003***	-0.003***	-0.003***	-0.003***	-0.003***
	(-3.49)	(-3.47)	(-2.89)	(-3.53)	(-3.61)	(-12.29)	(-12.26)	(-11.94)	(-12.38)	(-12.14)
Loan Size	-0.146***	-0.143***	-0.161***	-0.146***	-0.145***	-0.044***	-0.044***	-0.052***	-0.044***	-0.044***
	(-12.02)	(-11.79)	(-11.01)	(-12.09)	(-12.13)	(-9.55)	(-9.33)	(-11.29)	(-9.55)	(-9.67)
Previous Lending	-0.051***	-0.057***	-0.062***	-0.053***	-0.046**	-0.028***	-0.035***	-0.029***	-0.029***	-0.025**
	(-2.76)	(-3.10)	(-2.96)	(-2.90)	(-2.51)	(-2.70)	(-3.35)	(-2.83)	(-2.82)	(-2.45)
Performance Pricing	0.119***	0.122***	0.108***	0.122***	0.124***	-0.165***	-0.169***	-0.173***	-0.166***	-0.166***
	(6.32)	(6.48)	(4.96)	(6.52)	(6.61)	(-19.98)	(-20.02)	(-20.41)	(-20.15)	(-20.19)
No. of Lender	0.002*	0.001	0.002*	0.002	0.001	-0.003***	-0.003***	-0.004***	-0.003***	-0.003***
	(1.71)	(1.31)	(1.85)	(1.44)	(1.25)	(-5.47)	(-5.63)	(-6.31)	(-5.50)	(-5.72)
Collateral Dummy	0.612***	0.610***	0.606***	0.614***	0.617***	0.444***	0.445***	0.436***	0.445***	0.442***
	(17.42)	(17.12)	(14.90)	(17.36)	(17.67)	(46.12)	(46.36)	(44.47)	(46.49)	(46.32)
Syndication Dummy	0.312***	0.306***	0.250***	0.310***	0.322***	0.024*	0.028**	0.010	0.024*	0.024*
	(4.96)	(4.79)	(3.28)	(4.93)	(5.10)	(1.80)	(2.09)	(0.76)	(1.83)	(1.79)
Term Loan	0.174***	0.169***	0.215***	0.178***	0.190***	0.007	-0.016	0.011	0.007	0.004
	(3.07)	(2.98)	(2.95)	(3.13)	(3.28)	(0.33)	(-0.74)	(0.48)	(0.30)	(0.18)
Revolver Loan	-0.302***	-0.297***	-0.271***	-0.293***	-0.290***	-0.246***	-0.270***	-0.227***	-0.245***	-0.247***
	(-5.78)	(-5.69)	(-4.06)	(-5.63)	(-5.44)	(-11.60)	(-12.73)	(-10.57)	(-11.64)	(-11.68)
364 Facilities	-0.626***	-0.619***	-0.639***	-0.618***	-0.620***	-0.656***	-0.684***	-0.649***	-0.657***	-0.661***
	(-13.96)	(-13.88)	(-12.08)	(-13.89)	(-13.70)	(-19.68)	(-20.06)	(-18.26)	(-19.71)	(-19.86)
Firm Size	0.002	-0.003	-0.009	-0.000	0.001	-0.015***	-0.015***	-0.004	-0.016***	-0.013***

	(0.17)	(-0.26)	(-0.62)	(-0.04)	(0.05)	(-3.26)	(-3.19)	(-0.82)	(-3.36)	(-2.89)
ROA	-0.088	-0.009	0.020	-0.044	-0.134	-0.291***	-0.303***	-0.310***	-0.308***	-0.284***
	(-0.50)	(-0.05)	(0.12)	(-0.25)	(-0.75)	(-8.62)	(-8.84)	(-8.91)	(-9.13)	(-8.28)
Leverage	0.186**	0.275***	-0.025	0.242***	0.132	0.299***	0.293***	0.292***	0.300***	0.303***
	(2.32)	(3.38)	(-0.28)	(3.00)	(1.64)	(14.99)	(14.56)	(14.44)	(14.97)	(15.25)
Coverage	0.002***	0.002***	0.001*	0.002***	0.002**	0.000	-0.000	0.000	0.000	0.000
	(2.93)	(2.99)	(1.89)	(2.88)	(2.51)	(0.41)	(-0.41)	(0.30)	(0.31)	(0.02)
Z-Score	-0.080***	-0.078***	-0.086***	-0.078***	-0.088***	-0.037***	-0.040***	-0.039***	-0.037***	-0.038***
	(-10.87)	(-10.41)	(-11.22)	(-10.50)	(-12.04)	(-16.87)	(-17.01)	(-16.97)	(-16.63)	(-17.00)
Firm Age	-0.001*	-0.001	-0.003***	-0.001	-0.001	0.000	-0.000	0.000	0.000	0.000
	(-1.92)	(-1.58)	(-3.92)	(-1.52)	(-1.56)	(0.38)	(-0.48)	(1.26)	(0.36)	(1.24)
Market-to-Book	-0.020***	-0.018***	-0.016***	-0.018***	-0.019***	0.001	0.000	0.001	0.001	0.000
	(-7.58)	(-6.93)	(-6.46)	(-7.00)	(-7.48)	(0.77)	(0.21)	(0.88)	(0.87)	(0.44)
Constant	7.237***	7.174***	7.799***	7.207***	7.240***	6.247***	6.284***	6.355***	6.250***	6.220***
	(34.87)	(34.23)	(32.00)	(34.72)	(35.22)	(98.31)	(98.00)	(98.07)	(98.30)	(98.17)
Observations	5,692	5,659	4,240	5,692	5,766	19,144	18,295	17,745	19,171	19,268
R-squared	0.303	0.306	0.323	0.306	0.305	0.363	0.371	0.369	0.363	0.364

TABLE 5. Interaction Effects of Lender Reputation and Relationship Strength on Loan Spread

We define reputable banks as a top 5 banks who hold most of loan volume for a given year. For lending relationship, we include an indicator variable that is equal to one if a loan is from the same lender as one who arranged loans for last three years. We include all control variables but the control variables are not shown for brevity. The variable definitions are provided in the Appendix A. The standard errors are adjusted for facility clustered and adjusted t-statistics are in parenthesis. Significance at the 10%, 5%, and 1% levels is indicated by *, **, and ***, respectively.

	Dependent var. = Loan Spread					
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
	Without interaction	With interaction	Without interaction	With interaction	With interaction	With interaction
Reputation	-0.049***	-0.050***	-0.048***	-0.056***		
	(-6.84)	(-6.95)	(-6.68)	(-6.71)		
Abnormal RM	0.044***	0.029***				
	(5.52)	(3.03)				
Abnormal RM* Reputation		0.049***				
		(3.00)				
Abnormal AM			0.163***	0.135***		
			(6.37)	(4.49)		
Abnormal AM* Reputation				0.104*		
				(1.93)		
Previous Lending					-0.034***	-0.044***
					(-4.34)	(-4.92)
Previous Lending*Abnormal RM					0.075***	
					(4.19)	
Previous Lending*Abnormal AM						0.160**
						(2.50)
Constant	7.650***	7.649***	6.735***	6.738***	7.668***	6.768***
	(113.42)	(113.48)	(107.39)	(107.31)	(113.65)	(107.91)
Observations	24,863	24,863	25,034	25,034	24,863	25,034
R-squared	0.679	0.679	0.680	0.680	0.678	0.679

TABLE 6. Earnings Attributes and Loan Spread

This table reports OLS regression results on the relationship between various earnings attributes and corporate loan spread. The dependent variable is natural logarithm of loan spreads. All other variable definitions are in Appendix A. Robust standard errors adjusted for heteroskedasticity and clustered by firm. *, **, *** indicate significance at the 1%, 5%, and10% level, respectively.

	Dependent var. = Loan Spread			
VARIABLES	(1)	(2)	(3)	(4)
CF Vol.	0.443***			
	(6.21)			
Earnings Vol.		0.456***		
		(12.37)		
Negative CF			0.197***	
			(13.50)	
Accrual Vol.				0.332***
				(7.85)
Maturity	-0.003***	-0.003***	-0.002***	-0.003***
	(-9.62)	(-10.94)	(-7.79)	(-9.82)
Loan Size	-0.077***	-0.065***	-0.076***	-0.076***
	(-17.61)	(-15.15)	(-16.64)	(-17.49)
Previous Lending	-0.030***	-0.005	-0.029***	-0.029***
	(-3.78)	(-0.58)	(-3.60)	(-3.67)
Performance Pricing	-0.116***	-0.105***	-0.120***	-0.116***
	(-16.45)	(-14.67)	(-16.56)	(-16.50)
No. of Lender	-0.001**	-0.002***	-0.001	-0.001*
	(-2.07)	(-3.83)	(-1.06)	(-1.81)
Collateral Dummy	0.396***	0.411***	0.388***	0.395***
	(47.70)	(49.90)	(44.73)	(47.58)
Syndication Dummy	-0.031**	0.028**	-0.024*	-0.031**
	(-2.44)	(2.32)	(-1.78)	(-2.49)
Term Loan	0.044*	0.081***	0.051*	0.042*
	(1.76)	(3.50)	(1.88)	(1.69)
Revolver Loan	-0.164***	-0.118***	-0.163***	-0.165***
	(-6.98)	(-5.44)	(-6.37)	(-7.02)
364 Facilities	-0.479***	-0.436***	-0.475***	-0.480***
	(-19.04)	(-18.26)	(-17.97)	(-19.07)
Corporate Control	0.172***	0.207***	0.181***	0.177***
	(12.44)	(14.13)	(12.75)	(12.76)
Corporate Purpose	0.030**	0.068***	0.031**	0.032**
	(2.44)	(5.18)	(2.51)	(2.57)
Debt Repay	0.032**	0.054***	0.032**	0.034**
	(2.31)	(3.74)	(2.27)	(2.44)
Project Finance	0.033	0.081	-0.005	0.042
	(0.51)	(1.29)	(-0.07)	(0.66)
Firm Size	-0.062***	-0.070***	-0.062***	-0.065***
	(-13.33)	(-15.40)	(-12.92)	(-14.16)
ROA	-0.226***	-0.250***	-0.173***	-0.228***
	(-7.27)	(-8.14)	(-5.20)	(-7.38)
Leverage	0.287***	0.272***	0.266***	0.281***
	(15.20)	(14.79)	(13.60)	(14.93)
Market-to-Book	-0.002***	-0.002**	-0.003***	-0.003***
	(-2.72)	(-2.28)	(-3.66)	(-2.90)
Coverage	-0.000**	-0.000	-0.000***	-0.000***
	(-2.48)	(-0.51)	(-2.92)	(-2.62)

Z-Score	-0.031***	-0.030***	-0.031***	-0.029***
	(-15.53)	(-14.82)	(-14.69)	(-14.56)
Firm Age	-0.000	-0.000	-0.000	-0.000
	(-0.18)	(-0.52)	(-0.58)	(-0.31)
AAA	-1.252***	-1.258***	-1.230***	-1.257***
	(-36.30)	(-31.69)	(-34.55)	(-36.85)
AA	-1.047***	-1.015***	-1.029***	-1.050***
	(-31.39)	(-30.53)	(-30.53)	(-31.50)
A	-0.742***	-0.703***	-0.724***	-0.743***
	(-37.58)	(-34.75)	(-36.19)	(-37.62)
BBB	-0.235***	-0.182***	-0.226***	-0.234***
	(-16.31)	(-12.32)	(-15.51)	(-16.24)
BB	0.170***	0.204***	0.173***	0.171***
	(16.34)	(19.48)	(16.06)	(16.46)
B	0.295***	0.315***	0.302***	0.290***
	(26.02)	(27.75)	(25.74)	(25.55)
Year Dummy	Yes	Yes	Yes	Yes
Industry Dummy	Yes	Yes	Yes	Yes
Constant	7.388***	6.749***	7.412***	7.415***
	(109.31)	(104.61)	(105.84)	(110.24)
Observations	25,867	27,708	23,631	25,867
R-squared	0.677	0.646	0.692	0.677

TABLE 7. Accrual Component of Earning Volatility and Loan Spread: by accruals quintile

Using the methodology of Jayaraman (2008), we measure accrual component of earnings volatility (ACEV) as the difference between earning volatility and cash flow volatility. The dependent variable is a natural logarithm of loan spread from *DealScan*. All other variable definitions are in Appendix A. Robust standard errors adjusted for heteroskedasticity and clustered by firm. Adjusted t-statistics are in parenthesis. Significance at the 10%, 5%, and 1% levels is indicated by *, **, and ***, respectively.

	Dependent var. = Loan Spread				
	Smooth <====			Volatile ====>	
VARIABLES	(1)	(2)	(3)	(4)	(5)
Accrual Vol.	**-0.288**	**-0.958**	**-0.492**	**2.456*** **	**0.335*** **
	(-1.54)	**(-1.29)**	**(-0.56)**	**(3.10)**	**(4.98)**
Maturity	-0.003***	-0.002***	-0.001*	-0.002***	-0.004***
	(-4.10)	(-4.17)	(-1.68)	(-4.46)	(-5.51)
Loan Size	-0.051***	-0.082***	-0.108***	-0.104***	-0.043***
	(-5.52)	(-8.82)	(-11.55)	(-9.94)	(-4.69)
Previous Lending	-0.002	-0.078***	-0.031*	-0.019	0.018
	(-0.09)	(-4.87)	(-1.89)	(-1.01)	(0.94)
Performance Pricing	-0.115***	-0.082***	-0.073***	-0.091***	-0.172***
	(-7.27)	(-5.35)	(-4.59)	(-5.87)	(-10.77)
No. of Lender	-0.002	-0.001	0.001	-0.001	-0.002
	(-1.45)	(-1.17)	(0.98)	(-1.01)	(-1.34)
Collateral Dummy	0.342***	0.397***	0.379***	0.428***	0.337***
	(20.19)	(21.66)	(20.73)	(21.97)	(17.61)
Syndication Dummy	-0.029	-0.097***	-0.012	0.049*	-0.059**
	(-1.13)	(-3.33)	(-0.40)	(1.65)	(-2.40)
Term Loan	0.061	0.078*	-0.041	0.022	-0.002
	(0.95)	(1.68)	(-0.84)	(0.46)	(-0.04)
Revolver Loan	-0.115**	-0.119***	-0.262***	-0.189***	-0.212***
	(-2.02)	(-2.67)	(-5.62)	(-4.06)	(-3.47)
364 Facilities	-0.420***	-0.415***	-0.521***	-0.484***	-0.521***
	(-7.05)	(-7.93)	(-10.80)	(-9.05)	(-7.41)
Corporate Control	0.187***	0.195***	0.209***	0.220***	0.066**
	(5.73)	(6.47)	(7.34)	(7.10)	(2.07)
Corporate Purpose	0.033	0.016	0.038	0.077***	-0.014
	(1.06)	(0.58)	(1.52)	(2.79)	(-0.56)
Debt Repay	0.046	0.020	0.017	0.040	0.012
	(1.37)	(0.65)	(0.57)	(1.30)	(0.44)
Project Finance	0.056	-0.068	0.234**	0.018	-0.136
	(0.58)	(-0.44)	(2.01)	(0.11)	(-1.10)
Firm Size	-0.102***	-0.064***	-0.085***	-0.036***	-0.040***
	(-10.17)	(-6.54)	(-8.55)	(-3.22)	(-4.08)
ROA	-0.416***	-0.729***	-0.343***	-0.297***	0.036
	(-6.20)	(-8.02)	(-3.79)	(-3.16)	(0.80)
Leverage	0.336***	0.362***	0.257***	0.301***	0.239***
	(7.11)	(7.80)	(5.73)	(6.84)	(7.67)
Market-to-Book	-0.002	0.000	-0.006***	0.001	-0.002
	(-0.84)	(0.04)	(-2.72)	(0.37)	(-1.51)
Coverage	0.000*	-0.000	-0.000	-0.001*	-0.001**
	(1.81)	(-0.39)	(-0.94)	(-1.84)	(-2.09)
Z-score	-0.029***	-0.024***	-0.043***	-0.031***	-0.025***
	(-6.40)	(-4.56)	(-8.16)	(-6.64)	(-7.23)
Firm Age	-0.001**	0.000	-0.000	0.000	0.000
	(-2.53)	(0.00)	(-0.08)	(0.81)	(0.05)

AAA	-0.833***	-1.204***	-0.999***	-1.276***	-1.564***
	(-11.48)	(-12.38)	(-18.39)	(-17.26)	(-11.11)
AA	-0.940***	-1.120***	-0.763***	-1.092***	-1.296***
	(-9.08)	(-16.49)	(-14.34)	(-17.52)	(-5.96)
A	-0.692***	-0.689***	-0.560***	-0.732***	-1.147***
	(-12.27)	(-19.57)	(-15.33)	(-16.82)	(-15.42)
BBB	-0.162***	-0.159***	-0.121***	-0.297***	-0.341***
	(-4.75)	(-5.64)	(-4.13)	(-9.51)	(-7.39)
BB	0.253***	0.222***	0.231***	0.107***	0.017
	(9.97)	(10.68)	(10.25)	(4.90)	(0.63)
B	0.237***	0.351***	0.401***	0.244***	0.166***
	(8.71)	(12.35)	(15.19)	(10.03)	(7.44)
Year Dummy	Yes	Yes	Yes	Yes	Yes
Industry Dummy	Yes	Yes	Yes	Yes	Yes
Constant	7.067***	7.419***	8.191***	7.606***	6.883***
	(47.62)	(50.62)	(55.68)	(48.05)	(48.40)
Observations	5,175	5,172	5,174	5,173	5,173
R-squared	0.603	0.699	0.722	0.699	0.563

TABLE 8. Earning Attributes and Collateral

This table reports results for logistic regressions to investigate the relation between earnings attributes and the use of collateral by banks. The dependent variable is an indicator variable that is equal to one if loan is collateralized according to LPC DealScan; zero otherwise. All other variable definitions are in Appendix A. Robust standard errors adjusted for heteroskedasticity and clustered by firm. *, **, *** indicate significance at the 1%, 5%, and10% level, respectively.

	Dependent var. = Collateral Dummy			
VARIABLES	(1)	(2)	(3)	(4)
CF Vol.	2.696***			
	(6.94)			
Earnings Vol.		2.797***		
		(10.93)		
Negative CF			0.621***	
			(14.63)	
Accrual Vol.				2.042***
				(8.46)
Average Maturity	-0.003***	-0.003***	-0.002**	-0.003***
	(-3.34)	(-3.71)	(-2.14)	(-3.71)
Deal Amount	-0.116***	-0.061***	-0.111***	-0.112***
	(-4.77)	(-2.73)	(-4.26)	(-4.59)
Previous Lending	-0.168***	-0.148***	-0.157***	-0.163***
	(-3.96)	(-3.50)	(-3.54)	(-3.82)
Performance Pricing	0.988***	0.998***	1.022***	0.982***
	(25.00)	(25.90)	(24.58)	(24.85)
Number of Lender	0.025***	0.021***	0.026***	0.026***
	(7.76)	(6.87)	(7.68)	(7.97)
Syndication Dummy	0.301***	0.362***	0.272***	0.301***
	(5.69)	(7.42)	(4.72)	(5.68)
Firm Size	-0.500***	-0.495***	-0.499***	-0.520***
	(-22.46)	(-23.96)	(-21.11)	(-23.37)
ROA	-0.943***	-0.871***	-0.839***	-0.952***
	(-5.26)	(-4.99)	(-4.36)	(-5.35)
Leverage	0.548***	0.482***	0.488***	0.519***
	(5.04)	(4.63)	(4.23)	(4.75)
Market-to-Book	-0.005	-0.006	-0.003	-0.005
	(-0.95)	(-1.22)	(-0.63)	(-1.02)
Coverage	-0.003***	-0.003***	-0.003***	-0.003***
	(-4.57)	(-4.28)	(-4.07)	(-4.76)
Z-Score	-0.082***	-0.069***	-0.078***	-0.071***
	(-8.01)	(-6.89)	(-7.07)	(-7.02)
Firm Age	-0.005***	-0.004***	-0.004**	-0.005***
	(-3.60)	(-3.24)	(-2.52)	(-3.84)
AAA	-1.665	-1.068	-1.629	-1.670
	(-1.64)	(-1.48)	(-1.60)	(-1.64)
AA	-1.060***	-1.229***	-0.958***	-1.083***
	(-3.29)	(-3.83)	(-2.96)	(-3.36)
A	-1.589***	-1.589***	-1.564***	-1.599***
	(-11.88)	(-12.34)	(-11.32)	(-11.96)
BBB	-1.386***	-1.386***	-1.376***	-1.379***
	(-17.03)	(-17.38)	(-16.22)	(-16.94)
BB	0.633***	0.622***	0.672***	0.640***
	(12.00)	(12.20)	(12.14)	(12.09)
B	1.042***	1.005***	1.089***	1.018***
	(16.21)	(16.17)	(15.88)	(15.75)
Year Dummy	Yes	Yes	Yes	Yes
Industry Dummy	Yes	Yes	Yes	Yes

Constant	5.116*** (14.01)	3.506*** (11.03)	4.946*** (12.60)	5.275*** (14.46)
Observations	22,492	24,050	20,517	22,492

TABLE 9. Earning Attributes and Collateral: by Accruals Volatility Quintile

This table reports results for logistic regressions to investigate the relation between accrual component of earnings volatility and the use of collateral by banks. The dependent variable is an indicator variable that is equal to one if loan is collateralized according to LPC DealScan; zero otherwise. All other variable definitions are in Appendix A. Robust standard errors adjusted for heteroskedasticity and clustered by firm. *, **, *** indicate significance at the 1%, 5%, and10% level, respectively.

	Dependent var. = Collateral Dummy				
	Smooth <====			Volatile ====>	
VARIABLES	(1)	(2)	(3)	(4)	(5)
Accrual Vol.	-2.748**	-3.702	14.028	3.364	1.764***
	(-2.49)	(-0.77)	(1.24)	(0.71)	(3.47)
Average Maturity	0.001	0.002	0.008***	0.006**	0.005**
	(0.69)	(0.97)	(2.86)	(2.36)	(1.96)
Deal Amount	0.066	0.035	0.058	-0.017	-0.131**
	(1.05)	(0.55)	(0.90)	(-0.24)	(-2.03)
Previous Lending	0.026	-0.195*	-0.255**	-0.143	-0.042
	(0.24)	(-1.87)	(-2.37)	(-1.36)	(-0.34)
Performance Pricing	0.710***	0.844***	0.724***	0.755***	0.867***
	(7.55)	(8.56)	(7.18)	(7.57)	(8.12)
Number of Lender	0.025***	0.024***	0.022***	0.013*	0.004
	(2.75)	(3.17)	(3.04)	(1.69)	(0.45)
Syndication Dummy	-0.262**	-0.193	-0.062	-0.322**	-0.252*
	(-2.03)	(-1.26)	(-0.36)	(-2.00)	(-1.71)
Firm Size	-0.624***	-0.665***	-0.647***	-0.544***	-0.357***
	(-10.93)	(-10.70)	(-10.96)	(-8.19)	(-6.02)
ROA	-1.223**	-1.505**	-3.086***	-2.236***	-0.480
	(-2.48)	(-2.36)	(-4.86)	(-3.87)	(-1.48)
Leverage	0.871***	0.246	1.431***	1.260***	-0.040
	(2.99)	(0.81)	(4.17)	(4.31)	(-0.18)
Market-to-Book	-0.005	0.001	-0.018	-0.026**	-0.008
	(-0.37)	(0.10)	(-1.28)	(-2.12)	(-0.78)
Coverage	-0.001	-0.001	-0.000	-0.003	-0.006***
	(-0.65)	(-0.69)	(-0.09)	(-1.44)	(-3.46)
Z-Score	-0.097***	-0.157***	-0.104***	-0.032	-0.063***
	(-3.98)	(-5.16)	(-2.91)	(-1.03)	(-3.29)
Firm Age	-0.013***	-0.007**	-0.008**	-0.004	0.001
	(-3.97)	(-2.00)	(-2.31)	(-1.25)	(0.20)
AAA		-1.164	-0.022	-1.738*	
		(-1.09)	(-0.05)	(-1.64)	
AA	-1.749***	-1.843***	-1.142***	-1.296***	-2.547***
	(-3.56)	(-5.74)	(-4.07)	(-4.58)	(-5.25)
A	-1.154***	-1.413***	-1.331***	-1.460***	-1.909***
	(-5.54)	(-7.30)	(-7.19)	(-8.23)	(-7.43)
BBB	0.578***	0.799***	0.807***	0.863***	0.047
	(4.17)	(6.08)	(6.05)	(6.59)	(0.32)
BB	1.035***	1.282***	1.240***	1.488***	0.701***
	(5.54)	(6.50)	(6.40)	(8.47)	(4.66)
B	-1.120***	-0.872**	-1.507***	-1.624***	-1.483***
	(-3.92)	(-2.28)	(-3.68)	(-4.75)	(-4.56)
Year Dummy	Yes	Yes	Yes	Yes	Yes
Industry Dummy	Yes	Yes	Yes	Yes	Yes
Constant	2.844***	3.676***	2.995***	3.762***	5.322***
	(3.07)	(3.82)	(2.99)	(3.69)	(5.60)
Observations	3,736	3,624	3,602	3,636	3,548

Table 10. Simultaneous Equations Model

Table 10 estimate the simultaneous equation model where endogenous variables are earnings managements and loan spread. All control variables are specified in Appendix A. *Avg. Spread* is the average loan spread for the past three years. The following measures are based on Zang (2012):
Market Share is the ratio of a company's sales to the total sales of its industry and it captures the inverse of the costs associated with real activities manipulation; *Big4* is equal to 1 if a firm's auditor is one of the Big 4, otherwise zero; *Tax Rate* is the higher tax rate that induces more earnings management; *SOX Dummy* is equal to one if a loan is issued after 2002, otherwise, zero; *NOA Dummy* is equal to one if net operating assets (i.e., shareholders' equity less cash and marketable securities plus total debt) at the beginning of the year divided by lagged sales are above industry-year, otherwise, zero (measure of previous accounting choices, Barton and Simko, 2002); *Operating cycle* is equal to one if the days receivable plus the days inventory less the days payable at the beginning of the year (longer operating cycles have greater flexibility for accrual management), otherwise zero.

Dependent var.	Loan Spread	RM	Loan Spread	AM
VARIABLES	(1)	(2)	(3)	(4)
RM / AM	0.105*		0.250***	
	(1.67)		(5.76)	
Loan Spread		0.018		0.027
		(0.14)		(0.17)
Maturity	-0.002***	-0.001	-0.002***	-0.001
	(-9.22)	(-1.12)	(-6.62)	(-0.61)
Loan Size	-0.062***	-0.030*	-0.073***	0.036*
	(-11.67)	(-1.82)	(-11.20)	(1.73)
Previous Lending	-0.034***	0.040	-0.025**	-0.016
	(-3.60)	(1.52)	(-2.05)	(-0.46)
Performance Pricing	-0.101***	-0.013	-0.092***	-0.029
	(-10.84)	(-0.42)	(-7.50)	(-0.75)
No. of Lender	-0.001***	0.000	-0.002***	0.003
	(-2.60)	(0.19)	(-2.88)	(1.38)
Collateral Dummy	0.300***	0.064	0.293***	0.043
	(25.23)	(1.20)	(20.23)	(0.63)
Syndication Dummy	0.029	-0.063	0.001	0.099
	(1.19)	(-0.93)	(0.02)	(1.15)
Term Loan	0.009	-0.037	0.034	-0.153*
	(0.40)	(-0.57)	(1.12)	(-1.85)
Revolver Loan	-0.251***	-0.046	-0.205***	-0.223**
	(-11.39)	(-0.67)	(-6.83)	(-2.49)
364 Facilities	-0.556***	-0.045	-0.527***	-0.138
	(-22.04)	(-0.45)	(-15.76)	(-1.08)
Firm Size	0.004	0.026*	0.016**	-0.062***
	(0.71)	(1.83)	(2.41)	(-3.39)
ROA	-0.575***	0.104	-0.457***	0.205
	(-12.43)	(0.73)	(-7.21)	(1.14)
Leverage	0.301***	-0.256***	0.313***	-0.444***
	(12.40)	(-3.47)	(10.50)	(-4.77)
Coverage	-0.001***	-0.002**	-0.001***	0.003***
	(-3.63)	(-2.39)	(-4.44)	(3.46)
Firm Age	-0.000	0.001	0.001**	-0.006***
	(-1.10)	(1.63)	(2.55)	(-5.75)
Market-to-Book	-0.005***	-0.009***	-0.006***	0.003
	(-4.32)	(-3.04)	(-4.32)	(0.68)
AAA	-1.457***	-0.245	-1.704***	0.987***
	(-21.00)	(-0.91)	(-17.89)	(2.85)
AA	-1.317***	-0.086	-1.346***	0.190
	(-31.98)	(-0.42)	(-25.69)	(0.72)
A	-0.890***	-0.085	-0.950***	0.268

	(-39.90)	(-0.63)	(-33.26)	(1.56)
BBB	-0.310***	-0.037	-0.326***	0.069
	(-18.38)	(-0.57)	(-14.92)	(0.83)
BB	0.036**	-0.047	0.036**	-0.018
	(2.57)	(-1.21)	(2.00)	(-0.36)
B	0.174***	-0.129***	0.168***	-0.029
	(10.00)	(-2.60)	(8.32)	(-0.46)
Avg. Spread	0.001***		0.001***	
	(24.04)		(17.72)	
SOX Dummy		-0.242		0.323
		(-1.39)		(1.44)
Big4		0.047		0.091***
		(1.36)		(2.65)
Tax Rate		0.025		-0.017
		(1.33)		(-0.95)
Operating Cycle		0.000*		0.001***
		(1.65)		(3.85)
Market Share		-0.144***		-0.073
		(-2.81)		(-1.31)
NOA Dummy		-0.097***		-0.054**
		(-3.91)		(-2.29)
Z-Score		-0.047***		-0.116***
		(-4.49)		(-9.21)
Constant	6.528***	0.737	6.474***	0.294
	(74.42)	(0.85)	(59.05)	(0.27)
Hausman Test				
Ch^{i2}	460.92		417.04	
Prob>chi2	<0.0001		<0.0001	
Observations	13,008	13,008	13,057	13,057
R-squared	0.721	0.037	0.521	0.070

Figure 1. Spread and Cash Flow Volatility

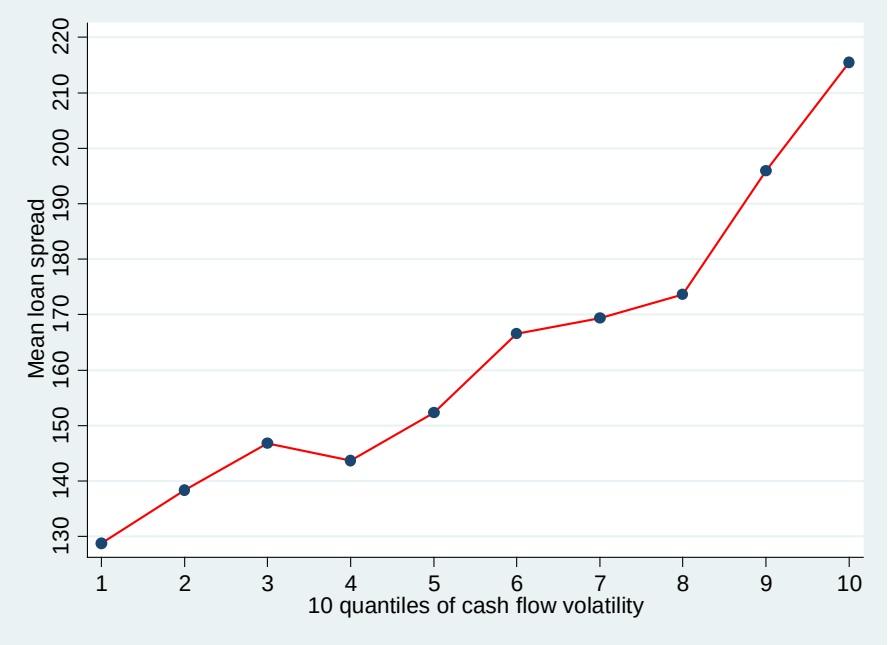


Figure 2: Spread and Earnings Volatility

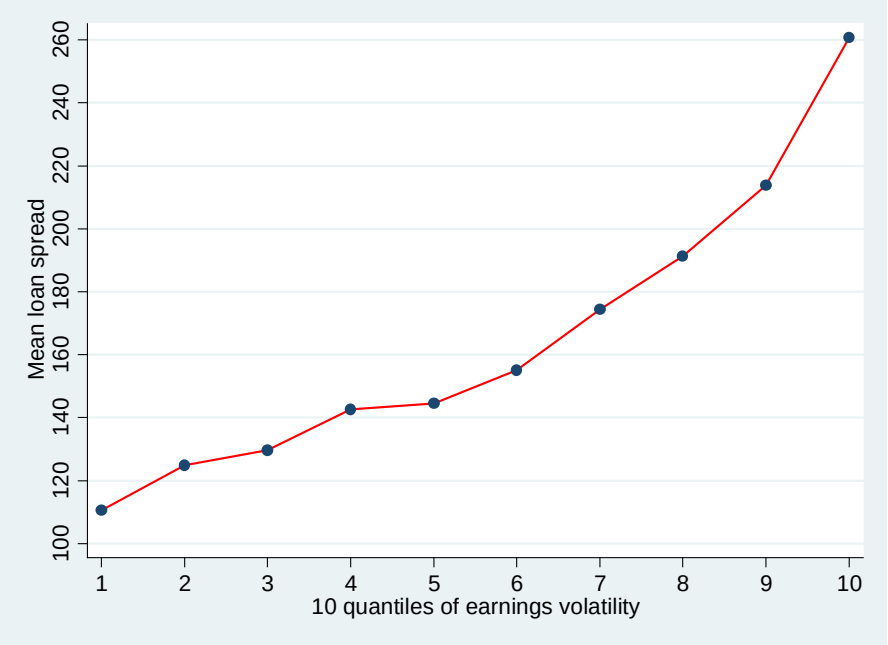
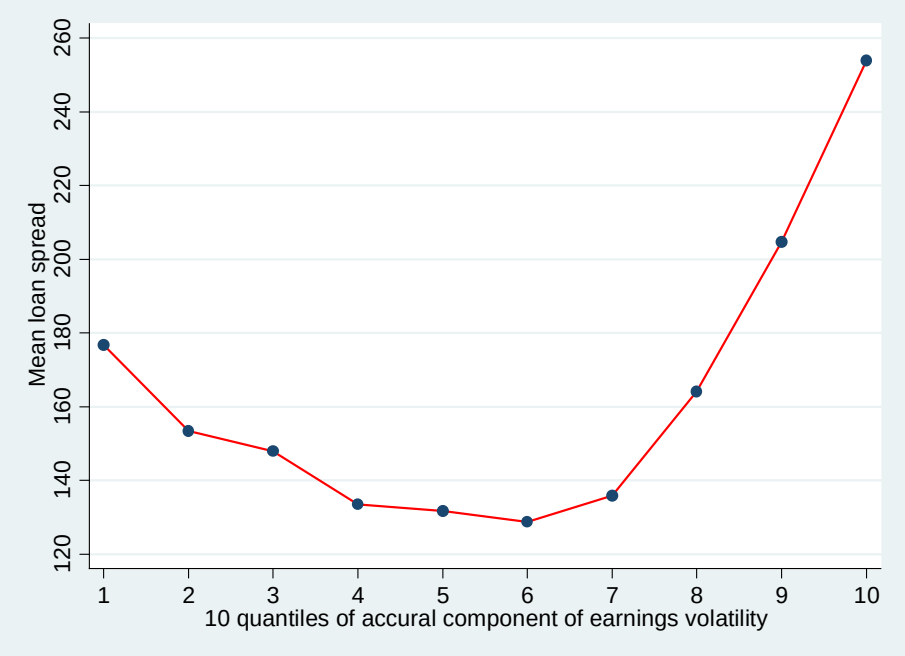


Figure 3: Spread and Accrual Component of Earnings Volatility



Appendix A: Variable definitions

Variable	Definition
Dependent variables:	
Loan Spread	Loan rate minus base rate, where the base rate is the monthly average 6-month LIBOR taken directly from Dealscan database
Collateral	1 if the loan is secured with collaterals, and 0 otherwise
Covenant Intensity Index	The sum of six covenant indicators (collateral, dividend restriction, more than two financial covenants, asset sales sweep, equity issuance sweep, and debt issuance sweep) available in Dealscan database (See Chakravarty and Rutherford, 2011)
Loan characteristics variables:	
Reputation (-)	1 if at least one lead arranger is a top tier bank in the previous 3 years
Reputation	1 if a lead lender (s) is from top five lenders, measured by market share in syndicated loan market in DealScan dataset, and 0 otherwise
Maturity	The log of loan maturity in months
Collateral (+/-)	1 if the loan is secured by collateral, and 0 otherwise
Secured Dummy	1 if loan is secured, and 0 otherwise
Loan Size	Loan amount at the facility-level divided by total assets
Loan Size (-)	The log of loan amount
Deal Size (-)	Loan amount at the deal-level divided by total assets
Total Lender	Number of total lenders in the loan syndicate
Syndication Dummy	1 if loan is syndicated, and 0 otherwise
Previous Lending	1 if over the previous three years the same lead bank arranged other loans for the same firm, and 0 otherwise
Performance Pricing	1 if the loan has performance pricing, and 0 otherwise
Term Loan	1 if the loan type is term loan, and 0 for other types of loans
Revolver Loan	1 if the loan type is revolver loan, and 0 for other types of loans
364 Facilities	1 if the loan type is 364 facilities, and 0 for other types of loans
Corporate Control	1 if the loan purpose is to gain corporate control through acquisitions, merger, LBO, or takeover, and 0 otherwise
Corporate Purpose	1 if the loan purpose is corporate purpose, and 0 otherwise
Debt Repay	1 if the loan purpose is debt repayment, and 0 otherwise
Project Finance	1 if the loan purpose is project finance, and 0 otherwise
Earnings Attributes	
CF Vol.	Standard deviation of 3 years' cash flow from operations, scaled by assets
Earnings Vol.	Standard deviation of 3 years' earnings before extraordinary items, scaled by assets
Negative CF	1 if negative cash flows during previous 3 years and 0 otherwise
ACEV	Accrual component of earnings volatility , measured by the difference between Earnings Vol. and CF Vol. (See Jayaraman, 2008)
Abnormal CFO	Abnormal cash flow from operations (Roychowdhury 2006)
Abnormal PROD	Abnormal production costs, (Roychowdhury 2006)
Abnormal DISEXP	Abnormal discretionary expenses (Roychowdhury 2006)
Abnormal RM	An aggregate measure of Abnormal CFO, Abnormal PROD, and Abnormal DISEXP. Higher values of Abnormal AM, Abnormal CFO, Abnormal PROD, Abnormal DISEXP, and Abnormal ALL implies more real earnings management.
Abnormal AM	The absolute value of discretionary accruals based on Modified Jones model

Firm characteristics variables:

Firm Size	The log of total assets
ROA	Return on assets
Leverage	Long-term debt divided by total assets
Market-to-Book	Borrower's market-to-book ratio of assets
Tangibility	Property, plant, and equipment scaled by total assets
Coverage	Earnings before interest and taxes divided by interest expense
Z-Score	3.3*(EBIT/AT) +0.99*(SALE/AT) +0.6*(FE/TL) +1.2*(ACT/AT) +1.4*(RE/AT)
Firm Age	Number of years a firm appears in Compustat
AAA	1 if S&P senior debt rating is AAA and 0 otherwise
AA	1 if S&P senior debt rating is AA+, AA, or AA- and 0 otherwise
A	1 if S&P senior debt rating is A+, A, or A- and 0 otherwise
BBB	1 if S&P senior debt rating is BB+, BBB, or BBB- and 0 otherwise
BB	1 if S&P senior debt rating is BB+, BB, or BB- and 0 otherwise
B	1 if S&P senior debt rating is B+, B, or B- and 0 otherwise