Financial Reporting Quality and the Choice of Monitoring Mechanisms in Debt Contracts: Evidence from Borrowing Base Restrictions[*]

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Abstract: Borrowing base restrictions are common debt contractual features which limit the amount available to the borrower based on its working capital assets. The lender determines the availability of credit to the borrower based on the success of borrowing base assets. Identifying the unique setting of borrowing base restrictions, I examine whether financial reporting quality affects the choice of monitoring mechanisms that lenders use in debt contracts. I find that borrowers with low quality financial statements are more likely to access borrowing base lines of credit, as they face high adverse selection costs in non-borrowing base lines of credit. Accordingly, I show that the effect of financial reporting quality on the cost of debt is diminished in borrowing base lines of credit as compared to non-borrowing base lines of credit. These results are robust to several financial reporting quality measures such as accrual model based proxies, internal control weakness disclosures and big auditors. Moreover, based on the narrative length of borrowing base restrictions specifically written on eligible accounts receivables in loan contracts, I construct a borrowing base restrictiveness measure and find that the effect of financial reporting quality on the cost of debt is decreasing with the restrictiveness, supporting the substitution effect between contractual monitoring mechanisms and borrower's financial reporting quality.

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1. Introduction

The literature has provided substantial evidence that financial reporting quality is effective in the design of contractual monitoring mechanisms to reduce agency problems between equity holders and debt holders. However, we have a limited understanding of the effects of financial reporting quality on the choice of monitoring mechanisms used by lenders.[1] As Armstrong, Guay and Weber (2010, pg. 217) note in their literature review, "Additional empirical evidence on how accounting quality affects the choice of monitoring mechanisms lenders use and how these mechanisms influence agency costs would be useful." Borrowing base restrictions are common debt contractual features included in almost one third of secured credit lines, based on Dealscan database. These restrictions limit the amount available to the borrower based on its working capital assets. Lenders monitor the success of borrowing base assets in order to determine the availability of the credit line to the borrower. Using the unique debt contractual setting of borrowing base restrictions, I examine whether financial reporting quality affects the choice of monitoring mechanisms in debt markets.

Extant literature, both in accounting and finance, has extensively focused on covenants in debt contracts. As discussed by Smith and Warner (1979), debt covenants are designed to reduce agency problems, and there is substantial evidence that attributes of the financial reporting system are effective in the design of debt covenants.[2] Armstrong et al. (2010) emphasize the importance of understanding the effect of financial reporting quality on other features of the debt

[1] Bharath, Sunder and Sunder (2008), and Costello and Wittenberg-Moerman (2011) are important examples of this early literature examining the effect of financial reporting quality on the choice of monitoring mechanisms.
[2] Along with financial reporting quality (Bharath, Sunder and Sunder, 2008; Costello and Wittenberg-Moerman, 2011), other financial reporting attributes such as voluntary accounting changes (Beatty, Ramesh and Weber, 2002), conservatism (Beatty, Weber and Yu, 2008; Nikolaev, 2010), standard setting environment (Demerjian, 2011) have been analyzed as to how they affect contractual features in debt contracts.

contract besides covenants. I aim to fill a void in the literature by analyzing the effect of financial reporting quality on the inclusion and design of a specific debt contractual feature, the borrowing base restriction.[3]

I examine whether the borrower's financial reporting quality affects the inclusion of borrowing base restrictions in revolving lines of credit. Since the amount available from the borrowing base line is strictly tied to the eligibility of the borrowing base assets, the lender needs to set up proper monitoring programs to closely monitor the borrower (Clarke, 1996). Because the reliability of borrower's financial reporting system affects the lender's estimate of future cash flows (Bharath et al., 2008), the lender determines contractual features based in part on financial reporting quality. As the borrower's financial reporting quality decreases, it is likely that the lender will include additional monitoring mechanisms in the contract, such as borrowing base restrictions, to monitor the borrower's repayment ability.

First, I analyze whether financial reporting quality is associated with the inclusion of borrowing base restrictions in secured credit lines. Specifically, I question whether firms with lower quality financial reports are more likely to access borrowing base lines of credit than non-borrowing base lines of credit. I argue that borrowing base restrictions enable the lender to carefully monitor the quality of the borrower's collateral, reducing the effect of publicly available accounting information at the initiation of the debt contract. When a borrower with low financial reporting quality tries to receive a loan without such a restriction, the opacity of the borrower will be extensively priced, leading to an adverse selection cost for the borrower.

[3] Armstrong et al. (2010, pg. 222) specifically mention that borrowing base restrictions could be affected by the quality of the accounting system and they have not been explored in the literature.

Therefore I expect and find that firms with lower financial reporting quality are more likely to access borrowing base lines of credit. My empirical results show that one standard deviation decrease in a firm's financial reporting quality leads to a 2.5% increase in the probability of accessing a borrowing base line of credit.

Second, I predict that the interest costs of borrowing base lines are less sensitive to the borrower's financial reporting quality, as the availability of the credit line is directly related to the borrowing base. Since lenders intensively follow the success of assets in the borrowing base, the borrower's financial reporting quality is expected to play a less pronounced role in assessing the uncertainty regarding the borrower's credit risk. Therefore, I argue that financial reporting quality is priced less sensitively at the initiation of borrowing base lines, as compared to other secured credit lines. Consistently, empirical results show that the effect of financial reporting quality on the cost of debt is diminished in borrowing base lines of credit, as compared to non-borrowing base lines. One standard deviation increase in financial reporting quality is associated with a decrease of 2 percent in borrowing base line spreads, and a decrease of 5 percent in non-borrowing base line spreads. The results are robust to several financial reporting quality proxies such as accrual-model based measures, disclosure of internal control weaknesses and auditing by big auditors.

Finally, I directly examine whether the intensity of borrowing base restrictions reduces the effect of financial reporting quality in the pricing of debt. I capture the variation in the intensity of borrowing base restrictions, as these restrictions could be seen as indicators of costly monitoring by the lender (Cerquerio et al., 2014; Diamond, 1984; Rajan and Winton, 1995). I

construct a restrictiveness[4] measure by calculating the narrative length of the borrowing base restrictions written on eligible accounts receivables on loan contracts, and test whether this measure diminishes the effect of financial reporting quality in the initial pricing of the loan contract. The results support the proposition that restrictions in the loan contract substitute for the effect of borrower's accounting practices on the cost of debt.

I make three main contributions to the accounting literature. First, focusing on the unique contractual feature of borrowing base restrictions, I provide novel evidence on the effect of financial reporting quality on the choice of monitoring mechanisms in debt markets. Since borrowing base lines of credit are forms of asset based loans that have increasingly gained popularity in recent years (S&P Rating Services, 2011), I provide the initial evidence on the role of accounting in this specific debt market.

Second, I provide refined evidence that monitoring by the lender affects the relation between financial reporting quality and cost of debt. To the extent that other factors explaining the relation between financial reporting quality and cost of debt are controlled,[5] this study increases our understanding of the influence of lender monitoring on the importance of financial reporting quality in certain debt markets.

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[4] I define restrictiveness as the amount of restrictions written on the debt contract. These restrictions can be evaluated as the lender's commitment to perform monitoring activity. If a contractual restriction states receivables from certain customers are not accepted in the borrowing base, then the lender has to monitor the origin of receivables in order to assess the borrower's report on the borrowing base assets. I avoid using "strictness", because in the context of debt contracts, "strictness" might refer to the probability that a certain contractual term will be violated, as in Demerjian and Owens (2016).

[5] Armstrong et al. (2010) provide a non-exhaustive list of factors such as differences in access to information, costs of renegotiation, length of the lending relationship and monitoring ability. Disentangling all potential explanations as to why financial reporting quality is less important in certain debt markets is beyond the scope of this study.

Third, consistent with the view of Sufi (2009) that dual characterization of debt markets as public and private is too simplistic; I provide further evidence that the effect of the quality of financial statements on private debt markets is not uniform. There are cases where financial reporting quality of the borrower plays a limited role in the cost of debt, because of private monitoring mechanisms included in the debt contract.

The following section explains the motivation and lays out the hypotheses. The third section describes the sample selection and research methodology. The fourth section discusses empirical results. The fifth section concludes.

2. Motivation and Hypothesis Development

2.1. The Role of Financial Reporting Quality in Debt Contracting

Beginning with the agency-theory-based view of the firm by Jensen and Meckling (1976), the research on debt markets has focused on the conflicts of interest between debt holders and equity holders. Smith and Warner (1979) analyze covenants in debt contracts aimed at resolving these conflicts between debt holders and equity holders, and suggest that accounting information plays an important role in the choice of debt covenants, which are often based on accounting numbers. This contractual use of accounting information is at the heart of Watts and Zimmerman's (1986) positive accounting theory. As such, Leftwich (1981) provides evidence that even "cosmetic" accounting changes could affect the measurements of covenants in debt contracts and consequently affect the value of debt and equity.

The quality of accounting information is crucial in its contractual use in debt markets. Bharath et al.'s (2008) study is an important milestone in this line of research. They show that the quality of financial reports, measured by the magnitude of abnormal accruals, is effective in a

firm's choice between accessing private or public debt markets. Since private debt holders have access to private information, firms with low quality financial statements are more likely to choose private debt in order to avoid adverse selection costs in public debt markets.[6] Bharath et al. (2008) also show that since private lenders have access to private information and have contracting flexibility, they can design non-price monitoring mechanisms (e.g., collateral and maturity) sensitive to the borrower's financial reporting quality.

Bharath et al.'s (2008) findings triggered a line of research examining the effect of financial reporting quality on the choice of contractual monitoring mechanisms in private debt contracts. For example, Costello and Wittenberg-Moerman (2011) focus on how financial reporting quality affects the choice of certain types of debt covenants. They find that low quality financial information, as measured by material internal control weaknesses, is associated with a decrease in financial covenants and a switch to price and security protections in debt contracts. As the reliability of accounting information decreases, lenders switch to monitoring mechanisms that rely less on accounting information. By identifying borrowing base restriction as a unique and economically important debt contractual monitoring mechanism, I aim to extend this line of literature and provide novel evidence on the effect of financial reporting quality on the choice of monitoring mechanisms.

2.2. Borrowing Base Restrictions as Monitoring Mechanisms

The structure and contents of private debt contracts are highly catered to the needs of the lender and the borrower. A private debt or loan contract is a set of a variety of contractual features (Melnik and Plaut, 1986), including covenants, performance pricing grids, borrowing

[6] The negative association between accounting quality and cost of debt is also documented by Francis et al. (2005) and Graham, Li and Qiu (2008).

base restrictions and loan syndicate structure, all of which are customized based on the attributes of the borrower. Financial accounting information is an important input for these contractual features. As such, the literature has shown a great deal of interest in these institutional features in private debt markets, and how accounting information affects these features.[7]

Bank lines of credit (revolving credit or revolver) are common loan agreements used by firms for corporate liquidity management. In a typical revolving credit agreement, the lending bank makes funds available to the borrowing firm up to a specified limit. The borrowing firm draws down funds from the line when it needs cash, similar to the credit card in consumer financing. The borrower pays interest fees for drawn and undrawn amounts from the line, all specified in the initial loan contract. The borrower is also subject to covenants restricting it from engaging in activities, from the bank's perspective, that are value-decreasing. One of the striking findings in Sufi (2009) is that although bank lines of credit are considered as committed liquidity sources for borrowers, the usage of these lines is actually contingent upon the maintenance of high cash flows and compliance with covenants. If firms decrease their cash flow levels or they violate debt covenants, banks restrict access to credit lines.

Some revolving credit line contracts include borrowing base restrictions. Throughout the paper, I label credit lines that include this feature as borrowing base lines of credit, and I label credit lines that do not include this feature as non-borrowing base lines of credit. A borrowing base line agreement specifies a maximum loan limit and a certain borrowing base, which

[7] There is a large body of accounting literature on debt covenants (Christensen and Nikolaev, 2012; Demerjian, 2011; Dichev and Skinner, 2002; Li, 2010). Also, other debt contractual features such as performance pricing grids (Asquith, Beatty and Weber, 2005), maturity and collateral (Bharath et al., 2008), syndicate structure (Ball, Bushman and Vasvari, 2008) and cross-acceleration provisions (Beatty, Weber and Liao, 2012) have been studied in accounting literature.

typically includes the eligible working capital assets of the borrowing firm. The borrower can draw the lesser of the loan limit or the specified percentage of the borrowing base from this revolving line. As a result, the availability of funds in the borrowing base line is contingent upon the eligibility of the borrowing base assets. Flannery and Wang (2011) provide the first large-sample empirical evidence on the characteristics of borrowing base lines. They find that borrowers with high risk and low cash flow prefer borrowing base lines as compared to non-borrowing base lines, since the highly contingent nature of borrowing base lines helps risky borrowers avoid the adverse selection costs in non-borrowing base lines.

Borrowing base lines of credit are specific forms of asset based lending. They are based on the premise that the borrower's working capital assets (e.g., its receivables, inventory) can have a substantial life of their own independent of the company itself (Caouette et al., 2008). The role of working capital assets in a firm's capital structure was recognized as early as Adam Smith (1776, pg. 228), who notes in *The Wealth of Nations*: "No fixed capital can yield any revenue but by means of a circulating capital. The most useful machines and instruments of trade will produce nothing, without the circulating capital, which affords the materials they are employed upon, and the maintenance of the workmen who employ them". Economics and finance literatures have provided evidence that working capital can be used as a source of additional funds, because even if the firm's business goes down, its working capital can be reclaimed to pay off the loan (e.g., Fazzari and Petersen, 1993; Petersen and Rajan, 1997). Therefore, in the case of borrowing base lines of credit, lenders receive additional security by using working capital assets as collateral for drawing down funds from the revolving credit line.

As the economy becomes larger, firms become more dependent on outside financing, because the businesses cannot be funded by only the wealth of their founders anymore (Caouette

et al., 2008). Credit is a crucial element of the modern firm, but many firms do not qualify for unsecured loans (Caouette et al., 2008). As a result, asset-based lending and borrowing base lines of credit in particular have gained momentum in recent decades.

Borrowing base restriction provides security for the lender by tying the eligibility of the funds to the success of working capital assets in the borrowing base. As long as the borrowing base assets are successfully monitored, the effect of financial reporting quality of the borrowing firms should be attenuated when funds are released through the credit line.

This leads to the question of how the borrower's financial reporting quality affects its access to borrowing base and non-borrowing base lines of credit. If separate examination of the borrowing firm and borrowing base assets lead to a decrease in the role of borrower's financial reporting quality in the lender's credit decision, then borrowers with low quality financial statements will be more likely to receive borrowing base lines of credit. When those firms with lower financial reporting quality choose non-borrowing base lines of credit, the lack of a borrowing base restriction will lead to higher interest rates charged by the bank, leading to an adverse selection cost for the borrower.[8]

Alternatively, the quality of financial statements could still be an important consideration for the lender, because borrowing base reports are likely to reflect characteristics of the borrower's financial reporting system. For example, Caouette et al. (2008) maintain that borrowers' book keeping is important for borrowing more money against the collateral. A

[8] Based on a similar argument, Beatty, Liao and Weber (2009) show that firms with low financial reporting quality are more likely to lease assets instead of purchasing them, as the lessor's private monitoring on leased assets diminishes problems with the lessee's financial reporting quality.

borrower with low financial reporting quality might still face high costs on borrowing base lines of credit and be indifferent between borrowing base and non-borrowing base lines of credit.

To empirically test this question, I form the following hypothesis in alternative form:

H1: Firms with lower financial reporting quality are more likely to access borrowing base lines of credit.

While borrowing base restrictions provide banks with additional protection, they also require monitoring from the bank, as the sufficiency of the borrowing base asset is crucial in determining the release of funds to the borrower. Unlike a fixed asset provided as collateral, working capital assets are volatile and directly affected by business conditions. Therefore, I argue that borrowing base restriction motivates banks to conduct intensive monitoring and private information production on the status of borrowing base assets, decreasing their usage of publicly available financial statements in assessing the borrower.

As proposed in H1, firms with lower financial reporting quality will be more likely to access borrowing base lines of credit, expecting that their low quality financial information will be given less weight by the lender when the price of the loan is determined. As a result, the established sensitivity of loan spreads to financial reporting quality (e.g., Bharath et al., 2008; Graham et al., 2008) is expected to be lower in borrowing base lines of credit. I construct the following testable hypothesis in alternative form:

H2: The magnitude of the association between loan spreads and financial reporting quality is lower in borrowing base lines of credit, as compared to non-borrowing base lines of credit.

A casual reading of borrowing base restrictions in several loan contracts provides the intuition that these restrictions are highly customized for the borrower. A typical borrowing base restriction includes the definition of the underlying asset (e.g., accounts receivable, cash and inventory) and the proportion by which the credit line is available to the borrower, which is called the advance rate (e.g., 85% of eligible accounts receivables). However, there are other written specifications about the frequency of the borrowing base report, under which circumstances the asset does not qualify as a part of the borrowing base (e.g., if the receivable has been due by more than 90 days) and other borrower-specific definitions (e.g., receivables from certain customers do not qualify as a borrowing base).

In H1 and H2, I argue that borrowers with lower financial reporting quality are more likely to access borrowing base lines of credit because their poor quality financial statements are given less weight in pricing the debt. As the borrower's financial reporting quality decreases, the lender decreases its reliance on publicly available financial statements, and switches to stricter (i.e., more restrictive) contractual features. This suggests that the increase in the restrictiveness of borrowing base restrictions can lead to a further decrease in the effect of borrower's financial reporting quality on the loan spreads.

Alternatively, the restrictiveness of the borrowing base restrictions on loan contracts could simply reflect the business conditions of the borrower (e.g., health of the customer base, perishable inventory), and the borrower's financial reporting quality could be evaluated and priced separately from borrowing base restrictions.

To assess this substitution of borrowing base restrictions for financial reporting quality on its effects on cost of debt, and complete the reasoning put forward in H1 and H2, I form the following hypothesis in alternative form:

H3: The restrictiveness of borrowing base restrictions written on the loan contract reduces the effect of the borrower's financial reporting quality on the loan spreads.

I now move to test these three hypotheses through statistical analysis.

3. Sample Selection and Methodology

3.1. Sample

I access the information on credit lines through Loan Pricing Corporation's (LPC) Dealscan database. Dealscan contains comprehensive historical information on loan pricing and contracts details, terms and conditions. In addition to SEC filings and public documents such as 10Ks, 10Qs, 8Ks and registration statements, Dealscan compiles data from loan syndicators and other internal sources, therefore providing a high level of coverage of the U.S. loan market. The loan data in Dealscan is organized in deals (or packages) and facilities (or tranches). A loan deal refers to a specific agreement between a borrower and a lender or a syndicate of lenders. A loan deal might include several facilities with different terms and characteristics. I perform the analyses at the facility level, since I am interested specifically in credit lines or revolving facilities. I retrieve loan facilities issued between 1995 and 2012 from Dealscan. I merge the "FACILITY", "PACKAGE", "CURRFACPRICING" and "COMPANY" tables from Dealscan to get panel data of loan facilities with pricing information and borrowing firm identifiers. I use the "BORROWERBASE" table of Dealscan for information on borrowing base restrictions, including the borrowing base asset type and advance rate for corresponding facilities. Although

Dealscan provides information on borrowing firm names, industries and countries, it does not provide a universal firm identifier for matching with other databases. I use the matching table described in Chava and Roberts (2008), and kindly provided by Michael Roberts on his website, to match borrowing firm names in Dealscan with firm identifiers in S&P's Compustat database. Firm related accounting information is retrieved from Compustat.

Following Nini (2009) and Flannery and Wang (2011) I identify revolving facilities by selecting the following facility types on Dealscan: "Revolver/Line > 1 Yr.," "Revolver/Line < 1 Yr.," "Revolver/Term Loan," "364-Day Facility," "Demand Loan" or "Limited Line." I only select secured lines of credit in order to eliminate the effect of security decision, and to compare fairly the choice of borrowing base or non-borrowing base lines of credit (Flannery and Wang, 2011).

3.2. Variable Measurement

3.2.1. Financial Reporting Quality

Several different measures of financial reporting quality have been developed in the accounting literature. In their review of earnings quality research, Dechow, Ge and Schrand (2010) argue that there is no universal definition of earnings quality, since the concept of quality is dependent on the decision context.

In the context of this paper's research question, financial reporting quality stands for how transparently financial statements reflect the information environment of the borrowing firm. This is important for the lending bank, because covenants in the debt contract and how much effort the bank will put into private information production depend on the transparency of financial statements. If the borrower's accounting numbers are affected by measurement errors in accrual numbers to a large extent, the lender would decrease its reliance on these numbers. Note

that the source of the measurement error in accruals could be either intentional management actions or unintentional errors. As a result, in this paper, I use firm's accrual quality as the proxy for financial reporting quality.[9]

Therefore, I estimate the following accrual quality model developed by Ball and Shivakumar (2006), who augment the original Dechow and Dichev (2002) model:

$$\Delta WCA_{it} = \beta_0 + \beta_1 CFO_{it-1} + \beta_2 CFO_{it} + \beta_3 CFO_{it+1} + \beta_4 DCF_{it} + \beta_5 DCF_{it} * CFO_{it} + \varepsilon_{it} \qquad \text{(A)}$$

where ΔWCA is total change in working capital accruals;[10] *CFO* is cash flows from operations; *DCF* is the indicator variable taking the value of 1 if *CFO* is negative, zero otherwise. The proxy for economic losses is the level of cash flows. I estimate the model (A) in each of Fama and French's (1997) 48 industry groups every year, and derive firm-specific residuals each industry-year. I calculate the standard deviation of each firm's residuals measured over the last five years, including the current year. I multiply the standard deviation of residuals by −1 to derive the financial reporting quality measure, and name it *Accrual Quality*.

In the model (A), accrual quality is measured as how successfully the accounting system maps working capital accruals into realized operating cash flows. It incorporates the timely loss recognition role of accrual accounting, as the timely recognition of losses (i.e., conditional conservatism) is an important feature for debt holders, who are mainly interested in reducing their downside risk.[11] Ball and Shivakumar (2006) show that piecewise linear regressions,

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[9] Accrual quality models are commonly used in the literature examining the effect of accounting quality on debt markets (Beatty, Liao and Weber, 2010, 2012; Bharath et al., 2008; Biddle and Hillary, 2006).

[10] Dechow and Dichev (2002) use change in working capital accruals but McNichols (2002) notes this model might be noisy for total accruals. Although Ball and Shivakumar (2006) report main findings with total accruals as their dependent variable, they mention their inferences hold also with working capital accruals.

[11] A rich line of accounting literature provides evidence on the importance of conditional conservatism in debt markets. See for example, Ahmed et al. (2002), Watts (2003) and Zhang (2008).

incorporating proxies for gains and losses, substantially increase the explanatory power of accruals models.[12]

Dechow et al. (2010) note that model-based accrual quality measures have been criticized because the variables used to model normal accruals are themselves measured by reported accrual-based earnings associated with performance. In order to address this criticism, I also use other measures of financial reporting quality such as disclosure of material internal control weaknesses and auditing by big auditors. Details of these tests are explained in robustness tests in Section 4.3.

3.2.2. Restrictiveness of Borrowing Base Restrictions

H3 predicts that the higher the restrictiveness of borrowing base restrictions on the loan contract, the lower the effect of financial reporting quality on the cost of debt. The test of this hypothesis requires a measure of borrowing base restrictiveness. I attempt to develop such a measure by directly calculating the narrative length of the borrowing base restrictions written specifically on the borrower's accounts receivables. Accounts receivable is the most common type of asset included in borrowing base restrictions: 78% credit lines in the sample include accounts receivables in the borrowing base[13]. Narrative sections that define eligible accounts receivables show where the lender protects itself from risks stemming from the borrower's accounting system. As accrual accounts, accounts receivables are highly open to borrower's

[12] Ball and Shivakumar (2006) also develop another accrual model where they use change in operational cash flows as the measure for economic losses in their piecewise linear regressions. The results are qualitatively similar, when I repeat all the analyses with that alternative accrual measure.
[13] Appendix 2 lists the frequency of assets included in borrowing base sections, along with corresponding advance rates applied to these assets.

intentional or unintentional accounting errors. Analyzing one type of borrowing base asset avoids possible confounding effects from other restrictions written on the loan contract.

Therefore, I hand-collect a subsample of credit line contract narratives with borrowing base restrictions which include accounts receivables in the borrowing base. I measure the narrative length of the accounts receivable borrowing base as the natural logarithm of the number of words included in the section. I name this variable RESTRICTIVE. The longer the section in the contract is, the more restrictions are written on eligible accounts receivables, and thus the higher the RESTRICTIVE is.

3.3. Empirical Models

3.3.1. The Choice between Borrowing Base and other Secured Lines of Credit

In order to test H1, I augment Flannery and Wang's (2011) probit model of the selection between borrowing base and non-borrowing base lines of credit:

$$\begin{aligned} P(BB{=}1) = {} & \beta_0 + \beta_1 Accrual\ Quality + \beta_2 SIZE + \beta_3 ROA + \beta_4 RATING + \beta_5 NOTRATED \\ & + \beta_6 CFVOL + \beta_7 MTB + \beta_8 DA + \beta_9 RD + \beta_{10} MISRD + \beta_{11} AGE + \beta_{12} OTC + \beta_{13} SP \\ & + \beta_{14} AR + \beta_{15} INV + \beta_{16} INDAR + \beta_{17} INDINV + \beta_{18} TANG + \beta_{19} INTANG \\ & + \beta_{20} MISINTANG + Industry\ Fixed\ Effects + Year\ Fixed\ Effects + \varepsilon, \end{aligned} \quad (1)$$

where *BB* is an indicator variable taking the value of one if the line of credit includes a borrowing base restriction, and *Accrual Quality* stands for Ball and Shivakumar's (2006) measure of financial reporting quality as derived from the model (A) above. I also control for several other firm characteristics, including the credit quality, information asymmetry and asset

composition of the borrowing firm, which are defined in Appendix 1.[14] If firms with low quality financial statements have a better access to borrowing base lines of credit, then H1 predicts that β_1 is negative.

3.3.2. Cost of Borrowing Base Lines and Financial Reporting Quality

In H2, I argue that borrowing base lines of credit are subject to extensive private monitoring by the lender, so the lender's reliance on borrower's publicly available accounting information decreases in determining the cost of the loan. As a result, the empirical association between loan spreads and financial reporting quality is less pronounced in the case of borrowing base lines of credit. I test this hypothesis by estimating the following regression model for both borrowing base lines and non-borrowing base lines[15]:

$$\begin{aligned} Log(SPREAD) = {} & \beta_0 + \beta_1 Accrual\ Quality + \beta_2 Log(MATURITY) \\ & + \beta_3 Log(COVENANTS) + \beta_4 PPIND + \beta_5 SIZE + \beta_6 ROA \\ & + \beta_7 RATING + \beta_8 NOTRATED + \beta_9 CFVOL + \beta_{10} MTB + \beta_{11} DA \\ & + \beta_{12} RD + \beta_{13} MISRD + \beta_{14} AGE + \beta_{15} OTC + \beta_{16} SP \\ & + \beta_{17} AR + \beta_{18} INV + \beta_{19} TANG + \beta_{20} INTANG + \beta_{21} MISINTANG \\ & + \beta_{22} LEADFIN + \beta_{23} LEADFOR + \beta_{24} LEADOTH + \beta_{25} Inverse\ Mills\ Ratio \\ & + Industry\ Fixed\ Effects + Year\ Fixed\ Effects + \varepsilon, \end{aligned} \quad (2)$$

[14] Flannery and Wang (2011) include Altman's (1968) Z score and excess cash derived from Opler et al.'s (1999) cash holding model as proxies for credit risk. Since these model-based proxies lead to loss of many observations, which affect the power of sub-sample robustness tests, I do not include these variables in the model; instead I include the borrowing firm's credit rating and an indicator for whether the firm is rated, as proxies for credit risk. All main results with the accrual quality measure are robust to the use of Flannery and Wang's (2011) original selection model.

[15] I follow the recent literature (e.g. Bharath et al., 2008; Graham et al., 2008; Flannery and Wang, 2011) in controlling for the risk factors associated with the cost of debt. To the extent that *Accrual Quality* measure is associated with unobservable risk factors, the results should be interpreted with caution. Therefore, it is important to analyze other financial reporting quality proxies, as outlined in the robustness tests.

where *SPREAD* is the all-indrawn spread over LIBOR reported by Dealscan. I use a variety of facility, firm and industry specific characteristics as components in the control matrix, which are all defined in Appendix 1. The expected sign of the β_1 is negative (Bharath et al., 2008). A formal test of H2 requires the comparison of coefficients between estimates of the loan spread model under borrowing base and non-borrowing base sub-samples. If the magnitude of β_1 under a non-borrowing base regime is larger than that under a borrowing base regime, then H2 is supported.

An important technical consideration in comparing coefficients across two different regimes is that the sample allocation into these separate regimes is not random. That is to say, firms with certain characteristics self-select themselves into one of these regimes, so this selection should be taken into consideration while comparing coefficients across these two separate borrowing regimes. Following similar applications in the literature (Beatty et al., 2010; Bharath et al., 2008; Flannery and Wang, 2011), I estimate an endogenous switching model while running the loan spread model (2). Endogenous switching approach takes the selection in model (1) into consideration by deriving the inverse Mills ratio, and jointly estimates model (2) in two different subsamples. This leads to a fair comparison between coefficients under different regimes.

3.3.3. Borrowing Base Restrictiveness and Financial Reporting Quality

H3 predicts that the restrictiveness of borrowing base restrictions diminishes the effect of financial reporting quality on the pricing of the credit line. H1 and H2 propose that firms with low quality financial statements are more likely to receive borrowing base lines of credit in order to avoid adverse selection costs they face in non-borrowing base lines of credit. H3 completes

this line of reasoning by arguing that the diminishing role of financial reporting quality in borrowing base lines of credit comes from the contractual features in the debt contract.

I test this hypothesis by analyzing the interaction effect between financial reporting quality and borrowing base restrictiveness in the loan spread regression. Specifically, I estimate the following model in borrowing base lines of credit:

$$\begin{aligned} Log(SPREAD) = {} & \beta_0 + \beta_1 Accrual\ Quality + \beta_2 RESTRICTIVE + \beta_3 AccrualQuality * RESTRICTIVE \\ & + \beta_4 Log(MATURITY) + \beta_5 Log(COVENANTS) + \beta_6 PPIND + \beta_7 SIZE + \beta_8 ROA \\ & + \beta_9 RATING + \beta_{10} NOTRATED + \beta_{11} CFVOL + \beta_{12} MTB + \beta_{13} DA + \beta_{14} RD \\ & + \beta_{15} MISRD + \beta_{16} AGE + \beta_{17} OTC + \beta_{18} SP + \beta_{19} AR + \beta_{20} INV + \beta_{21} TANG \\ & + \beta_{22} INTANG + \beta_{23} MISINTANG + \beta_{24} LEADFIN + \beta_{25} LEADFOR + \beta_{26} LEADOTH \\ & + Industry\ Fixed\ Effects + Year\ Fixed\ Effects + \varepsilon, \end{aligned} \quad (3)$$

where the terms are defined in Appendix 1. A formal support for H3 requires that the coefficient on the interaction term between *Accrual Quality* and *RESTRICTIVE* (β_3) is positive.

4. Results

4.1. Descriptive Statistics

Applying the filters to the Dealscan data discussed in the methodology section above and merging the Dealscan data with Compustat, I obtain 6,796 secured credit lines issued by 2,766 distinct firms between 1995 and 2012 with all necessary facility and firm level variable information available. 2,352 of these credit lines have borrowing base restrictions. Figure 1 shows the annual distribution of borrowing base and non-borrowing base lines during the sample period. Note that the proportion of borrowing base lines to all secured lines increases during turbulent times such as early 2000s and the financial crisis in 2008. This is consistent with the

idea that borrowing base lines are more desirable when the borrower is perceived as a greater risk.

Figure 2 shows the total limits of borrowing base and non-borrowing base lines of credit over the sample period. The credit limit provided by borrowing base lines of credit is lower than that provided by non-borrowing base lines. However, there is an increasing trend in the funds available through borrowing base lines of credit, and after the 2008 crisis, it catches up with the funds provided through non-borrowing base lines of credit. This figure underlines the economic significance of borrowing base lines of credit.

Table 1, Panel A presents descriptive statistics of the main variables used in the analyses. Several firm and facility level features of borrowing base and non-borrowing base lines are also presented and compared in Table 1, Panel B. Consistent with Flannery and Wang's (2011) findings, borrowers of borrowing base lines are smaller and they face a higher credit risk as compared to borrowers of non-borrowing base lines. Also, financial reporting quality is significantly lower in borrowing base line borrowers, supporting the hypothesis that borrowers with lower financial reporting quality are more likely to access borrowing base lines rather than non-borrowing base lines.

A correlation matrix of main variables used in analyses is presented in Table 2. Consistent with the earlier descriptive evidence, borrowing base lines are significantly associated with firms with lower financial reporting quality, higher financial risk, higher business volatility and lower operational performance.

4.2. Multivariate Results

4.2.1. The Choice between Borrowing Base and non-Borrowing Base Lines of Credit

H1 maintains that financial reporting quality of the borrowing firm should have an effect on the choice between borrowing base and non-borrowing base lines of credit, all other things held constant. Specifically, firms with lower reporting transparency are more likely to access borrowing base lines of credit, as borrowing base restrictions provide stronger protection for the lending bank. Table 3, Panel A shows the estimation results of the probit model (1). The first column replicates the baseline model of Flannery and Wang (2011). The results are consistent with their findings, as borrowing base lines are associated with smaller firms and lower operational performance. The second column augments the baseline model by introducing the *Accrual Quality* variable, in order to test H1. The coefficient on *Accrual Quality* is negative and significant (asymptotic t-value is -3.29), supporting H1. Economically, one standard deviation increase from the average accrual quality level is associated with a 2.5% decrease in the probability of accessing a borrowing base line of credit, holding all other things constant at their average levels. Overall, the results in Table 3, Panel A formally support H1 after controlling for confounding factors that affect the choice between borrowing base and non-borrowing base lines of credit.

4.2.2. Cost of Borrowing Base Lines and Financial Reporting Quality

If a firm's financial reporting quality affects its choice between borrowing base and non-borrowing base lines of credit, then we would expect to see a differential effect of financial reporting quality on the costs of borrowing base lines and non-borrowing base lines. Intensive monitoring in borrowing base lines helps borrowers reduce adverse selection costs arising from low quality accounting information. Therefore, as formalized in H2, the effect of financial reporting quality on the cost of debt in borrowing base lines should be less than that in non-

borrowing base lines. Table 3, Panel B presents the estimation results of model (2). The coefficient estimates on *Accrual Quality* are significantly negative in both types of secured lines. In borrowing base loans, one standard deviation increase in accrual quality is associated with a decrease in the loan spread by 2 percent, while in non-borrowing base loans; one standard deviation increase in accrual quality is associated with a decrease in the loan spread by 5 percent. The equality of *Accrual Quality* coefficients across two models is rejected at the 1% level, showing that the effect of accrual quality in the two types of credit lines is significantly different. Financial reporting quality is an effective component in determining the price in both types of secured loans, but the magnitude of the effect is less pronounced in borrowing base lines of credit, providing formal support for H2.

4.2.3. Restrictiveness of Borrowing Base Restrictions

If firms with lower financial reporting quality are more likely to access borrowing base lines of credit with high intensity monitoring in the form of restrictive contractual features, then it is important to provide evidence that the diminishing role of financial reporting quality in borrowing base lines of credit indeed comes from an increase in the restrictiveness. Accordingly, H3 predicts that the higher the restrictiveness of borrowing base restrictions on the credit line contract, the lower the effect of financial reporting quality on the cost of debt.

In order to address this question, I develop a borrowing base intensity measure, RESTRICTIVE, based on the narrative length of the borrowing base restrictions specifically written on eligible accounts receivables, as discussed in section 3.2.2. Identifying accounts receivable restrictions on loan contracts requires hand collection and manual investigation. Because of resource requirements, I reduce the sample period to between 2000 and 2008 for this test. Out of 1,307 borrowing base lines of credit issued between 2000 and 2008, 1,100 include

accounts receivable as eligible borrowing base assets. I search for these borrowing base line contracts through Direct EDGAR's query tool. Bank loan contracts are attached as publicly available exhibits to the SEC filings of 10-K, 10-Q and 8-K. I identify 680 loan contracts out of this sample of 1,100. The main reason for the reduced number is that Dealscan records some amendments in loan contracts as new agreements. When a loan agreement is amended, typically some definitions are modified with reference to the original agreement, and the borrower attaches a short amendment document (not a new loan agreement) to its next SEC filing. Dealscan records some of these amendments as new loan agreements, since some of contractual features are modified. Another reason for the loss of observations is that, as explained above, Dealscan also uses private information resources to identify loan facilities, which might not be publicly available on SEC filings.

After collecting 680 loan contracts from SEC filings, I read these documents and isolate sections where eligible accounts receivables are described. These are standard legal texts, but customizations yield important information about the borrower. I capture data about customizations by measuring the length of the section that specifies what types of accounts receivable recorded by the borrower are sufficient as collateral, presuming that any critical information affecting the borrower's accounts receivable will be reflected in that section. Some examples of accounts receivable restrictions written on borrowing base sections of loan contracts are provided in Appendix 3.

I measure the length of the eligible accounts receivable section by the number of words written in the section. I utilize a Java program to count the number of words in the pertinent

section as well as in the whole loan contract[16]. I construct the RESTRICTIVE variable as the natural logarithm of the word count in the eligible accounts receivable section.

Table 4, Panel A shows descriptive statistics of the hand collected sample. On average, the eligible accounts receivable section consists of 907 words, which accounts for roughly 2% of the loan contract. Loan and borrower characteristics of the hand-collected sample are comparable to those of all borrowing base lines in the main sample.

Panel B of Table 4 presents the results from the estimation of model (3) on the hand-collected sample. I use RESTRICTIVE as the measure for the borrowing base restrictiveness. If contractual restrictions can decrease the effect of financial reporting quality on the cost of debt as predicted by H3, then the interaction between RESTRICTIVE and accrual quality measure will be positive.

Consistent with H3, the coefficient on the interaction term is significantly positive (*t*-value is 1.79). When the contractual restrictions written specifically on accounts receivable are longer, the effect of accrual quality on the cost of debt diminishes, supporting the diminishing effect of contractual restrictions on the relationship between financial reporting quality and cost of debt.

4.3. Robustness Tests: Alternative Measures of Financial Reporting Quality

4.3.1. Material Internal Control Weaknesses

In order to provide further insights into the role of financial reporting quality in the choice between borrowing base and non-borrowing base lines of credit, I identify firms

[16] For the novel application of computational linguistics on debt contracts, see Bozanic et al. (2013).

disclosing material internal control weaknesses (ICWs), and analyze how their access to borrowing base and non-borrowing base lines of credit changes. Costello and Wittenberg-Moerman (2011) find that firms experiencing material ICWs face increasing loan costs as ICWs decrease the lenders' reliance of financial covenants and as they increase the uncertainty regarding the borrowers' creditworthiness.

ICWs are expected to trigger lenders to decrease their reliance on financial covenants and to look for other contractual features increasing the loan security, such as borrowing base restrictions. From the perspective of firms experiencing ICWs, their credit risk is higher after they disclose ICWs, and they face higher costs in the debt market. Therefore, in line with H1 and H2, they will be willing to include borrowing base restrictions in their loan contracts to avoid high adverse selection costs in non-borrowing base lines of credit.

I test these expectations by employing a temporal design of ICW firms following Costello and Wittenberg-Moerman (2011). In Table 5, Panel A, I find that firms are more likely to access borrowing base lines after disclosing material ICWs and before correcting them (UNCORRECTED period), supporting H1. Also, as shown in Table 5, Panel B, firms accessing non-borrowing base lines pay significantly higher spreads after disclosing material ICWs, while there is not a significant association between ICWs and loan spreads for firms accessing borrowing base lines, in line with H2.[17]

[17] I require each ICW firm to receive a secured revolver before and after the ICW, which yields a sample of 1020 facilities, 378 of them being borrowing base lines. This leads to a low statistical power in analyses. A formal comparison of ICW coefficients between borrowing base and non-borrowing base lines fail to reject the equality, mainly due to the low power.

4.3.2. Firms Audited by Big 4 Auditors

Big auditors are considered to be important determinants of financial reporting quality, because they can mitigate intentional and unintentional misstatements (Dechow et al., 2010). For example, many studies, including DeFond and Subramanyam (1998) and Francis, Maydew and Sparks (1999), suggest that big auditors are associated with high accruals quality in their customer firms. Consistently, it has been shown that engaging big auditors is associated with lower cost of debt in debt markets (Mansi, Maxwell and Miller, 2004; Pittman and Fortin, 2004). In order to provide further evidence about the effect of financial reporting quality on the choice of secured credit line types, I also use being audited by a big four auditor (Deloitte, EY, KPMG and PricewaterhouseCoopers) as an indicator of high financial reporting quality.[18]

Table 6, Panel A shows that firms audited by big four auditors are less likely to receive borrowing base lines of credit, supporting H1. The results on Table 6, Panel B show no evidence of lower cost of debt for firms audited by big four auditors when they receive borrowing base lines of credit; while being audited by a big auditor is significantly associated with a decrease in spreads of non-borrowing base lines of credit. The difference between big auditor coefficients across both credit lines is statistically significant, providing a formal support for H2.

Overall, robustness tests with alternative financial reporting quality measures such as material ICWs and big auditors support the main results derived by using accrual quality as the measure of financial reporting quality.

[18] The sample period for the big auditor analysis is 2002-2012, as I use Audit Analytics database for identifying the auditors. Audit Analytics data is more complete after 2002 (DeFond, Erkens and Zhang, 2014).

5. Conclusion

Debt markets are increasingly important financing sources for U.S. firms, and extant accounting literature has shown a lot of interest in how the quality of accounting information affects choice of monitoring mechanisms (i.e. contractual features) in debt contracts. In this paper, identifying the unique setting of borrowing base restrictions, I provide evidence supporting the relationship between financial reporting quality and the choice of monitoring mechanisms. I argue that the inclusion of borrowing base restrictions in a revolving credit line contract is affected by the borrower's financial reporting quality.

I ask whether financial reporting quality is associated with access to borrowing base lines of credit versus non-borrowing base lines of credit. As the availability of funds from the credit line is contingent upon the success of borrowing base assets, borrowers' overall financial reporting quality is expected to play a less pronounced role in the credit decision of the lender. On the other hand, firms with lower quality financial statements should face additional adverse selection costs in non-borrowing base lines of credit. Consistent with these explanations, I find that firms with lower financial reporting quality are more likely to access borrowing base lines of credit.

I also question if financial reporting quality has a differential effect on the pricing of borrowing base and non-borrowing base lines of credit, as borrowing base restrictions are expected to reduce the effect of accounting information on the cost of debt. The results show that the association between cost of debt and financial reporting quality is stronger in non-borrowing base lines of credit, as compared to borrowing base lines of credit. These results are robust to several financial reporting quality proxies such as accrual-model based measures, disclosure of internal control weaknesses and auditing by big auditors.

Moreover, I analyze the restrictiveness of borrowing base restrictions in borrowing base lines of credit, and ask whether such restrictiveness reduces the effect of financial reporting quality on the cost of debt. I obtain the variance in restrictiveness in borrowing base line contracts by measuring the narrative length of the borrowing base section on eligible accounts receivables. I find that this restrictiveness measure diminishes the effect of financial reporting quality on the initial pricing of the loan contract.

This study joins the broad literature on the effects of financial reporting quality on debt markets. Utilizing the novel setting of borrowing base restrictions in debt contracts, I provide evidence that the borrower's financial reporting quality affects the choice of contractual monitoring mechanisms in private debt contracts. Accordingly, I provide further evidence that lender's private monitoring intensity diminishes the role of the borrower's financial reporting quality in cost of debt. I also provide the initial evidence on the role of financial reporting quality in borrowing base lines of credit, which are increasingly popular and economically important types of credit.

Appendix 1: Variable Definitions

Accrual Quality: The standard deviation of each firm's residuals multiplied by -1, calculated over the last five years, including the current year, using the model (A). *Data Source: Compustat*

AGE: Natural logarithm of the difference between the firm-year and the year of firm's first appearance in Compustat. *Data Source: Compustat*

AR: Accounts receivable scaled by non-cash total assets. *Data Source: Compustat*

BB: An indicator variable taking the value of one if the line of credit includes a borrowing base restriction, zero otherwise. *Data Source: Dealscan*

BIG4: An indicator variable which takes the value of 1, if the firm is audited by a big-four auditor, zero otherwise. *Data Source: Audit Analytics*

CFO: Cash flows from operations scaled by average total assets. *Data Source: Compustat*

CFVOL: Cash flow volatility measured by the standard deviation of operating cash flows divided by average total assets during the previous five fiscal years. *Data Source: Compustat*

CORRECTED: An indicator variable which takes the value of 1, if the firm disclosed correction of the previous material internal control weakness. *Data Source: Audit Analytics*

COVENANTS: Total number of financial covenants included in the loan contract. Financial covenants are defined as "Min. Cash Interest Coverage", "Min. Debt Service Coverage", "Min. EBITDA", "Min. Fixed Charge Coverage", "Min. Interest Coverage", "Max. Debt to EBITDA", and "Max. Senior Debt to EBITDA" in Dealscan database. *Data Source: Dealscan*

DA: Debt-to-assets ratio, calculated as total liabilities scaled by total assets. *Data Source: Compustat*

DCF: An indicator variable taking the value of 1 if cash flow from operations is negative, zero otherwise. *Data Source: Compustat*

INDAR: Industry-year median of accounts receivables. Industries are defined as Fama and French's (1997) 48 groups. *Data Source: Compustat*

INDINV: Industry-year median of inventory. Industries are defined as Fama and French's (1997) 48 groups. *Data Source: Compustat*

INTANG: Intangible assets scaled by non-cash total assets. *Data Source: Compustat*

INV: Total inventory scaled by non-cash total assets. *Data Source: Compustat*

LEADFIN: An indicator variable taking the value of one if the lead lender is a financial institution, zero otherwise. *Data Source: Dealscan*

LEADFOR: An indicator variable taking the value of one if the lead lender is a foreign institution, zero otherwise. *Data Source: Dealscan*

LEADOTH: An indicator variable taking the value of one if the lead lender does not fall under the classification of financial, foreign or US based institution, zero otherwise. *Data Source: Dealscan*

LEADUS: An indicator variable taking the value of one if the lead lender is a US based institution, zero otherwise. *Data Source: Dealscan*

MATURITY: Maturity period of the loan facility, in months. *Data Source: Dealscan*

MISINTANG: An indicator variable taking the value of one if intangible assets field is missing in Compustat, zero otherwise. *Data Source: Compustat*

MISRD: An indicator variable taking the value of one if research and development expenses field is missing in Compustat, zero otherwise. *Data Source: Compustat*

MTB: Market-to-book ratio. ((Number of shares outstanding*Fiscal year-end price) + (Total assets – Common equity)) / (Total assets). *Data Source: Compustat*

NOTRATED: Indicator variable taking the value of 1, if **S**&P domestic long-term issuer credit rating does not exist, zero otherwise. *Data Source: Compustat*

OTC: An indicator variable taking the value of one if the firm's stock is traded over the counter (not traded on the NYSE, AMEX, or NASD), zero otherwise. *Data Source: Compustat*

PPIND: Indicator variable taking the value of 1, if the loan contract includes a performance pricing provision, zero otherwise. *Data Source: Dealscan*

RATING: S&P domestic long-term issuer credit rating, recoded numerically from 1 to 22, with 1 being "AAA" and 22 being "D", and 0 for not rated. *Data Source: Compustat*

RD: Research and development expenses scaled by non-cash total assets. *Data Source: Compustat*

RESTRICTIVE: Natural logarithm of the number of words used in eligible borrowing base accounts receivable section of the loan contract. *Data Source: Hand Collected*

ROA: Return on assets, calculated as earnings before extraordinary items divided by non-cash total assets. *Data Source: Compustat*

SIZE: Natural logarithm of non-cash total assets. *Data Source: Compustat*

SP: An indicator variable taking the value of one if the firm's stock is included in major S&P indexes (S&P 500, S&P Midcap 400, S&P Smallcap 600), zero otherwise. *Data Source: Compustat*

SPREAD: All-indrawn spread over LIBOR charged on the loan. *Data Source: Dealscan*.

TANG: Asset tangibility, defined as gross property, plant, and equipment scaled by non-cash total assets. *Data Source: Compustat*

UNCORRECTED: An indicator variable which takes the value of 1 if the firm has disclosed a material internal control weakness during the span of previous five years, and has not yet disclosed a correction of the internal control weakness. *Data Source: Audit Analytics*

ΔWCA: Changes in working capital accruals scaled by average total assets. Working capital accruals are derived from the cash flow statement as the sum of the decrease (increase) in accounts receivable, the decrease (increase) in inventory the increase (decrease) in accounts payable the increase (decrease) in taxes payable and the net change in other current assets. *Data Source: Compustat*

WORDCOUNT: Number of words used in eligible borrowing base accounts receivable section in the loan contract. *Data Source: Hand Collected through DirectEDGAR*

Appendix 2: Assets included in Borrowing Base Restrictions

Borrowing Base Asset Type	# of Credit Lines	Advance Rate			
		Mean	Median	Minimum	Maximum
Accounts Receivable - Domestic	76	81.52	85	40	90
Accounts Receivable - Foreign	69	72.64	80	40	90
Cash & Cash Equivalents	70	95.87	100	25	100
Eligible Accounts Receivable	1672	82.34	85	20	100
Eligible Inventory	1314	59.63	60	10	100
Eligible Property Value	64	58.90	60	10	100
Inventory - Finished Goods	157	60.04	60	10	95
Inventory - Raw Material	156	47.25	50	15	100
Inventory - Work in Progress	80	47.15	50	5	90
Marketable Securities	6	64	60	50	80
Oil & Gas Reserves	40	92.78	100	65	100
Other	136	74.13	85	10	100
Property, Plant & Equipment	126	66.57	75	10	100

Statistics from the full estimation sample of 2,352 borrowing base lines of credit issued between 1995 and 2012.

Appendix 3: Examples of Restrictions on Accounts Receivable in the Borrowing Base

"If, other than with respect to a Receivable arising out of the sale of Restricted Inventory, the Account Debtor is also a supplier to or creditor of the Borrower or a Guarantor, the either (i) that Account Debtor shall have entered into an agreement with or for the benefit of the Banks with respect to the waiver of rights of setoff which is acceptable to the Banks or (ii) 120% of the amount owed at such time by the Borrower or the applicable Guarantor to that Account Debtor shall be subtracted from the amount of the Receivable."

"(not included if) …arises from a sale to any director, officer, other employee or Affiliate of any Credit Party, or to any entity that has any common officer or director with any Credit Party."

"(not included if) … the Account is not paid within the earlier of 60 days following its due date or 90 days following its original invoice date."

"(not included if) …such Accounts do not arise from sales on consignment, guaranteed sale, sale and return, sale on approval, or other terms under which payment by the account debtor may be conditional or contingent."

"…such Account is not based on a "bill and hold" transaction and/or does not arise from promotional transactions or salesmen samples."

"Accounts with respect to an Account Debtor whose total obligations owing to Borrowers exceed 10% (such percentage as applied to a particular Account Debtor being subject to reduction by Lender in its Permitted Discretion if the creditworthiness of such Account Debtor deteriorates) of all Eligible Accounts, to the extent of the obligations owing by such Account Debtor in excess of such percentage"

"Any account deemed ineligible by Bank when Bank, in its reasonable discretion, deems the creditworthiness or financial condition of the account debtor, or the industry in which the account debtor is engaged, to be unsatisfactory."

"(not included if) …the Account is an obligation of an Account Debtor that is the federal (or local) government or a political subdivision."

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Figure 1: Percentage of Borrowing Base Revolvers over All Secured Lines of Credit over Time (Source: Dealscan)

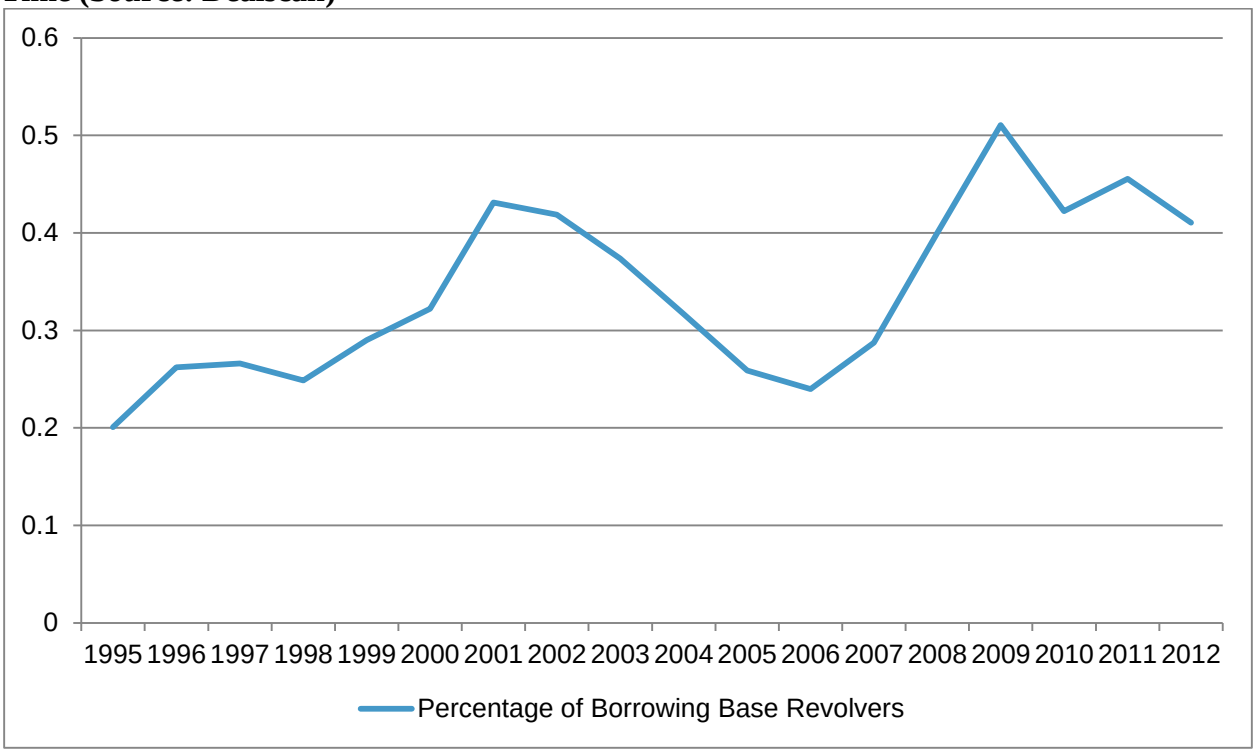

Figure 2: Total Credit Limit (in $ billion) Made Available by BB and non-BB Revolvers over Time (Source: Dealscan)

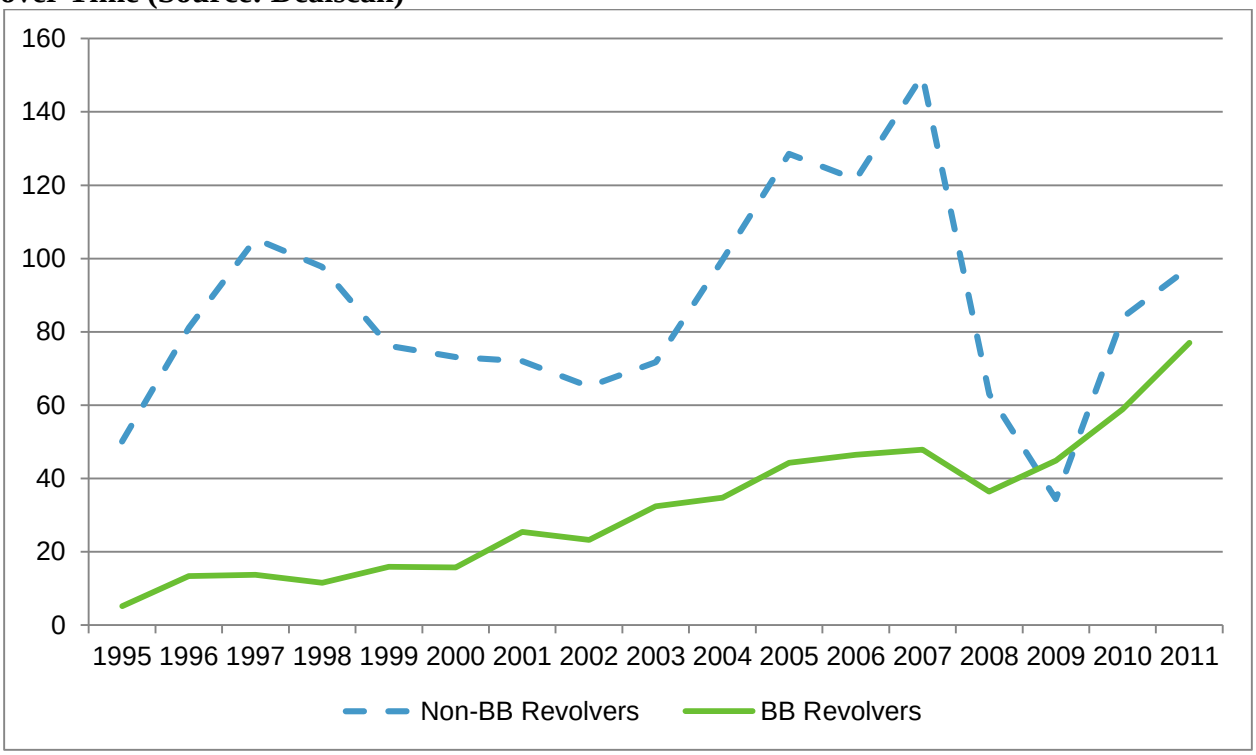

Table 1
Panel A: Descriptive Statistics

Variable	Mean	Std Dev	25th Pctl	Median	75th Pctl
BB	0.35	0.48	0	0	1
Accrual Quality	-0.04	0.03	-0.05	-0.03	-0.02
SPREAD	226.40	103.97	150	225	275
MATURITY	45.37	19.16	36	48	60
COVENANTS	1.54	1.13	1	2	2
PPIND	0.65	0.48	0	1	1
SIZE	6.07	1.62	4.99	6.03	7.12
ROA	0.00	0.14	-0.02	0.03	0.06
RATING	5.07	6.55	0	0	12
NOTRATED	0.61	0.49	0	1	1
CFVOL	0.08	0.07	0.04	0.06	0.09
MTB	1.56	0.84	1.05	1.31	1.77
DA	0.62	0.28	0.44	0.59	0.75
RD	0.02	0.05	0	0	0.01
MISRD	0.51	0.50	0	1	1
AGE	2.73	0.65	2.20	2.64	3.22
OTC	0.21	0.41	0	0	0
SP	0.34	0.47	0	0	1
AR	0.18	0.14	0.07	0.16	0.25
INDAR	0.13	0.07	0.06	0.14	0.18
INV	0.16	0.17	0.01	0.11	0.25
INDINV	0.11	0.10	0.00	0.11	0.18
TANG	0.34	0.26	0.13	0.28	0.50
INTANG	0.17	0.20	0.00	0.08	0.28
MISINTANG	0.09	0.28	0	0	0
LEADFIN	0.12	0.31	0	0	0
LEADFOR	0.11	0.28	0	0	0
LEADOTH	0.05	0.19	0	0	0
LEADUS	0.72	0.41	0.50	1	1

This table shows descriptive statistics of variables used in analyses. The sample includes 6,796 secured revolving credit lines provided by banks during 1995-2012. All variables except logged and categorical variables are winsorized at top and bottom 1% levels. Refer to Appendix 1 for variable definitions.

Panel B: Descriptive Comparisons between BB and non-BB Lines of Credit

	Non-BB Lines (N=4,444)		BB Lines (N=2,352)		Tests of Difference	
					Mean Diff.	Median Diff.
Variable	Mean	Median	Mean	Median	Pr > |t|	Pr > |Z|
Accrual Quality	-0.04	-0.03	-0.05	-0.04	<.0001	<.0001
SPREAD	214.86	200	248.21	250	<.0001	<.0001
MATURITY	47.95	55	40.49	36	<.0001	<.0001
COVENANTS	1.71	2	1.22	1	<.0001	<.0001
PPIND	0.68	1.00	0.58	1	<.0001	<.0001
SIZE	6.25	6.24	5.72	5.66	<.0001	<.0001
ROA	0.02	0.04	-0.03	0.01	<.0001	<.0001
RATING	5.54	0	4.17	0	<.0001	<.0001
NOTRATED	0.56	1	0.70	1	<.0001	<.0001
CFVOL	0.07	0.06	0.09	0.07	<.0001	<.0001
MTB	1.67	1.41	1.35	1.15	<.0001	<.0001
DA	0.61	0.59	0.63	0.60	0.0002	0.0004
RD	0.02	0	0.02	0	0.71	0.14
MISRD	0.54	1	0.47	0	<.0001	<.0001
AGE	2.72	2.64	2.76	2.64	0.02	0.02
OTC	0.17	0	0.29	0	<.0001	<.0001
SP	0.38	0	0.27	0	<.0001	<.0001
AR	0.16	0.14	0.21	0.19	<.0001	<.0001
INDAR	0.12	0.14	0.14	0.15	<.0001	<.0001
INV	0.12	0.06	0.24	0.21	<.0001	<.0001
INDINV	0.08	0.02	0.15	0.16	<.0001	<.0001
TANG	0.37	0.29	0.30	0.25	<.0001	<.0001
INTANG	0.19	0.11	0.12	0.06	<.0001	<.0001
MISINTANG	0.09	0	0.09	0	0.83	0.83
LEADFIN	0.06	0	0.22	0	<.0001	<.0001
LEADFOR	0.13	0	0.07	0	<.0001	<.0001
LEADOTH	0.06	0	0.03	0	<.0001	<.0001
LEADUS	0.75	1	0.68	1	<.0001	<.0001

This table compares means and medians of variables across borrowing base and non-borrowing base lines of credit, issued between 1995 and 2012. Refer to Appendix 1 for variable definitions.

Table 2: Correlation Matrix

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
(1)	BB	1	-0.2***	0.2***	-0.2***	-0.2***	-0.1***	-0.2***	-0.2***	-0.09***	0.1***	0.2***	-0.3***	0.04***	-0.02	0.03*	0.2***	0.3***	-0.1***	-0.1***
(2)	Accrual Quality	-0.2***	1	-0.1***	0.2***	0.07***	0.1***	0.4***	0.05***	0.2***	-0.3***	-0.5***	-0.09***	0.09***	-0.2***	0.10***	-0.3***	-0.2***	0.2***	0.1***
(3)	SPREAD	0.2***	-0.08***	1	-0.1***	0.04***	-0.2***	-0.09***	-0.3***	0.08***	0.001	0.06***	-0.2***	0.2***	-0.002	-0.02	-0.02	-0.05***	-0.02	0.07***
(4)	MATURITY	-0.1***	0.2***	-0.09***	1	0.2***	0.2***	0.2***	0.2***	0.2***	-0.2***	-0.2***	0.1***	0.03*	-0.07***	0.03**	-0.1***	-0.1***	0.05***	0.2***
(5)	COVENANTS	-0.2***	0.08***	0.005	0.2***	1	0.4***	-0.02	0.1***	0.02	-0.03**	-0.06***	0.1***	-0.02	-0.0009	-0.08***	0.03*	-0.2***	-0.04**	0.2***
(6)	PPIND	-0.1***	0.1***	-0.2***	0.3***	0.4***	1	0.08***	0.2***	0.04**	-0.07***	-0.06***	0.09***	-0.08***	-0.05***	-0.04***	-0.03*	-0.07***	0.05***	0.07***
(7)	SIZE	-0.2***	0.4***	-0.06***	0.2***	-0.03*	0.07***	1	-0.06***	0.5***	-0.6***	-0.4***	-0.06***	0.3***	-0.1***	0.3***	-0.3***	-0.1***	0.2***	0.2***
(8)	ROA	-0.2***	0.1***	-0.3***	0.2***	0.1***	0.2***	0.04**	1	-0.1***	0.06***	0.05***	0.4***	-0.4***	0.008	-0.01	0.09***	0.02	-0.07***	0.02
(9)	RATING	-0.10***	0.2***	0.07***	0.1***	0.02	0.04***	0.5***	-0.02	1	-1.0***	-0.2***	-0.06***	0.4***	-0.09***	0.1***	-0.3***	-0.1***	0.1***	0.1***
(10)	NOTRATED	0.1***	-0.3***	-0.0005	-0.1***	-0.03*	-0.07***	-0.6***	-0.02	-1.0***	1	0.3***	0.03*	-0.3***	0.09***	-0.1***	0.3***	0.1***	-0.1***	-0.1***
(11)	CFVOL	0.10***	-0.5***	0.07***	-0.1***	-0.06***	-0.08***	-0.4***	-0.08***	-0.2***	0.2***	1	0.2***	-0.2***	0.1***	-0.2***	0.2***	0.1***	-0.2***	-0.1***
(12)	MTB	-0.2***	-0.2***	-0.1***	0.005	0.04**	0.05***	-0.2***	0.1***	-0.09***	0.08***	0.3***	1	-0.1***	0.2***	-0.1***	0.08***	-0.2***	-0.04***	0.09***
(13)	DA	0.05***	0.04***	0.2***	-0.002	-0.03*	-0.10***	0.3***	-0.3***	0.3***	-0.3***	-0.1***	-0.07***	1	-0.1***	0.1***	-0.1***	-0.05***	0.1***	0.010
(14)	RD	0.005	-0.3***	0.02	-0.1***	-0.08***	-0.1***	-0.2***	-0.2***	-0.1***	0.1***	0.2***	0.3***	-0.1***	1	0.08***	0.3***	0.2***	-0.2***	0.08***
(15)	AGE	0.03*	0.1***	-0.02	0.02	-0.07***	-0.04**	0.3***	0.02	0.1***	-0.2***	-0.2***	-0.1***	0.09***	-0.03*	1	0.003	0.1***	0.01	-0.02
(16)	AR	0.2***	-0.3***	-0.03*	-0.1***	0.006	-0.04***	-0.3***	0.02*	-0.3***	0.3***	0.2***	0.07***	-0.08***	0.2***	-0.02	1	0.2***	-0.5***	0.05***
(17)	INV	0.3***	-0.2***	-0.06***	-0.09***	-0.2***	-0.08***	-0.2***	-0.004	-0.1***	0.1***	0.07***	-0.1***	-0.07***	0.03*	0.08***	0.04**	1	-0.3***	-0.2***
(18)	TANG	-0.1***	0.2***	-0.02	0.03**	-0.02*	0.05***	0.1***	-0.03*	0.1***	-0.1***	-0.2***	-0.06***	0.09***	-0.2***	-0.009	-0.5***	-0.4***	1	-0.4***
(19)	INTANG	-0.2***	0.1***	0.08***	0.2***	0.2***	0.08***	0.1***	0.03**	0.1***	-0.1***	-0.04***	0.03*	-0.02	-0.02	-0.08***	-0.08***	-0.3***	-0.4***	1

Pearson correlations are reported on the lower diagonal, while Spearman correlations are reported on the upper diagonal. *, ** and *** stand for significance levels at p<0.05, p<0.01, and p<0.001 confidence intervals. Refer to Appendix 1 for variable definitions.

Table 3
Panel A: Financial Reporting Quality and the Selection between BB and non-BB Lines of Credit

VARIABLES	(1)	(2)	(3)	(4)
	P(BB=1)			
	Coefficient	z-stat	Coefficient	z-stat
Accrual Quality			**-2.472*** **	**-3.29**
SIZE	-0.090***	-4.01	-0.083***	-3.70
ROA	-1.188***	-7.18	-1.132***	-6.77
RATING	0.088***	4.93	0.088***	4.92
NOTRATED	1.244***	4.99	1.241***	4.98
CFVOL	1.439***	3.97	0.943**	2.39
MTB	-0.290***	-8.78	-0.297***	-8.96
DA	0.184*	1.92	0.172*	1.79
RD	-0.819	-1.42	-0.888	-1.53
MISRD	0.018	0.33	0.023	0.42
AGE	0.004	0.11	0.003	0.09
OTC	0.196***	3.68	0.184***	3.44
SP	-0.115**	-2.01	-0.113**	-1.98
AR	1.166***	5.00	1.077***	4.54
INV	1.298***	5.99	1.259***	5.79
INDAR	0.127	0.28	0.177	0.40
INDINV	1.579***	4.70	1.599***	4.74
TANG	-0.136	-0.78	-0.093	-0.54
INTANG	-1.025***	-5.31	-0.983***	-5.09
MISINTANG	-0.088	-1.14	-0.087	-1.13
Industry and Year Fixed Effects	Yes		Yes	
Observations	6,796		6,796	
Pseudo R Squared	22%		23%	

This table presents the results from estimating model (1). The effect of financial reporting quality on the inclusion of borrowing base restrictions in a revolving loan contract is tested. The dependent variable equals to one if the secured credit line includes a borrowing base restriction, zero otherwise. Robust z-statistics are calculated by clustering standard errors at the borrowing firm level. *, ** and *** stand for significance levels at p<0.1, p<0.05, and p<0.01 confidence intervals. Refer to Appendix 1 for variable definitions.

$$P(BB=1) = \beta_0 + \beta_1 Accrual\ Quality + \beta_2 SIZE + \beta_3 ROA + \beta_4 RATING + \beta_5 NOTRATED + \beta_6 CFVOL + \beta_7 MTB + \beta_8 DA + \beta_9 RD + \beta_{10} MISRD + \beta_{11} AGE + \beta_{12} OTC + \beta_{13} SP + \beta_{14} AR + \beta_{15} INV + \beta_{16} INDAR + \beta_{17} INDINV + \beta_{18} TANG + \beta_{19} INTANG + \beta_{20} MISINTANG + Industry\ Fixed\ Effects + Year\ Fixed\ Effects + \varepsilon, \quad (1)$$

Panel B: Cost of Borrowing Base Lines and Financial Reporting Quality

VARIABLES	(1)	(2)	(3)	(4)
	Log(SPREAD)			
	BB Lines		non-BB lines	
	Coefficient	t-stat	Coefficient	t-stat
Accrual Quality	-0.604**	-2.39	-1.706***	-5.37
Log(MATURITY)	-0.055***	-3.44	0.039**	2.50
Log(COVENANTS)	0.063***	3.78	0.084***	4.30
PPIND	-0.058***	-3.47	-0.126***	-6.08
SIZE	-0.021**	-2.52	-0.072***	-7.63
ROA	-0.381***	-5.27	-0.504***	-5.42
RATING	0.029***	3.74	0.087***	9.83
NOTRATED	0.412***	3.71	1.048***	8.72
CFVOL	0.145	0.98	0.444**	2.53
MTB	-0.090***	-4.90	-0.129***	-8.77
DA	0.216***	6.54	0.256***	7.24
RD	0.178	0.82	-0.242	-0.95
MISRD	-0.017	-0.95	-0.036*	-1.80
AGE	-0.006	-0.48	0.014	0.94
OTC	0.065***	3.38	0.155***	6.15
SP	-0.014	-0.70	-0.093***	-4.50
AR	0.009	0.09	-0.090	-0.77
INV	0.001	0.01	-0.006	-0.04
TANG	-0.044	-0.60	-0.193***	-2.64
INTANG	0.084	0.94	-0.259***	-3.27
MISINTANG	-0.023	-0.68	-0.022	-0.69
LEADFIN	0.095***	5.45	0.292***	7.74
LEADFOR	0.038	1.15	0.086***	3.18
LEADOTH	0.128***	2.59	0.259***	6.81
Inverse Mills Ratio	0.121	1.58	-0.471***	-5.24
Industry and Year Fixed Effects	Yes		Yes	
Observations	2,352		4,444	
Adj. R-squared	33%		37%	
H0: Accrual Quality(BB) = Accrual Quality(non-BB)	**chi2 =7.88**		**Prob > chi2 = 0.005**	

This table presents the results of estimating model (2) in both borrowing base lines (in columns 1 and 2) and non-borrowing base lines of credit (in columns 3 and 4). The association between financial reporting quality and loan spreads is compared across these two different types of secured credit lines. The formal comparison of coefficients is performed at the bottom row of the table. For a fair comparison between coefficients, endogenous switching approach is used by including the Inverse Mills Ratio from model (1), and simultaneously estimating the model (2) in both borrowing base and non-borrowing base lines. Dependent variable is Log(SPREAD). Robust t-statistics are calculated by clustering standard errors at the borrowing firm level. *, ** and *** stand for significance levels at p<0.1, p<0.05, and p<0.01 confidence intervals. Refer to Appendix 1 for variable definitions.

$$Log(SPREAD) = \beta_0 + \beta_1 Accrual\ Quality + \beta_2 Log(MATURITY) + \beta_3 Log(COVENANTS) + \beta_4 PPIND + \beta_5 SIZE + \beta_6 ROA + \beta_7 RATING + \beta_8 NOTRATED + \beta_9 CFVOL + \beta_{10} MTB + \beta_{11} DA + \beta_{12} RD + \beta_{13} MISRD + \beta_{14} AGE + \beta_{15} OTC + \beta_{16} SP + \beta_{17} AR + \beta_{18} INV + \beta_{19} TANG + \beta_{20} INTANG + \beta_{21} MISINTANG + \beta_{22} LEADFIN + \beta_{23} LEADFOR + \beta_{24} LEADOTH + \beta_{25} Inverse\ Mills\ Ratio + Industry\ Fixed\ Effects + Year\ Fixed\ Effects + \varepsilon, \quad (2)$$

Table 4
Panel A: Descriptive Statistics of the Hand Collected Sample

Variable	N	Mean	25th Pctl	Median	75th Pctl
WORDCOUNT	680	907.45	566	886	1222
WORDRATIO	680	0.02	0.01	0.02	0.02
SPREAD	680	246	200	250	300
Accrual Quality	666	-0.06	-0.07	-0.05	-0.03
MATURITY	680	39.96	34.00	36.00	60.00
COVENANTS	680	1.42	1	1	2
PPIND	680	0.69	0	1	1
SIZE	675	5.56	4.55	5.57	6.48
ROA	675	-0.04	-0.07	0.00	0.04
RATING	680	4.10	0	0	12
NOTRATED	680	0.71	0	1	1
CFVOL	679	0.13	0.05	0.07	0.11
MTB	644	1.41	0.96	1.16	1.56
DA	680	0.67	0.46	0.61	0.79
RD	675	0.02	0	0	0.01
MISRD	680	0.46	0	0	1
AGE	680	2.69	2.20	2.56	3.14
OTC	680	0.34	0	0	1
SP	680	0.24	0	0	0
AR	675	0.23	0.12	0.21	0.31
INV	672	0.22	0.08	0.20	0.33
TANG	675	0.26	0.11	0.23	0.38
INTANG	675	0.14	0.01	0.09	0.22
MISINTANG	680	0.06	0	0	0
LEADFIN	680	0.28	0	0	1
LEADFOR	680	0.06	0	0	0
LEADOTH	680	0.04	0	0	0
LEADUS	680	0.61	0	1	1

This table shows descriptive statistics of the hand collected sub-sample. The sample includes 680 contracts of secured revolving credit lines including borrowing base restrictions specifically written on accounts receivables. The sub-sample period is 2000-2008. All variables except logged and categorical variables are winsorized at top and bottom 1% levels. Refer to Appendix 1 for variable definitions.

Panel B: Financial Reporting Quality and the Restrictiveness of Contractual Terms

VARIABLES	(1) Log(SPREAD) Coefficient	(2) Log(SPREAD) t-stat
Accrual Quality	-4.034**	-2.07
RESTRICTIVE	0.031	1.03
RESTRICTIVE*Accrual Quality	**0.535***	**1.79**
Log(MATURITY)	-0.087***	-3.25
Log(COVENANTS)	0.097***	2.82
PPIND	-0.043	-1.38
SIZE	-0.008	-0.49
ROA	-0.334***	-4.68
RATING	0.018*	1.78
NOTRATED	0.272*	1.81
CFVOL	0.004	1.30
MTB	-0.072***	-4.80
DA	0.111***	2.70
RD	0.254	0.94
MISRD	-0.042	-1.40
AGE	-0.033	-1.61
OTC	0.082***	3.00
SP	-0.034	-1.03
AR	-0.148	-1.18
INV	-0.319**	-2.38
TANG	-0.200*	-1.84
INTANG	-0.066	-0.61
MISINTANG	-0.032	-0.70
LEADFIN	0.018	0.66
LEADFOR	0.001	0.01
LEADOTH	0.156*	1.65
Industry and Year Fixed Effects	Yes	
Observations	623	
Adj. R-squared	38%	

This table presents the results of estimating model (3) on the hand collected sub-sample. The effect off the length of accounts receivable restrictions (RESTRICTIVE) on the association between financial reporting quality and loan spreads is tested. Dependent variable is Log(SPREAD). Robust t-statistics are calculated by clustering standard errors at the borrowing firm level. *, ** and *** stand for significance levels at p<0.1, p<0.05, and p<0.01 confidence intervals. Refer to Appendix 1 for variable definitions.

$$Log(SPREAD) = \beta_0 + \beta_1 Accrual\ Quality + \beta_2 RESTRICTIVE + \beta_3 Accrual\ Quality * RESTRICTIVE + \beta_4 FACISIZE + \beta_5 Log(MATURITY) + \beta_6 Log(COVENANTS) + \beta_7 PPIND + \beta_8 SIZE + \beta_9 ROA + \beta_{10} RATING + \beta_{11} NOTRATED + \beta_{12} CFVOL + \beta_{13} MTB + \beta_{14} DA + \beta_{15} RD + \beta_{16} MISRD + \beta_{17} AGE + \beta_{18} OTC + \beta_{19} SP + \beta_{20} AR + \beta_{21} INV + \beta_{22} TANG + \beta_{23} INTANG + \beta_{24} MISINTANG + \beta_{25} LEADFIN + \beta_{26} LEADFOR + \beta_{27} LEADOTH + Industry\ Fixed\ Effects + Year\ Fixed\ Effects + \varepsilon, \quad (3)$$

Table 5
Panel A: Robustness Tests, Material Internal Control Weaknesses and the Selection between BB and non-BB Lines of Credit

VARIABLES	(1) P(BB=1) Coefficient	(2) z-stat
UNCORRECTED	**0.334***	**1.90**
CORRECTED	0.187	0.97
SIZE	-0.183***	-2.87
ROA	-1.610***	-3.56
RATING	0.092**	2.46
NOTRATED	1.383**	2.53
CFVOL	2.522*	1.91
MTB	-0.406***	-3.69
DA	0.046	0.19
RD	-1.087	-0.75
MISRD	0.036	0.25
AGE	0.084	0.72
OTC	0.448***	3.17
SP	0.359**	2.54
AR	0.710	1.12
INV	1.597***	2.62
INDAR	2.574**	2.14
INDINV	2.862***	3.02
TANG	0.095	0.19
INTANG	-0.409	-0.78
MISINTANG	-0.126	-0.45
Industry and Year Fixed Effects	Yes	
Observations	1,016	
Pseudo R Squared	27%	

This table presents the results from a modified version of model (1), as a robustness test. The effect of material internal control weaknesses on the inclusion of borrowing base restrictions in a revolving loan contract is tested. The dependent variable equals to one if the secured credit line includes a borrowing base restriction, zero otherwise. Robust z-statistics are calculated by clustering standard errors at the borrowing firm level. *, ** and *** stand for significance levels at p<0.1, p<0.05, and p<0.01 confidence intervals. Refer to Appendix 1 for variable definitions.

$$P(BB=1) = \beta_0 + \beta_1 UNCORRECTED + \beta_2 CORRECTED + \beta_3 SIZE + \beta_4 ROA + \beta_5 RATING + \beta_6 NOTRATED + \beta_7 CFVOL + \beta_8 MTB + \beta_9 DA + \beta_{10} RD + \beta_{11} MISRD + \beta_{12} AGE + \beta_{13} OTC + \beta_{14} SP + \beta_{15} AR + \beta_{16} INV + \beta_{17} INDAR + \beta_{18} INDINV + \beta_{19} TANG + \beta_{20} INTANG + \beta_{21} MISINTANG + Industry\ Fixed\ Effects + Year\ Fixed\ Effects + \varepsilon$$

Panel B: Robustness Tests, Cost of Borrowing Base Lines and Material Internal Control Weaknesses

VARIABLES	(1)	(2)	(3)	(4)
	Log(SPREAD)			
	BB Lines		non-BB lines	
	Coefficient	t-stat	Coefficient	t-stat
UNCORRECTED	0.052	0.82	0.111*	1.65
CORRECTED	-0.053	-0.88	-0.024	-0.36
Log(MATURITY)	-0.104**	-2.41	-0.001	-0.02
Log(COVENANTS)	0.140***	2.93	0.044	0.82
PPIND	-0.058	-1.10	-0.183***	-3.32
SIZE	-0.011	-0.55	-0.073***	-3.37
ROA	-0.666***	-4.23	0.005	0.03
RATING	0.033*	1.86	0.021	1.41
NOTRATED	0.467*	1.88	0.137	0.67
CFVOL	0.488	1.03	-0.165	-0.31
MTB	-0.102***	-2.73	-0.087**	-2.48
DA	0.123	1.42	0.409***	4.91
RD	0.722	1.33	-0.759	-1.07
MISRD	0.077*	1.82	-0.097**	-2.32
AGE	-0.020	-0.63	0.021	0.54
OTC	0.033	0.65	0.133**	2.06
SP	0.004	0.09	-0.042	-0.81
AR	0.477**	2.12	-0.363	-1.31
INV	0.420*	1.77	-0.624**	-2.34
TANG	0.396**	2.23	0.020	0.09
INTANG	0.629***	3.20	-0.082	-0.41
MISINTANG	-0.009	-0.09	0.008	0.07
LEADFIN	0.098**	2.06	0.189**	2.34
LEADFOR	-0.078	-0.96	0.071	1.23
LEADOTH	0.061	0.57	0.217**	2.22
Inverse Mills Ratio	0.140	1.32	0.067	0.46
Industry and Year Fixed Effects	Yes		Yes	
Observations	378		640	
Adj. R-squared	40%		42%	
H0: Uncorrected(BB) = Uncorrected(non-BB)	**chi2 = 0.48**		**Prob > chi2 = 0.49**	

This table presents the results from a modified version of model (2) in both borrowing base lines (in columns 1 and 2) and non-borrowing base lines of credit (in columns 3 and 4), as a robustness test. The association between material internal control weaknesses and loan spreads is compared across these two different types of secured credit lines. The formal comparison of coefficients is performed at the bottom row of the table. Dependent variable is Log(SPREAD). Robust t-statistics are calculated by clustering standard errors at the borrowing firm level. *, ** and *** stand for significance levels at p<0.1, p<0.05, and p<0.01 confidence intervals. Refer to Appendix 1 for variable definitions.

$$Log(SPREAD) = \beta_0 + \beta_1 UNCORRECTED + \beta_2 CORRECTED + \beta_3 Log(MATURITY) + \beta_4 Log(COVENANTS) + \beta_5 PPIND + \beta_6 SIZE + \beta_7 ROA + \beta_8 RATING + \beta_9 NOTRATED + \beta_{10} CFVOL + \beta_{11} MTB + \beta_{12} DA + \beta_{13} RD + \beta_{14} MISRD + \beta_{15} AGE + \beta_{16} OTC + \beta_{17} SP + \beta_{18} AR + \beta_{19} INV + \beta_{20} TANG + \beta_{21} INTANG + \beta_{22} MISINTANG + \beta_{23} LEADFIN + \beta_{24} LEADFOR + \beta_{25} LEADOTH + \beta_{26} Inverse\ Mills\ Ratio + Industry\ Fixed\ Effects + Year\ Fixed\ Effects + \varepsilon$$

Table 6
Panel A: Robustness Tests, Big 4 Auditors and the Selection between BB and non-BB Lines of Credit

VARIABLES	(1) P(BB=1) Coefficient	(2) z-stat
BIG4	**-0.115***	**-1.84**
SIZE	-0.066**	-2.25
ROA	-1.236***	-5.73
RATING	0.081***	3.86
NOTRATED	1.181***	3.97
CFVOL	1.826***	4.10
MTB	-0.307***	-7.09
DA	0.307**	2.56
RD	-0.566	-0.75
MISRD	0.017	0.25
AGE	0.009	0.18
OTC	0.238***	3.17
SP	-0.031	-0.44
AR	1.356***	4.24
INV	1.537***	5.19
INDAR	0.001	0.00
INDINV	2.606***	4.99
TANG	0.080	0.34
INTANG	-1.193***	-4.85
MISINTANG	-0.206	-1.39
Industry and Year Fixed Effects	Yes	
Observations	4,336	
Pseudo R Squared	25%	

This table presents the results from a modified version of model (1), as a robustness test. The effect of Big 4 auditors on the inclusion of borrowing base restrictions in a revolving loan contract is tested. The dependent variable equals to one if the secured credit line includes a borrowing base restriction, zero otherwise. Robust z-statistics are calculated by clustering standard errors at the borrowing firm level. *, ** and *** stand for significance levels at p<0.1, p<0.05, and p<0.01 confidence intervals. Refer to Appendix 1 for variable definitions.

$$P(BB=1) = \beta_0 + \beta_1 BIG4 + \beta_2 SIZE + \beta_3 ROA + \beta_4 RATING + \beta_5 NOTRATED + \beta_6 CFVOL + \beta_7 MTB + \beta_8 DA + \beta_9 RD + \beta_{10} MISRD + \beta_{11} AGE + \beta_{12} OTC + \beta_{13} SP + \beta_{14} AR + \beta_{15} INV + \beta_{16} INDAR + \beta_{17} INDINV + \beta_{18} TANG + \beta_{19} INTANG + \beta_{20} MISINTANG + Industry\ Fixed\ Effects + Year\ Fixed\ Effects + \varepsilon$$

Panel B: Robustness Tests, Cost of Borrowing Base Lines and Big 4 Auditors

VARIABLES	(1)	(2)	(3)	(4)
	Log(SPREAD)			
	BB Lines		non-BB lines	
	Coefficient	t-stat	Coefficient	t-stat
BIG4	-0.023	-1.20	-0.077***	-3.34
Log(MATURITY)	-0.066***	-3.29	0.038	1.55
Log(COVENANTS)	0.095***	4.61	0.076***	3.03
PPIND	-0.079***	-4.10	-0.133***	-5.50
SIZE	-0.012	-1.34	-0.063***	-5.93
ROA	-0.425***	-5.51	-0.541***	-4.77
RATING	0.038***	4.76	0.087***	9.83
NOTRATED	0.571***	4.97	1.079***	8.79
CFVOL	0.526***	3.20	0.747***	3.79
MTB	-0.115***	-5.93	-0.123***	-6.85
DA	0.223***	5.51	0.356***	8.16
RD	0.353	1.49	-0.316	-0.97
MISRD	-0.017	-0.83	-0.074***	-3.20
AGE	-0.006	-0.39	0.008	0.43
OTC	0.093***	4.02	0.147***	4.15
SP	-0.003	-0.14	-0.067***	-2.82
AR	0.069	0.58	0.059	0.42
INV	0.113	0.92	0.200	1.22
TANG	-0.035	-0.41	-0.136	-1.42
INTANG	-0.055	-0.55	-0.247**	-2.45
MISINTANG	-0.071	-1.56	-0.011	-0.20
LEADFIN	0.056***	2.70	0.277***	5.47
LEADFOR	0.031	0.73	0.123***	3.78
LEADOTH	0.135**	2.17	0.290***	6.64
Inverse Mills Ratio	0.173**	2.39	-0.463***	-5.23
Industry and Year Fixed Effects	Yes		Yes	
Observations	1,594		2,742	
Adj. R-squared	44%		41%	
H0: Big4(BB) = Big4(non-BB)	**chi2 = 3.31** **Prob > chi2 = 0.07**			

This table presents the results from a modified version of model (2) in both borrowing base lines (in columns 1 and 2) and non-borrowing base lines of credit (in columns 3 and 4), as a robustness test. The association between Big 4 auditors and loan spreads is compared across these two different types of secured credit lines. The formal comparison of coefficients is performed at the bottom row of the table. Dependent variable is Log(SPREAD). Robust t-statistics are calculated by clustering standard errors at the borrowing firm level. *, ** and *** stand for significance levels at p<0.1, p<0.05, and p<0.01 confidence intervals. Refer to Appendix 1 for variable definitions.

$$Log(SPREAD) = \beta_0 + \beta_1 BIG4 + \beta_2 Log(MATURITY) + \beta_3 Log(COVENANTS) + \beta_4 PPIND + \beta_5 SIZE + \beta_6 ROA + \beta_7 RATING + \beta_8 NOTRATED + \beta_9 CFVOL + \beta_{10} MTB + \beta_{11} DA + \beta_{12} RD + \beta_{13} MISRD + \beta_{14} AGE + \beta_{15} OTC + \beta_{16} SP + \beta_{17} AR + \beta_{18} INV + \beta_{19} TANG + \beta_{20} INTANG + \beta_{21} MISINTANG + \beta_{22} LEADFIN + \beta_{23} LEADFOR + \beta_{24} LEADOTH + \beta_{25} Inverse\ Mills\ Ratio + Industry\ Fixed\ Effects + Year\ Fixed\ Effects + \varepsilon$$