Borrower Private Information Covenants and Loan Contract Monitoring ☆

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Abstract

Prior research finds that commercial borrowers provide lenders with private information, but generally does not identify the mechanisms by which lenders obtain such information or types of information obtained, limiting the directness of tests of lenders' use of the information for loan contract monitoring and other purposes. To fill this gap, we construct a novel database of covenants in 3,309 commercial loan contracts that require public borrowers to periodically provide lenders with two types of accounting-related private information: projected financial statements for future periods and monthly historical financial statements. We hypothesize and provide evidence that: (1) loan contracts include these borrower private information covenants when they enhance loan contract monitoring by lenders; (2) the covenants are positively associated with the frequency of loan contract amendments, a proxy for lenders' monitoring intensity; and (3) lenders trade on the borrower private information they receive. We further show that the two types of covenants have predictably different determinants and effects.

Keywords: loan contract monitoring, debt contracting, debt covenants, relationship lending, private information

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Prior research finds that commercial borrowers provide lenders with private information, but generally does not identify the mechanisms by which lenders obtain such information or types of information obtained, limiting the directness of tests of lenders' use of the information for loan contract monitoring and other purposes. To fill this gap, we construct a novel database of covenants in 3,309 commercial loan contracts that require public borrowers to periodically provide lenders with two types of accounting-related private information: projected financial statements for future periods and monthly historical financial statements. We hypothesize and provide evidence that: (1) loan contracts include these borrower private information covenants when they enhance loan contract monitoring by lenders; (2) the covenants are positively associated with the frequency of loan contract amendments, a proxy for lenders' monitoring intensity; and (3) lenders trade on the borrower private information they receive. We further show that the two types of covenants have predictably different determinants and effects.

1. Introduction

Prior research finds that commercial borrowers provide lenders with private information (Acharya and Johnson [2007], Bushman et al. [2010], Frankel et al. [2011], Ivashina and Sun [2011], Massoud et al. [2011], Minnis and Sutherland [2016]). With the notable exception of Minnis and Sutherland [2016], who obtain proprietary data about lenders' requests for private information from small commercial borrowers, these prior studies generally do not identify the specific mechanisms by which lenders obtain such information or the specific types of information obtained. This limits the directness of prior tests of lenders' use of private information to monitor borrowers' current and likely future compliance with financial covenants and other loan contract terms (hereafter, "loan contract monitoring"). More generally, research has generated very little insight about how lenders obtain and use accounting-related borrower private information for loan contract monitoring, a natural question for accounting research on loan contracts.

To overcome these limitations and thereby provide insight into this research question, we collect a sample of 3,309 original private loan contracts, both single-lender and syndicated loans, with publicly traded borrowers. These contracts generally include a category within the affirmative covenant section that specifies borrower financial reporting covenants. We collect the covenants that require borrowers to provide accounting-related private information (hereafter, "borrower private information") periodically after loan origination. We identify two types of borrower private information specified in these covenants: projected financial statements for future periods and more frequent than quarterly (usually monthly) and not yet publicly available historical financial statements. Almost half (47%) of the loan contracts in our sample include one or both of these covenants, with projected financial statements being required almost twice as often as monthly financial statements (40% versus 21% of contracts, respectively).

Borrower private information covenants constitute a specific contractual mechanism by which lenders obtain specific types of accounting-related borrower private information. To our knowledge, prior researchers have not previously examined or even been aware of this mechanism and these types of borrower private information, despite lenders' likely intention to use this information for loan contract monitoring. As described below, we predict and provide evidence that lenders use this contractually required information to monitor and amend loan contracts and to insider trade.

We argue that borrower private information covenants exist because lenders find it useful for loan

contract monitoring to obtain more timely or additional information than is available in publicly traded borrowers' financial reports filed with the SEC. Due to costs associated with the preparation by borrowers, use by lenders, and possible dissemination of borrower private information to the broader market, however, after receiving loan funds borrowers may not voluntarily provide such information. This possibility reduces lenders' willingness to lend or the attractiveness of the interest rates and other contract terms that they offer. Prior to loan funding, therefore, firms seeking to borrow may find it beneficial to commit contractually to provide their private information.

We further argue that borrower private information covenants have both benefits and costs, and that loan contracts include these covenants only when the benefits exceed the costs. Lenders benefit through (1) improved loan contract monitoring, which reduces borrower moral hazard (Diamond [1984], Fama [1985]), (2) timelier loan contract amendment, and (3) trading on the information. Borrowers benefit because competition induces lenders to pass along some of their benefits by offering lower interest rates or other terms more desirable to borrowers. These covenants also impose costs on borrowers, primarily, the main ones being attributable to the production of the information and with lenders' use of the information to obtain more favorable loan contract terms from borrowers, i.e., the "hold up" problem. Broader dissemination of borrower private information through lenders' trading may also impose proprietary (e.g., competitive) and other costs. Kim et al. [2015] provide an example of such other costs, showing that an active CDS market referencing borrowers' debt facilitates informed trading by lenders which leads borrowers to increase disclosure of bad news, in part to avoid litigation costs.

We provide two sets of evidence regarding the benefits of borrower private information covenants for lenders' loan contract monitoring. First, prior research shows that the benefits of such monitoring increase with (1) borrower credit risk and uncertainty, as long as these factors are not too large or do not exacerbate the hold-up problem too much for monitoring to be cost effective (Diamond [1991], Nikolaev [2015], Minnis and Sutherland [2016]); (2) borrower-lender information asymmetry (Sufi [2007], Minnis and Sutherland [2016]); and (3) loan contract terms that, when borrowers are determined to be non-compliant, reallocate control rights, adjust loan contract terms, or require borrowers to take some action in lenders' favor (Rajan and Winton [1995], Asquith et al. [2005], Flannery and Wang [2011], Christensen and Nikolaev [2012], Nikolaev [2015], Minnis and Sutherland [2016]). Motivated by this research, we hypothesize and provide descriptive evidence that

loan contracts include more borrower private information covenants when borrowers have higher credit risk and uncertainty, when borrower-lender information asymmetry is higher, and when the contracts include financial covenants or other terms for which this information enhances monitoring of the terms. We further predict and find that loan contracts are more likely to require projected (monthly) financial statements when additional or more timely information about borrowers' future (historical) accounting performance is more important. While we include many proxies for each of the general types of determinants of borrower private information covenants in the empirical models, to illustrate these determinants sharply and intuitively, we focus the exposition on the following three predictions and findings: (1) loan contracts that include performance covenants or performance pricing provisions tied to future accounting performance are more likely to require projected financial statements; (2) contracts with borrowers that have experienced more volatile economic and accounting performance in the past are more likely to require monthly financial statements; and (3) contracts between lenders and borrowers that exhibit greater information asymmetry are more likely to require both types of borrower private information.

Second, prior research shows that loan contract renegotiations and amendments occur when lenders receive and evaluate information after loan origination that resolves uncertainty about borrowers' credit quality (Roberts and Sufi [2009], Nikolaev [2015]). Motivated by this research, we view loan contract amendments as a manifestation of lenders' loan contract monitoring intensity, and we hypothesize and provide evidence that borrower private information covenants are associated with more frequent amendments. We further predict and find that the two types of covenants exhibit distinct associations with amendment timing. Borrowers required to provide monthly financial statements do so multiple times each quarter. Hence, we predict and find that the provision of monthly financial statements is most strongly positively associated with amendments in the quarter after loan origination prior to the borrowers' public release of its quarterly financial information, which incorporates the three most recent monthly financial statements. In contrast, borrowers required to provide projected financial statements generally do so only once annually around the fiscal year end. Hence, we predict and find that the provision of projected financial statements is most strongly positively associated with amendments beyond the quarter after loan origination. The two sets of evidence summarized above are consistent with lenders using accounting-related borrower private information in predictable ways to monitor borrowers' compliance with loan contracts and

to amend those contracts.

To provide further confirmation that borrower private information covenants provide lenders with valuable information about borrowers, and that lenders process and use that information, we provide evidence regarding lenders' trading on the two types of borrower private information. Although lenders generally are expected to keep borrower private information confidential, prior research finds that lenders trade on this information in various markets (Acharya and Johnson [2007], Bushman et al. [2010], Ivashina and Sun [2011], Massoud et al. [2011]). We examine lenders' trading in the secondary loan market because: (1) insider trading by lenders is more likely to occur in that market due to private loans not being public securities governed by the Securities Acts of 1933 and 1934; (2) loan contracts should include borrower private information covenants when that information is value-relevant for loans; and (3) loan contracts require borrowers to provide the two types of borrower private information at the dramatically different periodicities discussed above, allowing us to make the following precise and distinct hypotheses as to when lenders' trading on each type of information is reflected in borrowers' loan returns. Specifically, we predict and find that abnormal loan returns over various windows leading up to and including the contractually required delivery date of projected financial statements, but not over randomly selected windows of equal length, are significantly positively associated with the subsequently reported change in operating cash flows for the following year. We predict and find that the intraquarter speed of price discovery in the secondary loan market, measured following Bushman et al. [2010], is faster when loan contracts require borrowers to provide monthly financial statements.

Our study is most directly related to recent prior work by Minnis and Sutherland [2016], who examine a sample of lenders' information requests to generally small private commercial borrowers provided by a proprietary data source. This source does not indicate whether individual information requests stem from loan contractual requirements. Minnis and Sutherland [2016] examine two types of accounting-related information requests: annual or interim financial statements and tax returns. They provide evidence that lenders' requests for borrower private information: (1) exhibit an inverse U-shaped relation with borrower credit risk, being highest for borrowers with intermediate credit risk; (2) fall with the length of the lending relationship; and (3) rise with collateral for non-real estate loans in lender friendly states whose laws make collateral more readily available to lenders. They further find that financial statements and tax returns can be either substitutes or complements,

depending on borrower characteristics and the degree of borrower-lender information asymmetry.

Our study both is complementary to and generates significant additional results beyond Minnis and Sutherland [2016] in four primary respects. First, by extracting borrower private information covenants from public borrowers' loan contracts filed as exhibits to Form 10K/Q and 8K filings, we identify and examine *only* borrowers' ex ante commitments to provide private information to lenders, a specific mechanism under which borrowers provide lenders with specific types of private information. Second, the availability of financial reports and other public information for our sample of public borrowers enables us to examine a richer set of determinants of borrower private information covenants (e.g., borrower characteristics, borrowing histories, lending relationships, and loan contract terms) than is possible with their proprietary data source, thereby increasing the model specification and statistical power of our tests of these determinants. Further, this public data availability enables us to expand the scope of the analysis to document two important effects of borrower private information covenants: more frequent loan contract amendments, an observable manifestation of lenders' loan contracts monitoring intensity; and insider trading by lenders around the receipt of borrower private information, an indirectly observable manifestation of lenders' use of that information outside the setting of the loan contract. Third, we examine public and usually larger borrowers who file financial reports each period with the SEC and whose equity and other securities typically trade in more liquid markets. As a consequence, borrower private information covenants involve different benefits and costs for our public borrowers than for their private borrowers. For example, public borrowers' more extensive publicly available information likely reduces the benefits of borrower private information covenants for loan contract monitoring. These borrowers' greater access to securities markets likely also reduces borrowers' costs associated with the hold-up problem, although it may also enable informed investors to better infer borrower private information from lenders' trading. Fourth, we examine forward-looking projected financial statements and historical but frequently provided monthly financial statements, which yields various new predictions and results. For example, we predict and find that borrowers' provision of projected financial statements is positively associated with: (1) accounting-based performance covenants and performance pricing, loan contract features that depend on accounting information and so have been a focus of prior accounting research (e.g., Asquith et al. [2005], Christensen and Nikolaev [2012],Nikolaev [2015]); (2) longer-horizon loan contract amendments; and (3) trading by lenders in

advance of the public release of the realization of the projected information.

Like Minnis and Sutherland [2016], our study provides evidence that lenders' ongoing collection of borrower private information serves various purposes beyond strict enforcement of financial covenants and contractual transfer of control rights upon covenant violation to lenders, the focuses of most prior accounting research on debt contracting. These purposes include, for example, facilitating loan contract amendment well prior to borrowers' violation of financial covenants. In particular, such purposes *must* motivate loan contractual requirements to provide projected financial statements, which constitute unverifiable information about borrowers' future prospects and so cannot be used by lenders to evaluate borrowers' current compliance with financial covenants or to transfer control rights.

Our study is also thematically related to contemporaneous work by Baylis et al. [2016], who show that aspects of borrowers' accounting and the loan contractual setting determine whether loan contracts require auditor certification of borrowers' compliance with financial covenants. Baylis et al. [2016] demonstrate that auditor certification enhances loan contracting efficiency, much like we demonstrate that accounting-related borrower private information covenants have such effects.

We emphasize two caveats to our study. First, we document interesting and heretofore largely unknown associations, not causal relations, between borrower private information covenants and borrower characteristics, borrower-lender information asymmetry, loan contract terms, loan contract amendment frequency and timing, and trading by lenders on borrower private information. While our analysis is motivated by prior research, these covenants are jointly determined with other loan contract terms and the overall loan contract setting (Armstrong et al. [2010]). Our findings that the two types of borrower private information covenants have predictably distinct determinants and effects mitigates this concern, however. Second, although our insider trading results suggest that the concern that borrowers may incur proprietary and other costs from lenders' trading on borrower private information is a real one, we primarily provide evidence related to the benefits, not the costs, of borrower private information covenants. We encourage future researchers to identify proxies for these costs and provide evidence as to how they influence the presence and effects of these covenants.

We organize our paper as follows. Section 2 discusses the motivation, supporting theory, and related empirical research. Section 3 describes the data and summary statistics. Section 4 outlines the research design and presents the empirical results. Section 5 concludes.

2. Motivation and background

2.1. Loan contract monitoring and borrower private information covenants

Lenders' primary goal is to ensure they receive adequate returns on their loan investments. To help achieve this goal, loan contracts often include financial covenants and other terms that, upon violation by the borrower or in other specified circumstances, transfer control rights to lenders, adjust loan contract terms, or require borrowers to take some action in lenders' favor (Rajan and Winton [1995], Asquith et al. [2005], Flannery and Wang [2011], Christensen and Nikolaev [2012], Nikolaev [2015], Minnis and Sutherland [2016]). Although considerable empirical research beginning with Booth [1992] is motivated by or examines banks' role in loan contract monitoring, relatively little is known about what activities are involved in such monitoring and thus what information banks use in performing these activities. We argue that lenders monitor borrowers' current and likely future compliance with these terms in part so that they know when to exercise their contractual rights, in part to motivate borrowers to act in ways that do not require them to exercise these rights, and in part to preempt the need to exercise these rights and to promote lending relationships through timely (i.e., pre-violation) loan renegotiation and amendment. Lenders likely also monitor all of their significant borrowers for firm-level credit risk management, accounting, and regulatory purposes.

It may not be necessary for loan contracts to include borrower private information covenants for lenders to be able to monitor loan contracts effectively, because lenders have various alternative means to obtain desired information. Specifically, public borrowers file financial reports with the SEC that contain detailed and standardized historical financial statement information and are available at quarterly intervals. In addition, most loan contracts require that borrowers satisfy reasonable information requests from lenders (see Appendix A for an example), allowing lenders to request information on an *ad hoc* basis as needed. Moreover, loan contracts with financial covenants typically require borrowers to provide covenant compliance reports.[1] Finally, lenders may obtain desired information through established lending and non-lending relationships with borrowers (Fama

[1]Manual inspection of a random subsample of loan contracts with financial covenants indicates that borrowers generally must deliver covenant compliance reports with quarterly and annual financial statements; hence, these reports are not timely enough to be private information. For the rare contracts that require borrowers to deliver these reports more frequently than quarterly, borrowers invariably must deliver the reports with monthly financial statements.

[1985], Boot [2000], Bharath et al. [2007], Mester et al. [2007]). Under these alternatives, however, borrowers may be unwilling or may not have the information systems in place to provide the desired information, and negotiations regarding information requests may be costly or may delay the provision of useful information.

We expect loan contracts to contain borrower private information covenants only when the benefits exceed the costs. As discussed in more detail in the next section, prior research suggests that loan contract monitoring benefits are larger when borrowers have higher credit risk and uncertainty, when borrower-lender information asymmetry is higher, and when loan contracts include terms that are tied to historical financial statement numbers (e.g., financial covenants). Naturally, these benefits can only arise when (1) borrower private information covenants are not simply lender-specific boilerplate and require information incremental to that available to lenders through the alternative means described above, and (2) lenders process the information provided and use it to monitor borrowers.

There are three primary, non-mutually exclusive ways that these covenants can provide incremental information. First, borrower private information may be more timely than the available information, being provided at more closely spaced intervals (as in the case of monthly financial statements) or with shorter reporting lag. More timely information should improve the timeliness of lenders' loan contract monitoring. Second, borrower private information may disaggregate (e.g., by financial statement line item) or indicate the quality of the available information. Such related but supplemental information should improve the accuracy of lenders' loan contract monitoring. Third, borrower private information may be more forward-looking than the available information (as in the case of projected financial statements). More forward-looking information should improve lenders' ability to predict borrowers' future compliance with loan contract terms.

Prior research also suggests that borrower private information covenants entail various costs in addition to the direct costs of producing the information. In particular, the provision of borrower private information to lenders may exacerbate the "hold-up" problem in which existing lenders exploit their superior information to obtain higher interest rates or other more favorable contract terms (Rajan [1992], Santos and Winton [2008]). In addition, although borrowers can reasonably expect lenders to keep the specific details of the information confidential, prior research indicates that lenders trade on borrower private information in debt, credit derivative, and equity markets

(Acharya and Johnson [2007], Bushman et al. [2010], Ivashina and Sun [2011], Massoud et al. [2011]). Such trading by lenders may disseminate the information more broadly, which may yield proprietary or other costs for the borrower.

2.2. Determinants of borrower private information covenants

We argue that loan contracts include borrower private information covenants when the loan contract monitoring benefits of these covenants exceed their costs. Below, we discuss three general sets of factors that prior research suggests are related to these benefits: borrower characteristics, borrower-lender information asymmetry, and loan contract terms.

Prior research shows that lenders' loan contract monitoring and acquisition of borrower private information for monitoring purposes are positively associated with borrower credit risk as long as that risk is not too large for monitoring to be cost effective (Diamond [1984], Lee and Mullineaux [2004], Minnis and Sutherland [2016]). An important reason for lenders to monitor borrowers' compliance with loan contract terms is to renegotiate and amend the contracts when they become inefficient. This reason is more likely to be a primary motivation for monitoring for borrowers with higher uncertainty about future outcomes, for which it is more difficult to design loan contracts that remain efficient over time (Roberts [2015], Nikolaev [2015]). On the other hand, borrowers with more growth options or other intangible assets that are difficult for an alternative lender to evaluate, while tending to exhibit higher uncertainty, also tend to be more subject to hold-up by their existing lender, which reduces the frequency of amendment and the benefits of related monitoring (Nikolaev [2015]).

Prior research generally shows that lenders' loan contract monitoring and acquisition of borrower private information for monitoring purposes are positively associated with borrower-lender information asymmetry (Sufi [2007], Minnis and Sutherland [2016]). Borrower-lender information asymmetry is reduced by borrowers' prior borrowing experience, both general and lender-specific (Diamond [1991]). Borrowers that pay their loan obligations consistently over time develop reputations for reliable payment that reduce lenders' incentives to monitor (Sufi [2007]), while borrowers that do not meet these obligations are subject to more restrictive loan contract terms and enhanced monitoring (Nini et al. [2012]). Relationship lenders accumulate borrower information over time, reducing borrower-lender information asymmetry and thus the benefits of loan contract monitoring (Boot and Thakor [1994], Petersen and Rajan [1994]).

Lenders should more closely monitor loan contracts with terms that expose them to greater risk, such as larger loan amount and longer loan maturity. Hence, we expect contracts that include such terms to be more likely to include borrower private information covenants. We further expect that loan contracts with financial covenants and other terms that require borrower financial information are more likely to include borrower private information covenants. For example, interest coverage covenants require measures of borrowers' net income and interest expense, while collateral requirements require valuations of borrowers' pledged assets. Lenders' determination that borrowers have violated financial covenants shortens the effective maturity of loans. Collateral requirements increase loans' effective priority (Rajan and Winton [1995]).

The following hypothesis summarizes the discussion above:

H1: Borrower private information covenants are positively associated with borrower characteristics that indicate higher credit risk and uncertainty, borrower-lender information asymmetry, and loan contract terms that expose lenders to greater risk or involve borrower financial information.

Although we expect this hypothesis to hold for both types of borrower private information covenants, we expect these types to exhibit distinct associations with certain specific factors. For example, we expect loan contract provisions whose application depends strongly on borrowers' future accounting performance (e.g., performance covenants and accounting-related performance pricing provisions) to be positively associated with loan contract requirements for borrowers to provide projected financial statements but to have little or no association with requirements to provide monthly financial statements. We expect the variability of borrowers' historical economic and accounting performance (e.g., return and cash flow volatility) to be positively associated with requirements to provide monthly financial statements but to have little or no association with requirements to provide projected financial statements. We expect factors positively associated with borrower-lender information asymmetry to be positively associated with both types of borrower private information covenant.

2.3. Borrower private information covenants and loan contract renegotiation and amendment

Prior research shows that loan contract renegotiation and amendment occur when lenders receive and evaluate information after loan origination that resolves uncertainty about borrower credit quality (Roberts and Sufi [2009], Nikolaev [2015]). This information may indicate actual or predicted

financial covenant violations,[2] which typically lead to amendments that favor lenders.[3] This information may also indicate changes in borrower credit risk and alternative borrowing opportunities, which lead to amendments that may favor either lenders or borrowers depending on the direction of the changes.[4] Motivated by this research, we view loan contract amendments as a manifestation of lenders' loan contract monitoring intensity.

Borrower private information covenants are mechanisms by which lenders receive information that may lead to loan contract renegotiation and amendment, even in the absence of a covenant violation.[5] For example, a borrower that provides a credible projection of substantially improved financial performance may induce its lender to renegotiate and amend the loan contract rather than to wait for the performance improvement to be realized, at which point the borrower would be more likely to explore alternative funding sources.

Borrower private information covenants may also strengthen the relation between other contract terms and loan contract amendments. For example, prior research shows that financial covenants and other loan contract terms that allocate decision rights to lenders in the event of borrower noncompliance are positively associated with the frequency of amendments (Christensen and Nikolaev [2012], Nini et al. [2012], Nikolaev [2015]). Borrower private information can facilitate renegotiation of financial covenants in advance of anticipated covenant violations. Although it is possible to identify settings in which borrower private information covenants are negatively associated with the frequency of loan contract amendments,[6] we expect such settings to be the exception rather than the rule. Hence, our second hypothesis is:

H2: Borrower private information covenants are positively associated with the frequency of loan contract amendments.

We discuss the nontrivial possibility of reverse causality with respect to this hypothesis at the end

[2]Covenant violations are fairly common; for example, Nini et al. [2012] indicate that between 10% and 20% of non-financial firms report being in violation of a covenant in any given year from 1996-2008.

[3]In exchange for covenant waivers, lenders typically require one or more of higher interest rates, greater restrictions on borrower decisionmaking (e.g., capital expenditures), and strengthened protections of their investment (e.g., shorter maturity and higher collateral requirements) (Nini et al. [2012]).

[4]Roberts and Sufi [2009] find that improvements in borrower credit quality lead to lower interest rates and other more favorable loan contract terms for the borrower.

[5]Roberts and Sufi [2009] report that 90% of loan contracts originated in 1996-2005 were renegotiated prior to maturity, with only 18% of these renegotiations accompanied by a covenant violation or payment default.

[6]For example, performance pricing and other provisions that automatically adjust loan contract terms based on borrower financial information are negatively associated with amendments (Roberts and Sufi [2009], Nikolaev [2015]). Borrower private information covenants may enhance the effectiveness of such provisions in a way that makes amendments less likely.

of the section.

While we expect this hypothesis to hold to some extent for both types of borrower private information covenant, we expect these types to be differentially associated with the frequencies of loan contract amendments in different windows after loan origination. Specifically, borrowers contractually required to provide monthly financial statements provide this information multiple times each quarter. Hence, we expect the provision of monthly financial statements is positively associated with amendments in the quarter after loan origination prior to the borrowers' public release of its quarterly financial information, which subsumes the previously provided monthly information. This prediction exhibits considerable tension, because borrowers likely provide lenders with extensive information prior to loan origination, although loan contracts would not require borrowers to provide monthly financial statements unless their circumstances could change rapidly.

In contrast, borrowers contractually required to provide projected financial statements generally do so only once annually around the fiscal year end.[7] Hence, we predict that the provision of projected financial statements is positively associated with amendments well beyond the quarter after loan origination. The specific timing of such amendments depends on the date of the delivery of the first annual projection relative to loan origination, which depends on when the loan was originated during the fiscal year and on the frequency with which lenders compare projected financial statements to borrowers' reported performance (e.g., quarterly or annually).

As discussed in the introduction, the direction of causality is a concern for all our hypotheses, but it is particularly so for this hypothesis. Loan contracts that are more likely to be amended *ex ante* likely include more borrower private information covenants, which *ex post* facilitate loan contract renegotiation. Our analysis of the differential associations of the two types of borrower private information with loan contract amendments in different windows after loan origination mitigates this concern, however.

2.4. Borrower private information covenants and insider trading by lenders

To provide further confirmation that borrower private information covenants provide lenders with valuable information about borrowers, and that lenders process and use that information, we

[7]Contractual delivery dates for projected financial statements relative to the fiscal year end vary significantly across loans. In our sample, these dates range from 60 (calendar) days prior to 120 days following the fiscal year end, with a median of 45 days after the fiscal year end.

examine lenders' insider trading on borrower private information. Borrower private information transferred to lenders is protected by confidentiality agreements and thus is not subject to SEC Regulation Fair Disclosure under Rule 100(b)(2).[8] Perhaps for this reason, as discussed above prior research provides evidence that lenders trade on borrower private information in various markets. We examine the secondary loan market because: (1) insider trading by lenders is particularly likely in that market due to the fact that private loans are not public securities governed by the Securities Acts of 1933 and 1934; (2) loan contracts should require borrowers to provide private information when it is value-relevant for loans; and (3) the two types of borrower private information covenants require borrowers to provide projected financial statements and monthly financial statements at dramatically different periodicities, enabling us to formulate precise and distinct predictions as to when lenders' trading on each type of information is reflected in borrowers' loan returns.

Specifically, borrowers generally provide projected financial statements only once a year, and these statements constitute forward-looking information about borrowers' future performance. If lenders trade in the secondary loan market upon their receipt of projected financial statements, abnormal loan returns at that time should be positively associated with future borrower performance. Hence, we predict that abnormal loan returns around borrowers' provision of these statements to lenders is positively associated with the subsequently reported changes in operating cash flows for the following year.[9] Because we cannot observe the date that borrowers provide lenders with projected financial statements, which may occur before the contractually required date, we examine various windows leading up to and including the contractually required date. We thus hypothesize that:

H3A: Borrowers' abnormal loan returns in windows leading up to and including the contractually required delivery date of the projected financial statements are positively associated with their subsequently reported changes in operating cash flows for the following year.

Borrowers usually provide monthly financial statements once a month, and these statements

[8]See the answers to questions 101.04-.07 and .09 in the SEC's Compliance and Disclosure Interpretations for Regulation FD, available at https://www.sec.gov/divisions/corpfin/guidance/regfd-interp.htm.

[9]In prior drafts of the paper, we also examined subsequently reported accruals (i.e., the other component of net income) for the following year. We make predictions about and report only the results for operating cash flows in this draft for the following reasons: (1) accruals are subject to greater discretionary accounting behavior, and it is not clear whether borrowers project their future discretionary accounting behavior so far ahead and, if they do, whether their actual behavior will conform to this distant projection; (2) we find no relationship between projected financial statements and accruals for the following year; and (3) to shorten and simplify the paper.

provide timely information about borrowers' historical accounting profitability that borrowers first disclose publicly in an aggregated form at the subsequent quarterly earnings announcement or SEC filing date. If lenders trade in the secondary loan market upon their receipt of monthly financial statements, the intraquarter speed of price discovery in that market should increase. Consistent with this intuition, Bushman et al. [2010] provide evidence that lenders' possession of borrower private information increases the intraquarter speed of price discovery in the secondary loan market and, when institutional investors hold pieces of syndicated loans, in the equity market as well. They further show that financial covenants, borrower credit risk and asset tangibility, relationship lending, and lead arranger reputation are significantly positively associated with the intraquarter speed of price discovery in the secondary loan market. We thus hypothesize that:

H3B: Borrowers' provision of monthly financial statements is positively associated with the intraquarter speed of price discovery in the secondary loan market.

Following Bushman et al. [2010], we measure the intraquarter speed of price discovery in the secondary loan market over the period between (public) quarterly earnings announcements.

3. Borrower private information covenants and sample selection

3.1. Identification and types of borrower private information covenants

The affirmative covenant section of nearly all loan contracts includes a subsection specifying borrower reporting covenants. We categorize a type of information specified in these covenants as borrower private information if the type exhibits all three of the following characteristics: (1) it is useful for lenders' evaluation of borrowers' historical financial statements or prediction of borrowers' future financial statements, (2) it is not publicly available when provided to lenders, and (3) it is provided at fixed intervals. This categorization excludes certain information that is often specified in reporting covenants, such as periodically produced public information (e.g., Form 10-Q, Form 10-K, and other SEC filings) and *ad hoc* notifications of the occurrence of specified significant events (e.g., default, litigation, and reportable pension plan changes under ERISA). It also excludes the common umbrella requirement that the borrower satisfy any reasonable information request by the lender.

As discussed in detail below, we manually examined a sample of public borrowers' loan contracts to identify borrower reporting covenants and the types of borrower private information that these

covenants specify with reasonable frequency. Based on this examination, we collected two distinct types of borrower private information covenants: projected financial statements for future fiscal periods, and historical financial statements for periods shorter than a quarter (typically months).[10]

Appendix A contains examples of the two types of borrower private information covenants, which help address different loan contracting problems. Forward-looking projected financial statements help lenders predict borrowers' future compliance with financial covenants. They also facilitate lenders' evaluation of borrowers' management by enabling comparison of management's financial projections to the borrower's subsequently realized performance. Frequently provided monthly financial statements enable lenders to evaluate changes in borrowers' accounting performance, as well as the current valuations of assets pledged as collateral or included in borrowing bases on a timely basis.

We denote covenants requiring borrowers to provide lenders with projected financial statements and monthly financial statements by the indicator variables *ProjFinStat* and *MonthFinStat*, respectively. Each of these variables takes a value of one when loan contracts include the corresponding type of borrower private information covenant and zero otherwise. We also examine a composite borrower private information covenant measure, *Private N*, the sum of *ProjFinStat* and *MonthlyFinStat*. We refer to *ProjFinStat*, *MonthlyFinStat*, and *Private N* collectively as *Private.*

To accurately and efficiently identify the borrower private information covenants included in each loan contract in our sample (described in the following section), we developed Python code using the following steps. First, we read the borrower reporting covenant sections of 110 loan contracts randomly drawn from the sample examined by Nini et al. [2009] to identify the specific words and context used in each borrower private information covenant. We hand-coded the borrower private information covenants in these contract sections. Second, we wrote Python code that accurately identified these covenants in these contract sections. Third, we read and hand-coded the borrower private information covenants in the reporting covenant sections of a separate random sample of 110

[10]In prior drafts of the paper, we also identified and empirically examined a third type of borrower private information, written communications received from auditors ("management letters") that discuss internal control deficiencies, as required under AICPA AU-C Section 265, *Communicating Internal Control Related Matters Identified in an Audit*, as well as other audit-related issues and recommendations for improvements in operational efficiency (AICPA [2012], Thomson Reuters PPC [2012]). We omitted this type from the current paper because: (1) these letters likely reveal information that significantly influences loan contracting only in the relatively infrequent cases when borrowers exhibit material weaknesses in internal control, (2) prior research by Baylis et al. [2016] examines the related phenomenon of whether loan contracts require auditor certification of borrowers' compliance with financial covenants, and (3) to shorten and simplify the exposition.

loan contracts. Fourth, we tested the ability of the Python code to identify each type of borrower private information covenant in the second sample, finding that the code identified each type of covenant with greater than 97% accuracy.[11] Lastly, we used the validated code to identify the borrower private information covenants included in the entire sample of loan contracts, described next.

3.2. Loan contract sample

We limit the sample to original loan contracts, meaning the initial contract in a lending arrangement, not an amendment of an existing contract. We do this because we primarily examine the role of borrower private information covenants in lenders' initial decisions to lend to and monitor borrowers.[12] As discussed above, however, we also examine whether the borrower private information covenants included in original loan contracts affect the frequency of subsequent amendments of those contracts.

We constructed the sample beginning with 2,534 original loan contracts initiated during the years 1996-2005 within the sample examined by Nini et al. [2009], which are already matched to DealScan. Using the same identification algorithm as Nini et al. [2009], we then collected all available original loan contracts on SEC EDGAR initiated during the years 2006-2011 and matched them to DealScan.[13] We were able to identify borrower private information covenants for 1,613 of these contracts. Combining the pre- and post-2006 samples yields 4,147 loan contracts during the years 1996-2011. We obtain loan characteristics such as amounts, maturities, interest rates, and covenants from DealScan. Excluding financial firms and utilities and requiring the borrower and loan characteristics included our models to be available yields the final sample of 3,309 original loan contracts for public borrowers during the years 1996-2011.[14]

Loan contracts specify the terms of a deal, which can include multiple individual loans. Because borrower private information covenants are specified and monitored at the deal level, we conduct our tests using deals as the unit of observation. For deals with multiple loans, we aggregate the

[11] The accuracy levels are 98.1% and 97.2% for *ProjFinStat* and *MonthlyFinStat*, respectively.

[12] A lender with a pre-existing loan to a borrower might incorporate borrower private information differently in structuring an amendment than would an unexposed lender in structuring an original loan contract.

[13] We distinguish amendments to existing loan contracts from original loan contracts by first removing extraneous formatting and then searching the first 1,000 characters of the loan contract exhibit for standard amendment terms such as "AMENDED AND RESTATED", "AMENDMENT NUMBER", and "AMENDS CREDIT".

[14] We end the sample in 2011 to enable analysis of amendments over a four-year period (i.e., through 2015) for the most recent contracts in the sample.

terms of the individual loans in the deal to construct deal-level terms. Specifically, the deal-level loan amount equals the sum of the amounts of funded loans and the maximum amounts of unfunded loan commitments in the deal. The deal-level maturity equals the maximum maturity of all loans in the deal. Indicator variables for revolvers, borrowing bases, collateral requirements, and performance pricing take a value of one if they exist for at least one loan in the deal. Hereafter, we use "loan" synonymously with "deal."

3.3. Borrower private information covenant summary statistics

Table 1 reports the means of the *ProjFinStat, MonthlyFinStat*, and *Private N* for the full sample and for the subsamples exhibiting the four possible combinations of values of *ProjFinStat* and *MonthlyFinStat* (i.e., 0,0; 0,1; 1,0; and 1,1). Of the 3,309 loan contracts in the sample, 47% include at least one type of borrower private information covenant. The sample loan contracts include *ProjFinStat* (40% of contracts) more frequently than *MonthlyFinStat* (21% of contracts), with 14% of the contracts including both types of borrower private information covenant. Figure 1 depicts the means of *ProjFinStat*, *MonthlyFinStat*, and *Private N* in each year during the sample period. These means vary considerably over time; typically additional borrower private information covenants (particularly *MonthlyFinStat*) are included in loan contracts in bad economic times (such as the 2001 recession and the 2007-2009 financial crisis) and then are dropped as times improve (such as 2003-2005 and 2010-2011).

Table 2 reports industry-level means of *ProjFinStat, MonthlyFinStat*, and *Private N*. This table indicates broad representation of industries in the sample as well as fairly consistent inclusion of borrower private information covenants in loan contracts across industries.

4. Empirical Models and Results

Section 4.1 describes the empirical tests of H1 regarding the determinants of borrower private information covenants. Section 4.2 describes the empirical tests of H2 regarding the effects of borrower private information covenants on the frequency and timing of loan contract amendments. Section 4.3 describes the empirical tests of H3A regarding the association between borrowers' abnormal loan returns in various windows leading up to and including the contractually required delivery date projected statements and their subsequently reported changes in operating cash flows for the following year. Section 4.4 describes the empirical tests of H3B regarding the effects of borrowers' provision

of monthly financial statements on the intraquarter speed of price discovery in the secondary loan market. Section 4.5 reports supplemental and robustness tests.

4.1. Determinants of borrower private information covenants

We conduct the tests of H1 using the following empirical model:

$$\begin{aligned} Pr(Private = s) &= F_s(\beta_0 + \Sigma_j \beta_j Borrower\,Characteristic_j + \Sigma_k \beta_k Borrower\text{-}Lender\,Information\,Asymmetry_k \\ &\quad + \Sigma_l \beta_l Loan\,Term_l + \Sigma_m \beta_m Loan\,Purpose_m + \Sigma_n \beta_n Industry_n + \Sigma_p \beta_p Year_p) \end{aligned} \quad (1)$$

The independent variables in equation (1) are borrower characteristics, borrower-lender information asymmetry variables, and loan contract terms that prior research suggests are associated with lenders' benefits from loan contract monitoring. While we intend each independent variable to capture one construct, some likely capture other constructs as well. We use intuitive variable names and provide complete definitions of all variables in Appendix B. We proxy for borrowers' credit risk-related financial condition using *Size*, *ROA*, and *Leverage*. *Size* is particularly likely to capture other constructs. We proxy for borrowers' uncertainty using *Return Volatility* and *Cash Flow Volatility*. We proxy for the availability of public information about borrowers using the indicator *Rated*, for borrowers' growth options using the *Market-to-Book* ratio of assets, for borrowers' unrecognized intangible assets using *R&D*, and for the composition of borrowers' recognized assets using *Tangibility*. *Market-to-Book* may also capture borrowers' financial condition, and *Market-to-Book* and *R&D* may also capture proprietary costs. We proxy for borrower-lender information asymmetry using a simplified version of Maskara and Mullineaux's [2011] composite measure of the information asymmetry between borrowers and outside investors (*Info Asymmetry*),[15] as well as measures for borrowers' prior borrowing experience with any lender (*Borrower History*) and with any of the lead arrangers of the current loan (*Relationship*). All borrower characteristics and borrower-lender information asymmetry variables are measured prior to loan origination.

We proxy for the major loan contract terms using *Loan Size*, *Maturity*, and the indicator *Revolver*. We proxy for loan terms whose effectiveness depends on lenders' monitoring of borrowers' current valuations of assets using indicators for whether the loan is collateralized (*Secured*) or the

[15] Maskara and Mullineaux's [2011] measure of information asymmetry is based on six variables, of which we use only three: borrowers' equity bid-ask spread, residual returns volatility, and inverse firm age. We do not use analyst forecast errors, dispersion of analyst forecasts, and abnormal returns around earnings announcements, because this use would entail significant loss of observations. Because this measure does not directly involve lenders, it can equally well be viewed as a borrower characteristic.

maximum amount borrowable is tied to a specified pool of assets (*Borrowing Base*). We proxy for financial covenants whose effectiveness depends on lenders' monitoring of borrowers' accounting numbers using the number of accounting-based *Performance Covenants* and *Capital Covenants*.[16] Performance covenants facilitate contingent control transfers and are sensitive to changes in borrower income statement variables, such as net income, whereas capital covenants help align the interests of lenders and shareholders and are sensitive to changes in borrowers' balance sheet variables, such as net worth (Christensen and Nikolaev [2012]). We proxy for loan pricing terms whose effectiveness depends on lenders' monitoring of borrowers' performance using indicators for performance pricing provisions tied to credit ratings (*Performance Pricing-Rating*) versus tied to other, generally accounting-based, performance measures (*Performance Pricing-Accounting*).[17] The effectiveness of *Performance Pricing-Rating* depends on monitoring of borrowers by credit rating agencies, whereas the effectiveness of *Performance Pricing-Accounting* depends on monitoring by lenders, so we expect borrower private information covenants to provide greater benefits for the latter form of performance pricing.

As mentioned in the introduction, rather than providing a tedious and hard-to-digest discussion of the (comprehensively tabulated) results for the many conceptually and statistically interrelated proxies for each of the general types of determinants of borrower private information covenants included in equation (1), to illustrate these determinants sharply and intuitively, we focus the exposition of the descriptive analysis and tests related to H1 on the following three specific predictions. First, we predict that the loan contract features whose application depends most on borrowers' future accounting performance, *Performance Covenants* and *Performance Pricing-Accounting*, are positively associated with *ProjFinStat* but have little or no association with *MonthlyFinStat*. Second, we predict the measures of the volatility of borrowers' historical economic and accounting performance, *Return Volatility* and *Cash Flow Volatility*, are positively associated with *MonthlyFinStat* but have little or no association with *ProjFinStat*. Third, we predict that the borrower-lender information asymmetry variables, *Info Asymmetry (Borrower History* and *Relationship*), are positively (negatively) associated with both types of borrower private information covenant.

Table 1 reports the means of the borrower characteristics, borrower-lender information asym-

[16] Our inferences are unaffected by the use of indicators for the presence of these types of financial covenants.

[17] The majority of non-rating-based performance pricing provisions use accounting ratios as the measure of performance. The remaining provisions use measures such as remaining loan maturity and amount.

metry variables, and loan contract terms in equation (1) for the full sample and for subsamples exhibiting the four possible combinations of *ProjFinStat* and *MonthlyFinStat* (i.e., 0,0; 0,1; 1,0; and 1,1). Unless indicated otherwise, we refer to mean differences, coefficients, and other statistics as significant if they differ from zero at the 5% level or better in two-tailed tests. Means of variables in the three subsamples with at least one borrower private information covenant (i.e., 0,1; 1,0; and 1,1) that are significantly different from the means of the same variables in the subsample without any covenants (i.e., 0,0) are indicated by boldface type. To isolate the effect of a given type of borrower private information, we discuss only the differences of the means for the 0,1 and 1,0 subsamples versus the 0,0 subsample. Most of these means differences are significant in the direction predicted in H1. That is, compared to the subsample of loan contracts without borrower private information covenants, the subsamples of contracts that include one or more of these covenants usually involve borrowers with higher credit risk and uncertainty, greater borrower-lender information asymmetry, and loan contract terms that impose more risk on lenders or whose effectiveness benefits from monitoring by lenders.[18]

We discuss in detail the means differences related to the three specific predictions based on H1 that are our focus. First, compared to the subsample of loan contracts without borrower private information covenants, the means of *Performance Covenants* and *Performance Pricing-Accounting* significantly increase when *ProjFinStat* increases from zero to one, consistent with forward-looking information about borrowers' future accounting performance facilitating the application of these accounting-performance-related loan contract terms. By comparison, the mean of *Performance Covenants* does not significantly change and the mean of *Performance Pricing-Accounting* increases much less when *MonthlyFinStat* increases from zero to one, consistent with more timely information about borrowers' historical accounting performance being less useful for applying these terms. Second, the means of *Return Volatility* and *Cash Flow Volatility* are significantly higher when *MonthlyFinStat* increases from zero to one, consistent with more timely information about borrowers' historical accounting performance being more useful when borrowers have experienced more volatile historical economic and accounting performance. By comparison, the mean of *Cash Flow*

[18] An obvious exception to this statement is that the inclusion of borrower private information covenants in loan contracts is negatively associated with *Loan Size*, despite larger loans imposing more credit risk on lenders, all else being equal. This finding is due the positive correlation of *Loan Size* with *Size*, an inverse measure of borrower credit risk. We find that *Loan Size* exhibits the expected positive association with borrower private information covenants in the multivariate analysis.

Volatility does not significantly change and the mean of *Return Volatility* increases much less when *ProjFinStat* increases from zero to one, consistent with forward-looking information about future accounting performance being less useful for borrowers with highly uncertain performance. Lastly, the mean of *Info Asymmetry* is significantly higher and the means of *Borrower History* and *Relationship* are significantly lower when each of *ProjFinStat* and *MonthlyFinStat* increases from zero to one, consistent with both types of borrower private information covenant being more useful when borrower-lender information asymmetry is higher.

Table 3 presents the pooled sample estimation of equation (1). Columns (1)-(3) of the table present the marginal effects of each independent variable, holding the other variables at their means, in (ordered) logit estimations with *ProjFinStat*, *MonthlyFinStat*, or *(Private N)*, respectively, as the dependent variable. All continuous independent variables in equation (1) are winsorized at the top and bottom percentiles. The equation also includes loan purpose, industry, and calendar year fixed effects.[19] We calculate standard errors clustering observations by firm.

The coefficients reported in Table 3 largely correspond to the predictions in H1 and the differences in the means across the borrower private information covenant subsamples in Table 1 discussed above. Specifically, the coefficients on *Performance Covenants* and *Performance Pricing-Accounting* are significantly positive in the *ProjFinStat* and *Private N* models but are insignificant in the *MonthlyFinStat* model, consistent with the application of these accounting-performance-related contractual terms benefiting more from information about borrowers' future accounting performance than from timely information about their historical accounting performance.[20] The coefficients on *Return Volatility* and *Cash Flow Volatility* are significantly positive in the *MonthlyFinStat* and *Private N* models but are insignificant in the *ProjFinStat* model, consistent with timely information about historical performance being relatively more important for more volatile borrowers. The

[19]We obtain the primary purpose of each loan (i.e., deal) from Thomson Reuters' DealScan database. The most common loan purposes for our sample in declining order of frequency, with the number of sample observations with these purposes indicated in parentheses, are: (1) general corporate purposes (948), (2) working capital (860), (3) debt repayment (586), (4) takeover (432), (5) acquisition line of credit (168), and (6) commercial paper backup (167). All other individual loan purposes apply to at most 48 sample observations. Following Sufi [2007], we aggregate these loan purposes into five categories/fixed effects: (a) general corporate purposes and working capital (purposes 1 and 2), (b) debt repayment (purpose 3), (c) takeover and acquisition (purposes 4 and 5), (d) commercial paper backup (purpose 6), and (e) all other.

[20]Relatedly, the coefficient on *Performance Pricing-Rating* is significantly negative in the same columns that the coefficient on *Performance Pricing-Accounting* is significantly positive, consistent with the two types of performance pricing provision being substitutes and with projected financial statements not having any use in the application of *Performance Pricing-Rating.*

coefficients on *Info Asymmetry* are significantly positive for all three borrower private information covenant measures, and the coefficients on *Relationship* are significantly negative for two out of the three borrower private information covenant measures, consistent with both types of borrower private information being more important when borrower-lender information asymmetry is higher.

In addition, Table 3 reports results that provide confirmation for findings previously reported in Minnis and Sutherland [2016]. Specifically, the table reports positive coefficients on *Secured* in all columns and on *Borrowing Base* in the *MonthlyFinStat* and *Private N* models, but not in the *ProjFinStat* model. These coefficients are consistent with their findings that lenders' interim financial statement requests increase with collateral, particularly in lender-friendly states, and thus with timely historical accounting information enhancing lenders' monitoring of the asset valuations underlying collateral and borrowing base loan contract provisions.

In summary, the results reported in Table 3 generally support the predictions in H1 that loan contracts are more likely to include borrower private information covenants when borrowers exhibit higher credit risk and uncertainty, borrower-lender information asymmetry is higher, and loan contract terms expose lenders to greater risk or involve borrower financial information. Moreover, the specific types of covenants included depend on borrower characteristics, borrower-lender information asymmetry, and loan contract terms. These results support the idea that borrower private information facilitates lenders' loan contract monitoring.

4.2. Borrower private information covenants and loan contract amendment

In this section, we test H2 that borrower private information covenants are positively associated with the frequency and timing of loan contract renegotiation and amendment. As discussed in Section 2.3, the direction of causality could go in either direction for this hypothesis. Hence, it is essentially arbitrary whether we test this hypothesis by regressing borrower private information covenants on loan contract amendments or vice-versa. As it is more consistent with the prior literature on amendments (e.g., Roberts and Sufi [2009], Nikolaev [2015]), we chose the latter approach. As discussed below, however, we conduct the analysis both ways and obtain identical inferences.

We test H2 using the following empirical model:

$$
\begin{aligned}
Pr(Amended\,Ind = 1) \quad = \quad & F(\beta_0 + \beta_1 Private + \Sigma_j \beta_j Borrower\,Characteristic_j \\
& + \Sigma_k \beta_k Borrower\text{–}Lender\,Information\,Asymmetry_k + \Sigma_l \beta_l Loan\,Term_l \\
& + \Sigma_m \beta_m Loan\,Purpose_m + \Sigma_n \beta_n Industry_n + \Sigma_p \beta_p Year_p),
\end{aligned} \tag{2}
$$

where *Amended Ind* indicates whether a loan contract is amended prior to its maturity. The test variables in equation (2), collectively denoted *Private*, are *ProjFinStat*, *MonthlyFinStat*, and *Private N*. Equation (2) also includes all of the borrower and lending relationship characteristics, loan contract terms, and loan purpose, industry, and calendar year fixed effects included in equation (1); to conserve space, we do not tabulate the coefficients on these control variables. We estimate equation (2) using logit.

In addition, to demonstrate differences in the time to first amendment for *ProjFinStat* versus *MonthlyFinStat*, we estimate two modified versions of equation (2). First, we replace the dependent variable with the number of days from loan origination to the first amendment, denoted *Amend Days*, and estimate this model using the Cox proportional hazard approach. The estimation of this model will capture the associations of the two borrower private information covenant measures with the overall hazard rate for amendment of loan contracts after loan origination. Consistent with the discussion at the end of Section 2.3, and because this overall hazard rate is more strongly affected by loan amendments occurring shortly after loan origination, we expect this rate to be higher for *MonthlyFinStat* than for *ProjFinStat*. Second, for the subsample of 2,975 loans that are not amended in the first 90 days of loan origination, we replace the dependent variable with with the number of days from 90 days after loan origination to the first amendment, denoted *Amend Days - 90*. We also estimate this model using the Cox proportional hazard approach. The estimation of this model will capture the associations of the two borrower private information covenant measures with the hazard rate for loan amendment more than 90 days after loan origination conditional on loans not having been amended within 90 days after origination. Because this overall hazard rate is more strongly affected by loan amendments occurring shortly after 90 days after loan origination, we expect this conditional hazard rate to be higher for *ProjFinStat* than for *MonthlyFinStat*. To confirm that these two alternative approaches capture the intuitions indicated, we also conduct descriptive analysis that illustrates time variation in the loan amendment hazard rate.

To identify loan contract amendments, we collected all Form 10K/Q and 8K filings from loan origination to 2015 for all borrowers in our sample of 3,309 original loan contracts, locating the loan contract exhibits attached to these filings.[21] To be deemed an amendment rather than an original loan contract, we require a loan contract exhibit to indicate that it is an amendment and to mention the date of one of the borrower's original loan contracts.[22] Although the SEC requires borrowers to attach material loan contracts, including amendments, as exhibits to SEC filings, the filed loan contract exhibits that we identified as amendments sometimes indicate prior amendments that borrowers did not attach to filings. In this case, we searched the filed exhibit for the first filed or unfiled amendment.[23]

For a loan contract to be included in the sample for the amendment analysis, it must meet the following two filters. First, we exclude 92 original loan contracts with maturities less than 364 days, because very short-maturity loans are unlikely to be renegotiated.[24] Second, to ensure that loan contract amendments are observable, we exclude 55 original loan contracts for which we are unable to observe filings for borrowers for the year following loan origination. These filters reduce the number of contracts in the amendment sample to 3,162.

As reported in Table 4, the resulting sample includes observed amendments for 1,781 of 3,162 original loan contracts, for a 56% amendment rate. This rate is less than the 73% amendment rate

[21] We searched for post-loan origination SEC filings for borrowers using both the CIK for the original filing and, if Compustat reports an updated CIK for the same GVKEY following origination, the updated CIK.

[22] Specifically, after removing extraneous formatting, we searched the first 1,000 characters of exhibits for standard amendment terms such as "AMENDED AND RESTATED", "AMENDMENT NUMBER", and "AMENDS CREDIT" and then searched each exhibit that contained such terms for the first three dates mentioned. If any of these dates matched an original loan contract date for the borrower, we identified the exhibit as an amendment of that contract. This procedure is highly accurate except when firms incept multiple original loan contracts on the same date or the original loan contract date is a fiscal quarter end. We manually checked all exhibits in these categories. This approach to identifying loan contract amendments is similar to that employed by Nikolaev [2015]. The main differences, all of which reduce the sample size relative to Nikolaev [2015], are: (1) our loan contract sample construction follows Nini et al. [2009], as discussed in Section 3.2; (2) we exclude DealScan loans that are amended and restated versions of original contracts; and (3) our sample period is shorter.

[23] Specifically, to determine the date of the first filed or unfiled amendment of an original loan contract, we first identify the date of the first filed amendment, which usually is the first date in the corresponding exhibit and is followed by the (known) date of the original loan contract. Hence, when the original contract date is the second date mentioned in an exhibit, we use the first date as the first filed amendment date. When the original contract date is the first date listed in an exhibit, however, we hand collect the first filed amendment date. We then determine the first filed or unfiled amendment date by searching the exhibit for any date that is both within 100 characters before or after the string "amend" and within 1,000 characters before or after the original contract date. If any dates meet these conditions, we use the date that most closely follows the original contract date as the first amendment date. Otherwise, we use the first filed amendment date as the first amendment date. We verified that each of the steps used to identify the first amendment date is highly accurate.

[24] Because 188 loans in the sample have 364-day maturity, we use 364 (rather than 365) days as the cutoff point for sample inclusion to avoid significant sample attrition.

reported by Roberts [2015], primarily because we do not treat "rollovers", i.e., new loan contracts with overlap in lenders that are issued prior to the end of the original loan contract term, as amendments. The amendments include a variety of covenant, interest rate, commitment size, and term modifications.

Table 4 presents the means of *Amended Ind* for all loan contracts in the sample and the mean of*Amend Days* for amended loans in the sample for each possible value of *ProjFinStat*, *MonthlyFinStat,* and *Private N*. *Amended Ind* reliably increases with the inclusion and number of borrower private information covenants in loan contracts. For example, the mean of *Amended Ind* rises monotonically from 47% for contracts with *Private* $N = 0$ to 74% for contracts with *Private* $N = 2$. The frequency of amendments is higher for loan contracts that require *MonthlyFinStat* (72%) than for those that require *ProjFinStat* (66%). The time to first amendment reliably decreases with the number of borrower private information covenants. For example, the mean of *Amend Days* falls monotonically from 401 days for contracts with *Private* $N = 0$ to 309 days for contracts with *Private* $N = 2$. The time to first amendment is lower for loan contracts that require *MonthlyFinStat* (305 days) than for those that require *ProjFinStat* (350 days).

H2 predicts that borrower private information covenants provide information that facilitates loan contract renegotiation and amendment. To test this hypothesis, Table 5 reports logit estimations of equation (2) with *Amended Ind* as the dependent variable and including *Private N* (column (1)), *ProjFinStat* (column (2)), *MonthlyFinStat* (column (3)), and both *ProjFinStat* and *MonthlyFinStat* (column (4)) as the test variables. The table reports the marginal effects of these variables, holding the other independent variables at their means. The reported marginal effects indicate that loan contracts that include borrower private information covenants are more likely to be amended. For example, the significantly positive marginal effect of *Private N* reported in column 1 indicates that the requirement of an additional type (both types) of borrower private information covenant increases this probability by 4.2% (8.4%). Column (2) reports a significant (10% level) positive marginal effect for *ProjFinStat* and column (3) reports a significant positive marginal effect for *MonthlyFinStat*, consistent with both types of borrower information covenant increasing the likelihood that loan contracts are amended. When the two types of borrower private information covenant are included in the same regression in column (4), however, only the marginal effect of *MonthlyFinStat* is significant.

We conducted two specification analyses that do not affect these inferences. First, as discussed above, in untabulated analysis we alternatively tested H2 by regressing *ProjFinStat*, *MonthlyFinStat,* and *Private N* on *Amended Ind*, i.e., reversing the regression. The inferences from this estimation are identical to those from the analysis reported in Table 5. Specifically, the coefficient on *Amended Ind* is positive and significant at the 5% level in the *MonthlyFinStat* and *Private N* models and at the 10% level in the *ProjFinStat* model, consistent with both types of borrower information covenant being positively associated with the frequency of loan contract amendments. Second, we estimate equation (2) including controls for changes in three measures of borrower performance and risk (*ROA*, *Leverage*, and market capitalization) and in two macroeconomic variables (gross domestic product and the yield spread of Moody's Baa-rated bonds over Aaa-rated bonds) over one- and two-year horizons following original loan origination. We find that the associations between both types of borrower private information covenants and amendments strengthen slightly when one-year controls are included, and the association between *ProjFinStat* (*MonthlyFinStat*) and amendments becomes insignificant (strengthens further) when two-year controls are included.[25]

We now test our predictions that the two types of borrower private information covenants are associated with loan contract amendments in different windows after loan origination. Table 5, column (5) reports the Cox proportional hazard estimation of the alternative version of equation (2) with *Amend Days* as the dependent variable and with both *ProjFinStat* and *MonthlyFinStat* included as test variables. The estimated hazard ratio for *MonthlyFinStat* is 1.167 (implying a hazard rate 16.7% above normal) and significant, while the estimated hazard ratio for *ProjFinStat* is 1.082 (implying a hazard rate 8.2% above normal) but insignificant. Column (6) of the table reports the Cox proportional hazard estimation of the alternative version of equation (2) with *Amend Days-90* as the dependent variable and with both *ProjFinStat* and *MonthlyFinStat* included as test variables for the subsample of loans that are not amended in the first 90 days of loan origination. The estimated hazard ratio for *MonthlyFinStat* is 1.062 (implying a hazard rate 6.2% above normal) but insignificant, while the estimated hazard ratio for *ProjFinStat* is 1.120 (implying a hazard rate 12.0% above normal) and significant at the 10% level. These results are consistent with our prediction that *MonthlyFinStat* is primarily associated with amendments of loan contracts in the quarter after

[25]The inclusion of control variables over one- and two-year horizons reduces the sample size by 144 and 321 observations, respectively.

loan origination, whereas *ProjFinStat* is primarily associated with amendments of loan contracts after that quarter.

To provide additional support for these predictions, Figure 2 reports the incremental cumulative probability of loan contract amendment, measured as the Kaplan-Meier failure rate, for each day from 0 to 500 days after loan origination for contracts that require one or both of *ProjFinStat* and *MonthlyFinStat* relative to the corresponding cumulative probability for contracts that require neither *ProjFinStat* nor *MonthlyFinStat*. The cumulative probability of loan contract amendment rises particularly sharply with *MonthlyFinStat*, with or without *ProjFinStat*, in the window from about 60-100 days after origination. The cumulative probability of loan contract amendment rises gradually with *ProjFinStat*, particularly with *MonthlyFinStat*, in the window from about 90-300 days after origination. After about 350 days, neither *ProjFinStat* nor *MonthlyFinStat* has much association with the changes in the cumulative probability of loan contract amendment.[26]

In summary, the results reported in Table 5 and related graphical and untabulated results support the prediction in H2 that both types of borrower private information covenants are associated with more frequent loan contract amendments. They also support the related prediction that amendments associated with *MonthlyFinStat* primarily occur in the quarter after loan origination while those associated with *ProjFinStat* primarily occur after that quarter.

4.3. ProjFinStat and the predictive power of abnormal loan returns for future operating cash flows

In this section, we test H3A that abnormal loan returns in windows leading up to and including the contractually required delivery date of the projected financial statements are positively associ-

[26] In two untabulated analyses, we provided additional support for these predictions. First, using logit, we estimated versions of equation (2) where the dependent variable *Amended Ind* is replaced by indicators for loan contract amendments within 90 days after loan origination, from 91-300 days after loan origination, and beyond 300 days after loan origination and with both *ProjFinStat* and *MonthlyFinStat* included as test variables. In the model with the indicator for loan contract amendments within 90 days after loan origination as the dependent variable, the marginal effect of *MonthlyFinStat* is significantly positive and the marginal effect of *ProjFinStat* is insignificant. In the model with the indicator for loan contract amendments from 91-300 days after loan origination as the dependent variable, the marginal effect of *MonthlyFinStat* is insignificant and the marginal effect of *ProjFinStat* is significantly positive. In the model with the indicator for loan contract amendments more than 300 days after loan origination as the dependent variable, the marginal effects of both types of borrower information covenants are insignificant. Second, we estimated the alternative version of equation (2) with *Amend Days* as the dependent variable using a non-proportional hazard (cubic spline) approach. Consistent with *ProjFinStat* being weakly associated with loan amendments close to loan origination and more strongly associated with later loan originations around the delivery of the projected financial statements, the hazard ratio for *ProjFinStat* is lowest (and significantly below the normal hazard ratio of 1) in the period shortly after loan origination and rapidly rises to a peak around 100 days (where it significantly exceeds its proportional hazard ratio of 1.082) before gradually and monotonically decreasing. In contrast, the hazard ratio for *MonthlyFinStat* is highest (and significantly exceeds its proportional hazard ratio of 1.167) in the period immediately after loan origination and then gradually and monotonically declines.

ated with future cash flow from operations, consistent with insider trading by lenders on borrowers' projected financial statements. We test this hypothesis using the following empirical model:

$$\begin{aligned} CFO_{i,t+1} &= \beta_0 + \beta_1 Mkt\,Adj\,Loan\,Ret\,(20\,day)_{i,t} + \beta_2 CFO_{i,t} + \beta_3 Accruals_{i,t} \quad (3) \\ &\quad + \Sigma_p \beta_p Industry_p + \Sigma_q \beta_q Year_q \end{aligned}$$

where the dependent variable $CFO_{i,t+1}$ denotes borrowers' cash flow from operations in the following (i.e., projection) year t+1, divided by average assets during the year. The test variable, $Mkt\,Adj\,Loan\,Ret(20\,day)_{i,t+1}$, denotes borrowers' cumulative market-adjusted (abnormal) loan return over the 20 trading day period ending on the contractually specified deadline for borrowers' delivery of *ProjFinStat*.[27] As borrowers' loan returns may be associated with their future performance for reasons that have nothing to do with their delivery of *ProjFinStat* to lenders, we conduct a placebo test in which we replace $Mkt\,Adj\,Loan\,Ret(20\,day)_{i,t+1}$ with the borrower's cumulative loan return over a 20 trading day period ending at the projection deadline for a randomly assigned loan in the sample, denoted $Mkt\,Adj\,Loan\,Ret\,Rand(20\,day)_{i,t+1}$. To further demonstrate the importance of projections, we also estimate an expansion of equation (3) that includes an indicator for projections for year t+1 for which the delivery date is after the earnings announcement for year t, denoted *Post-Earn Ann Projection*, as well as the interaction of this indicator with $Mkt\,Adj\,Loan\,Ret(20\,day)_{i,t+1}$. We expect post-earnings announcement projections to be less informative than timelier ones and thus the coefficient on $Mkt\,Adj\,Loan\,Ret(20\,day)_{i,t+1}$ to be less positive for post-earnings announcement projections than for timelier projections. The control variables are $CFO_{i,t}$ and $Accruals_{i,t}$, i.e., deflated cash flow from operations and accruals for the current year t. We also include industry and year fixed effects.[28] Our sample includes loan facility-year observations for the subset of loans with *ProjFinStat* covenants and available secondary market loan prices from Thomson Reuters LPC Mark-to-Market data, and data for all equation (3) variables. We manually collect annual projection deadline dates from contracts, which are set relative to the

[27] For the tabulated results, we chose a 20 trading day period up to and including the contractual deadline as this period corresponds approximately to one calendar month. At least some borrowers likely provide projections when it is convenient to do so, for example, when they make these projections or when they provide other types of borrower private information to lenders, rather than wait for the contractual deadline. Untabulated analysis indicates the results are very similar when a shorter 15 trading day period is used. Even shorter 10 and 5 trading day periods yield similar coefficients but higher standard errors, reducing the significance of the results.

[28] Untabulated analysis indicates the results are insensitive to the measuring the dependent variables as annual changes and to the inclusion of the following additional control variables: the natural logarithm of beginning assets and the current period changes in deflated cash flow from operations and accruals (measured for current year t).

end of the fiscal year prior to the projected period.

Table 6 reports the results of estimating equation (3). Column (1) of the table reports the results for the base model with $CFO_{i,t+1}$, as the dependent variable. The only control variable that is significant is $CFO_{i,t}$. The coefficient on $Mkt\,Adj\,Loan\,Ret(20\,day)_{i,t+1}$ is significantly positive, consistent with lenders trading on projections and with those projections being informative about future cash flow from operations. Column (2) reports the placebo test for the model that replaces $Mkt\,Adj\,Loan\,Ret(20\,day)_{i,t+1}$ with $Mkt\,Adj\,Loan\,Ret\,Rand(20\,day)_{i,t+1}$, which as expected yields an insignificant coefficient on $Mkt\,Adj\,Loan\,Ret\,Rand(20\,day)_{i,t+1}$. Column (3) reports the expanded model including *Post-EarnAnn Projection* and its interaction with $Mkt\,Adj\,Loan\,Ret(20\,day)_{i,t+1}$. As expected, the coefficient on $Mkt\,Adj\,Loan\,Ret(20\,day)_{i,t+1}$ becomes more positive and significant and the coefficient on the interaction of *Post-EarnAnn Projection* and $Mkt\,Adj\,Loan\,Ret(20\,day)_{i,t+1}$ is negative and significant at the 10% level, consistent with pre-earnings announcement projections being more informative than post-earnings announcement projections.

In summary, the results reported in Table 6 provide support for the prediction in H3A that abnormal loan returns in windows leading up to and including the contractually required delivery date of the projected financial statements are positively associated with future cash flow from operations, consistent with insider trading by lenders on borrowers' projected financial statements.

4.4. MonthlyFinStat and the intraquarter timeliness of secondary loan market prices

In this section, we test H3B that *MonthlyFinStat* is positively associated with the speed of price discovery in the secondary loan market (*Loan IPT*), controlling for other factors associated with the speed of price discovery in that market. We test this hypothesis using the following empirical model:

$$\begin{aligned} Loan\,IPT \;=\; & \beta_0 + \beta_1 MonthlyFinStat + \beta_2 Financial\,Covenants + \beta_3 Borrower\,Size + \beta_4 Market\,Makers \\ & + \beta_5 Loan\,BidAsk\,Spread + \beta_6 Tangibility + \beta_7 Investment\,Grade + \beta_8 Relationship \\ & + \beta_9 Lead\,Arranger\,Reputation + \Sigma_{j=2}^{4} \beta_j FiscalQtr\,FE_j + \epsilon. \end{aligned} \tag{4}$$

We measure *Loan IPT* using an approach similar to Bushman et al. [2010], who define the quarterly earnings cycle as the 63 trading days starting 60 trading days prior to the quarterly earnings announcement (day 0) and ending two trading days after that announcement (day 62).

For each facility-quarter observation, *Loan IPT* equals the area under the curve of the cumulative buy-and-hold abnormal loan return from the prior quarterly earnings announcement date to each trading day t in the quarterly earnings cycle ($BHAR_t$), divided by the cumulative buy-and-hold abnormal loan return from the prior quarterly earnings announcement date to the current quarterly earnings announcement date ($BHAR_{62}$).[29] Bushman et al. [2010] measure the area under this curve as:

$$Loan\,IPT = \frac{1}{2}\Sigma_{t=0}^{62}(BHAR_t + BHAR_{t-1})/BHAR_{62}.$$

To calculate $BHAR_t$, daily abnormal loan returns are market-adjusted using the equally weighted loan market return calculated using all daily loan returns with at least two available quotes.

Equation (4) includes the following control variables that the prior literature has found to be associated with the transfer of private information by borrowers or informed trading by lenders, which partially overlap with the explanatory variables in equations (1) and (2): the number of *Financial Covenants* in the loan contract; *Borrower Size*; the average number of daily quotes over the quarter (*Market Makers*); average *Loan Bid-Ask Spread* over the quarter; *Tangibility*; an indicator for *Investment Grade*; *Relationship*; and an indicator for *Lead Arranger Reputation*. We also include fixed effects for the four fiscal quarterly earnings cycles to control for the predictable increase in news in the fourth cycle for each fiscal year (i.e., approaching the announcement of annual earnings). All continuous independent variables are winsorized at the top and bottom percentiles. Standard errors are calculated clustering observations by firm.

The sample for this analysis includes all loan facility-quarter observations from 1999 to 2010 with available data on the equation (4) variables.[30] We merge observations of *MonthlyFinStat* and the control variables from our full sample described in Section 3.2 with observations of secondary market loan prices from Thomson Reuters' LPC Mark-to-Market data. We exclude observations with an absolute value of $BHAR_{62}$ less than 0.5% to mitigate small denominator problems. We also exclude observations with average loan bid-ask spread greater than one to ensure that the distribution of *Loan IPT* is not overly impacted by illiquid facilities as well as observations for otherwise unusual

[29]The main difference of our approach from that of Bushman et al. [2010] is that they measure *Loan IPT* for loan portfolios formed based on various common characteristics.

[30]Our sample in this analysis ends in 2010 because our data source for secondary market loan prices ends in that year.

facilities (foreign currency, 364 day, debtor-in-possession, acquisition, bridge loans, et cetera). The resulting sample consists of 1,242 facility-quarter observations.

Figure 3 depicts the mean of $BHAR_t/BHAR_{62}$ for every trading day in the quarterly earnings cycle for the *MonthlyFinStat*=0 and *MonthlyFinStat*=1 subsamples. The figure indicates that the mean of $BHAR_t/BHAR_{62}$ increases for the *MonthlyFinStat*=1 subsample relative to the *MonthlyFinStat*=0 subsample beginning around the fifteenth trading day in the quarterly earnings cycle and this difference persists through the earnings announcement on day 60 of the cycle.[31] This is consistent with *MonthlyFinStat* requiring borrowers to provide lenders with financial statements multiple times during a quarter, and with lenders trading on this information in secondary loan markets, thereby increasing the intraquarter speed of price discovery in those markets.

Table 7 reports the OLS estimation of equation (4). Consistent with H3B, the coefficient on *MonthlyFinStat* is positive and highly significant.[32] Consistent with Bushman et al. [2010], we find significant positive coefficients on the control variables *Financial Covenants*, *Lead Arranger Reputation* (10% level), and *Tangibility* (10% level).[33]

In summary, these results are consistent with *MonthlyFinStat* increasing the flow of private information from borrowers to lenders within the quarterly earnings cycle, and with lenders using this information to trade in the secondary loan market, thereby increasing the speed of price discovery in that market. This effect is both incremental to and stronger than those of the time-varying private information transfers resulting from other loan contract features and borrower, lender, and borrower-lender relationship characteristics examined in the prior literature.

4.5. Robustness to controlling for loan interest rate spread and lead lender fixed effects

Theoretical and empirical research finds that debt contract monitoring increases with borrower credit risk as long as it is not too large for monitoring to be cost effective, resulting in an inverse U-shaped relationship between monitoring and borrower credit risk (Diamond [1991], Minnis and Sutherland [2016]). In untabulated analysis, we estimated an expanded version of equation (1) that includes the loan interest rate spread (*Spread*) and the square of this variable (*Spread^2*) to control

[31] By construction $BHAR_t/BHAR_{62}$ equals one on trading day 62 at the end of the quarterly earnings cycle.

[32] In contrast, if *ProjFinStat* is included in equation (4), the coefficient on that type of borrower information covenant is insignificant.

[33] We also estimated the model using a numeric credit rating rather than the *Investment Grade* indicator variable and found no meaningful difference in the results.

nonlinearly for borrower credit risk.[34] Ideally, we would use a proxy for borrower credit risk that, unlike *Spread*, is not simultaneously determined with the other loan contract terms, such as credit ratings; unfortunately, credit ratings are not available for many of the sample borrowers.

The untabulated results indicate that *Spread* (*Spread^2*) is strongly positively (negatively) associated with the inclusion of both types of borrower private information covenants in loan contracts. The joint marginal effect of *Spread* and *Spread^2* is positive and significant for relatively small levels of *Spread*, and decreases as *Spread* rises, becoming insignificantly negative for the highest levels of *Spread* in the sample. These findings are largely consistent with the finding in Minnis and Sutherland [2016] of an inverse U-shaped relation between lender information requests and *Spread*. We do not observe a significant negative marginal effect of *Spread* for the firms in our sample with the highest credit risk, however, likely because the public borrowers in our sample are significantly larger and have lower credit risk than the private borrowers in their sample; the mean, median, and maximum loan spreads in our sample (the sample of Minnis and Sutherland [2016]) are 1.75%, 1.5% and 6.5% (6.05%, 6%, and 12%), respectively. Despite the strong significance of the *Spread* variables, the main inferences from Table 3 discussed in Section 4.1 mostly remain supportive of H1. In particular, *ProjFinStat* remains strongly positively associated with *Performance Covenants* and *Performance Pricing-Accounting*; more generally, the coefficients on loan contract terms do not change much with the inclusion of the *Spread* variables. Although the coefficients on most borrower characteristics and borrower-lender asymmetry variables attenuate, *MonthlyFinStat* remains strongly positively associated with *Cash Flow Volatility*, although its positive association with *Return Volatility* drops just below significance. *ProjFinStat* remains strongly negatively associated with *Relationship*, and the associations of both types of borrower information covenant with *Info Asymmetry* become insignificant.

Lead lenders may have different practices regarding the number and types of borrower private information covenants, or they may specialize in specific types of borrowers and loans. In untabulated tests, we control for these possibilities by including lead lender fixed-effects in our borrower private information covenant determinant tests and our inferences are unaffected.[35]

[34] *Spread* equals the all-in drawn spread for the largest facility in each loan (deal). 87 observations are lost in this analysis because DealScan does not contain interest rates for all loans.

[35] To create the lead lender fixed effects, we first ranked lead lenders by the number of loans for which they were designated lead lender in our sample. We then created separate indicator variables for each of the top 15 lead lenders, and grouped the remaining lenders using a single indicator variable.

5. Conclusion

Although prior research finds that commercial borrowers provide lenders with private information, with the notable exception of Minnis and Sutherland [2016] these prior studies generally do not identify the specific mechanisms by which lenders obtain such information or the specific types of information obtained. This limits the directness of prior tests of lenders' use of private information for loan contract monitoring and other purposes. More generally, research has generated very little insight about how lenders obtain and use accounting-related borrower private information for loan contract monitoring, a natural question for accounting research on loan contracts.

To help fill this gap, in this paper we construct a novel database of covenants in 3,309 commercial loan contracts that require public borrowers to provide their lenders with two types of accounting-related private information periodically after loan origination: projected financial statement information for future periods and more frequent than quarterly (usually monthly) and not yet publicly available historical financial statements. We argue that these borrower private information covenants exist because lenders find it useful for loan contract monitoring purposes to obtain more timely or additional information than is available in publicly traded borrowers' financial reports filed with the SEC, and because prior to loan funding firms seeking to borrow find it beneficial to commit contractually to provide their private information. We further argue that borrower private information covenants have both benefits and costs, and that loan contracts include these covenants only when the benefits exceed the costs.

We provide two sets of evidence regarding the benefits of borrower private information covenants for lenders' loan contract monitoring. First, we hypothesize and provide descriptive evidence that loan contracts include more borrower private information covenants when borrowers have higher credit risk and uncertainty, when borrower-lender information asymmetry is higher, and when the contracts include financial covenants or other terms for which this information enhances monitoring of the terms. We further predict and find that loan contracts are more likely to require projected (monthly) financial statements when additional or more timely information about borrowers' future (historical) accounting performance is more important. To illustrate, we find that: (1) loan contracts that include performance covenants or performance pricing provisions tied to future accounting performance are more likely to require projected financial statements; (2) contracts with borrowers that have experienced more volatile returns and cash flows in the past are more likely to

require monthly financial statements; and (3) contracts between lenders and borrowers that exhibit information asymmetry are more likely to require both types of borrower private information.

Second, viewing loan contract amendments as a manifestation of lenders' loan contract monitoring intensity, we hypothesize and provide evidence that borrower private information covenants are associated with more frequent amendments. We further predict and find that the two types of covenants exhibit distinct associations with amendment timing. Because borrowers required to provide monthly financial statements do so multiple times each quarter, we predict and find that the provision of monthly financial statements is most strongly positively associated with amendments in the quarter after loan origination prior to the borrowers' public release of its quarterly financial information, which incorporates the three most recent monthly financial statements. In contrast, because borrowers required to provide projected financial statements generally do so only once annually around the fiscal year end, we predict and find that the provision of projected financial statements is most strongly positively associated with amendments beyond the quarter after loan origination. These two sets of evidence are consistent with lenders using accounting-related borrower private information in predictable ways to monitor borrowers' compliance with loan contracts and to amend those contracts.

To provide further confirmation that borrower private information covenants provide lenders with valuable information about borrowers, and that lenders process and use that information, we provide evidence regarding lenders' trading on the two types of borrower private information in the secondary loan market. Exploiting the fact that loan contracts require borrowers to provide the two types of borrower private information at dramatically different periodicities, we predict and find that abnormal loan returns over various windows leading up to and including the contractually required delivery date of projected financial statements, but not over randomly selected windows of equal length, are significantly positively associated with the subsequently reported change in operating cash flows for the following year. We predict and find that the intraquarter speed of price discovery in the secondary loan market, measured following Bushman et al. [2010], is faster when loan contracts require borrowers to provide monthly financial statements.

In summary, our evidence indicates that accounting-related borrower private information covenants, a largely unexplored aspect of loan contracts, enhance lenders' loan contract monitoring and amendment, but also enable them to insider trade on the information. This evidence suggests that the

borrower private information covenants identified and examined in this paper should be of use in future research on the role of accounting-related information in loan contracting. In this regard, one limitation of this study is that we primarily provide evidence related to the benefits, not the costs, of borrower private information covenants. We encourage future researchers to identify proxies for these costs and provide evidence as to how they influence the presence and effects of these covenants.

Appendix A

The entire financial reporting covenant subsection of the affirmative covenant section of a loan contract for Immucor Inc., dated February 23, 2001, which Immucor filed as an exhibit to its Form 10-Q for the fiscal quarter ending February 28, 2001 filed on April 23, 2001, is reproduced below. This section includes examples of the three different types of borrower private information covenants identified and examined in this study: *ProjFinStat* (item 4.2.8), *MonthlyFinStat* (items 4.2.1 and 4.2.10), and *AuditComm* (4.2.4). It also includes the common umbrella requirement that the borrower satisfy any reasonable request for information by the lender (item 4.2.11).

4.2 Financial and Other Reporting.
4.2.1 U.S. Borrower's Monthly Statement. The U.S. Borrower shall, as soon as practicable, and in any event within thirty (30) days after the end of each Fiscal Month, furnish to Lender unaudited financial statements of the U.S. Borrower and its Consolidated Subsidiaries, including balance sheets, income statements and statements of cash flow, for the Fiscal Month ended, and for the Fiscal Year to date, on a consolidated and, if requested by Lender, consolidating basis, all prepared in accordance with GAAP (subject to year-end adjustments) and certified as to truth and accuracy by the chief financial officer of the U.S. Borrower.
4.2.2 U.S.Borrower's Quarterly Statement. Borrower shall, as soon as practicable, and in any event within forty-five (45) days after the end of each Fiscal Quarter, furnish to Lender unaudited financial statements of the U.S. Borrower and its Consolidated Subsidiaries, including balance sheets, income statements and statements of cash flow, for the Fiscal Quarter ended, and for the Fiscal Year to date, on a consolidated and, if requested by Lender, consolidating basis, all prepared in accordance with GAAP (subject to year-end adjustments) and certified as to truth and accuracy by the chief financial officer of the U.S. Borrower.
4.2.3 Borrower's Annual Statement. Borrower shall, as soon as practicable, and in any event within ninety (90) days after the end of each Fiscal Year, furnish to Lender the annual audit report of the U.S. Borrower, certified without qualification by independent certified accountants selected by the U.S. Borrower and acceptable to Lender, and prepared in accordance with GAAP, together with relevant financial statements of the U.S. Borrower for the Fiscal Year then ended, on a consolidating and a consolidated basis, if available. The U.S. Borrower shall cause said accountants to furnish Lender with a statement that in making their examination of such financial statements, they obtained no knowledge of any Event of Default or Default Condition which pertains to accounting matters relating to this Agreement or the Notes, or, in lieu thereof, a statement specifying the nature and period of existence of any such Event of Default or Default Condition disclosed by their examination.
4.2.4 Management Letters, Etc. Borrower shall, within five (5) Business Days after its receipt thereof, provide Lender with copies of all management letters, exception reports or other similar letters or reports received by Borrower from its independent certified public accountants.
4.2.5 SEC Filings and Press Releases. Borrower shall, promptly upon their becoming available, provide Lender with copies of (i) all financial statements, reports, notices and proxy statements made publicly available by Borrower to its security holders, (ii) all regular and periodic reports and

all registration statements and prospectuses (if any) filed by Borrower with any securities exchange or with the Securities and Exchange Commission or any governmental or private regulatory authority, and (iii) all press releases and other statements made available by Borrower to the public concerning material changes or developments in the business of Borrower or any of its Subsidiaries.

4.2.6 Default Notices. Borrower shall, as soon as practical and in any event within five (5) Business Days after Borrower acquires knowledge of the existence of any Default Condition or Event of Default or any other event which has had or could reasonably be expected to have a Material Adverse Effect, provide Lender with telephonic or telecopy notice of such Default Condition, Event of Default or any other event, including the anticipated effect thereof, which notice, if given telephonically, shall be promptly confirmed in writing on the next Business Day.

4.2.7 Certificate of No Default. Borrower shall, on a quarterly basis, not later than forty-five (45) days after the close of each of its Fiscal Quarters, and, on an annual basis, not later than one hundred twenty (120) days after the close of its Fiscal Year, certify to Lender, in a statement executed by the chief financial officer of the U.S. Borrower in the form of Exhibit F attached hereto, that no Event of Default and no Default Condition exists or has occurred, or, if an Event of Default or Default Condition exists or has occurred, specifying the nature and period of existence thereof. Each quarterly and annual certificate shall also set forth, in reasonable detail, compliance with all financial covenants set forth in Article 6 for the immediately preceding Fiscal Quarter, as applicable.

4.2.8 Budget. Borrower shall, at least ten (10) days prior to the beginning of each Fiscal Year, deliver to Lender an annual budget for the U.S. Borrower and its Consolidated Subsidiaries for such Fiscal Year, as approved by the Board of Directors of the U.S. Borrower.

4.2.9 Certain Required Notices. Promptly, upon its receipt of notice or knowledge thereof, Borrower will report to Lender: any lawsuit or administrative proceeding in which any Credit Party is a defendant in which the amount or amounts in controversy exceed $250,000.

4.2.10 Borrowing Base Certificate and Other Collateral Reports. As soon as practicable, but in any event, on or before fifteen (15) days after the end of each Fiscal Month (or more frequently as requested by Lender from time to time in its sole discretion), Borrower shall deliver to Lender a duly executed certificate, with respect to satisfaction of the requirement that the aggregate amount of Advances outstanding shall not exceed the Override Borrowing Limitation, as of the last day of the preceding Fiscal Month, in the form of Exhibit L (a "Borrowing Base Certificate"), the statements in which, in each instance, shall be certified as to truth and accuracy by the chief financial officer of the U.S. Borrower, together with a status report, certified by the chief financial officer of the U.S. Borrower, which shall accompany each monthly Borrowing Base Certificate, showing: (A) the aggregate Dollar value of the items comprising the Accounts Receivable and the age of each individual item thereof as of the last day of the preceding Fiscal Month (segregating such items in such manner and to such degree as Lender may request, including, without limitation, by account debtor name, address, invoice date, invoice number and due date); (B) the aggregate Dollar value of the items of Accounts Receivable subject to "bill and hold" arrangements (segregating such items in such manner and to such degree as Lender may request); (C) the aggregate Dollar value of the items comprising the accounts payable of the U.S. Borrower and its Subsidiaries and the age of each individual item thereof as of the last day of the preceding month (segregating such items in such manner and to such degree as Lender may request); (D) the type, age, Dollar value and location of the Inventory as at the end of the preceding month, valued at the lower of its FIFO cost or market value; and (E) the aggregate Dollar value of all returns, repossessions or discounts with respect to Inventory. Additionally, Lender may, at any time in its sole discretion, require Borrower and each Subsidiary to permit Lender in its own name or any designee of Lender in its own name to verify the individual account balances of or any other matter relating to the individual account debtors immediately upon its request therefor by mail, telephone, telegraph or otherwise.

Borrower and its Subsidiaries shall cooperate fully with the Lender in an effort to facilitate and promptly conclude any such verification process. In any event, with the above described status report for the month of December of each year and upon request from the Lender, made at any time hereafter, Borrower shall furnish Lender with a then current customer and account debtor name and address list. In addition thereto, at such time or times as Lender may request or at any time if a Default Condition or Event of Default exists, Borrower shall provide Lender with copies of proof of delivery and the original copy of all documents, including, without limitation, repayment histories and present status reports relating to all accounts listed on any Borrowing Base Certificate and such other matters and information relating to the status of the Accounts of the Borrower and its Subsidiaries as the Lender shall reasonably request;

4.2.11 Other Documents or Information. Borrower shall provide Lender with such other financial and other information respecting Borrower or any of its Subsidiaries as the Lender may from time to time reasonably request.

Appendix B

Variable definitions. All borrower variables are measured in the quarter prior to loan origination.

ProjFinStat	an indicator variable equal to one if the loan contract requires the borrower to provide a forward-looking projection or budget for an upcoming fiscal year and zero otherwise
MonthlyFinStat	an indicator variable equal to one if the loan contract requires the borrower to provide financial information more frequently than quarterly and zero otherwise
Private N	the sum of *ProjFinStat* and *MonthlyFinStat*
Size	total assets for the borrower
ROA	the ratio of income before extraordinary items to total assets for the borrower
Leverage	the ratio of debt to total assets for the borrower
Return Volatility	annualized stock return volatility measured using daily returns for the borrower over 100 trading days prior to loan origination
Cash Flow Volatility	the standard deviation of cash from operations divided by total assets for the borrower measured over the 16 quarters prior to loan origination
Rated	an indicator variable equal to one if the borrower has an available credit rating for outstanding senior unsecured debt and zero otherwise
Market-to-Book	the book value of debt plus the market value of equity divided by the book value of total assets for the borrower
R&D	the ratio of research and development expense to total assets for the borrower
Tangibility	the ratio of property, plant, and equipment to total assets for the borrower
Info Asymmetry	a composite index based on three information asymmetry measures: volatility of residual returns, inverse firm age, and equity bid-ask spread. Each index component is measured over the year prior to loan origination and grouped into quintiles by year, and *Info Asymmetry* is the average of the three component quintiles
Borrower History	the number of loans obtained by the borrower in the five years prior to the loan contract effective date
Relationship	an indicator variable equal to one if the borrower has obtained loans in the prior five years from any lead lender and zero otherwise
Loan Size	the sum of the funded and maximum unfunded loan amounts
Maturity	the maximum stated maturity (in years) across all facilities in the loan
Revolver	an indicator variable equal to one if the loan includes a revolving line of credit and zero otherwise
Secured	an indicator variable equal to one if the loan is secured and zero otherwise
Borrowing Base	an indicator variable equal to one if the loan includes a borrowing base and zero otherwise
Performance Covenants	the number of performance-based financial covenants in the loan contract
Capital Covenants	the number of capital-based financial covenants in the loan contract
Performance Pricing-Rating	an indicator variable equal to one if the loan includes a rating-based performance pricing provision and zero otherwise
Performance Pricing-Accounting	an indicator variable equal to one if the loan includes an accounting-based performance pricing provision and zero otherwise
Amended Ind	an indicator variable equal to one if the loan contract has been amended prior to its maturity and zero otherwise
Amend Days	the number of days from loan origination to the first amendment

(continued from previous page)

Amend Days - 90	the number of days from 90 days after loan origination to the first amendment
Mkt Adj Loan Ret (20 day)	the cumulative abnormal loan return for the 20 trading day period ending at the projection delivery deadline (market-adjusted)
Mkt Adj Loan Ret Rand (20 day)	the cumulative abnormal loan return for the 20 trading day period ending at the random projection delivery deadline (market-adjusted), where sample projection deadlines are randomly reassigned
Post-Earn Ann Projection	an indicator variable equal to one when the projection delivery deadline for fiscal year t+1 is on or after the earnings announcement for fiscal year t and zero otherwise
CFO(t+1)	cash from operations for the projected fiscal year scaled by average assets
CFO(t)	cash from operations for the preceding fiscal year scaled by average assets
Accruals(t)	total accruals for the preceding fiscal year, measured as the difference between income before extraordinary items and cash from operations scaled by average assets
Loan IPT	measured as $\frac{1}{2}\Sigma_{t=0}^{62}(BHAR_t + BHAR_{t-1})/BHAR_{62}$, where $BHAR_t$ is the buy-and-hold abnormal (market-adjusted) loan return up to trading day t, and $BHAR_{62}$ is measured starting 60 trading days prior to, and ending two trading days after, the quarterly earnings announcement (earnings announcement on trading day 60)

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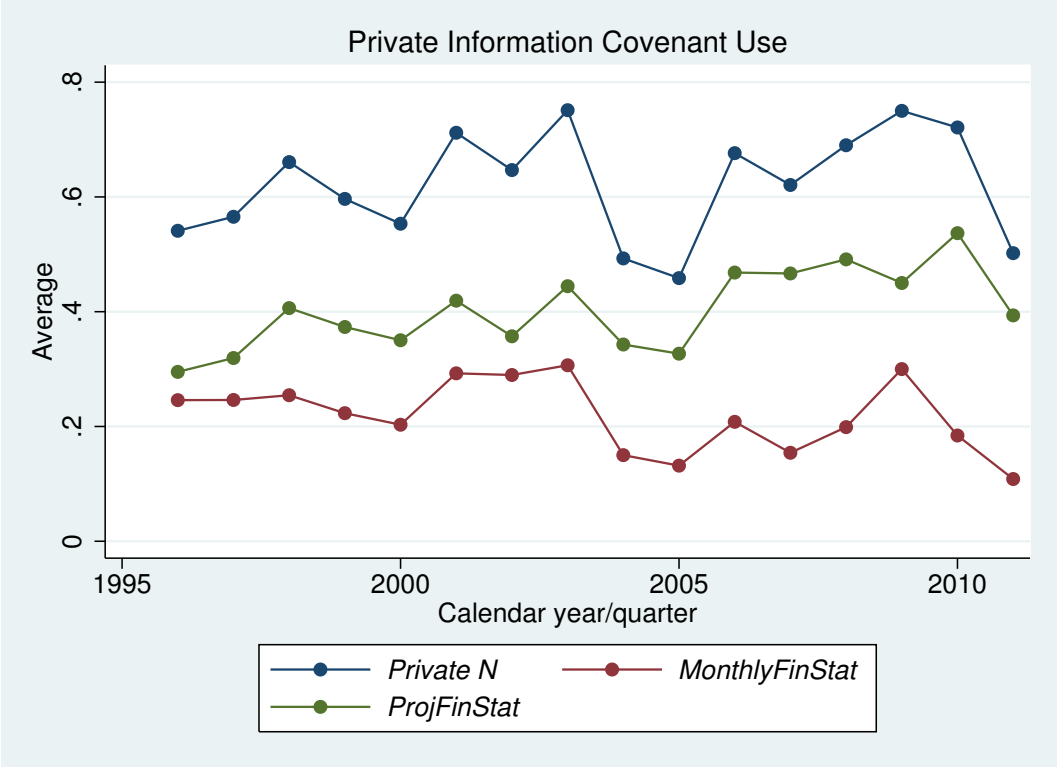

Figure 1: Private Information Covenant Use (By Year)

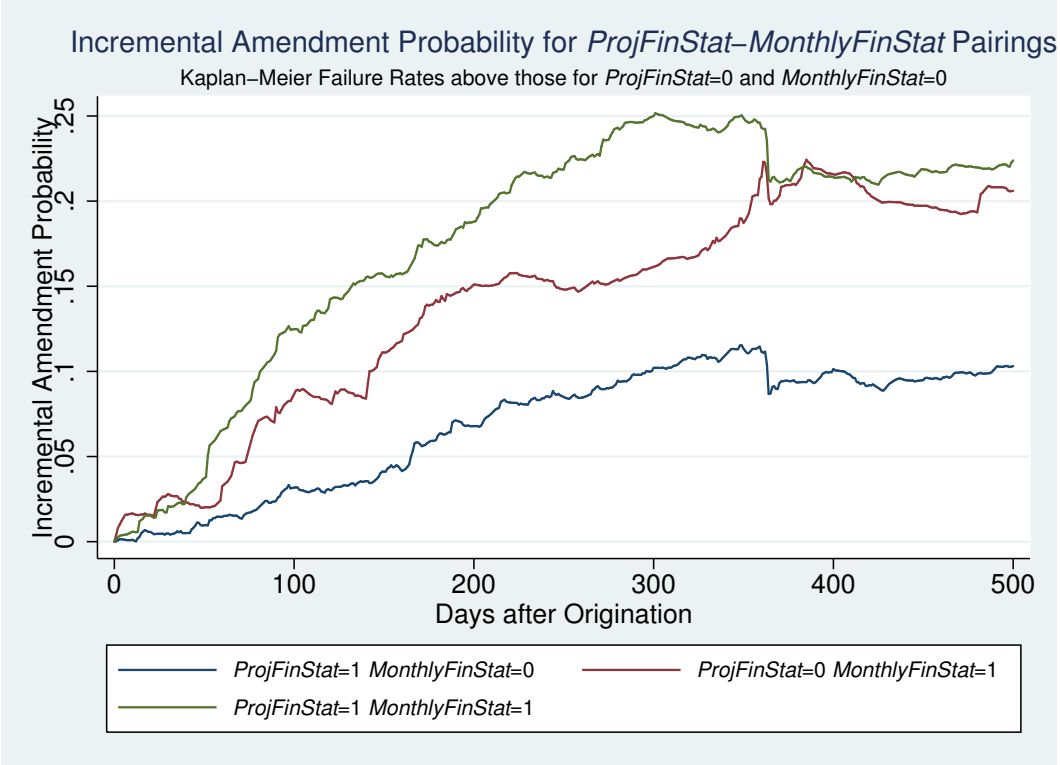

Figure 2: Incremental Amendment Probabilities (by *ProjFinStat/MonthlyFinStat*)

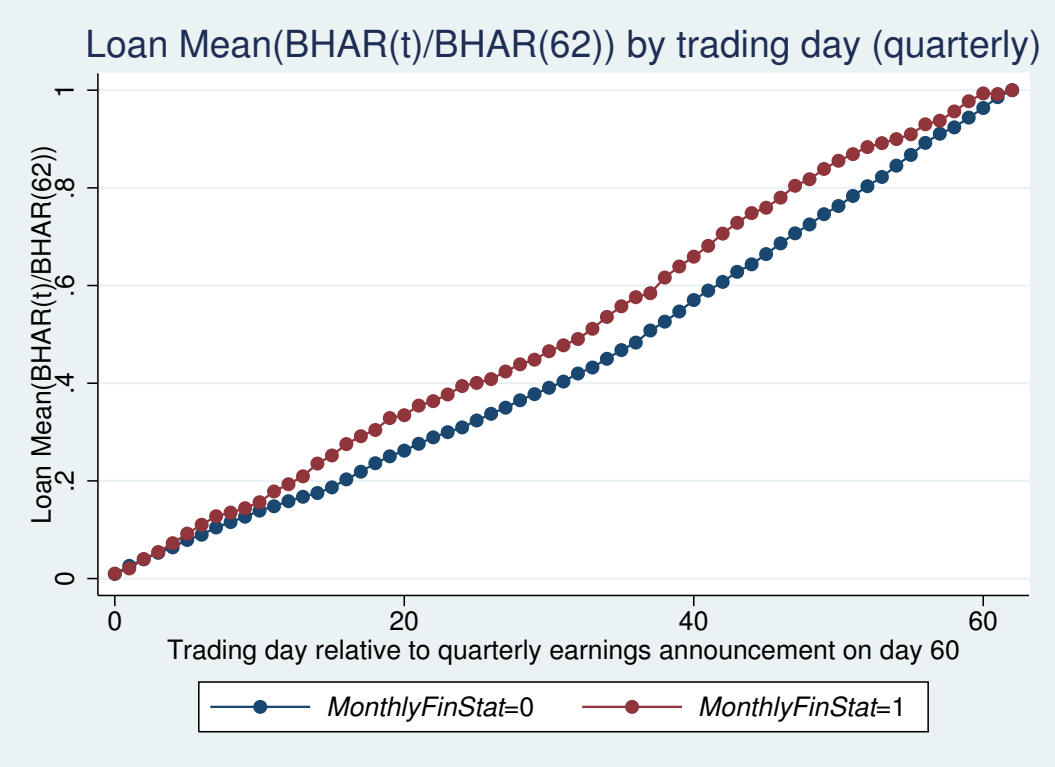

Figure 3: Secondary Loan Market Scaled BHAR by Trading Day Relative to Earnings Announcement (by *MonthlyFinStat*)

Table 1: Summary Statistics for Borrower Private Information Covenant Measures, Borrower Characteristics, and Loan Contract Terms

Summary Statistics for the Full Sample and Subsamples with and without Borrower Private Information Covenants						
			ProjFinStat-MonthlyFinStat Combinations			
		Full Sample	0, 0	0, 1	1, 0	1, 1
		N=3,309	1,748	233	850	478
Category	Variable	Mean	Mean	Mean	Mean	Mean
Private	*ProjFinStat*	0.40	0.00	0.00	1.00	1.00
Information	*MonthlyFinStat*	0.21	0.00	1.00	0.00	1.00
Covenants	*Private N*	0.62	0.00	1.00	1.00	2.00
Borrower	*Size*	4625.99	7641.13	**1730.66**	**1379.47**	**784.31**
Characteristics	*ROA*	0.04	0.06	**-0.03**	**0.05**	**-0.02**
	Leverage	0.22	0.21	0.21	**0.24**	**0.24**
	Return Volatility	0.48	0.40	**0.73**	**0.48**	**0.66**
	Cash Flow Volatility	0.03	0.03	**0.05**	0.03	**0.04**
	Rated	0.26	0.35	**0.15**	**0.17**	**0.14**
	Market-to-Book	1.84	1.96	**1.61**	**1.86**	**1.51**
	R&D	0.02	0.02	0.03	0.02	0.02
	Tangibility	0.31	0.32	0.30	0.30	**0.28**
Borrower-Lender	*Info Asymmetry*	2.28	1.92	**3.06**	**2.41**	**3.01**
Information	*Borrower History*	2.17	2.53	**1.77**	**1.77**	**1.78**
Asymmetry	*Relationship*	0.37	0.47	**0.21**	**0.30**	**0.22**
Loan Contractual	*Loan Size*	569.05	803.55	**219.62**	**398.81**	**184.58**
Terms	*Maturity*	4.13	3.89	**3.27**	**4.76**	**4.28**
	Revolver	0.92	0.89	**0.94**	**0.94**	**0.95**
	Secured	0.51	0.26	**0.90**	**0.68**	**0.92**
	Borrowing Base	0.16	0.04	**0.61**	**0.06**	**0.56**
	Performance Covenants	1.44	1.21	1.15	**1.90**	**1.62**
	Capital Covenants	0.60	0.65	**0.85**	**0.48**	**0.52**
	Performance Pricing-Rating	0.24	0.42	**0.03**	**0.06**	**0.03**
	Performance Pricing-Accounting	0.52	0.38	**0.47**	**0.75**	**0.65**

Summary statistics for private information covenant measures, borrower characteristics, and loan contract terms for a sample of 3,309 loan contracts that span the years 1996-2011. Means of variables in the three subsamples with at least one borrower private information covenant (i.e., 0,1; 1,0; and 1,1) that are significantly different from the means of the same variables in the subsample without any covenants (i.e., 0,0) are in boldface (chi-squared p-value $<.05$ for dichotomous variables, t-test p-value $< .05$ otherwise).

Variable Definitions: *ProjFinStat* is an indicator variable equal to one if the loan contract requires the borrower to provide a forward-looking projection or budget for an upcoming fiscal year and zero otherwise. *MonthlyFinStat* is an indicator variable equal to one if the loan contract requires the borrower to provide financial information more frequently than quarterly and zero otherwise. *Private N* is the sum of *ProjFinStat* and *MonthlyFinStat*. *Size* is total assets for the borrower. *ROA* is the ratio of income before extraordinary items to total assets for the borrower. *Leverage* is the ratio of debt to total assets for the borrower. *Return Volatility* is annualized stock return volatility measured using daily returns for the borrower over 100 trading days prior to loan origination. *Cash Flow Volatility* is the standard deviation of cash from operations divided by total assets for the borrower measured over the 16 quarters prior to loan origination. *Rated* is an indicator variable equal to one if the borrower has an available credit rating for outstanding senior unsecured debt and zero otherwise. *Market-to-Book* is the book value of debt plus the market value of equity divided by the book value of total assets for the borrower. *R&D* is the ratio of research and development expense to total assets for the borrower. *Tangibility* is the ratio of property, plant, and equipment to total assets for the borrower. *Info Asymmetry* is a composite index based on three information asymmetry measures: volatility of residual returns, inverse firm age, and equity bid-ask spread. Each index component is measured over

Table 1, continued.

the year prior to loan origination and grouped into quintiles by year, and *Info Asymmetry* is the average of the three component quintiles. *Borrower History* is the number of loans obtained by the borrower in the five years prior to the loan contract effective date. *Relationship* is an indicator variable equal to one if the borrower has obtained loans in the prior five years from any lead lender and zero otherwise. *Loan Size* is the sum of the funded and maximum unfunded loan amounts. *Maturity* is the maximum stated maturity (in years) across all facilities in the loan. *Revolver* is an indicator variable equal to one if the loan includes a revolving line of credit and zero otherwise. *Secured* is an indicator variable equal to one if the loan is secured and zero otherwise. *Borrowing Base* is an indicator variable equal to one if the loan includes a borrowing base and zero otherwise. *Performance Covenants* (*Capital Covenants*) is the number of performance-based (capital-based) financial covenants in the loan contract. *Performance Pricing-Rating* (*Performance Pricing-Accounting*) is an indicator variable equal to one if the loan includes a rating-based (non-rating-based) performance pricing provision and zero otherwise. All borrower variables are measured in the quarter prior to loan origination.

Table 2: Summary Statistics for Borrower Private Information Covenant Measures by Industry

Industry Description	N	*ProjFinStat*	*MonthlyFinStat*	*Private N*
Business Equipment	513	0.43	0.23	0.66
Chemicals and Allied Products	130	0.24	0.16	0.40
Consumer Durables	99	0.44	0.31	0.76
Oil, Gas, and Coal Extraction and Products	254	0.29	0.17	0.46
Healthcare, Medical Equipment, and Drugs	252	0.41	0.23	0.63
Manufacturing	588	0.39	0.16	0.55
Consumer NonDurables	248	0.35	0.19	0.54
Other	567	0.46	0.25	0.71
Wholesale, Retail, and Some Services	511	0.40	0.28	0.68
Telephone and Television Transmission	147	0.48	0.16	0.64
Full Sample	3309	0.40	0.21	0.62

Average values for borrower private information covenant measures for Fama-French 12 industries excluding financial firms and utilities. The sample includes 3,309 loan contracts that span the years 1996 to 2011.
Variable Definitions: *ProjFinStat* is an indicator variable equal to one if the loan contract requires the borrower to provide a forward-looking projection or budget for an upcoming fiscal year and zero otherwise. *MonthlyFinStat* is an indicator variable equal to one if the loan contract requires the borrower to provide financial information more frequently than quarterly and zero otherwise. *Private N* is the sum of *ProjFinStat* and *MonthlyFinStat*.

Table 3: Borrower Private Information Covenant Measures, Borrower Characteristics, and Loan Contract Terms

$$Pr(Private = s) = F_s(\beta_0 + \Sigma_j \beta_j Borrower\,Characteristic_j + \Sigma_k \beta_k Borrower\text{-}Lender\,Information\,Asymmetry_k + \Sigma_l \beta_l Loan\,Term_l + \Sigma_m \beta_m Loan\,Purpose_m + \Sigma_n \beta_n Industry_n + \Sigma_p \beta_p Year_p)$$

VARIABLES	Predicted Sign	(1) *ProjFinStat*	(2) *MonthlyFinStat*	(3) *Private N*
Size	-	-0.059***	-0.019**	-0.014***
		(0.017)	(0.009)	(0.004)
ROA	-	-0.090	-0.166**	-0.056*
		(0.114)	(0.068)	(0.030)
Leverage	+	0.128*	0.033	0.027*
		(0.068)	(0.033)	(0.014)
Return Volatility	+	0.050	0.049*	0.027**
		(0.055)	(0.029)	(0.013)
Cash Flow Volatility	+	0.067	0.714***	0.195*
		(0.470)	(0.244)	(0.107)
Rated	-	0.029	0.004	0.003
		(0.033)	(0.019)	(0.007)
Market-to-Book	+/-	-0.011	-0.025***	-0.007**
		(0.012)	(0.008)	(0.003)
R&D	+/-	-0.321	0.026	-0.048
		(0.278)	(0.226)	(0.071)
Tangibility	-	-0.026	0.000	-0.003
		(0.065)	(0.032)	(0.015)
Info Asymmetry	+	0.038*	0.022**	0.010**
		(0.021)	(0.011)	(0.005)
Borrower History	-	0.004	0.005	0.002
		(0.020)	(0.011)	(0.004)
Relationship	-	-0.070***	-0.015	-0.015***
		(0.022)	(0.014)	(0.005)
Loan Size	+	0.025	0.007	0.005
		(0.018)	(0.010)	(0.004)
Maturity	+	0.038***	-0.004	0.005***
		(0.008)	(0.004)	(0.002)
Revolver	+	0.107***	0.025	0.022***
		(0.040)	(0.021)	(0.008)
Secured	+	0.186***	0.134***	0.056***
		(0.026)	(0.017)	(0.007)
Borrowing Base	+	0.027	0.369***	0.144***
		(0.032)	(0.037)	(0.020)
Performance Covenants	+	0.053***	-0.007	0.008***
		(0.013)	(0.007)	(0.003)
Capital Covenants	-	-0.028*	-0.003	-0.007*
		(0.017)	(0.009)	(0.004)

(Continued on next page)

Table 3, continued.

Performance Pricing-Rating	-	-0.215***	-0.063***	-0.048***
		(0.034)	(0.023)	(0.007)
Performance Pricing-Accounting	+	0.101***	-0.018	0.015**
		(0.026)	(0.015)	(0.006)
Observations		3,309	3,309	3,309
LogL		-1630	-998.4	-2324
Pseudo R-squared		0.269	0.420	0.285

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.10

Logit and ordered logit regressions of individual borrower private information covenant measures, *ProjFinStat* and *MonthlyFinStat* (columns 1 and 2), and the composite measure, *Private N* (column 3), respectively, on borrower characteristics and loan contract terms. The table reports the marginal effects of each independent variable. Standard errors are calculated clustering observations by firm. All regressions include loan purpose, industry, and calendar year fixed effects (untabulated). All continuous independent variables are winsorized at the top and bottom percentile. Variable Definitions: *ProjFinStat* is an indicator variable equal to one if the loan contract requires the borrower to provide a forward-looking projection or budget for an upcoming fiscal year and zero otherwise. *MonthlyFinStat* is an indicator variable equal to one if the loan contract requires the borrower to provide financial information more frequently than quarterly and zero otherwise. *Private N* is the sum of *ProjFinStat* and *MonthlyFinStat*. *Size* is the log of total assets for the borrower. *ROA* is the ratio of income before extraordinary items to total assets for the borrower. *Leverage* is the ratio of debt to total assets for the borrower. *Return Volatility* is annualized stock return volatility measured using daily returns for the borrower over 100 trading days prior to the loan contract effective date. *Cash Flow Volatility* is the standard deviation of cash from operations divided by total assets for the borrower measured over the 16 quarters prior to loan origination. *Rated* is an indicator variable equal to one if the borrower has an available credit rating for outstanding senior unsecured debt and zero otherwise. *Market-to-Book* is the book value of debt plus the market value of equity divided by the book value of total assets for the borrower. *R&D* is the ratio of research and development expense to total assets for the borrower. *Tangibility* is the ratio of property, plant, and equipment to total assets for the borrower. *Info Asymmetry* is a composite index based on three information asymmetry measures: volatility of residual returns, inverse firm age, and equity bid-ask spread. Each index component is measured over the year prior to loan origination and grouped into quintiles by year, and *Info Asymmetry* is the average of the three component quintiles. *Borrower History* is the number of loans obtained by the borrower in the five years prior to the loan contract effective date. *Relationship* is an indicator variable equal to one if the borrower has obtained loans in the prior five years from any lead lender and zero otherwise. *Loan Size* is the sum of the funded and maximum unfunded loan amounts. *Maturity* is the maximum stated maturity (in years) across all facilities in the loan. *Revolver* is an indicator variable equal to one if the loan includes a revolving line of credit and zero otherwise. *Secured* is an indicator variable equal to one if the loan is secured and zero otherwise. *Borrowing Base* is an indicator variable equal to one if the loan includes a borrowing base and zero otherwise. *Performance Covenants* (*Capital Covenants*) is the number of performance-based (capital-based) financial covenants in the loan contract. *Performance Pricing-Rating* (*Performance Pricing-Accounting*) is an indicator variable equal to one if the loan includes a rating-based (accounting-based) performance pricing provision and zero otherwise. All borrower variables are measured in the quarter prior to loan origination.

Table 4: Summary Statistics for Loan Contract Amendments by Borrower Private Information Covenant Measure

Private Information Covenant Variable	Value	Statistic	*Amended Ind*	*Amend Days*
ProjFinStat	=0	Mean	0.49	385.04
		N	1871	925
	=1	Mean	**0.66**	**349.52**
		N	1291	856
MonthlyFinStat	=0	Mean	0.52	390.86
		N	2495	1304
	=1	Mean	**0.72**	**305.39**
		N	667	477
Private N	=0	Mean	0.47	400.51
		N	1663	786
	=1	Mean	**0.63**	**359.58**
		N	1040	657
	=2	Mean	**0.74**	**308.61**
		N	459	338
Total		Mean	0.56	367.97
		N	3162	1781

Mean of indicator for loan contract amendments, *Amended Ind,* and the number of days to the first amendment, *Amend Days*, for the possible values of each of the three borrower private information covenant measures. The sample is restricted to the subset of loan contracts involving borrowers with filings on SEC EDGAR a minimum of one year beyond the origination date. Means of amendment variables for subsamples with at least one type of borrower private information covenant that are significantly different from the means of the same variables in the subsample without any covenants are in boldface (chi-squared p-value $<.05$ for dichotomous variables, t-test p-value $< .05$ otherwise). Variable Definitions: *ProjFinStat* is an indicator variable equal to one if the loan contract requires the borrower to provide a forward-looking projection or budget for an upcoming fiscal year and zero otherwise. *MonthlyFinStat* is an indicator variable equal to one if the loan contract requires the borrower to provide financial information more frequently than quarterly and zero otherwise. *Private N* is the sum of *ProjFinStat* and *MonthlyFinStat*. *Amended Ind* is an indicator variable equal to one if the loan contract has been amended prior to its maturity and zero otherwise. *Amend Days* is the number of days from loan origination to the first amendment.

Table 5: Borrower Private Information Covenant Measures and Loan Contract Amendments

$$\begin{aligned} Pr(Amended\,Ind = 1) \quad = \quad & F(\beta_0 + \beta_1 Private + \Sigma_j \beta_j Borrower\,Characteristic_j \\ & + \Sigma_k \beta_k Borrower\text{–}Lender\,Information\,Asymmetry_k + \Sigma_l \beta_l Loan\,Term_l \\ & + \Sigma_m \beta_m Loan\,Purpose_m + \Sigma_n \beta_n Industry_n + \Sigma_p \beta_p Year_p), \end{aligned}$$

	(1)	(2)	(3)	(4)	(5)	(6)
	Amended	*Amended*	*Amended*	*Amended*	*Amend*	*Amend*
VARIABLES	*Ind*	*Ind*	*Ind*	*Ind*	*Days*	*Days - 90*
Private N	0.042**					
	(0.018)					
ProjFinStat		0.039*		0.032	1.082	1.120*
		(0.023)		(0.024)	(0.064)	(0.072)
MonthlyFinStat			0.066**	0.059*	1.167**	1.062
			(0.032)	(0.032)	(0.091)	(0.091)
Observations	3,162	3,162	3,162	3,162	3,247	2,975
Borrower Characteristics	YES	YES	YES	YES	YES	YES
Loan Terms	YES	YES	YES	YES	YES	YES
Loan Purpose FE	YES	YES	YES	YES	NO	NO
FF12 Industry FE	YES	YES	YES	YES	NO	NO
Calendar Year FE	YES	YES	YES	YES	NO	NO
LogL	-1991	-1993	-1992	-1991	-13124	-11039
Pseudo R-squared / Chi-squared	0.0808	0.0801	0.0805	0.0809	253.6	186.8

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.10

Logit regressions of the indicator for loan contract amendments after loan origination, *Amended Ind* (columns (1) - (4)), and Cox proportional hazard model estimations of the number of days to first amendment, *Amend Days* and *Amend Days-90* (columns 5, 6), on borrower private information covenant measures and untabulated at-origination borrower characteristics and loan contract terms. The table reports the marginal effects of each independent variable for columns (1) - (4), and hazard ratios for columns (5) and (6). Standard errors are adjusted for clustering at the firm level. All columns include the borrower characteristics and loan contract terms included in Table 3, and columns (1) - (4) include loan purpose, industry, and year fixed effects. All continuous independent variables are winsorized at the top and bottom percentile.

Variable Definitions: *ProjFinStat* is an indicator variable equal to one if the loan contract requires the borrower to provide a forward-looking projection or budget for an upcoming fiscal year and zero otherwise. *MonthlyFinStat* is an indicator variable equal to one if the loan contract requires the borrower to provide financial information more frequently than quarterly and zero otherwise. *Private N* is the sum of *ProjFinStat* and *MonthlyFinStat*. *Amended Ind* is an indicator variable equal to one if the loan contract has been amended prior to its maturity and zero otherwise. *Amend Days* is the number of days from loan origination to the first amendment. *Amend Days - 90* is the number of days from 90 days after loan origination to the first amendment.

Table 6: *ProjFinStat* Borrower Private Information Covenant, Loan Abnormal Returns, and Future Cash Flows

$$CFO_{i,t+1} = \beta_0 + \beta_1 Loan\,MA\,Ret\,(20\,day)_{i,t} + \beta_2 CFO_{i,t} + \beta_3 Accruals_{i,t} + \Sigma_p \beta_p Industry_p + \Sigma_q \beta_q Year_q$$

	(1)	(2)	(3)
VARIABLES	*CFO(t+1)*	*CFO(t+1)*	*CFO(t+1)*
Mkt Adj Loan Ret (20 day)	0.201**		0.325***
	(0.080)		(0.115)
Mkt Adj Loan Ret Rand (20 day)		0.076	
		(0.079)	
Post-Earn Ann Projection			0.011*
			(0.006)
*Post-Earn Ann Projection*Mkt Adj Loan Ret (20 day)*			-0.258*
			(0.138)
CFO(t)	0.680***	0.671***	0.667***
	(0.056)	(0.057)	(0.055)
Accruals(t)	0.036	0.028	0.037
	(0.043)	(0.043)	(0.043)
Constant	0.043***	0.042***	0.031**
	(0.012)	(0.012)	(0.014)
Observations	1,029	1,029	1,029
FF12 Industry FE	YES	YES	YES
Calendar Year FE	YES	YES	YES
Adjusted R-squared	0.408	0.403	0.414

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.10

OLS regressions of annual cash from operations on abnormal loan returns preceding projection delivery dates, and prior year financial performance. The sample includes loans with *ProjFinStat* covenants and secondary loan market prices, and includes multiple observations per projected fiscal year when multiple traded facilities exist. Standard errors are adjusted for clustering at the firm level. All regressions include industry, and year fixed effects (untabulated). All continuous independent variables are winsorized at the top and bottom percentile.

Variable Definitions: *CFO(t+1) (CFO(t))* is cash from operations for the projected (preceding) fiscal year scaled by average assets. *Accruals(t)* is total accruals for the preceding fiscal year, measured as the difference between income before extraordinary items and cash from operations scaled by average assets. *Mkt Adj Loan Ret (20 day)* is the cumulative abnormal loan return for the 20 trading day period ending at the projection delivery deadline (market-adjusted). *Mkt Adj Loan Ret Rand (20 day)* is the cumulative abnormal loan return for the 20 trading day period ending at the random projection delivery deadline (market-adjusted), where sample projection deadlines are randomly reassigned. *Post-Earn Ann Projection* is an indicator variable equal to one when the projection delivery deadline for fiscal year t+1 is on or after the earnings announcement for fiscal year t and zero otherwise.

Table 7: *MonthlyFinStat* Borrower Private Information Covenant and Intraperiod Loan Return Timeliness

$$\begin{aligned} Loan\,IPT \quad = \quad & \beta_0 + \beta_1 MonthlyFinStat + \beta_2 Financial\,Covenants + \beta_3 Borrower\,Size + \beta_4 Market\,Makers \\ & + \beta_5 Loan\,BidAsk\,Spread + \beta_6 Tangibility + \beta_7 Investment\,Grade + \beta_8 Relationship \\ & + \beta_9 Lead\,Arranger\,Reputation + \Sigma_{j=2}^{4} \beta_j FiscalQtr\,FE_j + \epsilon \end{aligned}$$

	(1)
VARIABLES	*Loan IPT*
MonthlyFinStat	3.991***
	(1.360)
Financial Covenants	1.292**
	(0.548)
Borrower Size	0.692
	(0.600)
Market Makers	-0.024
	(0.215)
Loan Bid-Ask Spread	1.908
	(3.126)
Tangibility	3.853*
	(2.177)
Investment Grade	0.695
	(2.522)
Relationship	1.300
	(1.287)
Lead Arranger Reputation	2.378*
	(1.332)
Constant	11.849*
	(6.527)
Observations	1,242
Fiscal Quarter FE	YES
Adj. R-squared	0.0618

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.10

OLS regression of quarterly intraperiod loan return timeliness (*Loan IPT*) measures on *MonthlyFinStat* and controls for borrower, contract, secondary loan market, and lead arranger characteristics. *Loan IPT* is measured as $\frac{1}{2}\Sigma_{t=0}^{62}(BHAR_t + BHAR_{t-1})/BHAR_{62}$, where $BHAR_t$ is the buy-and-hold abnormal (market-adjusted) loan return up to trading day t, and $BHAR_{62}$ is measured starting 60 trading days prior to, and ending two trading days after, the quarterly earnings announcement (earnings announcement on trading day 60). The sample includes observations for quarters between 1999 and 2010 with an absolute value of $BHAR_{62}$ greater than .5%, and an average loan bid-ask spread less than or equal to one. Unusual facilities (foreign currency, 364 day, DIP, acquisition, bridge loans, etc.) are excluded from the sample. Standard errors are calculated clustering observations by firm. All regressions include fiscal quarter fixed effects (untabulated). All continuous independent variables are winsorized at the top and bottom percentile.

Variable Definitions: *MonthlyFinStat* is an indicator variable equal to one if the loan contract requires the borrower to provide financial information more frequently than quarterly and zero otherwise. *Financial Covenants* is the number of financial covenants in the loan contract. *Borrower Size* is the log of borrower total assets. *Market Makers* is the average number of daily quotes over the quarter. *Loan BidAsk Spread* is the average daily loan bid-ask spread over the quarter. *Tangibility* is the ratio of property, plant, and equipment to total assets for the borrower. *Investment Grade* is an indicator variable equal to one when the borrower's long-term S&P credit rating is BBB- or above and zero otherwise. *Relationship* is an indicator variable equal to one if the borrower has obtained loans in the prior five years from a lead arranger and zero otherwise. *Lead Arranger Reputation* is an indicator variable equal to one when a lead arranger's market share is in the top three in the year prior to loan issuance and zero otherwise.