

Creditor Mandated Purchases of Corporate Insurance*

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Abstract

We present novel empirical evidence on the contractually mandated purchase of insurance by corporate creditors. In a large sample of private credit agreements of publicly-traded firms, we find that nearly all agreements contain at least a boilerplate provision requiring the borrower to purchase insurance. In about 80 percent of the agreements, the insurance covenant is more explicit. We focus on four additional features of the insurance covenant: explicit permission for the borrower to self-insure, requirements of coverage for specific risks, naming the lender as a loss payee, and mandating that any insurance proceeds be used to repay the loan. We find that credit agreements contain more stringent insurance requirements for borrowers that are smaller and pose higher credit risk, measured in a variety of ways. We also find that insurance requirements are highly correlated with many other terms of the loan and are very strongly positively correlated with the loan being secured by collateral and the loan size being limited by a borrowing base. This latter evidence suggests that insurance creates value by protecting lenders from unexpected changes in seniority that might happen following the destruction of collateral or the occurrence of a large liability suit. Mandatory insurance requirements appear to be an important ingredient of credit agreements designed to encourage monitoring by senior, secured lenders.

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Corporate credit agreements frequently require the borrower to purchase insurance, providing one answer to the long-debated question why publicly-traded corporations would demand insurance. Since the seminal work of Mayers and Smith (1982) first highlighted that the corporate form provides maximal diversification opportunities, researchers have looked for alternatives to risk-aversion to explain the corporate demand for insurance. Mayers and Smith (1987) and others have pointed to covenants in lending agreements as a source of corporate demand and have offered theories to identify the value that insurance can create.

Our paper provides the first large-sample evidence on the use and nature of insurance requirements in credit agreements for publicly-traded companies. We show that lenders nearly always mandate that borrowers have some form of insurance and in many cases tailor the requirement to the borrower's specific situation. In addition to a requirement simply to have insurance, credit agreements also frequently include four additional provisions: (1) a requirement that the borrower purchase specific types of coverage, such as liability or property insurance; (2) a requirement that the lender be named as an additional loss payee; (3) a requirement that any proceeds from insurance payments be used to pay down loan balances; and (4) explicit permission that the borrower may self-insure. Given that over three-quarters of public firms use credit agreements of the type we study (Sufi, 2007), creditor mandated purchases of insurance are indeed an important source to explain the depth and variety of corporate insurance that we see in practice.

We code the insurance requirements in a sample of 3,106 private credit agreements to publicly-traded firms in the U.S. and show empirically that they are related to a number of borrower specific characteristics. We find that the size and credit quality of the borrower are significantly related to the use of various insurance provisions. Larger firms are less likely to be

required to buy insurance and more likely to be permitted to self-insure. Firms posing higher credit risk are more likely to be required to buy insurance for specific risks, more likely to have to name the lender as a loss payee, and more likely to be required to use any insurance proceeds to pay down loan balances.

These correlations are consistent with existing theories that explain insurance covenants as a means to avoid underinvestment problems created by risky debt. Myers (1977) shows that managers of a levered firm may limit the scale of investment if some of the returns to a profitable project accrue to creditors in the form of reduced credit risk. Since the underinvestment problem worsens as firms become more levered, insurance may create value by reducing the probability of insolvency, as shown in Garven and MacMinn (1993). For firms with higher ex-ante credit risk, the benefit of insurance is larger, since it takes a smaller loss to move the firm closer to insolvency. We find a very strong correlation between the credit risk of the borrower and the stringency of the insurance requirement; for example, about one-quarter of loans to firms with investment-grade credit ratings require specific insurance coverage, but more than three-quarters of loans to speculative-grade borrowers have a similar provision.

We also find that the use of insurance covenants is highly correlated with other features of the loan contract, particularly the presence of collateral and the use of a borrowing base.¹ Loans that are secured by collateral are much more likely to require specific coverage – often insuring the asset serving as collateral – and much more likely to name the lender as an additional loss payee or require prepayment from insurance proceeds. We conjecture that the insurance requirement creates value by limiting the possibility that senior, secured lenders face a change in priority following an insurable loss. For example, consider a firm with a large amount of secured

¹ As we describe in more detail below, a borrowing base limits the amount of borrowing to a fraction of an asset owned by the borrower, such as inventory or accounts receivable.

debt that is exposed to the risk of being sued. The potential lawsuit creates the risk that a new claimant to the borrower's assets – namely, plaintiffs in a lawsuit – may alter the priority of the secured lenders in the case of a bankruptcy. Such a risk weakens the value of providing collateral in the first place, which recent empirical work (Rauh and Sufi, 2010) has shown is used strategically by lenders. However, if the borrower were required to purchase liability insurance, secured lenders would be more confident that their claim to the borrower's assets will remain intact. A similar argument can be made to justify why firms would purchase property insurance to replace damaged assets.

Existing theories of corporate capital structure identify several reasons why some loans are secured by collateral, which in a world with no frictions would create no value, based on a Modigliani and Miller (1958) argument. The distinguishing feature of a collateralized loan is priority in bankruptcy, which Carey and Gordy (2008) have shown leads to higher recovery rates following a default. Existing theories, such as Park (2000) and DeMarzo and Fishman (2007), point to priority in bankruptcy as generating valuable ex-ante benefits. If the cost of liquidating a failing firm is high, granting a secured claim gives a lender incentive to force a borrower into bankruptcy, which can limit borrower moral hazard problems.

Given that there are economic benefits from using collateral, mandated insurance strengthens these benefits by limiting the risk to changes in priority created by a secured claim. We surmise that the same underlying friction that makes collateral beneficial also creates the demand for insurance. Empirically, we document that controlling for the presence of collateral in the loan – an admittedly endogenous variable – reduces the correlation between most firm characteristics and insurance requirements. For example, we show that correlation between firm credit risk and

the requirement to purchase specific coverage is largely an artifact of the fact that most loans to speculative-grade rated borrowers are secured with collateral.

In the next section, we discuss existing theories regarding the corporate demand for insurance and highlight theories that explain the use of insurance requirements that we see in practice. Section 2 explains the collection of our sample of loan agreements and coding of insurance requirements. We also present summary statistics that illustrate the widespread use of insurance covenants in loan agreements for publicly-traded companies. Section 3 presents results on the correlations between firm characteristics and the use of insurance covenants; Section 4 on the correlations between firm characteristics and insurance covenants. Section 5 concludes by highlighting the relevance of existing theories of secured debt for the insurance requirement found in most debt contracts.

1. Background on the Corporate Demand for Insurance

1.1. Demand from Borrowers

The value of managing risk (including insurance purchases) for publicly-traded firms cannot arise from the benefits of diversification, as is the case for individuals. As Mayers and Smith (1982) first point out, the nature of the corporate form permits risk to be spread across a large group of shareholders, each of whom can form a portfolio suited to her taste for risk. With risk already spread across a large number of shareholders, there is little value in further diversifying risk through an insurance company. Moreover, when efficient markets require a risk premium for transferring undiversifiable risk, corporate risk management activities cannot create risk-adjusted value by simply changing the risk-return profile of the firm. The argument is simple

extension of Modigliani and Miller (1958) to include risk management as part of a firm's financial policy.

Existing positive theories justify corporate risk management activities by relaxing the Modigliani and Miller (1958) assumptions of zero taxes, no contracting costs, or fixed investment policy. The common thread that runs through the theories is that downside changes in asset values or earnings are more valuable than similar upside changes, creating concavity in the corporate value function and an incentive for firms to minimize randomness in asset values or earnings.

Corporate taxes can create a motive for firms to manage risk through two mechanisms. First, Smith and Stulz (1985) show that convexities in the tax code can create an incentive for firms to hedge their earnings to avoid increases in marginal tax rates. Progressive tax schedules and incomplete offsets for losses create mild convexities that provide some incentive for firms to smooth earnings (Graham and Smith, 1999). However, Graham and Rogers (2002) show that the larger tax motive for hedging arises from increased debt capacity. To the extent that corporate risk management permits firms to substitute tax-advantaged debt for equity, firms can create value by reducing their tax liability.

Avoiding costs associated with financial distress has also been proposed as a motive for corporate risk management. To the extent that risk management can limit the occasions when financial distress creates deadweights costs, there is an obvious increase in expected firm value. Financial distress costs can include the direct costs associated with bankruptcy or debt restructuring and indirect costs arising from forgone investment opportunities. Froot, Scharfstein, and Stein (1993) develop a model where a reduction in earnings or assets reduces the amount of internal capital available to invest; meaning firms must either cut back on

investment or resort to more costly external finance. Under the standard assumptions of diminishing returns to scale in production and convex costs of external finance, hedging creates value by permitting the firm to achieve a better scale more cheaply, helping to coordinate financing and investment decisions.

Finally, various corporate stakeholders may not have a fully diversified stake in a corporation, and risk management may permit the firm to achieve better terms with such parties. Such stakeholders include creditors, managers and employees, suppliers, and customers, all of whom may have a highly concentrated stake in the firm. Risk to the firm's prospect may affect these stakeholders, who will demand compensation for bearing the risk. By managing this risk or transferring some of it to a more diversified counterparty such as an insurance company, the firm may be able to reduce the total risk premiums it pays.

1.2. Demand from Creditors

Since Smith and Warner (1979) first noted that corporate bond indentures sometimes contain a provision requiring the borrower to purchase insurance, several theories have been proposed to explain why such a provision could create value. Smith and Warner (1979) point to the comparative advantage of an insurance company in evaluating, pricing, and monitoring certain types of risk. By contractually requiring borrowers to purchase insurance, lenders outsource these functions to specialist insurance companies. Smith and Warner (1982) push further this argument by illustrating that insurance is a useful means to prevent borrowers from shifting risk to creditors after receiving a loan. In particular, the insurance contract gives the insurance company significant incentive to limit any increases in risk.

Subsequent to this initial explanation, the leading theory explaining insurance covenants relied on anticipated conflicts of interest between equity-holders and creditors that might

discourage the firm from taking profitable investments. Myers (1977) shows that a levered firm may forgo a positive-NPV project if some of the project returns accrue to creditors, and Mayers and Smith (1987) extend this logic to support the use of insurance covenants in bond agreements. Intuitively, since an uninsured loss to a borrower's assets will make existing debt riskier, the underinvestment problem may worsen after an insurable loss. In order to commit to making optimal future investment decisions, equityholders promise to buy insurance to maintain future asset values. Schnabel and Roumi (1989) and Garven and MacMinn (1993) formalize this logic and show that existing equityholders can create value by minimizing the expected agency costs of future underinvestment.

The existing theories generate two explicit hypotheses that we use to motivate our empirical analysis. First, in the presence of conflicts of interest between creditors and equity-holders, debt agreements will include insurance requirements. This suggests a simple prediction that we should find widespread use of insurance requirements. Second, given that conflicts of interest are exacerbated when the borrower's debt is riskier, we expect that insurance requirements will be more common and more explicit when the borrower poses a higher credit risk. The following, taken from Mayers and Smith (1982), suggests a straightforward, testable prediction:

Since potential transfers from bondholders to the firm's other claimholders are increased the larger the fixed claims in the capital structure, we suggest that the probability of inclusion of insurance covenants will increase with the firm's debt/equity ratio.

2. Data and Summary Statistics

We examine mandatory insurance covenants in a set of credit agreements collected directly from Security and Exchange Commission (SEC) filings by publicly-traded firms. SEC rules and precedent have established that public companies are required to include copies of all "material"

contracts, which includes private credit agreements.² The contracts typically appear as exhibits at the end of a 10-K or 10-Q report or as an attachment to an 8-K filing. The SEC's *Edgar* electronic filing system permits us to search, extract, and download these credit agreements. Nini, Smith, and Sufi (2009) analyze covenants restricting investment in the same set of credit agreements and provide more detail on the exact procedure used to collect the contracts, which is only summarized here.

2.1. Loan agreements from DealScan and Edgar

The process begins with the set of loan deals from Reuters LPC's *DealScan* database initiated between 1996 and 2005 to nonfinancial firms that we can match to Standard & Poor's *Compustat* annual database. We include only deals for which borrower financial data are available for the fiscal year prior to the loan agreement being signed.³ Our starting year corresponds to when the SEC began requiring firms to file electronically; electronic filings are only sparsely available on Edgar prior to 1996. Once these restrictions are in place, we are left with 9,580 loan deals.

From *Compustat*, we construct financial statistics based on the fiscal year prior to the loan agreement being signed. EBITDA is operating earnings before taxes, depreciation, amortization, and interest payments, which we typically scale by the book value of total assets. The book leverage ratio is the book value of long term debt plus short term debt, scaled by book assets. The market to book ratio is total assets less the book value of equity plus the market value of equity, all scaled by total assets. The book value of equity is the book value of assets less the

² The reporting requirements for credit agreements fall within item 601(b) of regulation S-K, which is the general provision that requires exhibits to be filed with the SEC. Item 4 and item 10 under this regulation require disclosure of securities and material contracts, respectively. Most credit agreements fall within one of these two categories.

³ Specifically, we require non-missing data on cash flow, total assets, long-term debt, short-term debt, total liabilities, preferred stock, stock price, and common shares outstanding.

book value of liabilities and preferred stock plus deferred taxes. The market value of equity is common shares outstanding multiplied by the share price. Tangible assets include the net value of property, plant, and equipment, and cash is the book value of cash plus short-term investments. We include only deals for which these borrower-level variables are non-missing.

DealScan provides no information on insurance requirements, so we use match these loans to the loan contracts extracted from 10-Q, 10-K, and 8-K filings from Edgar as in Nini, Sufi, and Smith (2009). As reported in Nini, Sufi, and Smith (2009), *DealScan* observations are matched to the borrower's respective set of SEC filings based on the firm's tax identification number, which is available in *Compustat*. We then search the SEC filings for the following 10 terms: "credit agreement," "loan agreement," "credit facility," "loan and security agreement," "loan & security agreement," "revolving credit," "financing and security agreement," "financing & security agreement," "credit and guarantee agreement," and "credit & guarantee agreement." If one of these terms is found and the document contains the term "table of contents" within 60 lines after the initial search term, we extract the text of the filing from the initial search term until the end of the document or the phrase "in witness thereof," which often appears at the end of legal contracts. We then confirm, by hand, that we have extracted a loan contract and use the date of the contract to match to a respective *DealScan* observation.

Of the 9,580 deals in *DealScan*, we have the actual loan contract for about one-third of the deals, which yields a sample of 3,106 loan contracts.⁴ Nini, Sufi, and Smith (2009) discuss the reasons why the search program misses a substantial number of observations available in *DealScan*. The upshot is that the use of the Edgar sub-sample of *DealScan* contracts does not lead to an obviously uniquely selected sample of firms or loans.

⁴ We have a smaller sample than used in Nini, Sufi, and Smith (2009) for two reasons. First, we have more restrictive *Compustat* data requirements. Second, about 50 of the contracts in the Nini, Sufi, and Smith (2009) dataset are not complete contracts.

2.2. Insurance Requirements

From the sample of loan contracts, we collect information on insurance requirements contained in each agreement. Insurance requirements are usually documented in the affirmative covenants section near the end of the credit agreement. Many of the provisions are boilerplate requirements that the borrower maintain insurance “similar to other like firms.” For example, the April 28th, 2000 loan agreement for Alcoa Inc. contained the following insurance requirement, which required Alcoa to have insurance but permitted a self-insurance alternative.

SECTION 5.05. Insurance. Borrower shall, and shall cause its consolidated Subsidiaries to, insure and keep insured, in each case with reputable insurance companies, so much of its respective properties to such an extent and against such risks, or in lieu thereof, in the case of any Borrower, maintain or cause to be maintained a system or systems of self-insurance, as is customary in the case of corporations engaged in the same or similar business or having similar properties similarly situated.

Many loan agreements contain insurance provisions that are much more explicit. In addition to a generic requirement for some insurance, we code whether the loan contains the following four requirements: (1) whether the agreement permits self-insurance, (2) whether the agreement requires specific insurance coverage (e.g. workers’ compensation or property insurance), (3) whether the agreement mandates that the lender be named an additional loss payee⁵, and (4) whether the agreement mandates that some portion of insurance proceeds be used to pay down the loan. As an example, consider the August 5th, 1997 credit agreement to Three Rivers Holding Company Corp.

8.03 Insurance. (a) Holdings will, and will cause each of its Subsidiaries to (i) maintain, with financially sound and reputable insurance companies, insurance on all its property in at least such amounts and against at least such risks as is consistent and in accordance

⁵ In practice, the requirement that the lender be named as loss payee is typically accompanied by a requirement that the lender be named as an additional named insured, although we do not explicitly code the additional named insured requirement.

with industry practice and (ii) furnish to the Agent and each of the Banks, upon request, full information as to the insurance carried. In addition to the requirements of the immediately preceding sentence, Holdings will at all times cause insurance of the types described in Schedule VIII to be maintained (with the same scope of coverage as that described in Schedule VIII) at levels which are consistent with its practices immediately before the Initial Borrowing Date, taking into account the age and fair market value of equipment. Such insurance shall include physical damage insurance on all real and personal property (whether now owned or hereafter acquired) on an all risk basis, covering the full repair and replacement costs of all such property and business interruption insurance for the actual loss sustained. The provisions of this Section 8.03 shall be deemed supplemental to, but not duplicative of, the provisions of any Security Documents that require the maintenance of insurance.

(b) Holdings will, and will cause each of its Subsidiaries to, at all times keep the respective property of Holdings and its Subsidiaries (except real or personal property leased or financed through third parties in accordance with this Agreement) insured in favor of the Collateral Agent, and all policies or certificates with respect to such insurance (and any other insurance maintained by, or on behalf of, Holdings or any Subsidiary of Holdings) (i) shall be endorsed to the Collateral Agent's satisfaction for the benefit of the Collateral Agent (including, without limitation, by naming the Collateral Agent as certificate holder, mortgagee and loss payee with respect to real property, certificate holder and loss payee with respect to personal property, additional insured with respect to general liability and umbrella liability coverage and certificate holder with respect to workers' compensation insurance), (ii) shall state that such insurance policies shall not be cancelled or materially changed without at least 30 days' prior written notice thereof by the respective insurer to the Collateral Agent and (iii) shall be deposited with the Collateral Agent.

(c) If Holdings or any of its Subsidiaries shall fail to maintain all insurance in accordance with this Section 8.03, or if Holdings or any of its Subsidiaries shall fail to so name the Collateral Agent as an additional insured, mortgagee or loss payee, as the case may be, or so deposit all certificates with respect thereto, the Agent and/or the Collateral Agent shall have the right (but shall be under no obligation) to procure such insurance, and the Credit Parties agree to jointly and severally reimburse the Agent or the Collateral Agent, as the case may be, for all costs and expenses of procuring such insurance.

For this example, the agreement requires specific coverage and requires that the lending bank (here, the Collateral Agent) be named as an additional loss payee. Moreover, if the borrower fails to buy insurance, the lender can purchase insurance on behalf of the borrower and bill the premium to the borrower. The loan observation related to this contract would be coded as

having three of the five possible requirements: some insurance required, specific coverage required, and lender named as loss payee.

We also code if an agreement requires mandatory repayment of outstanding loans based on the proceeds of insurance. For example, the February 17th, 1998 credit agreement to F.Y.I.

Incorporated includes the provision:

F.Y.I. will cause all proceeds of insurance paid on account of the loss of or damage to any Property of F.Y.I. or any of its Subsidiaries and all awards of compensation for any Property of F.Y.I. or any of its Subsidiaries taken by condemnation or eminent domain to be paid directly to the Agent to be applied against or held as security for the Obligations, at the election of the Agent and the Required Lenders.

Such mandatory prepayments are common in private credit agreements and are generically known as sweeps provisions. New financing and asset sales are other events which can trigger a mandatory prepayment. We term provisions of this type as an insurance sweep.

For our full sample of loans, we code five types of insurance requirements: any contractual provision regarding insurance (“Some Insurance Requirement”), specific coverage mandated by the contract (“Specific Coverage Required”), a provision permitting self-insurance (“Self-Insurance Permitted”), a requirement to name the lender as loss payee (“Lender named as Loss Payee”), and a stipulation that insurance proceeds be used to repay the loan (“Insurance Proceeds Sweep”). To identify the provisions, we first search all of our sample contracts for the term “insurance” and then further examine to confirm the nature of the requirement. Second, we read the mandatory prepayments section of each agreement to identify if proceeds from insurance payments must be used to repay the loan. Since details of any required coverage are often provided in supplementary exhibits that are not included in the loan agreement, we do not code the nature of the exact coverage that is required but just note the presence of an explicit requirement.

We also use the information collected by Nini, Smith, and Sufi (2009) on the presence of various financial covenants in the credit agreements. Combined with information from *DealScan*, we have a large set of variables that describe additional attributes of the loan contract.

2.3. Summary Statistics

Table 1 contains the summary statistics for the sample of 3,106 private credit agreements and provides novel large-sample results on the use of insurance requirements in debt contracts. Panel A shows that nearly all (97.4 percent) of the sample loan agreements contain a requirement that the borrower be insured. Over roughly the same sample time period, Sufi (2007) shows that over 80 percent of public firms utilized private credit agreements in the form of bank lines of credit. In concert, these two statistics imply that creditor mandated purchases of insurance create a significant demand for corporate insurance.

The remaining entries in Panel A show that the additional refinements are fairly common in our sample. Only around 20 percent (not shown in table) of the sample contracts contain just the boilerplate requirement for insurance, with the remaining 80 percent of contract being tailored with some additional provision.

More than one-half (56.0 percent) of agreements require borrowers to buy specific types of insurance. After reading the contracts, we can confirm that many types of commercial insurance policies are required, including workers' compensation, product and general liability, commercial auto, and commercial property coverage.⁶ Slightly less than one-third (30.9 percent) of the agreements explicitly permit the borrower to self-insure at least some of the risks faced by the firm.⁷ In some cases, the nature of the self-insurance is clearly described, such as permitting

⁶ We do not count a title insurance requirement as a specific coverage, since title insurance is primarily a guarantee that the title insurer properly researched a deed or lien on a property.

⁷ Very few agreements explicitly forbid self-insurance, but some agreements specify requirements that would effectively prohibit self-insurance, such as requiring the insurance to be with an insurer rated by A.M. Best.

the borrower to insure through a captive insurance company. Alternatively, the agreement may simply permit the borrower to continue with a generic “existing” self-insurance plan.

About one-third (34.7 percent) of agreements require the lender to be named as an additional loss payee, which, among other rights, means that insurance payments are made jointly to the borrower and the lender. The requirement would also require the insurance company to notify the lender in case the policy is cancelled or lapses due to failure to pay insurance premiums.

About one-third (33.8 percent) of the sample contracts explicitly require that some portion of any proceeds from insurance payments be used to pay down any existing principal balances. Due to the similarity of the loss payee and insurance sweep provisions, and their high empirical correlation documented below (the sample Pearson correlation coefficient is 0.588), we combine the two indicators into a single variable that denotes if the loan contains either a loss payee or a sweeps provision.

As shown in Panel B of Table 1, insurance requirements are common across industries, although there is noticeable variation. Borrowers in service industries appear to have more stringent requirements, with specific coverage requirements and sweeps provisions more common. As shown in panel C., the use of the various insurance requirements has been relatively stable across the calendar years of our sample. In the multivariate analysis presented below, we include calendar year and industry fixed effects.

The final panel in Table 1 shows how the frequency of insurance requirements varies with the credit rating of the borrower. There is strong evidence that insurance requirements are much stricter for borrowers with lower ratings, very much consistent with the prediction from Mayers and Smith (1982). Most notable is the large increase the strictness of the insurance requirements as firms fall below investment-grade status (BBB). There is a large increase in the naming of a

specific coverage requirement, a decrease in permitted self-insurance, and striking increases in loss payee and sweeps provisions. Perhaps most remarkable is the relative lack of loss payee and sweeps provisions for firms with investment-grade ratings (BBB or better).

Table 2 shows the pair-wise correlations across the five insurance requirements found in our sample. Since the fraction of agreements containing at least some insurance requirement is so close to 1, the correlation with other requirements is positive but fairly low. As a result, we find the additional insurance requirements to be informative about the “strictness” of the insurance requirement.⁸ The naming of specific required coverage is positively correlated with the loss payee and sweep provisions (0.456 and 0.382, respectively), but the correlations are low enough to suggest that there is unique information in each of the indicators. The loss payee and sweep provisions are quite highly correlated (0.588), so we combine them to form a single indicator in the remainder of our analysis. Specifically, we form a variable (“Lender Controls Funds”) indicating that the contract contains either a loss payee provision or a sweep provision, which we interpret as giving the lending bank control over funds paid as part of insurance proceeds.

3. Insurance Requirements and Firm Characteristics

In this section, we examine which firm characteristics are correlated with insurance requirements in credit agreements. We estimate regressions to identify the conditional correlations between four insurance provisions and firm level characteristics from the year-end just prior to the loan signing.

3.1. Methodology

⁸ Conversations with lenders confirm that insurance requirements are a boilerplate component of credit agreements that lenders alter, or very occasionally remove, when needed.

Our goal is to examine the impact of cross-sectional differences in borrower characteristics on the use of insurance provisions. We focus primarily on the credit quality of the borrower but include a variety of additional borrower characteristics as explanatory variables. We include variables typically found to be correlated with firms' use of insurance and derivatives, since we want to control for any demand-side factors that might influence the use of insurance. Clearly many of the control variables are simultaneously determined with the structure of the loan contract, so we interpret our results as reflecting conditional correlations, rather than causal effects.

We use several measures of borrower credit quality to estimate the impact of differences in credit quality on the nature of insurance requirements. First, the borrower's leverage ratio is computed as the ratio of total book debt to total assets (Book Debt / Assets). Leverage is easy to measure, available for every borrower, and is a common measure of credit risk. The debt to assets ratio is measured as of the fiscal year immediately prior to the loan being signed. The second measure of credit quality is the borrower's S&P issuer credit rating as of the year-end before origination of the loan. Since credit ratings are available only for firms rated by S&P – about one-half of our sample – we include a category for unrated firms in our categorical variable for credit ratings. Finally, we use Altman's z-score as a measure of credit quality.^{9,10} The z-score is a summary measure capturing the probability of default (Altman, 1968) and can be computed for nearly all firms in our sample. A higher z-score corresponds to a firm with lower credit risk.

⁹ Altman's z-score is based on Altman (1968) and is given by $3.3*(OIBDP/Assets) + (Sales/Assets) + (Market Value of Equity/Liabilities) + (Net Working Capital/Assets) + (Retained Earnings/Assets)$.

¹⁰ In our data, there is a strong positive correlation between all three of our credit quality measures and the interest rate spread charged on the loan.

We include several measures of firms' growth opportunities, liquidity, and investment needs. We proxy for growth opportunities with the ratio of the market value of assets to the book value of assets (market-to-book ratio) and include a profitability measure based on the ratio of operating income before depreciation to assets (OIBDP / Assets). We also include the dividend yield (Dividends / Net Income) as a measure of firm liquidity, which Aunon-Nerin and Ehling (2008) show is positively related to usage of property insurance. We use the ratio of capital expenditures to assets (CAPEX / Assets) and the ratio of property, plant, and equipment plus inventory to assets (Tangible Assets / Total Assets) as controls for demand to insure physical assets. We also control for firm size, measured as the natural logarithm of total assets, which Aunon-Nerin and Ehling (2008) find is strongly related to use of property insurance.

Corporate taxes also provide an incentive for firms to buy insurance. Graham and Rogers (2002) show that the primary tax-related benefit from hedging is increased debt capacity, which helps firms shield more income from corporate taxes. We use simulated marginal tax rates based on Graham (1996) and Graham and Mills (2008) as controls.¹¹ We use tax rates before interest expense.

Table 3 presents summary statistics for the 12 borrower characteristics and 9 loan characteristics. All ratios have been winsorized at the 1st and 99th percentiles. These averages reported in Table 3 correspond closely with aggregate averages from *Compustat* and *DealScan* over the same period, suggesting we have a roughly random sample of firms.

Not every variable is available for every observation. In our subsequent regressions, we always use fewer than 3,106 observations and use slightly different samples for different specifications, because of missing data. None of the estimates is changed meaningfully if

¹¹ Thanks to John Graham for sharing these data.

estimate the regressions on the limited sample of observations with non-missing data on all variables.

3.2 Univariate Comparison

Table 4 presents a univariate comparison of firm and loan characteristics for loans with and without the four insurance provisions. The sample means are useful for identifying factors that have a strong correlation with insurance requirements, and many of the correlations remain in a multivariate setting.

Most notable is the impact of firm size. Firms that are not required to have insurance are 5 to 6 times larger (based on sales or assets) than the average firm. On average, firms not required to purchase insurance are above the 90th percentile of the assets and sales distributions. Similarly, larger firms are less likely to be required to buy specific coverage and cede control of proceeds to lenders. Larger firms are more likely to be permitted to self-insure. As will be shown below, the impact of size remains robust in the multivariate regressions.

Table 4 also highlights the importance of credit quality, which echoes the correlation with credit ratings shown in Table 1. Firms with higher credit risk (higher leverage or lower z-score) are more likely to have specific coverage required and give control of proceeds to lenders, and less likely to be permitted to self-insure.

3.2. Multivariate Comparison

Table 5 presents results of four sets of regressions where the dependent variable is one of our insurance requirement indicator variables. The estimates reflect the average partial effect of borrower characteristics on the likelihood that a loan agreement contains a particular insurance requirement. Our dataset is best considered a cross-section of credit agreements for different firms, although we do have some firms that borrow at multiple dates. We do not include firm

fixed-effects but do cluster our standard errors by borrower, effectively allowing for arbitrary correlation between residuals for loans to the same firm.¹² Our outcome of interest is the inclusion of a particular insurance requirement, which is a discrete {0,1} variable. We estimate standard probit models on the pooled data and compute average marginal effects from coefficient estimates.

Table 5 presents the estimates for each of each of four dependent variables: Some Insurance Required (Panel A), Specific Coverage Required (Panel B), Self-Insurance Permitted (Panel C), and Lender Controls Funds (Panel D). Since our controls for credit quality are highly correlated with each other, we estimate four different specifications and enter them separately in the first three specifications, (1)-(3); specification (4) includes all credit quality variables.

Since nearly all loans contain a provision that the borrower buy some insurance, there is very little variation to explain with additional variables, as shown in Panel A. The only statistically significant variable is the ratio of the size of the loan to the assets of the borrower, which has a small positive effect on the inclusion of some insurance requirement. Although not statistically significant, the signs of the correlations with firm size and credit ratings are the same as in the univariate comparison. Only the very largest and highly rated (A – AAA) borrowers are able to remove the requirement from their loan agreements.

The requirement to purchase specific coverage is quite sensitive to the credit quality of the borrower, as shown in Panel B. Compared with unrated borrowers, investment-grade firms (A or better or BBB) are much less likely to have specific coverage mandated in their loan agreements, and very low rated borrowers are much more likely to be required to purchase specific coverage. Moving from an A-rated borrower to a B-rated borrower, there is an increase of about 48 percentage points (.192 + .287, specification (1)) in the probability that a loan requires specific

¹² All results are qualitatively robust to including one observation per firm.

coverage. Given the mean likelihood of 56.0 percent, this effect is quite important. Similarly, a decrease in the z-score or an increase in leverage increases the probability that a loan has a specific coverage requirement. A one standard deviation increase in the leverage ratio adds about 7 percentage points to the probability that loan requires specific coverage, based on specification (3). Including all proxies for credit risk in specification (4) reduces the statistical significance of some variables, but leaves the general conclusion unchanged.

The effect of credit quality is equally strong in explaining the use of loss payee and sweep provisions, shown in Panel D. Highly rated borrowers are much less likely to give control over insurance funds to the lender. In specification (1), moving from an A-rated borrower to a B-rated borrower increases the probability that the lender controls funds by about 62 percentage points ($.225 + .398$). Given the mean likelihood of 34 percent, the impact of credit quality is very strong on this provision. Similarly, a one standard deviation increase the z-score reduces inclusion probability by roughly 12 percentage points, based on specification (2). Even after controlling for leverage and z-score in specification (4), the impact of credit ratings remains quite strong.

Panel C shows results for the regression with self-insurance permitted as the dependent variable. Credit quality appears to have only a slight impact on this provision, with riskier firms being less likely to be allowed to self-insure. Firm size appears to be the primary determinant whether firms are permitted to self-insure, with permission granted to larger firms much more often than smaller firms. We conjecture that this reflects underlying demand for self-insurance programs, which is likely positively correlated with firm size due to economies of scale in administering a self-insurance program.

In specifications (3) and (4) of all regressions, we include as an explanatory variable the ratio of secured debt to total debt.¹³ As seen in Panels B and D, this ratio is strongly positively correlated with the requirement for specific coverage and the requirement that the lender control funds. For instance, even after controlling for all other variables (specification (4)), a one standard deviation increase in the ratio of secured debt to total debt is associated with a 10 percentage point increase in likelihood that a loan contains a sweeps or loss payee provision. As we will show in the next section, there is an even stronger association between the individual loan being secured and the strictness of insurance requirements.

4. Insurance Requirements and Other Loan Characteristics

In this section, we explore empirically how other loan contract terms are related to the various insurance provisions. There is a vast literature showing how loan terms respond to borrower characteristics, so we do not interpret our results as causal. Nevertheless, we estimate regressions to measure partial correlations and identify conditionally strong relationships between the usages of various loan terms.

4.1. Loan-level variables and univariate comparison

We focus on several important loan terms that are available in the *DealScan* data. In addition to the size of the loan (Loan Commitment / Assets), the maturity of the loan (Loan Maturity), and the interest rate spread charged on the loan (Loan Spread), we focus on several additional non-price terms. We concentrate on whether the loan is secured by collateral (Loan is Secured), whether the loan contains a restriction on dividend payments (Loan has Dividend Restriction), whether a loan contains restriction on investment (Loan has CAPEX restriction), whether the

¹³ Compustat reports a balance sheet item for the total of secured debt plus mortgages

loan contains a cash-flow sweep (Loan has Other Sweeps Provision), whether the loan contains a borrowing base (Loan has Borrowing Base), and the number of financial covenants in the loan. A cash-flow sweep requires the borrower to use proceeds from an asset sale, new financing, or operating earnings to repay principal balances, similar to the insurance proceeds sweep. Financial covenants are accounting-based triggers of default on the loan contract. A borrowing base restricts the firm's maximum amount of borrowing to an easily measurable asset, such as inventory or accounts receivable. Summary statistics for these variables are presented in Table 3.

Table 4 reports univariate comparisons of the loan terms across the various insurance provisions. Not surprisingly, insurance requirements are stricter when loans are smaller and have a higher interest rate. This primarily reflects the size and credit risk of the borrowers. Non-price terms of the loan also vary with insurance requirements. Loans requiring specific coverage or giving the lender control of funds are also more likely to contain restrictions on investment, limitations on dividends, additional cash flow sweeps, and more financial covenants.

Two loan terms that vary considerably with insurance requirements are the use of collateral and the use of a borrowing base. Loans requiring specific coverage and giving the lender control of funds are much more likely to be secured by collateral and contain a borrowing base. As we show below, this correlation remains when we control for firm characteristics and additional loan terms.

4.2. Multivariate Comparison

Table 6 repeats specification (4) of the regressions presented in Table 5 but also includes 9 additional loan terms as explanatory variables. The results show that insurance requirements are strongly correlated with the loan being secured, the loan containing additional cash flow sweeps,

and the loan containing a borrowing base. We do not report coefficient estimates for all variables included in the model but limit reported results to the loan terms and measures of borrower credit quality.

Table 6 shows that collateral and borrowing base are strongly correlated with the use of insurance requirements, even after controlling for other loan terms. Loans secured by collateral are 21.9 percentage points more likely to contain a specific coverage requirement and 34.3 percentage points more likely to grant the lender control over insurance funds. Loans with a borrowing base are 7.4 percentage points more likely to contain a specific coverage requirement and 15.8 percentage points more likely to grant the lender control over insurance funds. Since loans with a borrowing base are nearly always secured, the impact of a borrowing base is most appropriately measured as the sum of the two coefficients, which leads to a 29.3 percentage point impact on the specific coverage requirement and a 50.1 percentage point impact on the lender controls funds variable.

Table 7 explores further the impact of collateral and borrowing bases on the insurance requirements. We split the sample into three groups of loans: unsecured, loans with secured with collateral but not having a borrowing base, and loans that are both secured and have a borrowing base. There are no loans with a borrowing base that are not secured. For each group, we report the frequency of each of the four insurance provisions and test for independence of the groups using a Pearson's chi-square test, which is distributed as a chi-square random variable under the null hypothesis of independence. We strongly reject independence for each of the four insurance covenants.

Most notably, the specific coverage requirement and lender controls funds provision vary very significantly with the usage of collateral. Within the group of uncollateralized loans, which

are 44 percent of the sample, only 32 percent require specific coverage and 9 percent give the lender control of the funds. For the group of loans secured by collateral and a borrowing base, 18 percent of the sample, these percentages increase to 81 percent and 81.4 percent. In the next section, we provide some discussion of why we observe such a significant correlation between insurance requirements and the use of collateral and borrowing bases.

5. Discussion and Conclusion

There is no existing theoretical justification for the observed correlation between the use of an insurance requirement and additional loan features such as collateral and a borrowing base. However, there is relevant literature on why firms have use various classes of debt, including creating a secured class through the use of collateral. As we discuss more below, we view a borrowing base as enhancing the value of collateral, since it contractually limits borrowing to be less than the value of the collateral.

5.1. Why are loans secured with collateral?

The distinguishing feature of a collateralized loan is a first lien on assets that gives secured lenders priority in bankruptcy. A borrowing base limits the capacity of the borrower to add additional leverage beyond the level of the borrowing base. The combination of a borrowing base and collateral provides the lender with an extremely safe claim, since in the event of bankruptcy, the lender will have first claim on the collateralized assets, which should be greater than the value of the debt, due to the borrowing base. In our data, we observe a strong positive correlation between the use of collateral and borrowing bases and the riskiness of the borrower. The combination suggests lenders use collateral and borrowing bases to create a very safe claim on an otherwise risky firm.

A set of theories examines how firms choose the priority of their financial claims as part of an optimal capital structure (Diamond (1993), Rajan and Winton (1995), Repullo and Suarez (1998), Gorton and Kahn (2000), Park (2000) and DeMarzo and Fishman (2007) are examples). A particularly relevant model is provided in Park (2000), who justifies giving lenders with superior monitoring capabilities (such as banks granting loans with financial covenants) senior priority status in the capital structure. In the model, lenders can prevent borrowers from undertaking negative-NPV projects only by threatening to liquidate the project, a decision that can be made more accurately if the lender invests in learning about the firm. Lenders will only choose to become informed if their cash-flow claim is both at-risk and can be preserved by liquidating the risky project in certain states of the world. Making lenders a large part of the capital structure creates risk that provides incentive, and making lenders senior gives them reason to liquidate risky projects, since they are not damaged too badly from costs associated with liquidation. The model justifies combining monitoring capabilities (e.g. financial covenants), with a senior secured cash-flow claim in firms where the moral hazard problem is fairly severe. DeMarzo and Fishman (2007) hint at this mechanism in the conclusion to their paper, writing "..., it may be optimal to make the credit line senior in the event of default so as to increase the incentives for the bank to follow through with a threat of termination." In a world where liquidation creates deadweight costs, it can be optimal to give some creditors a relatively safe claim to provide incentives to liquidate a failing firm. Collateral and borrowing bases provide just such safety.

The spirit of these models has been confirmed empirically by Rauh and Sufi (2010) and Carey and Gordy (2008). Rauh and Sufi (2010) show that firms with higher credit risk have more secured debt and more junior debt in their capital structures, as compared with lower credit

risk borrowers who have more uniform debt structures. They conjecture that the collateral puts senior lenders in their own priority class to let them appropriate the full return of their monitoring effort, and the junior debt reduces the size of the senior debt to give senior lenders incentive to shut down failing firms. Carey and Gordy (2008) document that recovery rates on defaulted senior secured claims are much higher than those on subordinated claims. Moreover, they show that the share of bank debt in the firm's capital structure is strongly, positively related to the firm-level recovery rate, which they interpret as banks forcing insolvent borrowers into default earlier when they have a larger claim. The empirical results from these papers are very much consistent with the notion that senior secured lenders provide value by committing to quickly liquidate failing firms.

5.2. Why require insurance in secured loans?

If collateral and seniority are used to provide incentives for lenders to liquidate failing firms, it makes sense to also incorporate mandatory insurance requirements, sweeps provisions, and loss payee requirements. In particular, insurance adds value by minimizing the possibility that a senior, secured lender becomes an unsecured claimant, which would reduce the incentive to liquidate a firm. By insuring risks to the value of collateralized assets, senior lenders are more likely to retain their secured status, which increases their incentive to monitor their borrowers and liquidate failing firms. For example, following a complete loss to collateralized assets, senior secured lenders would become *pari passu* with other lenders and face the same costs from liquidation as all other creditors. This will limit the incentive of lenders to liquidate failing firms and diminish the motivation for lenders to monitor their borrower's in the first place. Any value to providing collateral would be lost following destruction of the asset. Buying insurance to limit the frequency or severity of such events would strengthen the value of the collateral.

It is also sensible to use loss payee and sweeps provisions to strengthen the value of collateral. Following a loss to an insured, collateralized asset, borrowers may be reluctant to repair the asset because it is pledged to a lender as collateral. Moreover, it could be that the existing lien on a collateralized asset would not transfer to a significantly altered or brand new asset. In either case, the secured lender's claim would face a change in anticipated recovery in bankruptcy, which again would limit the value of the collateral. By mandating that insurance proceeds be used to pay down loan balances, the secured lenders claim becomes more secure, which increases the value of the collateral.

Finally, such a model can explain why the insurance is provided by a firm other than the lender, a question raised by Caillaud, Dionne, and Jullien (2000). In theory, the lender could serve as insurer by collecting the insurance premium (or raising the interest rate) and paying the indemnity (or forgiving the loan) following a loss. Such an arrangement would limit the underinvestment problem identified in existing theories for mandated insurance purchases. However, by providing the insurance, the lender would face a loss on the loan that would mitigate the incentives for monitoring and liquidating. It is precisely the security in the value of the loan (guaranteed through collateral and borrowing bases) that provides the monitoring incentive, which would be undone through simultaneous provision of insurance. Separating the provision of insurance from the provision of credit makes appears to be a second-best contracting solution in the face of borrower moral hazard.

5.3 Conclusion

We provide evidence of widespread use of insurance covenants in the private credit agreements of a large sample of publicly traded companies. These restrictions are more likely to be put in place for low credit quality firms and are more likely to be used when the loan is

secured with collateral. The strong correlation with collateral suggests that insurance requirements are an important component of a covenant package designed to encourage monitoring by senior, secured lenders.

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Table 1: Insurance Covenants, Summary Statistics

This table presents the summary statistics on the use of various insurance requirements in 3,106 private credit agreements. The agreements are from SEC filings over the period 1996-2005. The insurance requirements generally are found in the affirmative covenants section of the credit agreement contract. “Some Insurance Requirement (Some Insurance)” refers to any covenant requiring the borrower to have insurance; “Specific Coverages Required (Specific Coverage)” refers to covenants that specifically name the type of insurance the firm must purchase; “Self-Insurance Permitted (Self-Insurance)” refers to covenants that explicitly permit the borrower to self-insure; “Lender Named as Loss Payee (Loss Payee)” refers to covenants that require the lender be named as an additional loss payee in any insurance contract; and “Insurance Proceeds Sweep (Insurance Sweep)” refers to a provision in the credit agreement that mandates that some portion of insurance payments be used to pay down the loan. All reported statistics are unweighted means of the number of loan contracts containing the provision. In Panel B., borrower industry is based on 4-digit SIC code from Compustat and classified as in Fama and French (1997). In Panel C., the calendar year of the loan is based on the signing date of the loan from *DealScan*. In Panel D., the credit rating of the borrower is from the prior fiscal-year end from *Compustat*.

Panel A: Types of Requirements

<u>Insurance Requirement</u>	<u>Fraction of Loans with Requirement</u>
Some Insurance Requirement	97.4%
Specific Coverage Required	56.0%
Self-Insurance Permitted	30.9%
Lender Named as Loss Payee	34.7%
Insurance Proceeds Sweep	33.8%

Panel B. By Borrower Industry

Industry	N	Some Insurance	Specific Coverage	Self-Insurance	Loss Payee	Insurance Sweep
Personal and Business Services	342	97%	65%	27%	45%	43%
Petroleum and Natural Gas	262	96%	52%	20%	34%	29%
Business Equipment	247	99%	60%	20%	36%	32%
Healthcare, Medical Equipment	221	100%	69%	37%	50%	43%
Retail	211	98%	58%	38%	39%	39%
Utilities	187	97%	31%	52%	1%	7%
Communication	156	96%	57%	25%	40%	45%
Wholesale	145	97%	65%	32%	43%	36%
Fabricated Products and Machinery	129	98%	55%	30%	26%	26%
Construction and Construction Machinery	116	98%	49%	30%	29%	24%
Transportation	103	97%	67%	42%	24%	32%
Recreation	101	100%	73%	32%	43%	54%
Everything Else	92	100%	73%	34%	41%	28%
Business Supplies and Shipping	85	98%	34%	51%	18%	19%
Chemicals	81	99%	35%	31%	22%	28%
Food Products	75	92%	45%	35%	37%	39%
Steel Works Etc	74	100%	50%	30%	42%	34%
Restaurants, Hotels, Motels	71	99%	63%	32%	38%	47%
Printing and Publishing	70	90%	33%	20%	20%	16%
Apparel	70	99%	51%	13%	46%	41%
Consumer Goods	61	98%	62%	31%	39%	43%
Electrical Equipment	59	98%	63%	24%	37%	48%
Automobiles and Trucks	41	81%	61%	32%	27%	29%
Aircraft, Ships, and Railroad Eq.	41	98%	27%	39%	12%	24%
Textiles	23	100%	78%	26%	44%	44%
Precious Metals	19	95%	26%	32%	26%	16%
Beer & Liquor	12	100%	25%	8%	33%	17%
Coal	11	100%	91%	55%	46%	46%
Tobacco Products	1	0%	0%	0%	0%	0%

Panel C. By Calendar Year of Loan

Year	N	Some Insurance	Specific Coverage	Self-Insurance	Loss Payee	Insurance Sweep
1996	29	90%	13%	49%	1%	3%
1997	371	96%	25%	46%	4%	8%
1998	350	98%	61%	33%	41%	48%
1999	339	97%	84%	31%	67%	65%
2000	303	100%	75%	19%	50%	69%
2001	318	99%	67%	25%	44%	39%
2002	361	90%	13%	49%	1%	3%
2003	344	96%	25%	46%	4%	8%
2004	393	98%	61%	33%	41%	48%
2005	298	97%	84%	31%	67%	65%

Panel D. By Credit Rating of the Borrower

Credit Rating	N	Some Insurance	Specific Coverage	Self-Insurance	Loss Payee	Insurance Sweep
A or better	263	89%	15%	46%	0%	3%
BBB	513	96%	27%	46%	4%	8%
BB	418	98%	62%	33%	38%	45%
B	225	97%	83%	30%	68%	66%
CCC or worse	15	100%	73%	20%	47%	67%
Unrated	1,672	99%	66%	24%	44%	39%

Table 2: Pair-wise Correlations of Insurance Covenants

This table presents pair-wise correlations for the five insurance requirements found in 3,106 private credit agreements extracted from SEC filings over the period 1996-2005. Reported statistics are unweighted, pairwise Pearson correlations of the indicator variables denoting that the contract contains the provision.

	Some Insurance	Specific Coverage	Self- Insurance	Loss Payee
Specific Coverage	0.186			
Self-Insurance	0.110	-0.006		
Loss Payee	0.116	0.456	-0.124	
Insurance Sweep	0.101	0.382	-0.100	0.588

Table 3: Summary Statistics

This table presents unweighted sample statistics for various borrower (Panel A) and loan (Panel B) characteristics from the sample of 3,106 private credit agreements extracted from SEC filings over the period 1996-2005. Borrower characteristics are taken from *Compustat* and measured as of the fiscal year-end immediately preceding the loan signing date as reported in *DealScan*. Loan characteristics are taken from *DealScan*, except for Covenant Restricting Investment, which is taken directly from the credit agreements.

	N	Mean	Standard Deviation	10th Percentile	50th Percentile	90 th Percentile
<i>Panel A. Firm Characteristics</i>						
Total Assets (\$ millions)	3,106	3,272	10,645	84	656	7,273
Net Sales (\$ millions)	3,106	2,576	6,407	76	632	5,614
Market to Book Ratio	3,106	1.730	1.050	0.908	1.400	2.930
OIBDP / Total Assets	3,104	0.133	0.090	0.039	0.129	0.240
Dividends / Net Income	3,049	0.144	0.501	0.000	0.000	0.552
CAPEX / Assets	3,071	0.071	0.075	0.015	0.047	0.159
Tangible Assets / Total Assets	3,062	0.471	0.236	0.136	0.470	0.799
Simulated MTR before Interest	2,136	0.310	0.091	0.143	0.350	0.356
Book Debt / Assets	3,106	0.294	0.203	0.024	0.280	0.548
Altman Z-Score	2,987	2.120	1.340	0.584	2.060	3.840
Loan Amount / Total Assets	3,106	0.370	0.366	0.068	0.260	0.796
Secured Debt / Total Debt	2,676	0.271	0.359	0.000	0.045	0.948
<i>Panel B. Loan Characteristics</i>						
Loan Size (\$ millions)	3,106	443	1,000	25	188	1,000
Loan Spread (bps)	3,106	168	115	43	150	302
Loan Maturity (years)	3,106	3.530	1.650	1.000	3.080	5.000
Loan Secured	3,106	0.551	0.498	0.000	1.000	1.000
Covenant Restricting Dividends	3,106	0.761	0.426	0.000	1.000	1.000
Covenant Restricting Investment	3,106	0.322	0.467	0.000	0.000	1.000
Cash Flow Sweep	3,106	0.453	0.498	0.000	0.000	1.000
Loan has Borrowing Base	3,106	0.182	0.386	0.000	0.000	1.000
Number of Financial Covenants	3,030	2.560	1.230	1.000	3.000	4.000

Table 4: Univariate Comparison

This table presents sample means for various borrower (Panel A) and loan (Panel B) characteristics based on the presence of different insurance requirements. The sample is the 3,106 private credit agreements extracted from SEC filings over the period 1996-2005.

	Some Insurance Required		Specific Coverage Required		Self-Insurance Permitted		Lender Controls Funds	
	No	Yes	No	Yes	No	Yes	No	Yes
<i>Panel A. Firm Characteristics</i>								
Total Assets (\$ millions)	18,954	2,847	5,828	1,261	2,334	5,369	5,081	926
Net Sales (\$ millions)	12,505	2,307	4,402	1,139	1,817	4,273	3,877	889
Market to Book Ratio	1.517	1.737	1.794	1.681	1.737	1.717	1.806	1.633
OIBDP / Total Assets	0.116	0.133	0.141	0.126	0.129	0.142	0.147	0.114
Dividends / Net Income	0.273	0.141	0.205	0.097	0.121	0.197	0.213	0.055
CAPEX / Assets	0.062	0.071	0.069	0.073	0.075	0.062	0.073	0.069
Tangible Assets / Total Assets	0.400	0.473	0.483	0.462	0.468	0.478	0.487	0.451
Simulated MTR before Interest	0.311	0.310	0.320	0.301	0.304	0.322	0.325	0.285
Book Debt / Assets	0.299	0.294	0.276	0.309	0.295	0.293	0.268	0.328
Altman Z-Score	1.707	2.133	2.206	2.058	2.061	2.259	2.297	1.903
Loan Amount / Total Assets	0.138	0.376	0.275	0.444	0.392	0.320	0.281	0.485
Secured Debt / Total Debt	0.147	0.274	0.175	0.339	0.287	0.232	0.164	0.394
<i>Panel B. Loan Characteristics</i>								
Loan Size (\$ millions)	1,690	409	644	284	369	608	589	253
Loan Spread (bps)	114	170	123	203	180	141	113	240
Loan Maturity (years)	3.096	3.541	3.326	3.690	3.511	3.572	3.339	3.778
Loan Secured	0.195	0.560	0.311	0.739	0.597	0.446	0.277	0.905
Covenant Restricting Dividends	0.354	0.772	0.646	0.852	0.784	0.711	0.652	0.904
Covenant Restricting Investment	0.061	0.329	0.163	0.448	0.337	0.290	0.152	0.543
Cash Flow Sweep	0.293	0.457	0.325	0.554	0.466	0.425	0.297	0.655
Loan has Borrowing Base	0.024	0.187	0.079	0.264	0.214	0.110	0.060	0.341
Number of Financial Covenants	1.208	2.595	2.237	2.824	2.625	2.423	2.345	2.854

Table 5: Insurance Requirements and Firm Characteristics

This table presents estimated coefficients from cross-sectional regressions that relate the probability of having various insurance requirements on borrower characteristics measured as of the fiscal year-end immediately preceding the loan agreement. The sample is 3,106 private credit agreements extracted from SEC filings over the period 1996-2005. The dependent variable in all regressions is an indicator variable that equals one if the credit agreement contains the particular insurance requirement. All regressions contain year and industry dummy variables. Standard errors are clustered by borrower, since the same borrower may appear multiple times in the sample.

	<i>A. Some Insurance Required</i>			
	(1)	(2)	(3)	(4)
Ln(Assets)	-0.002 (0.001)	-0.002 (0.001)	-0.002 (0.002)	-0.002 (0.002)
Market-to-Book	0.002 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)
OIBDP / Assets	0.009 (0.018)	-0.002 (0.019)	0.004 (0.015)	0.000 (0.014)
Dividends / Net Income	-0.001 (0.001)	-0.003 (0.002)	-0.001 (0.001)	-0.002 (0.001)
CAPEX / Assets	-0.016 (0.020)	-0.006 (0.023)	-0.026 (0.020)	-0.007 (0.014)
(PPE + Inventory) / Assets	0.017 (0.011)	0.016 (0.011)	0.010 (0.009)	0.009 (0.009)
Simulated MTR	0.006 (0.010)	0.009 (0.011)	0.004 (0.009)	0.006 (0.008)
Loan Commitment / Assets	0.038** (0.014)	0.044** (0.014)	0.035* (0.018)	0.026 (0.014)
Rating: A - AAA	-0.005 (0.006)			-0.001 (0.003)
Rating: BBB	0.004 (0.002)			0.003 (0.003)
Rating: BB	0.002 (0.003)			0.002 (0.002)
Rating: B	-0.000 (0.004)			-0.000 (0.003)
Z-Score		0.001 (0.001)		0.000 (0.001)
Debt / Assets			-0.002 (0.006)	-0.002 (0.007)
Secured Debt / Total Debt			-0.002 (0.004)	-0.002 (0.003)
Industry Controls	Yes	Yes	Yes	Yes
Observations	2742	2615	2237	2152
Pseudo R^2	0.252	0.223	0.247	0.276

Marginal effects; Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$

	<i>B. Specific Coverage Required</i>			
	(1)	(2)	(3)	(4)
Ln(Assets)	-0.093** (0.017)	-0.112** (0.013)	-0.101** (0.013)	-0.080** (0.016)
Market-to-Book	-0.052** (0.018)	-0.052** (0.019)	-0.048* (0.019)	-0.046* (0.020)
OIBDP / Assets	-0.171 (0.212)	0.002 (0.248)	-0.194 (0.228)	0.061 (0.245)
Dividends / Net Income	-0.045 (0.027)	-0.095** (0.029)	-0.078** (0.030)	-0.056 (0.031)
CAPEX / Assets	0.011 (0.276)	-0.103 (0.296)	0.134 (0.303)	-0.022 (0.302)
(PPE + Inventory) / Assets	0.093 (0.096)	0.107 (0.101)	0.046 (0.100)	0.064 (0.105)
Simulated MTR	-0.003 (0.165)	0.114 (0.173)	0.131 (0.180)	0.136 (0.179)
Loan Commitment / Assets	0.245** (0.052)	0.257** (0.056)	0.216** (0.055)	0.222** (0.054)
Rating: A - AAA	-0.192** (0.066)			-0.318** (0.070)
Rating: BBB	-0.071 (0.057)			-0.112 (0.060)
Rating: BB	0.171** (0.047)			0.146** (0.050)
Rating: B	0.287** (0.049)			0.229** (0.057)
Rating: CCC	0.263 (0.168)			0.172 (0.253)
Z-Score		-0.051** (0.017)		-0.017 (0.019)
Debt / Assets			0.340** (0.085)	0.146 (0.098)
Secured Debt / Total Debt			0.103* (0.046)	0.087 (0.046)
Industry Controls	Yes	Yes	Yes	Yes
Observations	2061	1988	1757	1700
Pseudo R^2	0.198	0.176	0.173	0.206

Marginal effects; Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$

	<i>C. Self-Insurance Allowed</i>			
	(1)	(2)	(3)	(4)
Ln(Assets)	0.080** (0.014)	0.080** (0.011)	0.071** (0.012)	0.080** (0.015)
Market-to-Book	-0.034* (0.017)	-0.043* (0.018)	-0.032 (0.018)	-0.036* (0.018)
OIBDP / Assets	0.781** (0.206)	0.505* (0.220)	0.727** (0.213)	0.579* (0.229)
Dividends / Net Income	0.042 (0.023)	0.033 (0.024)	0.046 (0.025)	0.047 (0.026)
CAPEX / Assets	-0.485 (0.247)	-0.397 (0.255)	-0.504 (0.264)	-0.511 (0.264)
(PPE + Inventory) / Assets	-0.014 (0.091)	-0.020 (0.095)	-0.012 (0.096)	-0.003 (0.101)
Simulated MTR	0.072 (0.155)	0.010 (0.159)	0.010 (0.162)	-0.036 (0.166)
Loan Commitment / Assets	-0.015 (0.048)	-0.002 (0.048)	0.011 (0.047)	0.008 (0.048)
Rating: A - AAA	-0.053 (0.055)			-0.048 (0.061)
Rating: BBB	-0.025 (0.046)			0.012 (0.053)
Rating: BB	-0.048 (0.039)			-0.030 (0.043)
Rating: B	0.044 (0.056)			0.103 (0.066)
Rating: CCC	-0.090 (0.133)			
Z-Score		0.041** (0.015)		0.037* (0.017)
Debt / Assets			-0.075 (0.077)	-0.009 (0.091)
Secured Debt / Total Debt			-0.030 (0.041)	-0.014 (0.042)
Industry Controls	Yes	Yes	Yes	Yes
Observations	2061	1988	1757	1696
Pseudo R^2	0.119	0.119	0.116	0.120

Marginal effects; Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$

	<i>D. Lender Controls Funds</i>			
	(1)	(2)	(3)	(4)
Ln(Assets)	-0.103** (0.016)	-0.122** (0.012)	-0.116** (0.013)	-0.121** (0.017)
Market-to-Book	-0.045* (0.017)	-0.046* (0.019)	-0.034 (0.020)	-0.043* (0.020)
OIBDP / Assets	-0.933** (0.233)	-0.682** (0.264)	-0.970** (0.280)	-0.746** (0.279)
Dividends / Net Income	-0.058* (0.028)	-0.092** (0.028)	-0.082* (0.032)	-0.047 (0.037)
CAPEX / Assets	-0.220 (0.248)	-0.533 (0.277)	-0.330 (0.279)	-0.452 (0.281)
(PPE + Inventory) / Assets	-0.017 (0.086)	0.096 (0.095)	0.012 (0.098)	0.029 (0.104)
Simulated MTR	-0.446** (0.149)	-0.368* (0.163)	-0.359* (0.174)	-0.407* (0.177)
Loan Commitment / Assets	0.385** (0.072)	0.396** (0.078)	0.351** (0.083)	0.366** (0.083)
Rating: A - AAA	-0.225** (0.040)			-0.216** (0.066)
Rating: BBB	-0.152** (0.050)			-0.128* (0.055)
Rating: BB	0.269** (0.052)			0.322** (0.049)
Rating: B	0.398** (0.057)			0.387** (0.063)
Rating: CCC	0.151 (0.250)			0.024 (0.239)
Z-Score		-0.062** (0.016)		-0.009 (0.019)
Debt / Assets			0.510** (0.084)	0.242* (0.101)
Secured Debt / Total Debt			0.300** (0.047)	0.275** (0.047)
Constant				
Industry Controls	Yes	Yes	Yes	Yes
Observations	2061	1993	1747	1696
Pseudo R^2	0.334	0.280	0.296	0.354

Marginal effects; Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$

Table 6: Insurance Requirements and Other Loan Characteristics

This table presents estimated coefficients from cross-sectional regressions that relate the probability of having various insurance requirements on borrower characteristics and other loan provisions. Borrower characteristics are measured as of the fiscal year-end immediately preceding the loan agreement, and other loan provisions are from the same loan agreement. Standard errors are clustered by borrower.

	(1) Some Insurance Required	(2) Specific Coverage Required	(3) Self- Insurance Allowed	(4) Lender Controls Funds
Loan Commitment / Assets	0.006 (0.005)	0.112* (0.054)	-0.030 (0.052)	0.138 (0.073)
Rating: A - AAA	-0.000 (0.001)	-0.234** (0.080)	-0.022 (0.066)	0.057 (0.109)
Rating: BBB	0.001 (0.001)	-0.060 (0.063)	0.027 (0.055)	0.015 (0.071)
Rating: BB	-0.000 (0.001)	0.066 (0.055)	-0.052 (0.042)	0.204** (0.057)
Rating: B	-0.001 (0.002)	0.129 (0.067)	0.107 (0.067)	0.169* (0.080)
Rating: CCC		0.024 (0.286)		-0.225* (0.104)
Z-Score	0.000 (0.000)	-0.008 (0.019)	0.040* (0.018)	0.017 (0.019)
Debt / Assets	0.000 (0.002)	0.090 (0.101)	0.013 (0.092)	0.079 (0.113)
Secured Debt / Total Debt	-0.001 (0.001)	-0.002 (0.047)	-0.029 (0.043)	0.137** (0.050)
Loan Spread	-0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)	0.001** (0.000)
Loan Maturity	-0.000 (0.000)	0.006 (0.011)	0.010 (0.010)	0.029* (0.012)
Loan is Secured	0.001 (0.001)	0.219** (0.037)	0.048 (0.034)	0.343** (0.034)
Loan has Dividend Restriction	0.001 (0.002)	0.043 (0.038)	-0.012 (0.032)	0.011 (0.045)
Loan has CAPEX Restriction	0.002 (0.002)	0.077* (0.037)	0.059 (0.035)	0.084* (0.040)
Loan has Other Sweeps Provisions	-0.000 (0.001)	0.059 (0.033)	0.022 (0.031)	0.232** (0.037)
Loan has Borrowing Base	-0.000 (0.001)	0.074 (0.047)	-0.057 (0.038)	0.158** (0.051)
Covenants: 1 or 2	0.003 (0.003)	0.012 (0.096)	0.034 (0.080)	-0.079 (0.097)
Covenants: 3 or more	0.006 (0.006)	0.060 (0.095)	0.073 (0.080)	-0.032 (0.099)
Industry Controls	Yes	Yes	Yes	Yes
Observations	1278	1700	1696	1696
Pseudo R^2	0.410	0.246	0.128	0.503

Marginal effects; Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$

Table 7: Insurance Requirements and Collateral

This table presents a cross-tabulation of insurance requirements by the collateral requirement in the loan agreement. Unsecured loans are not backed by explicit collateral, and secured loans are backed by specific assets as collateral. Some secured loans have a borrowing base, which means that the permitted borrowing is limited to a fraction of an asset owned by the borrower, such as inventory or accounts receivable. Under the hypothesis of independence between the insurance requirement and the collateral category, the chi-square statistic is distributed as a chi-square random variable with 2-degrees of freedom, which has a 1% critical value of 9.21.

Collateral Category	N	Some Insurance Required	Specific Coverage Required	Self-Insurance Permitted	Lender Controls Funds
Unsecured	1,365	95.2%	32.0%	38.3%	8.9%
Secured, No Borrowing Base	1,175	98.8%	71.7%	28.2%	65.4%
Secured, With Borrowing Base	566	99.6%	80.9%	18.7%	81.4%
Chi-Square Statistic		47	579	79	1,200