

Do Tighter Loan Covenants Signal Improved Future Corporate Results? The Case of Performance Pricing Covenants

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Abstract

Covenants in corporate bonds and loan agreements mitigate agency conflicts between borrowers and lenders and may provide a signal of borrower quality to help resolve information asymmetry. Performance pricing covenants in bank loans specify automatic adjustments to loan spreads based on borrowers' subsequent performance. Our covenant signaling framework views interest-decreasing performance pricing as a tight covenant associated with borrowers' private information on improved future performance accompanied by reduced credit risk. This positive signal is associated with larger positive loan announcement returns and greater improvements in future borrower performance. Further, in addition to signaling value, we find that the spread impact of this class of covenant also depends on its option value and reduction in transaction costs.

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Covenants in corporate bonds and loan agreements mitigate agency conflicts between borrowers and lenders and also provide a signal of borrower quality to help resolve information asymmetry. When addressing agency conflicts, creditors play an important role in the corporate governance of firms experiencing reduced performance short of financial distress. Such intervention occurs through loan covenants that serve to allocate increased control rights to lenders when poor outcomes occur.

Our paper examines the role of covenants as a signal of borrower quality, prior to any violations. We focus on performance pricing covenants (PPCs) in bank loans that specify automatic adjustments to the interest-rate spread based on the borrower's subsequent performance as gauged by different accounting-based or credit rating-based measures such as the debt-to-earnings before interest, tax, depreciation, and amortization (EBITDA) ratio or Moody's rating of the borrower's bonds or commercial paper. With a PPC, moderate declines in financial performance do not trigger covenant violations and renegotiation but rather bring automatic adjustments to the cost of debt prior to the "tough principal" role (Freudenberg et al., 2015), which has been the focus of prior research on covenant violations.

PPCs provide a signal of borrower quality addressing asymmetric information. We distinguish between interest-decreasing and interest-increasing PPCs and argue that in an environment of information asymmetry, by accepting loan terms with interest-decreasing PPCs, the borrower signals that it possesses private information that its financial state will improve. Interest-decreasing performance pricing is generally a tighter covenant than its interest-increasing counterpart. We illustrate the distinction with a hypothetical example of a company that borrows at the London Interbank Offered Rate (LIBOR) plus 100 basis points (bps) and currently has a debt/EBITDA ratio of 3.0. Using an interest-increasing PPC, the loan spread would increase to

125 bps should the debt/EBITDA ratio rise to 3.5 and to 150 bps for a ratio of 4.0. Beyond debt/EBITDA of 4.5, the borrower goes into technical default.¹ This is a relaxed covenant as it gives the company slack should its debt ratio deteriorate from the current level of 3.0 to 4.5. In contrast, with an interest-decreasing PPC (tight covenant), borrowing at LIBOR as before, the borrower goes into technical default if the borrower's debt/EBITDA ratio should rise to 3.5 from the current level of 3.0. Interest-reducing provisions state that the spread would narrow to 75 bps if the ratio falls to 2.5 and to 50 bps for a ratio of 2.0. The tighter covenant package consisting of a lower same-variable covenant provision set closer to the current level and an interest-decreasing PPC constitutes a signal that the firm expects its financial strength to improve. This is a costly signal that cannot be mimicked by firms with poor prospects as its adoption would incur major costs by increasing the likelihood of technical default. Such signals are quite common: we find that interest-decreasing PPCs are roughly twice as prevalent as interest-increasing PPCs.

Recognizing that the presence of interest-decreasing PPC signals positive private borrower information forms the conceptual foundation for our three hypotheses: First, the announcement impact of this class of PPC will be more positive than for interest-increasing PPC for which the signal is lacking (H1). Second, borrowers with interest-decreasing PPCs will perform better in the long run as measured by return on assets (ROA) and Altman's Z-score than borrowers with interest-increasing PPCs. Further, the selection of a tight PPC is related to improvement in the credit-metric variables on which the PPCs are written (H2). Third, loans with interest-decreasing provisions are associated with lower spreads *ceteris paribus*; however, PPCs' impact on spreads is also affected by their option value as posited by Asquith, Beatty, and Weber (2005) (H3).

¹ Technical default indicates that the borrower is in financial trouble and can trigger an increase in a loan's interest rate, foreclosure, or other negative events. Beneish and Press (1995) provide evidence that announcements of technical default are associated with significant stock price declines.

Our first hypothesis predicts that because it is a tight covenant that sends a positive signal, an interest-decreasing PPC should be associated with higher announcement returns. We calculate the market-adjusted cumulative return using stock returns over three trading days centered at the loan announcement date. We then regress the announcement return on dummy variables for PPC inclusion in general and the impact of the direction of a PPC. In addition, because the market learns about different features of a loan agreement at the same time, we also control for other observable terms of the loan such as spread and size to be able to isolate the impact of a PPC on announcement returns. Our univariate analysis shows that loans with interest-decreasing PPCs produce an average three-day market-adjusted announcement return that is 160 bps higher than those of loans with interest-increasing PPCs, and 170 bps higher than the announcement return of loans without a PPC. Our regression analysis strongly supports this finding. Consistent across all models and robust to the choice of control variables, our results show that the presence of an interest-decreasing PPC in loan agreements is correlated with positive private information. Our second hypothesis states that interest-decreasing PPCs are associated with stronger long-run financial performance. We find that borrowers with any PPC on average enjoy a positive but economically insignificant improvement in their industry-adjusted ROA one year after loan initiation. In contrast, this change is a positive 10 bps for borrowers with a decreasing PPC and a negative 20 bps for borrowers with an increasing PPC. Interest-decreasing PPCs are also associated with improvement in credit quality as measured by Altman's Z-score. Our results (Table IV) show that a borrower with an interest-decreasing PPC has a reduction in its industry-adjusted leverage ratio by 130 bps relative to borrowers without a PPC. This change is, however, positive and significant (80 bps) for the holders of interest-increasing PPCs. We also consider the variables on which the PPCs are written. Besides the leverage ratio that was mentioned before,

debt/EBITDA and credit ratings are the most popular PPC variables, which constitute about 77% of the PPC loans in our sample. We observe a significant relation between the tightness of covenants at loan origination and future changes in borrowers' debt/EBITDA and ratings.

To test H3, we run regressions explaining spreads based on the presence of interest-decreasing PPC and controlling for borrower and deal characteristics. While interest-decreasing PPCs are expected to negatively affect loan spreads through a signaling channel, by providing positive private information about the borrower, an interest-decreasing PPC can also affect a loan spread through a cost-reduction channel (Asquith et al., 2005). Without an interest-decreasing PPC, a borrower requires renegotiation to obtain a lower interest rate when there are unanticipated improvements in the borrower's performance. An interest-decreasing PPC is valuable to borrowers as it automatically decreases the interest rate on the loan when borrowers' creditworthiness improves. Because it reduces borrowers' renegotiation costs, borrowers must compensate lenders for provision of interest-decreasing performance pricing. In contrast, an interest-increasing PPC grants an option to lenders that increases the interest rate on the loan when borrowers' creditworthiness declines prior to default. This option is valuable to lenders, and borrowers must be compensated for granting it. Therefore, through the cost-reduction (option-value) channel, an interest-decreasing PPC has a positive impact on loan spread (opposite to the signaling channel's impact), and an interest-increasing PPC has a negative impact on spread (there is no signaling channel for interest-increasing PPC). In our spread analysis, we are able to disentangle the two channels using three groups of test specifications. These three groups include pooled regressions, propensity score-matching analysis, and marginal impact analysis with loan packages.

Our empirical results provide strong support for H3. The removal of the signaling channel of interest-decreasing PPCs inflates loan spreads. We also show that the cost-reduction channel

has a positive impact on the spread of loans with interest-decreasing PPCs and has a negative impact on the spread of loans with interest-increasing PPCs. Our pooled regressions provide strong evidence that PPCs that include an interest-increasing provision carry reduced spreads on the order of 55–66 bps depending on the controls included, while there is a small positive significant impact on spread of a decreasing PPC (5–11 bps). This finding shows that the cost-reduction channel dominates the signaling value after controlling for observable borrower and loan characteristics, including borrowers' quality measures of Z-score and credit rating.

In further tests, we employ a probit model of the propensity to include a PPC to address the self-selection bias that likely arises because firm risk characteristics influence the decision to introduce performance pricing as well as the choice of design features: interest increasing or interest decreasing. The results of these refined tests also support our predictions in H3: in the pooled regressions, compared to loans with no PPC, interest-increasing PPCs have a smaller spread while interest-decreasing spreads are not significantly different from zero. The results indicate that the cost-reduction effect cancels the residual signaling value of interest-decreasing PPCs.

While the tests in the previous two groups of specifications control for borrowers' observable quality measures, the separation of the signaling channel and the cost-reduction channel in these tests is not perfect as the signaling value is related to private information that is not inferred from observable borrower characteristics. We address this issue with an alternative approach, creating a matched sample of pairs of loans within a single loan deal (package) in which one loan has a PPC and the other does not. This technique takes advantage of a natural experiment that arises from the common practice of structuring loan deals consisting of multiple loans issued on the same day with a common lead bank and set of participant lenders. Because some of the loans in a loan package contain a PPC and others do not, we can compare the impact of the PPC

while holding borrower and lender characteristics constant. A unique benefit of this setup is that we are able to accurately separate the signaling impact of a PPC from its option value impact. Because both treatment and control loans initiate at the same time and belong to the same borrower and lender, the signaling channel is effectively eliminated, and the difference between spreads relates only to the option and cost-reduction roles of PPCs. This third set of tests supports our prediction: interest-decreasing PPCs have higher spreads in the range of 24–29 bps. This indicates that in the absence of the signaling channel with a negative impact on spreads, the cost-reduction channel increases the spread significantly for interest-decreasing PPCs.

The contribution of our paper is threefold. First, we refine the concept of performance pricing as a signal to highlight the impact of interest-decreasing PPC as a tight covenant and strong positive signal in contrast with other types of PPCs, which offer a weak or negative signal. Second, we collect the first set of loan announcement data for different types of PPCs and use it to demonstrate that positive performance impacts of PPCs found in prior research are likely associated solely with interest-decreasing PPCs. Third, we apply this refinement to show how the signals combine with renegotiation cost savings and option effects to explain the impact of different types of PPCs on spreads.

The rest of the paper is organized as follows. Section I discusses related literature and our hypotheses. Section II details the data extraction and matching methodology. Section III covers our tests of PPCs' impact on loan announcement returns and future performance. Section IV presents multivariate tests on spreads. Section V concludes the paper.

I. Related Literature and Hypotheses

A. Covenant Signaling

The inclusion of a PPC in a loan agreement represents a signal to resolve asymmetric information between borrower and lender. Information asymmetry may center around future opportunities for wealth transfers from debt holder to equity holder (Gârleanu and Zwiebel, 2009) or as in this paper, on future performance of the borrower's investments (Demiroglu and James, 2010; Manso, Strulovici, and Tchisty, 2010).

The empirical design in this paper is built on a body of research demonstrating that market participants react positively to loan announcements in general (Fama, 1985; James, 1987; Lummer and McConnell, 1989; Billett, Flannery, and Garfinkel, 1995) due to the expectation that ex post bank monitoring will mitigate managerial agency problems in the borrowing firm. In addition, market participants' reactions to loan announcements also depend on the type of new information revealed in the terms and conditions of the loan contract. By observing the terms of loan contracts at the time of announcements, market participants discover the attitude of the lender and adjust their perception of the quality of borrowers. Demiroglu and James (2010) state that if the announcement of loans with tight covenants conveys favorable private information regarding the borrower, we can expect to observe higher stock returns for such loans. Consistent with this covenant signaling hypothesis, they find that firms with tight covenants on a minimum current ratio and maximum debt/EBITDA display higher future current ratios and lower future debt/EBITDA along with larger positive announcement returns. In a similar vein, Manso et al. (2010) develop a theoretical model in which the rationale for PPCs lies in reducing information asymmetry about the future growth prospects of borrowers. Their empirical tests reveal that borrowers with any type of performance-sensitive loans are more likely to be upgraded by bond rating agencies and have higher future ROA. Manso et al. do not distinguish between interest-

increasing and interest-decreasing PPC in their empirical tests. They indicate that their signaling model implies that announcement returns should be positive for PPC but do not conduct tests.

B. Performance Pricing and Loan Spreads

Our paper also builds on prior research on PPCs addressing how the renegotiation cost saving and option value of PPCs impact loan spreads (Asquith et al., 2005). Avoiding future renegotiation costs is beneficial to both lenders and borrowers. Further, Asquith et al. (2005) argue that because the credit-adjustment option in an interest-increasing PPC has value to the lender, the bank must compensate borrowers with a lower rate, and these authors' tests support this argument. For interest-decreasing PPCs, the credit-adjustment option provides an alternative to the borrower's prepayment option reducing transactions costs for both borrower and lender.² Because both parties potentially benefit from an interest-decreasing PPC, Asquith et al. did not assign an expected sign for its impact on spreads. Their empirical tests found a small and marginally significant positive impact on spreads, and our tests confirm this.

C. Hypotheses

Recognizing the role of interest-decreasing PPC in signaling the presence of positive, private borrower information forms the conceptual foundation for our hypotheses:

H1: The announcement impact will be more positive for interest-decreasing than for interest-increasing PPC for which the tight-covenant signal identified by Demiroglu and James (2010) is lacking.

H2: Borrowers with interest-decreasing PPCs will perform better in the long run than borrowers with interest-increasing PPCs. This suggests that the higher profitability and reduced

² The value of the prepayment option likely diminishes over time as information asymmetry between borrower and lender declines and the relation value increases (Freudenberg et al., 2015).

bankruptcy probability associated with all PPCs in the tests of Manso et al. (2010) result from the influence of interest-decreasing PPCs only.

H3: Due to the signaling effect, loans with interest-decreasing provisions are associated with lower spreads *ceteris paribus*. H3 follows from H1 and H2 and is based on the notion that borrowers that include interest-decreasing provisions in their loan agreements are expected to be financially stronger, and therefore, the spread they pay on their loans is expected to be lower. In order to empirically examine H3, it is important to note that the effect of a performance pricing provision on a loan spread is not limited to the signaling channel. Performance pricing provisions also affect loan spreads through an option-value channel. The effects of the signaling and option-value channels are not necessarily in the same direction. Interest-increasing PPCs carry an option value for the lender (automatically increasing the spread if the borrower's situation deteriorates). Because the lender could not do this without an interest-increasing PPC, it needs to compensate the borrower by decreasing the initial spread. In contrast, an interest-decreasing PPC provides a spread reduction that the borrower could achieve in its absence by prepaying and renegotiating the loan. To the extent that such renegotiation is not costless, the borrower may pay a premium for interest-decreasing PPC. Therefore, an interest-decreasing provision has opposite effects on spread through the signaling and option-value channels. Whether the overall effect is positive or negative is an empirical question.

II. Data Extraction and Descriptive Statistics

We extract loan data from Loan Pricing Corporation's (LPC's) DealScan database, which contains numerous loan deals, each between a syndicate of lenders, or a single lender, and a single borrower. Loan deals are typically composed of several individual loan facilities that can differ based on size, security, maturity, spreads, covenants, and other loan characteristics. We focus on

loan facilities in the LPC universe belonging to nonfinancial, nonutility borrowers with available financial and stock price data on Standard & Poor's (S&P's) Compustat and the Center for Research in Security Prices (CRSP) at the time of loan initiation. We use the DealScan–Compustat link provided by Michael Roberts running through August 2012. Also, we restrict the sample to loans with maturity longer than a year, with nonmissing loan spreads (all-in-drawn). Further, we start our sample period in 1994; as Asquith et al. (2005) note, LPC reports comprehensive information on performance pricing beginning in that year. As a result of this filtering, 20,572 loan facilities initiated between January 1, 1994, and August 20, 2012, remain. Because we also look at the ex post performance of borrowers one year after loan initiation as well as at the change in covenant variable up to two years after loan initiation, this means that our total coverage ends in 2015. The data screening process is presented in detail in Appendix I.

More than half of the observations in the pooled sample (10,644 facilities) have at least one form of PPC. Of these facilities, 96% contain only one PPC, and the remaining 4% have two or three.

Table I provides descriptive statistics on the types of PPCs in the pooled sample and their frequency along with examples of how these covenants are recorded in loan facility agreements.

The next step is to identify whether a PPC is interest increasing or interest decreasing by considering the specified adjustments to the initial interest-rate spread on loans conditioned on the borrower's subsequent performance changes. If a PPC is associated with only positive (negative) spread adjustments, then it is an increasing (a decreasing) PPC. A PPC can also include both positive and negative adjustments. Out of 10,644 loans with a PPC, 1,303 loans (12%) have only increasing PPCs, 3,891 (37%) have only decreasing PPCs, and 5,439 (54%) have both PPCs. The

direction for 11 observations is not known (around 0.1%), and we drop this group from the sample because it has incomplete data. The final pooled sample includes 20,561 loans.

Control and explanatory variables in univariate and multivariate analyses encompass both borrower and loan characteristics. The definition of each variable is provided in Appendix II. We winsorize all ratios (ROA, leverage, market to book, investment, Z-score, and volatility) at the upper and lower 1 percentile to mitigate the effect of outliers and to eradicate errors in data. We also convert all dollar values into real terms based on January 1994 dollars.

Descriptive statistics for the full sample are presented in Table II tabulated by credit metric and interest increasing versus interest decreasing. Panel A shows that an average loan facility in the pooled sample has an initial spread of about 208 bps over LIBOR, is about \$217 million in size at the time of initiation, and has a time to maturity of 53 months (about four and a half years). The average number of lenders in a syndicate is seven, and about 40% of loans have a nonbank lender in their syndicate. Further, about 67% of loans are revolvers, 90% are syndicated loans, and 58% are secured. The “secured” status for a quarter of our observations is not known. On average, each loan has two financial covenants, and 10% of loans are institutional loans. Around 46% of borrowers had a relationship with the lead lender. The average size of a borrower is about \$2.3 billion in market capitalization in real terms. Around 69% of the borrowers have a rating, and rated borrowers on average have a mean rating of about 3.4, which is equivalent to a B-. Stock return volatility (daily), ROA, leverage, market to book, and investment (capital expenditure/assets) ratios of an average borrower are, respectively, 3.3%, 1.9%, 55.6%, 232.5%, and 1.1%. Average Altman’s Z-score is 2.744. A Z-score higher than 2.9 is considered in the “safe” zone, a Z-score less than 1.23 is in the “distress” zone, and a Z-score between 1.23 and 2.99 (average borrower in our sample) is in the “gray area” (definitions based on Altman, 2000).

Panels B and C of Table II separate PPCs by the direction of adjustment. Panel B provides the result of comparing loans that are only PPC increasing (decreasing) with the rest of the pooled sample. Panel C compares loans that are only PPC increasing (decreasing) with loans that do not have a PPC. In Panels B and C, we see that loans with an interest-increasing PPC on average have 86.627 and 115.404 bps lower interest rates than their peers. In contrast, spreads on loans with an interest-decreasing PPC are on average 35.575 higher than their peers in Panel B and 5.428 bps lower in Panel C. These differences are significant at the 99% level of confidence (except for PPC decreasing in Panel C that is significant at the 95% confidence level). These univariate results are consistent with our third hypothesis: the spread impact of an interest-decreasing PPC is less negative than for an interest-increasing PPC for which the signal is lacking.

Panels B and C also reveal that loans with increasing PPCs are on average larger and are more likely to be a revolver and be syndicated. They have a higher number of financial covenants. They belong to borrowers with better credit quality (Z-score and rating), that are more profitable (measured by ROA), less leveraged, and have lower stock return volatility. Loans with a decreasing PPC, on the other hand, are smaller in size, longer in maturity, and more likely to be secured. They are also more likely to be syndicated when compared to other loans. Finally, they belong to smaller borrowers with higher market-to-book values and lower credit ratings.

III. The Effect of PPC Inclusion on Announcement Returns and Future Performance

Under the covenant signaling hypothesis, interest-decreasing PPCs (tight covenants) constitute a signal of higher future credit quality, consistent with the notion that only borrowers expecting improvements in their credit conditions are likely to include these clauses in their contracts. According to our first and second hypotheses, interest-decreasing PPCs should be

associated with (1) higher loan announcement returns and (2) better ex post operating performance as measured by improvements in profitability and Z-score.

A. Loan Announcement Returns and PPCs

To capture announcement returns, we exclude loan packages with multiple loans that have covenants with different directions. The reason is that all loans in the same package have the same announcement date, so if a package has both increasing and decreasing PPCs, the overall impact is not clear. To identify loan announcements, we draw a random sample of 7,000 loans from our pooled sample and for each loan search Factiva archives for a news report for 30 days before and after the loan inception date.³ We were able to identify announcement dates for 3,396 of the loans in our sample.⁴ Following Demiroglu and James (2010), we compute cumulative market-adjusted abnormal returns over a three-trading-day window centered on the announcement date, that is, $(1+R_{-1})(1+R_0)(1+R_{+1})-(1+SP_{-1})(1+SP_0)(1+SP_{+1})$ where R and SP denote daily returns on the borrower's common shares (CRSP item RET) and the S&P 500 index (CRSP item SPRTRN and subscripts -1 , 0 , and $+1$ denote consecutive trading days prior, on, or after the announcement date. Abnormal returns are winsorized at the 1% and 99% cutoff points to minimize the effect of outliers.

Table III explores the relation between announcement returns and the inclusion of PPCs. Panel A provides detailed summary statistics for the overall sample first by the presence of any PPC and then distinguishing between interest-increasing and interest-decreasing PPC. It also provides tests of whether the average values of the variable (market-adjusted returns) are significantly different from zero. Consistent with the findings of prior research discussed earlier,

³ To our knowledge, this is the largest sample in loan announcement studies.

⁴ Maskara and Mullineaux (2011) state that loan announcements are rare and driven by factors such as information asymmetry and perceived materiality. Notwithstanding the selection issue in loan announcements, because we are comparing the returns among borrowers with announcement returns, this issue does not affect our findings.

a loan announcement is accompanied by an average of 50 bps market-adjusted return on the borrower's stock significantly different from zero at the 99% confidence level. Loans with any PPC display a significant mean announcement return of 80 bps compared to 10 bps for loans without a PPC. On average, a loan with an interest-increasing PPC is associated with an abnormal return that is not significantly different from zero. An average loan with an interest-decreasing PPC creates 180 bps abnormal return, significant at the 99% level of confidence. Last, loans with both PPCs have a 44 bps spread over zero, significant at the 99% confidence level.

Panel B provides the result of univariate tests of significance for differences between mean announcement returns across different subsamples. The results show that an announcement of a loan with an interest-decreasing PPC, on average, accompanies with an abnormal stock return that is, respectively, 160 bps and 170 bps higher than the abnormal returns of announcements for loans with an interest-increasing PPC and loans without a PPC. These results strongly support our first hypothesis and show that an interest-decreasing PPC as a positive signal produces abnormal return on the borrower's stock. In Panel C, the results of our multivariate analysis are provided. Announcement returns are regressed on dichotomous variables for the inclusion of increasing PPCs, decreasing PPCs, and both in models 1–4, in addition to control variables including loan characteristics (models 2–4), borrower financial ratios, credit quality, and measures of information asymmetry between the borrower and lenders (models 3–4), and log (loan spread) at the time of loan initiation (model 4). Each dichotomous variable captures different information market participants receive about the borrower, and as a result, coefficients for PPC dummies should be able to capture the marginal impact of a PPC. We control for other unobserved information that the lender has about the borrower by including log (loan spread) in model 4.

The coefficient for the interest-decreasing PPC dummy shows that the marginal impact on announcement returns of an interest-decreasing PPC (tight covenant) is positive and significant at least at the 90% level of confidence in all models: respectively, 80 bps, 90 bps, 100 bps, and 110 bps. The results also suggest that an interest-increasing PPC has a marginal impact that is negative or not significantly different from zero. Consistent with our covenant signaling hypothesis (H1), the results in Table III, Panel C support the notion that firms that have positive information about themselves are more likely to have a tight covenant (a decreasing PPC) in their loan agreements and that the market reacts positively when this information is revealed.

B. The Effect of PPC Inclusion on Ex Post Performance of the Borrower

Our H2 states that borrowers with interest-decreasing PPCs enjoy better long-term performance. Further, because we identify an interest-decreasing PPC as a tight covenant, we predict that borrowers whose loans include a decreasing PPC face less flexibility in new debt issuance and capital expenditures. Following Demiroglu and James (2010), we measure performance by ROA and Altman's Z-score. We also include changes in investment and the leverage ratio (total debt to total assets) over one year after loan initiation as additional long-term measures to compare our results with prior studies that suggest future capital expenditure and debt issuance activities are affected by the restrictions creditors impose upon borrowers at the time of loan initiation (Bhanot and Mello, 2006; Demiroglu and James, 2010).

Our sample includes loans with times to maturity of one year or more, facilitating measurement of the relation between the inclusion of any PPC at the initiation of the loan and subsequent changes in performance measures over a one-year period after initiation. All measures are industry-adjusted changes computed as the difference between the change for each borrower and that for the median firm within the same four-digit Standard Industrial Classification (SIC)

code. Panel A of Table IV displays the mean of each variable across five samples: pooled, all loans with PPC, loans with a PPC-only increasing, loans with a PPC-only decreasing, and loans with PPC-both. Panel B provides the results of mean difference tests across these samples. Panel C reports the results of our multivariate analysis.

Summary statistics in Panel A show that during the sample period, the average credit quality of borrowers in general deteriorated, as measured by Z-score, and they have slightly lowered their investment while increasing leverage. The change in profitability (ROA) is not significantly different from zero when we look at the average across all borrowers in our sample. Of interest are the summary statistics for borrowers with decreasing PPC loans and borrowers with increasing PPC loans. Borrowers with the former PPC show a significantly positive change in ROA, while borrowers with the latter type show a significantly negative change in ROA. The results for Z-score and leverage are more favorable for borrowers with a decreasing PPC than for borrowers with an increasing PPC. The exception is investment. The results show that the holders of the tighter covenant (interest-decreasing PPC) have a negative change in their investment activities in the year following the loan inception, while this change is not significantly different from zero for the holders of interest-increasing PPCs.

In Table IV, Panel B, our main focus is on the differing roles of decreasing and increasing PPCs. Panel B reports the results of our univariate (mean difference) analysis. In the first column of Panel B, the borrowers of with-PPC loans, in general, are compared with borrowers of without-PPC loans. Inclusion of a PPC is associated with a small increase in ROA that is not significantly different from zero; an increase in the credit quality of the borrower, demonstrated by a 0.121 increase in the borrower's Z-score (significant at the 99% confidence level); a positive but insignificant change in investment; and a decrease of 0.008 in leverage (significant at 99%). To

illustrate the economic significance here, we note that each coefficient represents the additional change in a performance variable after accounting for the overall change in that variable across all firms in the same industry. Using sample statistics in Table II, we know that an average firm in the sample has an ROA, a Z-score, an investment rate, and a leverage ratio of, respectively, 1.9%, 2.74%, 1.1%, and 55.6%. Therefore, relatively speaking, inclusion of a PPC on average alters the Z-score and leverage by about 4.4% and -1.44% of their original levels. ROA and investment rate do not change significantly with the inclusion of a PPC. When we compare loans with an increasing or decreasing PPC to loans without a PPC in the second and third columns of Panel B, we find that borrowers with a decreasing PPC outperform borrowers without a PPC when we use the change in ROA, Z-scores, and leverage over one year as measures of performance. Borrowers with an increasing PPC, on the other hand, underperform borrowers of no-PPC loans across the three measures (results insignificant only for change in investment).

This finding is consistent with the results in the fourth column, where we compare loans with an increasing PPC to loans with a decreasing PPC. Decreasing-PPC borrowers outperform increasing-PPC borrowers in terms of ROA (by 0.003, significant at the 99% confidence level) and in terms of Z-score (by 0.299, significant at the 99% confidence level) representing a 16% increase in ROA and an 11% increase in Z-score from average borrower ROA of 0.019 and Z-score of 2.74 at loan initiation. Decreasing PPCs also outperform increasing PPCs with respect to the leverage ratio. The reduction in the leverage ratio is 0.02 (significant at the 99% confidence level), which is equivalent to a 4% (on 0.556 leverage ratio for an average borrower) reduction when we compare decreasing PPCs to increasing PPCs. Moreover, interest-decreasing PPC borrowers face an insignificant change in investment when compared to interest-increasing PPC

borrowers. The results in Panel B support H2 showing that a decreasing PPC is associated with superior long-run performance of the borrower.

Our multivariate analysis in Table IV, Panel C provides additional insight into the relation between covenant inclusion and long-term performance of the borrower. The key independent variables are the dummies for inclusion in the loan contract of only interest-increasing PPC, only interest-decreasing PPC, and PPCs with both directions (PPC-both). For each of our four performance measures, we estimate the industry-adjusted change as the dependent variable using three models differing in the choice of control variables. The first model includes only dummies for PPC inclusion as well as dummies for PPC-only decreasing and PPC-both. The second model provides additional controls for loan attributes. Consistent with previous tables in this paper, loan attributes include the logarithm of loan size, loan time to maturity, controls for revolver loans, syndication, secured and missing secured status, number of covenants, and whether the loan is an institutional loan. The third model adds risk controls including logarithm of market size of equity, historical stock return volatility, ROA, leverage, market-to-book ratio, whether the borrower has a credit rating, Altman's Z-score, size of loan syndicate, existence of prior relationship with the borrower, and whether a nonbank participates in the syndicate. For presentation purposes, we report in the table only the coefficient estimates corresponding to PPC dummies. All models are controlled for borrower, loan purpose, type of covenant, and time fixed effects.

The main explanatory variable here is the dummy variable, which captures the marginal effect of a decreasing PPC after controlling for the impact of PPCs in general. The coefficient for this dummy across the first set of models (models 1, 2, and 3) reveals that a decreasing PPC is associated with a positive change in ROA of around 20 bps, significant at the 99% confidence level (i.e., a relative 6% increase in ROA from average borrower ROA of 1.9% at the time of loan

initiation). The coefficients for only interest-increasing PPCs are not significantly different from zero, indicating that interest-increasing PPCs as loose covenants do not elicit any change in the borrower's ROA within the year after loan initiation. The second batch of models (models 1, 2, and 3 under change in Z-score) shows that interest-decreasing PPC is also accompanied by a significant positive change in the credit quality of the borrower as measured by Z-score. The change ranges from 0.073 to 0.143, significant at the 95% confidence level for two out of three coefficients, representing an increase of about 3%–5% from average borrower Z-score of 2.74 at the time of loan initiation (Table II). The coefficients, however, are all significantly negative for interest-increasing PPC, ranging from -0.170 to -0.264 , significant at the 95% or 99% confidence levels (equivalent to 6%–10% reduction in Z-score). Further, change in investment analysis shows that a decreasing PPC is associated with a decrease in investment rate (30 bps) that is translated into a relative 27% reduction from an average investment rate of 1.1% (capital expenditure/total assets). The results show, as a tight covenant, an interest-decreasing PPC restricts borrowers' investment activities over the year after loan initiation and also suggest that interest-increasing PPCs do not significantly affect investment. Finally, the results for change in leverage strongly support H2. An interest-decreasing PPC leads to a significant reduction in the borrower's leverage ratio, while an interest-increasing PPC significantly increases leverage. The coefficients for the former range between -0.012 and -0.008 , and coefficients for the latter range from 0.009 to 0.015. This translates into a 1.4%–2.2% increase for interest-decreasing PPCs and a 1.6%–8.1% reduction for interest-increasing PPCs from beginning leverage ratio of 55.6%, all significant at the 95% or 99% confidence level.

In sum, Table IV shows that consistent with our H2, borrowers with interest-decreasing PPCs experience an increase in relative performance after loan initiation in the form of

improvements in ROA and reduction in credit risk as reflected in lower Z-scores, and reduction in leverage. This result is consistent with that of Manso et al. (2010) but only for PPCs in the categories Only-Decreasing and Both and does not hold for Only-Increasing. This suggests that their findings are likely driven by PPCs that include an interest-decreasing feature implying that their model's focus on the key role of interest-increasing PPC as a signal may need extension to incorporate the critical signal inherent in interest-decreasing PPC.

Turning to the results for changes in investment, our findings suggest that borrowers with interest-decreasing PPCs face greater restrictions in increasing the amount of investment. However, borrowers with a more relaxed PPC (interest increasing) do not experience any change in their total future investments. These findings on the impacts of tight and relaxed covenants are similar to those documented by Denis and Wang (2014) in their study of covenant renegotiations.

C. The Effect of PPC Inclusion on Future Change in PPC Covenant Variables

We also analyze the effect of PPC inclusion on future change in PPC covenant variables. The majority of PPCs in our sample are written on two variables: debt/EBITDA and ratings. These two covenants constitute 77% of the PPCs in our sample.⁵ Debt/EBITDA is a cash-flow measure of a firm's ability to pay off its debt. Rating measures a firm's total credit risk and is assigned by a rating agency.

In unreported results, we focus on the sample of loans with a PPC and examine whether PPC tightness affects subsequent industry-adjusted changes in debt/EBITDA and ratings. In addition to the one-year change in the PPC variable following loan initiation, we also examine the two-year change as rating adjustments happen at a slower rate than accounting-based variables. Moreover, there is less variation in rating than accounting-based measures. In untabled results,

⁵ The next group of popular PPCs is based on leverage ratio (about 5%). We have analyzed leverage in the previous section (Table IV) where we look at the impact of PPCs on borrowers' ex post performance.

we find significant deterioration in debt/EBITDA for interest-increasing PPCs (loose covenant) relative to interest-decreasing PPCs (tight covenants). The percentage increase in the one-year and two-year industry-adjusted debt/EBITDA are, respectively, 7.7% and 9.3% (significant at the 95% and 99% confidence levels). The change in debt/EBITDA is, however, not significantly different from zero for interest-decreasing PPCs, while the debt/EBITDA has deteriorated in general for an average firm in our sample. The results show that when a PPC gives the borrower slack should its debt/EBITDA ratio deteriorate from the current level, the borrowers underperform. In contrast, when a borrower is faced with a tight PPC, its debt/EBITDA does not increase. Our results also show significant decreases in borrowers' credit risk, as shown by significant positive changes in borrowers' ratings, over one and two years after loan initiation for interest-decreasing PPCs. The percentage increase in the mean rating for borrowers with tight covenants is significantly greater (0.5% to 0.8%).

IV. Multivariate Tests on Spreads

A. Multivariate Analysis, Pooled Sample

H3 states interest-decreasing PPCs have lower spreads due to signaling effects and that an option effect (cost-reduction effect) reduces the spreads on interest-increasing PPCs. The reason is that an interest-decreasing PPC provides an option for the borrower to pay a lower spread should its performance improve. On the other hand, interest-increasing PPC provides an option for the lender to increase the spread should the borrower's performance deteriorate. Because these options have value, the holder of the option should compensate the other party at the time of loan initiation. To test the spread-PPC relation, we use spreads or change in spreads as the dependent variable with indicator variables for the presence of selected types of PPCs as independent variables. For the pooled sample, we estimate five regression models based on the choice of

control variables measuring borrower risk: model 1 includes loan characteristics and borrower and year fixed effects. Model 2 adds additional risk controls for borrowers, including borrower size, volatility, ROA, leverage, market-to-book ratio, Altman’s *Z*-score, and *rated*—a dummy variable indicating the presence of a rating—as measures of borrower credit quality. Model 3 is similar to model 2 with the exception that S&P credit rating replaces *Z*-score as the main measure of credit quality. Observations without a credit rating are excluded in model 3. Models 4 and 5 are, respectively, similar to models 2 and 3 with the addition of three variables that measure the severity of information asymmetries between the borrower and lenders: syndicate size, presence of past relationship between the borrower and the lead lender, and participation of nonbank lenders in the lending syndicate. Standard errors in regressions are clustered by firm. In addition, covenant, loan purpose, year, industry, and rating fixed effects are included. We perform the regressions separately for the pooled sample (Panel A) and also for revolver and term loans (Panel B).

The main explanatory variables in Table V are PPC-only increasing, PPC-only decreasing, and PPC-both. The results are robust to the choice of borrower risk controls for the interest-increasing indicator as well as “both” indicator. There is strong evidence that PPCs that are increasing or both increasing and decreasing carry reduced spreads. The coefficients associated with PPC-only increasing vary between -45.801 and -66.473 bps across all models (five in Panel A and four in Panel B) and are statistically significant at the 99% confidence level. The coefficients associated with PPC-only decreasing are significantly positive for all five specifications that examine the pooled sample and for the two specifications that examine the revolvers sample, ranging from 5.209 to 23.163 bps, significant at the 99% confidence level. The coefficients for PPC-only decreasing are not, however, significantly different from zero for specifications (4) and (5) in Panel B, in which we run the tests only on the sample of term loans,

suggesting an inclusion of a decreasing PPC does not significantly affect a term loan's spread. Last, the coefficients for PPC-both range from -20.749 to -51.384 , also significant at the 99% confidence level across Panels A and B.

As mentioned above, the spread is affected by a PPC through two channels: a signaling channel and a cost-reduction channel. We argue that the signaling channel applies to only interest-decreasing PPCs as tight covenants, the adoption of which is a costly signal for borrowers. The cost-reduction channel applies to both interest-increasing and interest-decreasing PPCs. This channel increases the spread for loans with interest-decreasing PPCs and decreases the spread for loans with interest-increasing PPCs as it provides a valuable option for the former and a valuable option against the latter. Therefore, while we control for observable borrower quality measures, the model specification in this section does not perfectly disentangle the signaling channel from the cost-reduction channel. The results indicate that the cost-reduction value of interest-decreasing PPCs dominates their residual signaling value. In the following sections, we provide first a different methodology to control for borrower observable characteristics and then an approach that controls for borrower unobservable characteristics.

B. Robustness Test: Propensity Score Matching Analysis

The summary statistics in Table II show that firms with and without a PPC have different characteristics suggesting the possible presence of selection bias in Table V. To address this issue, we use a propensity score matching technique in Lemmon and Roberts (2010) to estimate the effect of the three PPC measures (increasing, decreasing, and both) on loan spreads.

Our matching procedure relies on a nearest neighbor matching of propensity scores with replacement. The matching begins with a probit regression at the loan level where the dependent variable is a binary variable indicating whether a particular loan has one of the PPC types or does

not have a PPC, and independent variables are a host of borrower and loan characteristics from Table II excluding all-in-drawn. For example, we restrict the sample to loans that have either an increasing PPC or do not have any PPC. Then we run a probit regression on this sample to estimate the likelihood of having an increasing PPC based on observed firm and loan characteristics. The predicted value constitutes the propensity score for an increasing PPC. We conduct a similar procedure separately for loans with only a decreasing PPC and loans with both types of PPCs. The resulting propensity scores provide the basis for our matching. For each loan with an increasing PPC, we attempt to find a similar loan without a PPC and repeat the procedure for loans with a decreasing PPC and both types of PPC. Because the number of loans without any PPC is very similar to the number with a PPC, it is feasible to find one control match for each treatment loan. To improve the accuracy, we also require that the difference between propensity scores of the treated and the matched loan cannot be more than 0.005. This requirement results in some loans for which we are unable to find a corresponding match.

Regression results of the effect of a loan having a PPC on its all-in-drawn using propensity score matched samples support our findings in Table V. Firms with an increasing or a both PPC have an all-in-drawn approximately 25–30 bps lower than their peers after controlling for firm and loan characteristics. The results reveal that firms with a decreasing PPC have an all-in-drawn that is not significantly different from zero when compared to matched firms without a PPC. Overall, these untabled results provide strong, reinforcing evidence in support of our prior findings: loans with interest-decreasing PPCs are affected by two opposite forces—a spread-reduction force caused by their residual signaling value and a spread-inflation force caused by their option value *ceteris paribus*.

C. Robustness Test and Marginal Impact Analysis with Loan Packages

We introduce another methodology that addresses two issues: (1) Endogeneity is an important issue when examining whether loan contract features are priced. As noted earlier, if there are unobservable differences between loans with and without PPCs, the estimates obtained in Tables V and VI might be biased. (2) The signaling value of interest-decreasing PPC may be related to the private information that is not inferred from observable borrower characteristics. In Sections IVA and IVB, the two channels through which a PPC affects spread are not disentangled perfectly because we control for only observable borrower characteristics. To address these issues, we create a matched sample by identifying pairs of loans that are associated with a single loan deal (package), where one loan includes a PPC and the other does not. This approach takes advantage of a natural experiment arising from the common practice of structuring loan deals consisting of multiple loans issued at the same time with a common lead bank and set of participant lenders. Forming such pairs allows us to control for lender, borrower, and temporal characteristics.

If a single loan deal consists of more than two loans, then a separate matched pair is identified for every combination of two loans that differ on the basis of the existence of a PPC. Following this methodology, we identify a matched sample of 1,191 pairs consisting of 79 pairs that contain a loan element that is identified as increasing PPC, 693 pairs that contain an element that is identified as decreasing PPC, and 419 elements identified as both PPC. While the matched sample controls for all lender, borrower, and temporal characteristics, it does not control for loan characteristics, and differences in such characteristics remain across the two elements of the matched sample. One difference is welcomed: by design, each pair consists of one loan with a PPC and another without. To ensure that differences between the two element groupings are attributable to the status of the PPC alone, other dissimilarities in loan characteristics must be

addressed through the inclusion of control variables in our multivariate tests.⁶ We estimate regressions in which the unit of observation is a loan package, where the dependent variable is the difference between the spreads of loans with and without a PPC, and the key independent variables are within deal differences in the three PPC measures. An interesting aspect of the group of tests in Table VI is that the signaling effect of PPCs is controlled. We are comparing loans with and without a PPC within a single loan package that belongs to one borrower, so both loans provide information about the same borrower. By fixing the borrower, the difference in spreads accounts for only the option value (cost-reduction channel) of PPC.

The results in Table VI show that within a loan package, a loan with an increasing PPC on average has a spread that is around 34 bps lower without controlling for other loan characteristics (model 1 and 53 bps lower with such controls [model 2]). While an increasing PPC is accompanied by a negative effect on spreads, a decreasing PPC is associated with a positive effect consistent with our third hypothesis: to the extent renegotiation costs are positive, the borrower may pay a premium for the automatic adjustment in interest-decreasing PPC. The results in models 3 and 4 show that before and after controlling for other loan characteristics, loans with a decreasing PPC have around 29 and 24 bps higher spreads than loans without a decreasing PPC. Borrowers are compensated with lower spreads for an increasing PPC as these covenants provide an option to the lender to increase rates when the borrower is performing poorly. A decreasing PPC, on the other hand, offers lower renegotiation costs, which benefit the borrower. The results also show that loans with both types of PPC have on average 22 and 11 bps lower spreads than their peers. The former is significant at the 99% confidence level and the latter at the 90% confidence level. This

⁶ The results here are also generally robust to unreported refinements whereby the matched sample is limited to those pairs where both elements share identical loan characteristics, such as security status, syndication, financial covenants, loan options, and loan type.

result confirms the benefits of avoiding renegotiation costs for lenders when the borrower includes an interest-increasing PPC in its contract. Accordingly, the borrower is compensated by a reduction in the initial spread.

Table VI also shows that larger loans and revolvers are associated with lower spreads and institutional loans carry higher spreads compared to other loans in the same package. Overall, the results in the three groups of tests presented in Section IV provide strong support for H3. The results show that as we remove the signaling effect of an interest-decreasing PPC, the loan spread associated with this PPC becomes larger.

V. Conclusions

This paper draws on the covenant signaling framework of Demiroglu and James (2010) and Manso et al. (2010) to offer a new explanation for the role of PPCs in bank loans that specify automatic adjustments to loan interest rate spreads based on borrowers' subsequent performance. We view interest-decreasing performance pricing as a tight covenant associated with borrowers' private information on improved future performance accompanied by reduced credit risk. In this capacity, interest-decreasing performance pricing differs from other types of performance pricing in that it alone sends a strong positive signal. We hypothesize first that the positive signal inherent in interest-decreasing performance pricing is associated with larger positive loan announcement returns and assemble the first set of loan announcement returns for various types of performance pricing to conduct tests that support this hypothesis.

We also show that interest-decreasing performance pricing is associated with greater improvements in future borrower performance as measured by ROA, Altman's Z-score, leverage ratio, and PPC variables such as debt/EBITDA and credit ratings as compared to other types of performance pricing. Finally, we demonstrate that interest-decreasing performance pricing is

correlated with lower loan spreads, holding the option effect constant. In a broader context, our findings buttress the covenant signaling framework as a useful tool in separating the roles and impacts of different types of loan covenants.

Appendix I. Data Screening Process

The LPC database reports 132,936 U.S. dollar-denominated loan facilities between January 1, 1994, and prior to or on August 20, 2012. We eliminate all loan facilities for which the key measure of loan spreads is missing: ALLINDRAWN is defined as the basis point coupon spread over LIBOR plus the annual fee and upfront fee, spread over the life of the loan. We then restrict the sample to loans with maturity longer than a year. The sample size drops to 76,542 loans after this step. Next, we focus on loans with available borrower financial information on Compustat for the fiscal year preceding the loan agreement and with publicly traded stocks listed on CRSP as of the loan activation date. We use the DealScan-Compustat Link Data to match loan observations with borrowers' financial data (Chava and Roberts, 2008). Of 76,542 loans, 40,319 are linked to Compustat, 31,735 of which have a record on CRSP. We exclude financial firms (SIC codes 6000–6999) and utilities (SIC codes 4900–4949). After this step, our sample size drops to 27,943 loans. In the next step, we restrict the sample to borrowers with nonmissing total asset values (Item ATQ in Compustat) before and after initiations, leading to a sample size of 27,114 loans. To mitigate the effect of outliers, we exclude “penny stocks” and further restrict the sample to borrowers with a sufficient number of trading dates (having been traded for at least 20 days within the year prior to loan initiation) to ensure sufficient observations to calculate stock volatility. We exclude borrowers with negative market-to-book ratios and borrowers with missing accounting and market data necessary to construct Altman's Z-score as a measure of credit quality (explained in Appendix II). The sample size drops to 20,572 after this step.

Appendix II. Variable Definition

The definitions of the dependent and explanatory variables used in univariate and multivariate analyses are provided in this appendix.

Panel 1: Main Borrower Characteristics

Market Size	Market value of equity at the last quarter end prior to loan initiation: $[(\text{CRSP PRC (Share Price-Closing)} \times \text{CRSP SHROUT (Number of Shares Outstanding)}) * 1,000]$ converted into January 1994 dollars
Log (Market Size)	Natural Logarithm of Market Size
Volatility	100*Standard Deviation of CRSP RET (Daily Stock Price Return) over one year before loan initiation
ROA	Compustat OIADPQ (Operating Income After Depreciation Quarterly) / Compustat ATQ (Assets-Total Quarterly)
Leverage	Compustat LTQ (Liabilities-Total Quarterly) / Compustat ATQ (Assets-Total Quarterly)
Market-to-Book Ratio	$[(\text{CRSP PRC (Share Price-Closing)} \times \text{CRSP SHROUT (Number of Shares Outstanding)}) / 1,000] / [\text{Compustat ATQ (Assets-Total Quarterly)} - \text{Compustat LTQ (Liabilities-Total Quarterly)}]$
Investment	Investment is defined as the ratio of Capital Expenditure (Compustat CAPXY) to Total Assets (ATQ).
Rated	An indicator that equals 1 if Rating is available missing, zero otherwise
Rating	Compustat SPCSRC (S&P Current Credit Rating) quantified from 1 to 8. This variable is an appraisal of past performance of a stock's earnings and dividends and the stock's relative standing as of a company's current fiscal year-end. Growth and stability of earnings and dividends are key elements in establishing S&P's quality rankings. The rating ranges from A+ (quantified as 8 in our calculations) to Liquidation status (assigned a value of 1 in our calculations).
Z-Score	Altman's Z-score = $6.56A + 3.26B + 6.72C + 1.05D$, where: A = Compustat WCAPQ (Working Capital Quarterly) / Compustat ATQ (Assets-Total Quarterly) B = Compustat REQ (Retained Earnings Quarterly) / Compustat ATQ (Assets-Total Quarterly) C = Compustat OIADPQ (Operating Income After Depreciation Quarterly) / Compustat ATQ (Assets-Total Quarterly) D = $[\text{Compustat ATQ (Assets-Total Quarterly)} - \text{Compustat LTQ (Liabilities-Total Quarterly)}] / \text{Compustat LTQ (Liabilities-Total Quarterly)}$

Panel 2: Main Loan Characteristics

All-in-Drawn	The basis point coupon spread over LIBOR plus the annual fee and upfront fee, stated at the time of loan initiation
Facility Amount	The facility size (US\$) converted into January 1994 dollars
Log (Facility Amount)	Natural Logarithm of Facility Amount
Loan Maturity (Month)	Months to Maturity
PPC-Only Increasing	An indicator that equals unity if the loan has at least one PPC and those PPCs have only one direction, which is decreasing. The indicator equals zero otherwise.
PPC-Only Decreasing	An indicator that equals unity if the loan has at least one PPC and those PPCs have only one direction, which is increasing. The indicator equals zero otherwise.
PPC-Both	An indicator that equals unity if the loan has at least one PPC, with one of those PPCs being both increasing and decreasing, or at least one PPC with increasing direction and another PPC with decreasing direction. The indicator equals zero otherwise.
PPC-Unknown	An indicator that equals unity if the loan has at least one PPC and the direction of the PPC(s) is not known. The indicator equals zero otherwise.
Syndicate Size	Number of participants in the lending syndicate
Nonbank Lender Participation	An indicator that equals unity if at least one nonbank lender is participating in the lending syndicate and zero otherwise
Revolver	An indicator that equals unity if the loan is a revolving loan and zero otherwise
Syndicated	An indicator that equals unity if the loan is syndicated and zero otherwise
Secured	An indicator that equals unity if the loan is designated as secured by the database and zero otherwise

Missing Secured Status	An indicator that equals unity if the securitization status is missing
Number of Financial Covenants	Number of financial covenants (including Net Worth Covenant) as a part of terms and conditions of the loan
Institutional Loan	An indicator that equals unity if the loan is identified as an “Institutional Loan “ in LPC’s market sector classification, and zero otherwise
Relationship with Lead Lender	An indicator that equals unity when a past relationship between the borrower and the lead lender is present in the LPC data and zero otherwise

Panel 3: Ex Post Performance Measures

Change in ROA	The difference between the change in the ROA of a borrower over a year that start at the end of the deal quarter less the median change in the ROA of the industry (same four-digit SIC). If the change in the ROA of a firm is missing for one year, we use median industry ROA change instead. Final numbers are winsorized at the 1% and 99% cutoff points.
Change in Z-Score	The difference between the change in the Z-score of a borrower over a year that start at the end of the deal quarter less the median change in the Z-score of the industry (same four-digit SIC). If the change in the Z-score of a firm is missing for one year, we use median industry Z-score change for that year instead. Final numbers are winsorized at the 1% and 99% cutoff points.
Change in Investment	Change in investment is the difference between the change in the investment of a borrower over a year that start at the end of the deal quarter less the median change in the investment of the industry (same four-digit SIC). If the change in the investment of a firm is missing for one year, we use median industry investment change for that year instead. Final numbers are winsorized at the 1% and 99% cutoff points.
Change in Leverage	Leverage is defined as the ratio of Total Liabilities (LTQ) to Total Assets (ATQ). Change in leverage is the difference between the change in the leverage of a borrower over a year that start at the end of the deal quarter less the median change in the investment of the industry (same four-digit SIC). If the change in the investment of a firm is missing for one year, we use median industry investment change for that year instead. Final numbers are winsorized at the 1% and 99% cutoff points.

Panel 4: Change in Covenant Variable Measures

Change in Debt/EBITDA	The difference between the percentage change of the ratio of debt to EBITDA of a borrower over a year (or two years) that start at the end of the deal quarter less the median percentage change in the debt/EBITDA of the industry (same four-digit SIC). We define debt/EBITDA as the ratio of total debt (long-term debt [LTQ] plus debt in current liabilities [DLCQ]) to operating income before depreciation (OAIBPQ). If OAIBPQ is missing, we use (OAIADPQ – DPQ) which is operating income after depreciation less depreciation. If the change in the debt/EBITDA of a firm is missing for one year, we use median industry ROA change instead. Final numbers are winsorized at the 1% and 99% cutoff points.
Change in Rating	The difference between the percentage change in the rating of a borrower (as defined above) over a year (or two years) that start at the end of the deal quarter less the median percentage change in the rating of the industry (same four-digit SIC).

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Table I. PPC Types

This table provides descriptive statistics on the types of PPCs in the universe of DealScan bank loans from January 1, 1994, to August 20, 2012, issued by nonfinancial, nonutility U.S. firms with available financial and accounting information. The frequencies of loans with each PPC along with examples of how these covenants are mentioned in loan facility agreements are also provided.

PPC Type	Frequency	Example(s)
None	9,986	Not applicable
Total Debt-to-Cash Flow	5,872	Pricing is as indicated initially, tied to company's consolidated debt-to-EBITDA ratio thereafter.
Subordinated/Senior Debt Rating	2,322	Pricing is as indicated initially, tied to company's senior unsecured long-term debt ratings by S&P and Moody's thereafter (undisclosed). If split-rated, the higher rating applies. If split-rated by more than one level, the rating immediately above lower level applies. Company pays a standby letter of credit (SBLC) fee = applicable LIBOR margin and an undisclosed issuance fee. Another example: Pricing is as indicated through September 30, 2005, tied to company's senior unsecured long-term debt ratings by Moody's thereafter. Indicated level 1 applies for ratings \geq B1 and level 2 when $<$ B1.
User Condition	745	Pricing is as indicated initially, tied to company's average outstandings (in millions) thereafter. Company pays a SBLC fee = applicable LIBOR margin and an issuance fee of 12.5 bps. Company pays a commercial letter of credit fee = 50% of applicable LIBOR margin.
Leverage	494	Pricing is as indicated through December 31, 1993, tied to company's leverage and interest coverage ratios thereafter.
Senior Debt-to-Cash Flow	383	Pricing is as indicated initially, tied to company's secured debt-to-consolidated EBITDA ratio thereafter.
Fixed Charge Coverage	330	Pricing is as indicated initially and is tied to company's fixed charge coverage and consolidated debt less consolidated cash holdings to consolidated net worth ratios. Trade letter of credit fee is as follows: Level 1 = 90 bps, Level 2 = 52.5 bps, Level 3 = 27.5 bps.
Interest Coverage	243	Pricing is tied to company's consolidated EBITDA-to-consolidated interest expense ratio.
Outstandings	233	Pricing is as indicated through December 2, 1995; tied to borrowing base outstandings thereafter. Pricing increases by 100 bps beginning September 6, 1995 if preferred stock has not been redeemed in full.
Debt-to-Tangible Net Worth	227	Pricing is as initially indicated, tied to company's debt-to-tangible net worth and fixed charge coverage ratios thereafter.
Debt Service Coverage	91	Pricing is as indicated initially, tied to company's debt service coverage ratio thereafter. Level 1 applies with ratios $>1.25:1$ but $\leq 1.35:1$; level 2 applies with ratios $>1.35:1$ but $\leq 1.75:1$; and level 3 applies with ratios $>1.75:1$.
Maturity	48	Pricing is as indicated initially and tied to deal's maturity (years) thereafter. Level 1 will apply in years 1 and 2, level 2 in years 3 and 4, and level 3 in year 5.

Availability	46	Pricing is as indicated through June 30, 2009, tied to company's average excess availability (in \$ millions) thereafter. Level 1 applies when average excess availability is \leq \$5M, Level 2 when availability is $>$ \$5M but $<$ \$10M, Level 3 when availability is \geq \$10M.
Senior Leverage	25	Ratio = senior debt to capital. P + 0, LIB + 62.5 and commitment fee = 20 bps when company's senior long-term debt rating $>$ or = BBB-/Baa3 and the senior leverage ratio $<$ or = 0.45.
Commercial Paper Rating	18	Pricing is as indicated initially. If company is split rated A-1/P-2 or A-2/P-1, LIB + 25, annual fee = 15 bps pricing applies.
Borrowing Base	10	Pricing as indicated initially, tied to company's borrowing base utilization (in percentage) thereafter. Company pays a SBLC fee = applicable LIBOR margin and an issuance fee of 12.5 bps.
EBITDA	4	Pricing is as indicated initially, tied to company's adjusted EBITDA (in millions) thereafter.
Liquidity	2	Pricing is as indicated initially, tied to company's consolidated liquidity ratio thereafter. Level 2 applies when liquidity is \geq 1.35 but \leq 1.5. Level 3 applies when liquidity is $>$ 1.5.

Table II. Descriptive Statistics for Each Variable

Summary statistics for the pooled samples' loan and borrower characteristics are provided in Panel A. In Panel B, mean values of the variables for the following four subsamples—(1–2) loans with only interest-increasing PPCs and other loans, and (3–4) loans with only interest-decreasing PPCs—and other loans are presented. That is, the control group is the pooled sample excluding the treatment sample. Panel C is similar to Panel B with the exception that the control group is loans without a PPC. Using star signs, we show whether the mean values for the subsamples are significantly different. Variable definitions are presented in Appendix II.

Panel A. Pooled Sample (N = 20,561)

Variable	Mean	Standard Deviation	Minimum	Median	Maximum
All-in-Drawn	207.796	135.198	1.500	200.000	1,500.000
Facility Amount (\$M)	216.876	461.270	0.054	85.556	21,141.312
Log (Facility Amount)	18.102	1.633	10.895	18.265	23.774
Loan Maturity (Month)	53.221	20.385	13.000	60.000	276.000
PPC-Only Increasing	0.063	0.244	0.000	0.000	1.000
PPC-Only Decreasing	0.189	0.392	0.000	0.000	1.000
PPC-Both	0.265	0.441	0.000	0.000	1.000
PPC-Unknown	0.000	0.000	0.000	0.000	0.000
Syndicate Size	7.435	8.257	1.000	5.000	140.000
Nonbank Lender Participation	0.398	0.489	0.000	0.000	1.000
Revolver	0.673	0.469	0.000	1.000	1.000
Syndicated	0.905	0.294	0.000	1.000	1.000
Secured	0.584	0.493	0.000	1.000	1.000
Missing Secured Status	0.251	0.437	0.000	0.000	1.000
Number of Financial Covenants	1.911	1.663	0.000	2.000	8.000
Institutional Loan	0.102	0.303	0.000	0.000	1.000
Relationship with Lead Lender	0.461	0.498	0.000	0.000	1.000
Market Size (\$M)	2,341.318	8,203.143	0.773	384.313	209,545.551
Log (Market Size)	19.768	1.915	13.559	19.766	26.068
Volatility	3.274	1.746	0.969	2.832	9.886
ROA	0.019	0.031	-0.129	0.022	0.101
Leverage	0.556	0.196	0.113	0.568	0.967
Market-to-Book Ratio	2.325	2.638	0.209	1.594	18.764
Investment	0.011	0.015	-0.011	0.006	0.233

Rated	0.695	0.460	0.000	1.000	1.000
Rating	3.388	1.766	1.000	3.000	8.000
Z-Score	2.744	2.860	-5.821	2.410	12.839

Panel B. Difference in Means: Loans with Only Increasing/Decreasing PPCs versus Other Loans

Variable	Mean Loans with Only Increasing PPC (N = 1,303)	Mean Loans without Only Increasing PPC (N = 19,258)	Difference in Means	Mean Loans with Only Decreasing PPC (N = 3,891)	Mean Loans without Only Decreasing PPC (N = 16,670)	Difference in Means
	(1)	(2)	(1-2)	(3)	(4)	(3-4)
All-in-Drawn	126.662	213.285	-86.624***	236.638	201.064	35.575***
Facility Amount (\$M)	239.125	215.370	23.754*	154.766	231.373	-76.607***
Log (Facility Amount)	18.415	18.081	0.335***	17.900	18.149	-0.249***
Loan Maturity (Month)	52.178	53.291	-1.113*	54.658	52.885	1.772***
PPC-Only Increasing	1.000	0.000	1.000***	0.000	0.078	-0.078***
PPC-Only Decreasing	0.000	0.202	-0.202***	1.000	0.000	1.000***
PPC-Both	0.000	0.282	-0.282***	0.000	0.326	-0.326***
PPC-Unknown	0.000	0.000	0.000***	0.000	0.000	0.000***
Syndicate Size	7.635	7.421	0.215	7.237	7.481	-0.244*
Nonbank Lender Participation	0.389	0.399	-0.010	0.382	0.402	-0.020**
Revolver	0.813	0.663	0.150***	0.664	0.675	-0.011
Syndicated	0.951	0.901	0.049***	0.929	0.899	0.030***
Secured	0.581	0.584	-0.003	0.809	0.532	0.277***
Missing Secured Status	0.119	0.260	-0.141***	0.090	0.289	-0.198***
Number of Financial Covenants	2.237	1.889	0.348***	2.892	1.682	1.209***
Institutional Loan	0.066	0.105	-0.039***	0.098	0.103	-0.005
Relationship with Lead Lender	0.464	0.461	0.003	0.446	0.464	-0.018**
Market Size (\$M)	2,496.242	2,330.836	165.406	884.194	2,681.430	-1,797.236***
Log (Market Size)	20.182	19.741	0.441***	19.303	19.877	-0.574***
Volatility	2.850	3.303	-0.452***	3.435	3.237	0.198***

ROA	0.028	0.019	0.008***	0.021	0.019	0.001**
Leverage	0.481	0.561	-0.080***	0.554	0.556	-0.002
Market-to-Book Ratio	2.397	2.320	0.077	2.545	2.274	0.271***
Investment	0.011	0.011	0.001*	0.012	0.010	0.001***
Rated	0.787	0.689	0.098***	0.629	0.710	-0.082***
Rating	3.680	3.366	0.314***	3.021	3.464	-0.443***
Z-Score	3.788	2.673	1.115***	2.779	2.736	0.043

Panel C. Difference in Means: Loans with Only Increasing/Decreasing PPCs versus Loans without a PPC

Variable	Mean Loans with Only Increasing PPC (N = 1,303)	Mean Loans without a PPC (N = 9,928)	Difference in Means	Mean Loans with only Decreasing PPC (N = 3,891)	Mean Loans without a PPC (N = 9,928)	Difference in Means
	(1)	(2)	(1-2)	(3)	(4)	(3-4)
All-in-Drawn	126.662	242.066	-115.404***	236.638	242.066	-5.428**
Facility Amount (\$M)	239.125	182.215	56.909***	154.766	182.215	-27.449**
Log (Facility Amount)	18.415	17.757	0.659***	17.900	17.757	0.144***
Loan Maturity (Month)	52.178	52.531	-0.353	54.658	52.531	2.127***
PPC-Only Increasing	1.000	0.000	1.000***	0.000	0.000	0.000***
PPC-Only Decreasing	0.000	0.000	0.000***	1.000	0.000	1.000***
PPC-Both	0.000	0.000	0.000***	0.000	0.000	0.000***
PPC-Unknown	0.000	0.000	0.000***	0.000	0.000	0.000***
Syndicate Size	7.635	5.381	2.254***	7.237	5.381	1.855***
Nonbank Lender Participation	0.389	0.372	0.017	0.382	0.372	0.010
Revolver	0.813	0.586	0.226***	0.664	0.586	0.078***
Syndicated	0.951	0.845	0.105***	0.929	0.845	0.084***
Secured	0.581	0.534	0.047**	0.809	0.534	0.275***
Missing Secured Status	0.119	0.396	-0.277***	0.090	0.396	-0.306***
Number of Financial Covenants	2.237	1.217	1.020***	2.892	1.217	1.674***
Institutional Loan	0.066	0.153	-0.087***	0.098	0.153	-0.055***
Relationship with Lead Lender	0.464	0.414	0.050**	0.446	0.414	0.033**

Market Size (\$M)	2,496.242	2,626.809	-130.566	884.194	2,626.809	-1,742.615***
Log (Market Size)	20.182	19.543	0.639***	19.303	19.543	-0.240***
Volatility	2.850	3.562	-0.711***	3.435	3.562	-0.127**
ROA	0.028	0.015	0.012***	0.021	0.015	0.005***
Leverage	0.481	0.560	-0.078***	0.554	0.560	-0.005
Market-to-Book Ratio	2.397	2.294	0.103	2.545	2.294	0.251***
Investment	0.11	0.11	0.001	0.012	0.011	0.001***
Rated	0.787	0.656	0.130***	0.629	0.656	-0.028**
Rating	3.680	3.242	0.438***	3.021	3.242	-0.221***
Z-Score	3.788	2.556	1.231***	2.779	2.556	0.222**

Table III. Loan Announcement Returns

Borrower’s cumulative market-adjusted stock return over a three-trading-day window centered on the loan announcement date is the dependent variable. To identify loan announcements, we search Factiva archives for 30 days before and after loan inceptions. We randomly choose 7,500 loans from our pooled sample (all nonfinancial, nonutility public U.S. firms in the LPC universe from 1994 to 2013 with available data), of which we were able to identify announcement dates for 2,854 loans. Panel A provides detailed summary statistics for loan announcement returns for the overall sample and by presence of an interest-increasing and interest-decreasing PPC (returns are in percentage). It also provides tests of whether the average values of the variable are significantly different from zero. Panel B provides tests of difference in mean announcement returns across difference subsample along with t-values. In Panel C, announcement return is regressed on dichotomous variables for the inclusion of increasing performance pricing covenants (PPCs), inclusion of decreasing PPCs, and both in models 1–4, in addition to control variables including loan characteristics (models 2–4), borrower financial ratios, credit quality and measures of information asymmetries between the borrower and lenders (models 3–4), and log (loan spread) at the time of loan initiation (model 4). Standard errors are clustered by firm. Coefficients for covenant, year, industry, and loan purpose dummies are not reported. For variable definitions, see Appendix II.

Panel A. Summary Statistics

Variable	N	Mean	Std Dev	Minimum (before Winsorization)	Median	Maximum (before Winsorization)	t-Value
All	3,396	0.005	0.060	-0.682	0.002	2.007	4.981***
Without a PPC	1,358	0.001	0.067	-0.616	0.001	2.007	0.490
With a PPC	2,038	0.008	0.054	-0.682	0.0033	0.561	6.614***
With Only-Increasing PPC	340	0.002	0.053	-0.344	0.001	0.342	0.698
With Only-Decreasing PPC	587	0.018	0.059	-0.682	0.008	0.561	7.327***
With Both PPC	1,111	0.004	0.051	-0.417	0.002	0.328	2.953***

Panel B. Test of Mean Difference

Mean Difference	Mean Difference	t-Value
(With Only-Decreasing PPC) minus (With Only-Increasing PPC)	0.016	4.159***
(With Only-Decreasing PPC) minus (Without a PPC)	0.017	5.563***
(With Only-Increasing PPC) minus (Without a PPC)	0.001	0.768
(With a PPC) minus (Without a PPC)	0.007	3.212***

Panel C. Multivariate Analysis

Variable	(1)	(2)	(3)	(4)
PPC-Only Increasing	-0.008* (0.005)	-0.008 (0.005)	-0.006 (0.005)	-0.007 (0.005)
PPC-Only Decreasing	0.008* (0.005)	0.009* (0.005)	0.010** (0.005)	0.011** (0.005)
PPC-Both	-0.004 (0.004)	-0.004 (0.004)	-0.003 (0.004)	-0.003 (0.004)
Log (Loan Spread)				-0.005* (0.002)
Log (Facility Amount)		-0.002 (0.001)	0.000 (0.002)	0.000 (0.002)
Loan Maturity (Month)		0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
Syndicated		-0.005	-0.006	-0.007

			(0.006)	(0.006)	(0.006)
Secured			-0.001	-0.003	-0.001
			(0.003)	(0.003)	(0.003)
Missing Secured Status			-0.006*	-0.006**	-0.006*
			(0.003)	(0.003)	(0.003)
Number of Financial Covenants			-0.002*	-0.002**	-0.002*
			(0.001)	(0.001)	(0.001)
Institutional Loan			-0.006	-0.007	-0.005
			(0.005)	(0.005)	(0.005)
Revolver			-0.007*	-0.008*	-0.009**
			(0.004)	(0.004)	(0.004)
Log (Market Size)				-0.003**	-0.004***
				(0.001)	(0.001)
Volatility				0.000	0.000
				(0.001)	(0.001)
ROA				0.183***	0.177***
				(0.052)	(0.052)
Leverage				-0.010	-0.009
				(0.010)	(0.01)
Market-to-Book Ratio				0.000	0.000
				(0.001)	(0.001)
Z-Score				-0.001**	-0.002**
				(0.001)	(0.001)
Rated				0.001	0.000
				(0.003)	(0.003)
Syndicate Size				0.000	0.000
				(0.000)	(0.000)
Relationship with Lead Lender				0.001	0.001
				(0.002)	(0.002)
Nonbank Lender Participation				0.003	0.003
				(0.002)	(0.002)
Loan Purpose Fixed Effect	Yes	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes
Firm Fixed Effect	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes
Covenant Fixed Effect	Yes	Yes	Yes	Yes	Yes
R-Square	0.04	0.05	0.06	0.06	0.06
Number of Observations	3,396	3,396	3,396	3,396	3,396

***, **, and * indicate statistical significance at the 0.01, 0.05, and 0.10 level, respectively.

Table IV. Regression Tests, Ex Post Long-Term Performance

The relation between the inclusion of a PPC and ex post (industry-adjusted) changes in the borrower's return on investment (ROA), Altman's Z-score, investments, and leverage ratio during a year after loan initiation is estimated. The sample includes all nonfinancial, nonutility U.S. borrowers in the DealScan sample who have received a loan during 1994 to 2013. Panel A represents the mean variable for the pooled, PPC, PPC-Only Increasing, PPC-Only Decreasing, and PPC-Both sample and whether each mean is significantly different from zero. Panel B provides tests of mean difference of four variables across loans with and without a PPC, loans with an increasing PPC and loans without a PPC, loans with a decreasing PPC and loans without a PPC, and loans with an interest-decreasing PPC and with an interest-decreasing PPC. The significance and t-values are also reported. Panel C shows regression results. For each ex post variable, three models are estimated. In model 1, fixed effects of borrowers, time, industry, and covenant are controlled. Model 2 has additional controls for loan attributes including log (size), maturity, and dummies for revolver, syndication, secured, missing secured status, number of covenant and institutional loans. Model 3 in addition to loan attributes has additional controls for borrower characteristics including log (market value), volatility, ROA, leverage, market-to-book ratio, rated status, Z-score, size of the syndicate, relationship dummy, and whether a nonbank is in the syndicate. For presentation purposes, we report in the table only the coefficient estimates corresponding to PPC inclusion and the direction of PPC. Appendix II provides a detailed definition of each variable.

Panel A. Performance Pricing Covenants and Ex Post Changes in Borrower's Performance

Variable	Mean (Pooled)	Mean (PPC)	Mean (Increasing PPC)	Mean (Decreasing PPC)	Mean (Both PPC)
Change in ROA	1.6E-4	3.6E-4*	-0.002***	0.001***	3.0E-4
Change in Z-Score	-0.136***	-0.077***	-0.339***	-0.040	-0.041*
Change in Investment	-0.001***	-0.001***	-0.001	-0.002***	-0.001
Change in Leverage	0.010***	0.006***	0.022***	0.002	0.006***

Panel B. The Type of PPC and Ex Post Changes in Borrower's Performance

Variable	PPC – NO PPC	INCREASING – NO PPC	DECREASING – NO PPC	DECREASING – INCREASING
Change in ROA (t-VALUE)	4.1E-4 (1.17)	-0.002** (-2.39)	0.001*** (2.53)	0.003*** (4.07)
Change in Z-Score	0.121*** (4.24)	-0.141** (-2.15)	0.158*** (3.85)	0.299*** (4.65)
Change in Investment	6.8E-4 (1.54)	0.001 (0.85)	-8E-5 (-0.12)	-0.001 (-0.82)
Change in Leverage	-0.008*** (-4.75)	0.008* (1.60)	-0.013*** (-5.11)	-0.020*** (-4.90)

Panel C. Multivariate Analysis of the Relation between Inclusion of a PPC and Ex Post Changes in Borrower's Performance

Explanatory Variables	Change in ROA			Change in Z-Score			Change in Investment			Change in Leverage		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
PPC-Only Increasing	-0.001 (0.001)	-0.001 (0.001)	-0.001 (0.001)	-0.264*** (0.072)	-0.239*** (0.073)	-0.170** (0.072)	-0.001 (0.001)	-5.1E-4 (0.001)	-2.3E-4 (0.001)	0.015*** (0.004)	0.014*** (0.004)	0.009** (0.004)
PPC-Only Decreasing	0.002*** (0.001)	0.002*** (0.001)	0.002** (0.001)	0.073 (0.057)	0.117** (0.058)	0.143** (0.058)	-0.003** (0.001)	-0.003** (0.001)	-0.003** (0.001)	-0.008** (0.004)	-0.010*** (0.004)	-0.012*** (0.004)
PPC-Both	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.044 (0.052)	0.065 (0.055)	0.068 (0.054)	-0.001 (0.001)	-0.001 (0.001)	-0.001 (0.001)	-0.002 (0.003)	-0.004 (0.004)	-0.004 (0.004)
Loan Attributes		Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes
Borrower Risk Controls			Yes			Yes			Yes			Yes
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Covenant Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R-Square	0.01	0.01	0.03	0.02	0.02	0.05	0.02	0.02	0.02	0.02	0.02	0.04
Number of Observations	20,561	20,561	20,561	20,561	20,561	20,561	20,561	20,561	20,561	20,561	20,561	20,561

***, **, and * indicate statistical significance at the 0.01, 0.05, and 0.10 level, respectively.

Table V. Regression Tests, Spread Analysis

All-in-drawn is the dependent variable. It is the basis point coupon spread over LIBOR plus the annual fee and upfront fee, stated at the time of loan initiation. In Panel A, all-in-drawn for loans belonging to our pooled sample (all nonfinancial, nonutility public U.S. firms in the LPC universe from 1994 to 2013 with available data) is regressed on dichotomous variables for increasing and decreasing PPCs, and both, in addition to control variables including loan characteristics (models 1–5), borrower financial ratios (models 2–5), alternative measures of borrower credit quality: Altman’s Z-score and rated dummy (models 2 and 4), and borrower credit rating (models 4 and 5), and measures of information asymmetries between the borrower and lenders. When borrower characteristics are used, standard errors are clustered by firm (models 2–5). Coefficients for covenant, year, industry, loan purpose, and rating dummies are not reported. For variable definitions, see Appendix II. Panel B provides the result of models 4 and 5 separately for revolvers and term loans.

Panel A. Pooled Sample (N = 20,561)

Variable	(1)	(2)	(3)	(4)	(5)
PPC-Only Increasing	−66.473*** (3.616)	−56.281*** (2.991)	−53.962*** (3.082)	−57.861*** (2.989)	−55.426*** (3.095)
PPC-Only Decreasing	11.779*** (3.097)	6.171** (2.553)	9.453*** (3.000)	5.206** (2.521)	8.367*** (2.975)
PPC-Both	−31.286*** (3.008)	−32.095*** (2.383)	−29.56*** (2.656)	−34.165*** (2.368)	−31.708*** (2.648)
Log (Facility Amount)	−22.289*** (0.569)	−11.781*** (0.809)	−11.903*** (1.006)	−12.395*** (0.844)	−12.610*** (1.056)
Loan Maturity (Month)	−0.418*** (0.040)	−0.303*** (0.045)	−0.311*** (0.055)	−0.319*** (0.045)	−0.328*** (0.055)
Syndicated	−10.822*** (2.747)	−6.121* (3.217)	−3.340 (4.321)	−5.471* (3.141)	−2.312 (4.231)
Secured	75.039*** (2.225)	45.044*** (1.584)	41.361*** (1.821)	41.918*** (1.578)	38.898*** (1.809)
Missing Secured Status	9.939*** (2.471)	5.929*** (1.783)	3.018 (1.986)	6.862*** (1.779)	4.255** (1.977)
Number of Financial Covenants	−0.940* (0.554)	0.300 (0.579)	1.856** (0.746)	0.276 (0.568)	1.911*** (0.733)
Institutional Loan	85.653*** (2.81)	75.744*** (3.83)	75.111*** (4.793)	73.275*** (3.819)	72.878*** (4.764)
Revolver	−30.672*** (1.826)	−31.051*** (1.962)	−34.055*** (2.396)	−30.039*** (1.947)	−33.154*** (2.381)
Log (Market Size)		−9.793*** (0.704)	−7.425*** (0.837)	−9.641*** (0.7)	−7.32*** (0.832)
Volatility		11.73*** (0.650)	15.477*** (0.857)	10.71*** (0.639)	14.749*** (0.84)
ROA		−362.275*** (32.282)	−391.306*** (43.535)	−335.636*** (31.584)	−370.674*** (42.742)
Leverage		49.283*** (5.900)	90.27*** (4.978)	39.676*** (5.824)	84.048*** (4.953)
Market-to-Book Ratio		−0.280 (0.299)	−0.797* (0.411)	−0.222 (0.295)	−0.795* (0.407)
Z-Score		−2.825*** (0.410)		−2.971*** (0.401)	

Rated		-12.944***		-10.763***	
		(3.973)		(3.898)	
Rating			-6.712***		-6.348***
			(0.475)		(0.469)
Syndicate Size				-0.527***	-0.532***
				(0.089)	(0.102)
Relationship with Lead Lender				0.481	1.902
				(1.362)	(1.611)
Nonbank Lender Participation				33.246***	30.592***
				(1.526)	(1.794)
Covenant Fixed Effect	Yes	Yes	Yes	Yes	Yes
Loan Purpose Fixed Effect	Yes	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes
Firm Fixed Effect	No	Yes	Yes	Yes	Yes
Industry Fixed Effect	No	Yes	Yes	Yes	Yes
Rating Fixed Effect	No	Yes	No	Yes	No
R-Square	0.48	0.56	0.58	0.58	0.59
Number of Observations	20,561	20,561	14,287	20,561	14,287

***, **, and * indicate statistical significance at the 0.01, 0.05, and 0.10 level, respectively.

Panel B. Revolvers (N = 13,830) and Term Loans (6,731)

Variable	Revolvers (4)	Revolvers (5)	Term Loans (4)	Term Loans (5)
PPC-Only Increasing	-53.826*** (2.462)	-47.482*** (2.676)	-45.801*** (11.02)	-55.386*** (11.586)
PPC-Only Decreasing	15.983*** (2.505)	23.163*** (2.931)	-3.251 (7.702)	-7.217 (9.27)
PPC-Both	-25.379*** (2.226)	-20.794*** (2.478)	-47.919*** (7.948)	-51.384*** (9.265)
Log (Facility Amount)	-18.342*** (0.896)	-18.138*** (1.084)	-4.553*** (1.592)	-4.496** (2.061)
Loan Maturity (Month)	-0.194*** (0.045)	-0.138** (0.055)	-0.483*** (0.081)	-0.582*** (0.099)
Syndicated	-5.091* (2.994)	-3.175 (3.747)	-4.191 (6.834)	4.216 (9.54)
Secured	43.6*** (1.538)	39.979*** (1.732)	50.638*** (4.719)	50.251*** (5.532)
Missing Secured Status	8.827*** (1.632)	7.184*** (1.785)	11.018** (5.53)	8.283 (6.266)
Number of Financial Covenants	1.722*** (0.559)	3.536*** (0.68)	-3.162*** (1.155)	-2.177 (1.556)
Institutional Loan	125.423 (101.467)	124.985 (103.506)	62.72*** (4.542)	63.321*** (5.644)
Log (Market Size)	-7.372*** (0.691)	-5.141*** (0.794)	-14.345*** (1.42)	-13.097*** (1.807)
Volatility	10.448*** (0.64)	13.871*** (0.809)	10.89*** (1.298)	15.855*** (1.764)
ROA	-296.434*** (29.349)	-333.007*** (36.401)	-484.254*** (73.26)	-487.963*** (105.389)
Leverage	42.535*** (5.7)	83.747*** (4.965)	43.831*** (12.198)	80.315*** (10.723)
Market-to-Book Ratio	-0.239 (0.285)	-0.959*** (0.36)	-0.35 (0.57)	-0.608 (0.841)
Z-Score	-2.964*** (0.397)		-2.033** (0.854)	
Rated	-17.796*** (3.563)		19.103 (13.021)	
Rating		-5.92*** (0.435)		-6.66*** (1.177)
Syndicate Size	0.27*** (0.097)	0.316*** (0.109)	-1.12*** (0.144)	-1.199*** (0.168)
Relationship with Lead Lender	2.513** (1.276)	4.161*** (1.429)	-3.668 (3.167)	-4.01 (3.968)
Nonbank Lender Participation	31.004*** (1.461)	24.638*** (1.605)	38.177*** (3.449)	41.673*** (4.385)

Covenant Fixed Effect	Yes	Yes	Yes	Yes
Loan Purpose Fixed Effect	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes
Firm Fixed Effect	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes
Rating Fixed Effect	Yes	No	Yes	No
R-Square	0.640	0.418	0.661	0.444
Number of Observations	13,830	9,912	6,731	4,375

Panel C. Revolvers (N = 13,830) and Term Loans (6,731)

Variable	Revolvers (4)	Revolvers (5)	Term Loans (4)	Term Loans (5)
PPC-Only Increasing	-53.826*** (2.462)	-47.482*** (2.676)	-45.801*** (11.02)	-55.386*** (11.586)
PPC-Only Decreasing	15.983*** (2.505)	23.163*** (2.931)	-3.251 (7.702)	-7.217 (9.27)
PPC-Both	-25.379*** (2.226)	-20.794*** (2.478)	-47.919*** (7.948)	-51.384*** (9.265)
Log (Facility Amount)	-18.342*** (0.896)	-18.138*** (1.084)	-4.553*** (1.592)	-4.496** (2.061)
Loan Maturity (Month)	-0.194*** (0.045)	-0.138** (0.055)	-0.483*** (0.081)	-0.582*** (0.099)
Syndicated	-5.091* (2.994)	-3.175 (3.747)	-4.191 (6.834)	4.216 (9.54)
Secured	43.6*** (1.538)	39.979*** (1.732)	50.638*** (4.719)	50.251*** (5.532)
Missing Secured Status	8.827*** (1.632)	7.184*** (1.785)	11.018** (5.530)	8.283 (6.266)
Number of Financial Covenants	1.722*** (0.559)	3.536*** (0.680)	-3.162*** (1.1550)	-2.177 (1.556)
Institutional Loan	125.423 (101.467)	124.985 (103.506)	62.72*** (4.542)	63.321*** (5.644)
Log (Market Size)	-7.372*** (0.691)	-5.141*** (0.794)	-14.345*** (1.420)	-13.097*** (1.807)
Volatility	10.448*** (0.64)	13.871*** (0.809)	10.89*** (1.298)	15.855*** (1.764)
ROA	-296.434*** (29.349)	-333.007*** (36.401)	-484.254*** (73.26)	-487.963*** (105.389)
Leverage	42.535*** (5.700)	83.747*** (4.965)	43.831*** (12.198)	80.315*** (10.723)
Market-to-Book Ratio	-0.239 (0.285)	-0.959*** (0.36)	-0.350 (0.57)	-0.608 (0.841)
Z-Score	-2.964*** (0.397)		-2.033** (0.854)	
Rated	-17.796*** (3.563)		19.103 (13.021)	

Rating		-5.920***		-6.66***
		(0.435)		(1.177)
Syndicate Size	0.270***	0.316***	-1.12***	-1.199***
	(0.097)	(0.109)	(0.144)	(0.168)
Relationship with Lead Lender	2.513**	4.161***	-3.668	-4.010
	(1.276)	(1.429)	(3.167)	(3.968)
Nonbank Lender Participation	31.004***	24.638***	38.177***	41.673***
	(1.461)	(1.605)	(3.449)	(4.385)
Covenant Fixed Effect	Yes	Yes	Yes	Yes
Loan Purpose Fixed Effect	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes
Firm Fixed Effect	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes
Rating Fixed Effect	Yes	No	Yes	No
R-Square	0.640	0.418	0.661	0.444
Number of Observations	13,830	9,912	6,731	4,375

***, **, and * indicate statistical significance at the 0.01, 0.05, and 0.10 level, respectively.

Table VI. Regression Tests, Marginal Effects Analysis

The unit of observation is a loan package. The dependent variable is the difference between the spreads of loans with and without a PPC within one package, and the right-hand-side variables are differences in PPC and covenant dummies and loan characteristics. The sample includes all the loans in the DealScan sample during 1994–2013 that belong to nonfinancial, nonutility U.S. firms with available accounting and stock price information, conditioning on having at least a loan with a PPC and a loan without a PPC within the same loan package.

Variable	(1)	(2)	(3)	(4)	(5)	(6)
Δ PPC-Only Increasing	−34.233*** (12.487)	−52.586*** (12.529)				
Δ PPC-Only Decreasing			29.220** (6.623)	24.046*** (6.364)		
Δ PPC-Both					−21.878*** (6.497)	−11.136* (6.580)
Δ Log (Facility Amount)		−24.835*** (2.893)		−22.945*** (2.926)		−23.706*** (2.948)
Δ Loan Maturity		−0.125 (0.198)		−0.162 (0.199)		−0.139 (0.200)
Δ Secured		8.572 (11.018)		7.525 (11.028)		6.940 (11.081)
Δ Revolver		−23.344*** (5.718)		−21.368*** (5.742)		−22.176*** (5.775)
Δ Institutional Loan		32.027*** (7.244)		27.561*** (7.155)		26.167*** (7.203)
Intercept	−46.210*** (3.216)	−76.279*** (25.245)	−65.482** (4.777)	−91.185*** (25.454)	−40.784*** (3.854)	−74.530*** (25.568)
Year Fixed Effect	No	Yes	No	Yes	No	Yes
Adjusted R-Square	0.054	0.088	0.017	0.085	0.009	0.076
Number of Observations	1,191	1,191	1,191	1,191	1,191	1,191

***, **, and * indicate statistical significance at the 0.01, 0.05, and 0.10 level, respectively.