Performance Pricing Covenants and Corporate Loan Spreads

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Performance Pricing Covenants and Corporate Loan Spreads

1. Introduction

Performance pricing covenants (PPCs) in bank loans specify adjustments to the interest-rate spread when some measure of the borrower's subsequent performance changes. PPCs employ two alternative performance metrics: accounting-based measures, such as the debt-to-EBITDA ratio, and debt-ratings-based performance measures, such as the Moody's or Standard & Poor's rating of the borrower's bonds or commercial paper. They also differ in the direction of spread adjustment: interest-increasing PPCs specify higher spreads should borrower credit quality decline offering automatic protection to the lending bank. Interest-decreasing PPCs provide for narrower spreads should credit quality improve. By presenting an alternative to prepaying or renegotiating loans in such circumstances, PPCs offer reduced transactions costs to both parties.

PPCs are of interest because they provide an opportunity to study the value of accounting information vs. debt ratings. The accuracy of debt ratings has received considerable attention in light of the criticism of bond rating agencies in the wake of the recent financial crisis (Fridson (2010)). Further, as an innovation in covenant design, PPCs represent an opportunity for further testing of the signaling theory of covenants developed by Gerleanu and Zwiebel (2006) and Demiroglu and James (2010).

The central task of this paper is to measure how the introduction of a performance pricing covenant influences loan spreads. In a close antecedent to our work, Asquith, Beatty and Weber (2005) employ a joint model of the decision to introduce either interest-increasing or interest-decreasing performance pricing and the LIBOR spread. Our tests differ from theirs in several

important respects. First, we pioneer separate measurement of the impact of performance pricing depending on whether it is accounting- or debt-rating-based. This distinction matters because firms with accounting-based performance are riskier (have higher initial spreads and greater volatility of credit risk during the loan's life), borrow at longer maturities, are smaller, and are more likely to secure loans. In contrast, firms choosing to structure performance pricing based on credit ratings are larger and more complex. As a result, their accounting numbers require greater adjustment and are thus less suitable to simple rules in accounting-based performance pricing covenants. Accordingly, such firms prefer bond ratings as a performance-pricing benchmark as these are considered to be a comprehensive measure of credit risk. Further, the greater volatility of credit risk for these borrowers increases the value of the lender's option (in the case of interest-increasing performance pricing). Expected recontracting costs are higher for such firms and their lenders. As a result, we hypothesize that performance pricing (whether interest-increasing or decreasing) should have a greater impact on the initial spread when it is accounting based.

Second, we reexamine the theoretical rationale given in Asquith *et al.* for distinguishing between interest-increasing and decreasing performance pricing. That paper argues that because an interest-increasing PPC has value to the lender, the bank must compensate borrowers with a lower rate. They report a rate differential of just under 26 basis points. For interest-decreasing PPCs, Asquith *et al.* note that such contracts allow borrowers with improved credit quality to enjoy lower rates automatically without either side incurring the costs of loan prepayment or renegotiation. Because the benefit from lower costs may go to either side, they leave it to empirical testing to determine the impact on spreads. They report an economically small and

marginally significant, positive coefficient, interpreting this as evidence that "borrowers may gain slightly more than lenders by decreasing the renegotiation costs" (p124).

Our separation of PPCs according to the measure of performance allows us to draw on Doyle (2003) for insight on how interest-decreasing PPC should impact spread. It is likely that for higher risk firms choosing accounting-based performance pricing, bargaining power is low; hence the main saving in recontracting costs goes to the lender. This suggests that interest-increasing performance pricing reduces the initial spread. Put another way, for accounting-based PPC, we hypothesize that introduction of PPC reduces spread regardless of whether it is interest-increasing or decreasing.

Demiroglu and James (2010) analyze covenants as a signaling mechanism designed to attenuate information asymmetry.[1] In their framework, borrowers have private information about their future prospects. By accepting loan terms with tight covenants, the borrower signals that it believes its financial state will improve. Consistent with this covenant-signaling hypothesis, they find that firms with tight covenants display stronger future operating performance. Further, announcements of loans to such firms have higher than average positive stock market reaction. Both results are supportive of the signaling view of covenant design.

Viewed in the covenant signaling framework of Demiroglu and James (2010), 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 is borrowing at LIBOR plus 100 basis points and currently has a debt/EBITDA ratio of three.[2] Using an interest-increasing, accounting-based PPC, the company would agree to increase its spread to 125 basis point should debt / EBITDA rise to 3.5 and to 150 basis points for a ratio of

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[1] Related prior theoretical research motivates the existence of PPC as a device to reduce the agency costs of debt (Tchistyi (2005).

[2] Our example draws on Asquith *et al.* (2005), Beatty, Dichev and Weber (2002) and Demiroglu and James (2010).

4.0. Beyond debt/EBITDA of 4.5, the loan becomes due on demand. This is a relaxed covenant as it gives the company slack should its debt ratio deteriorate. In contrast, with a tight covenant: borrowing at LIBOR as before, the company would now agree that the loan becomes due on demand if its debt/EBITDA ratio should rise to 3.5. Further interest-reducing provisions would state that the spread would narrow to 75 basis points if the ratio falls to 2.5 and to 50 basis points for a ratio of two.

The tighter covenant package consisting of a lower same-variable covenant provision and an interest-decreasing PPC constitutes a signal that the firm expects its financial strength to improve. Such signals are quite common. In their empirical study, Asquith *et al.* report that interest-decreasing PPC is almost twice as prevalent as interest-increasing. As a positive signal, we predict that interest-decreasing PPC should be associated with lower spreads. We report strong empirical evidence supporting this prediction.

Third, we use matched pairs methodology and take advantage of a natural experiment to control for self-selection bias that likely arises because, as discussed above, firm risk characteristics influence the decision to introduce performance pricing as well as the selection of design features: interest-increasing or decreasing, accounting or debt-rating-based. The natural experiment arises from the common practice of structuring loan deals consisting of multiple loan facilities issued on the same day with a common lead bank and set of participant lenders. Since some of the facilities in a loan deal contain a PPC and others do not, we can compare the impact of the PPC while holding borrower and lender characteristics constant. In employing matching techniques, we follow earlier papers in the literature such as Helwege and Turner (1999), Bharath (2002), and Gottesman and Roberts (2004 and 2007), among others.

Our study uses the *Loan Pricing Corporation DealScan* database of loans initiated from 1994 to 1999.[3] Our key results are as follows. First, our pooled sample tests reveal that the presence of a PPC of any type results in spreads that are 24.6 basis points lower than they would be without the PPC. Similarly to prior studies, we also find that there are important differences in borrower characteristics between loan facilities with and without PPCs.

Applying our matching technique we find that in its more refined control setting, the presence of any PPC is associated with a reduction in spread of 40.4 basis points. Of the 1,078 matched pairs in our sample, 941 include an accounting-based PPC. For this set of pairs, the average spread is 45.8 basis points lower with the PPC. In contrast, debt-rating-based PPCs result in spreads that are only approximately 3-4 basis points lower than they would be without the PPC, a difference that is only weakly statistically significant. We conclude that the rate spread benefits associated with PPCs are mainly limited to accounting-based-PPCs. Our results also provide compelling evidence that estimating the effect of loan contract terms such as PPCs using pooled regressions can lead to estimation errors.

The rest of the paper is organized as follows. Section 2 discusses the data extraction and matching methodology. Sections 3 and 4 present the univariate and multivariate tests, respectively. Section 5 concludes.

2. Data extraction and matching methodology

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[3] Our study employs the Thomson Reuters *Loan Pricing Corporation DealScan* database of loans observed from 1994 to 1999. As mentioned in Carey and Nini (2007), LPC's *DealScan* data collection efforts were focused primarily on the U.S. loan market until the late 1990s, thus our study should not be affected by European discount results identified in that paper.

We form two samples to examine the impact of PPCs on loan spreads. The first is a pooled sample similar to Asquith et al. (2005). The second is a matched sample, the formation of which we will describe below. We extract loan data from *Loan Pricing Corporation's DealScan* (LPC) 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. The database reports 66,491 loan facilities. Of these, we eliminate all loan facilities for which the key measure of loan spreads is missing: RATEAISD is defined as the basis point coupon spread over LIBOR plus the annual fee and upfront fee, spread over the life of the loan. Further, we eliminate any observation prior to 1994; as Asquith *et al.* (2005) note, LPC reports comprehensive information about performance pricing beginning in 1994. As a result of this filtering, 31,459 loan facilities remain, all with initiation dates during the time period 1994 through 1999, inclusive. We designate this as the "pooled sample."

For each of these loan facilities, we identify whether it has an accounting-based PPC (ACCPPC), debt-rating-based PPC (DEBTPPC) or no PPC. Control variables encompass both borrower and loan characteristics. Borrower characteristics include BWMD, the Moody's senior debt rating, where the non-missing ratings of Aaa through C are translated into an ordinal scale ranging from 28 to 8.[4] BONDRATE is an indicator variable that equals unity if the borrower has a bond rating and zero otherwise. TICKER is an indicator variable that is equal to unity if the borrower is publicly listed, as indicated through the availability of a ticker symbol on the LPC database. BWSSIZE is the borrower's sales size.

Loan characteristics include TFCMAT, months to maturity and AMTFCSIZ, the facility size. The remaining loan characteristics are indicator variables. REVOLVER equals unity if the

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[4] All loan facilities in our sample are senior.

loan is a revolving loan. SYND equals unity if the loan is syndicated. The securitization status is missing for a large proportion of observations; hence, we include both the SECURED and SECUREDMISS variables, where SECURED is equal to unity if the loan is designated as secured by the database and zero otherwise, while SECUREDMISS is equal to unity if the securitization status is missing. We also extract controls for financial covenants. FCOVENT1-12 are indicator variables that are equal to unity if there is are coverage covenants based on the fixed charge (FCOVENT1); debt service (FCOVENT2); interest (FCOVENT3); cash interest (FCOVENT4); leverage ratio (FCOVENT5); debt-to-cash flow (FCOVENT6); senior debt-to-cash flow (FCOVENT7); debt-to-tangible net worth (FCOVENT8); debt-to-equity (FCOVENT9); current ratio (FCOVENT10); tangible net worth (FCOVENT11); and net worth (FCOVENT12).[5]

We next create a matched sample, through identifying pairs of facilities that are associated with a single loan deal, where one facility includes a PPC and the other does not. As stated above, forming such pairs allows us to control for lender, borrower, and temporal characteristics, as both elements of the pair are associated with the same lender(s), a single borrower, and a single date. If a single loan deal consists of more than two facilities, then a separate matched pair is identified for every combination of two facilities that differ on the basis of the existence of a PPC. Following this methodology, we identify a matched sample of 1,078 pairs consisting of 941 pairs that contain a loan facility element that is identified as ACCPPC, and 137 pairs that contain an element that is identified as DEBTPPC.

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

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[5] The DealScan database reports many additional loan contract variables, such as whether the loan represents refinancing, loan option, amendments, and general covenants. However, because these variables are reported for only a small proportion of the sample, we do not include them in our tests.

the two elements of the matched sample. One difference is welcomed - by design each pair consists of one facility with a PPC, and another without. Other dissimilarities in loan characteristics must be controlled, to ensure that differences between the two element groupings are attributable to the status of the PPC alone. We control for differences in loan characteristics through the inclusion of control variables in our multivariate tests.[6]

Our matching methodology offers a valuable alternative lens for viewing PPC along with the potential to sharpen the focus of the study by Asquith *et al.* In particular, while they control for the self-selection that may be introduced by the propensity to establish either interest-increasing or interest decreasing performance pricing, such controls may be incomplete. Further, they do not recognize any differences between accounting- and debt-rating based features and their sample includes both. As a result, differences in risk unobservable to the econometrician may persist. Should such risk differences be correlated with the choice of covenant type, they may lead to biased results.

Descriptive statistics are presented in Table 1 for the full pooled and matched samples tabulated by credit metric in Panel A and broken down between interest increasing and decreasing in Panels B and C. The descriptive statistics in Panel A indicate that of the pooled sample of 31,459 observations, 27% contain a PPC. More specifically, 22% have an ACCPPC while only 5.% have a DEBTPPC. The matched sample consists of 2,156 observations, or two for each of our 1,078 pairs. By construction, half of these observations have a PPC. Only 21% of the borrowers in the pooled sample and 41% of the matched sample loan facilities are rated and our multivariate tests will be performed separately for the rated and unrated facilities.

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[6] The results in this paper 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 securitization status, syndication, financial covenants, loan options, and loan type.

Panels B and C of Table 1 separate PPCs by the direction of adjustment. In Panel B, we see that for accounting-based PPC, the majority of contracts are interest decreasing both for the pooled and matched samples. The sample size declines because of missing information on the specifics of the interest grids. In contrast, for debt-based PPC, Panel C reveals a balanced distribution between interest-increasing and interest-decreasing PPC. More detailed discussion of these results appears later in the paper.

TABLE 1 HERE

Table 2 reports the number of loan facility observations that we identify for each year, the proportion of these observations with or without PPCs, and the proportion that are ACCPPC and DEBTPPC. Depending on the year, as low as 18.66% (1994) and as high a 31.7% (1995) of our loan facilities have a PPC. While ACCPPC does not show any temporal trend, the presence of DEBTPCC in our sample exhibits a monotonic decrease from 7.53% in 1995 to 3.65% in 1999. This result might indicate decreasing usefulness of DEBTPCC compared to ACCPPC as predicted above.

Table 2 shows the percentage of interest-increasing and decreasing PPC by year. There does not appear to be any temporal trend.

TABLE 2 HERE

3. Univariate analysis

3.1. Impact of any performance pricing covenant

We begin our measurement of the impact of introducing any PPC with mean of difference tests for the pooled sample of loan facility observations. Next we refine these results for a subsample of matched pairs.

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3.1.1. Pooled sample tests

For each variable, we calculate the difference of the mean variable value between those loan facilities without PPCs and those with, and compute the Student's t-statistic and Wilcoxon Signed Rank statistic to determine whether any identified differences are significant. The results of these tests are reported in Table 3. Our key finding is that loan facilities without PPCs are associated with spreads that are 24.631 basis points higher than loan facilities with PPCs, significant at the 1% level for both the t and Wilcoxon statistics.

TABLE 3 HERE

We find significant differences between the two groups of loan facilities for almost all other variables as well. These differences are all at the 1% level forthe t and Wilcoxon tests with the exception of some financial covenants. We find that lower risk borrowers with higher bond ratings are more likely to avoid PPCs consistent with the covenant signaling hypothesis. This result is clouded by the fact that loan facilities without PPCs are more commonly associated with borrowers whose bond rating is missing; hence the full risk effect is uncertain. We find that loan facilities without PPCs are less frequently associated with publicly traded firms, and are associated with smaller borrowers. We also find that loan facilities without PPCs are shorter and smaller than loan facilities with PPCs, and less often are revolvers or syndicated loans. These pooled sample results are generally consistent with Asquith, *et al.* (2005). They indicate that performance pricing tends to be included in loans with higher re-contracting, adverse selection, and moral hazard costs, such as syndicated loans, revolving loan facilities, loans used for takeover purpose, and loans with longer maturities.

Further, loan facilities without PPCs are less often secured. But as we found for rating, this result is blurred by the tendency for loan facilities without PPCs to be associated with borrowers

whose securitization status is missing; hence the full securitization effect is uncertain. Finally, we find that loan facilities without PPCs are generally less likely to include financial covenants. This is consistent with Beatty, *et al.* (2002) who report that the typical contract sets the initial pricing at the high-cost end of the performance pricing grid to handle credit improvements, while a same-variable covenant is set tightly beyond the top of the grid to handle credit deteriorations.

In brief, while the results in Table 3 constitute strong evidence that loan facilities without PPCs have higher spreads than their counterparts with PPCs, the two samples are widely disparate. To control for disparities related to borrower characteristics as well as for unobserved lender differences, we turn to matched pair tests.

3.1.2 Matched pairs tests

Difference of means tests using our matched sample control more effectively for non-spread differences between loan facilities without and with PPCs. The results of these tests for all PPC are reported in Table 4 (columns 1-3). By construction, there is no difference in all borrowers' characteristics (BWMD, BONDRATE, TICKER, and BWSSIZE) between the elements in any pair. Further, within each pair, the lead bank and participant lenders are identical so we also control for any unobserved variation in lender features.

<div align="center">TABLE 4 HERE</div>

Since some matched samples contain a small number of observations possibly resulting in a violation of the assumption of normality underlying the parametric Student's t test, we also conduct nonparametric Wilcoxon tests. The key result of higher spreads for loan facilities without PPCs reported for the pooled sample holds more strongly for the sample of all PPC matches: the mean difference in spread for the matched sample here is 40.420 basis points in comparison to 24.631 basis points for the pooled sample in Table 3. While our matched sample

methodology controls for borrower characteristics, we continue to identify significant differences between the two groups of loan facilities for other variables besides the spread. For the sample of all matches, opposite to our finding for the pooled sample, we find that loan facilities without PPCs bear longer maturities than loan facilities with PPCs, significant at the 1% level for both the t and Wilcoxon statistics. Similarly to our finding for the pooled sample, loan facilities without PPCs are smaller than loan facilities with PPCs, and are less likely to be revolvers, significant at the 1% level for both the t and Wilcoxon statistics. We do not find significant differences for syndication.

To summarize, the difference of means tests for the matched sample demonstrate that loan facilities without PPCs are associated with even higher spreads under the refined control setting associated with matched pairs. Finally, there continue to be significant loan characteristic differences between loan facilities with and without PPCs. In Section 4 we perform multivariate tests to control for these differences.

3.2. Accounting-based vs. debt-rating based performance pricing covenants

Table 1 supports Doyle's (2003) characterization of firms with ACCPPC as riskier with higher average spreads and lower bond ratings than borrowers with DEBTPPC. Further, borrowers with ACCPPC are less likely to have a bond rating or to be listed on a stock exchange. These borrowers are also smaller and more likely to borrow on a secured basis. These differences are statistically significant for both the pooled and matched samples.

Based on the riskier profile of borrowers using ACCPPC, the covenant signaling hypothesis suggests that the inclusion of a PPC will reduce spreads by a greater amount than for borrowers with DEBTPPC. The results in Table 4 support this hypothesis: for ACCPPC matches, loan

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facilities without PPCs are associated with spreads that are 45.762 basis points higher than loan

facilities with PPCs, significant at the 1% level of the t and Wilcoxon statistics. But for

DEBTPPC matches, loan facilities without PPCs are associated with spreads that are only 3.728

basis points higher than loan facilities without PPCs. Further, this result is only significant for

the t-statistic, and at the 5% level. While these results support our hypothesis, it remains for

multivariate tests to control for differences within pairs on loan characteristics also documented

in Table 4.

3.3 Interest-increasing vs. interest-decreasing performance pricing covenants

As stated above, tearsheets describing the pricing grids are required to identify interest-

increasing (INTINCR) and interest-decreasing (INTDECR) features in PPCs. These are available

for a subset of loan facilities for which summary statistics appear in Table 1, sorted by ACCPPC

(panel B) and DEBTPPC (panel C). Interest-decreasing PPC is more far more common and the

imbalance is due to the far larger ACCPCC subset: there are a total of 429 cases of INTINCR

and 787 observations of INTDECR in the pooled sample and 24 INTINCR and 230 INTDECR

for the matched pairs. In contrast, for DEBTPPC, the two types are fairly evenly matched with

134 INTINCR and 140 INDECR in the pooled sample and 8 INTINCR and 12 INTDECR in the

paired sample. This imbalance is similar to that reported in Asquith *et al* .(2005).

We show earlier that ACCPPC borrowers are riskier. Taken with their preponderant use of INTDECR over INTINCR PPC, this suggests that INCTDECR borrowers are riskier. Table 1 verifies this idea: in the ACCPPC subsample in panel B, we see that borrowers with INTDECR have higher spreads, lower bond ratings and are more likely to use security – all consistent with higher risk.

Further, the descriptive statistics support the view that, of the two types of PPC, INTDECR represents a tighter constraint especially for the ACCPPC subset. For more relaxed INTINC PPC, most cases (89% for the pooled sample and 88% for the matched sample) also include an INTDECR provision indicating that the accounting variable can move in either direction before reaching the end of the grid and a constraining covenant. In contrast, for INTDECR, far fewer cases also include an INTINCR provision (48% for the pooled sample and only 9% for the matched sample). This means that most INTDECR PPCs lack an interest-increasing provision and are set at the edge of the grid tightly bounded by a same-variable covenant.

As a tight covenant, we predict that inclusion of an INDECR PPC is expected to reduce spreads according to the covenant signaling hypothesis. The matched pair tests in Table 4, Panel B support our prediction: INTDECR PPC is associated with a lower spread of 50.4 basis points while for INTINCR PPC the spread is lower by only 28.2 basis points. The samples in Table 4, Panel B include both ACCPPC and DEBTPPC. The 32 INTCR pairs include 24 ACCPPC and 8 DEBTPPC. For INTDECR, the numbers are 230 and 12, respectively. The predominance of ACCPPC suggests that the spread-decreasing role of INTDECR PPC derives from the features of borrowers selecting ACCPPC as discussed above. Table 4, Panel B also shows that the signaling effect exceeds the magnitude of the credit adjustment option which imparts a positive value to

INTINCR PPC. While this reinforces the importance of covenant signaling, we must interpret the comparison of magnitudes with caution because the INTDECR subsample contains a larger weighting of ACCPPC for which the effect should be stronger.

Overall, this section of our matched pairs tests reinforces the results in Asquith *et al.* (2005) assigning a spread-reducing role to INTINCR PPC. This type of PPC provides a valuable option to lenders for which borrowers are compensated. For INTDECR PPC, however, our results are opposite to those of Asquith *et al.* who report a small positive impact of INTDECR on spreads which they attribute to charging borrowers for lower renegotiation costs. In contrast, we find a negative influence strongly significant both statistically and economically and consistent with the covenant signaling hypothesis. In particular, by separating ACCPPC and DEBTPPC in our tests, we show that the higher risk profile of borrowers using ACCPPC reinforces the covenant signaling effect. While this separation of different PPC types in pricing tests constitutes a unique contribution of the present paper, it cannot explain why we obtain results opposite to those of Asquith *et al.* because their sample also includes predominantly ACCPPC. Rather, the difference must lie in the effectiveness of risk controls.

Such controls are necessary due to the higher risk profiles of borrowers with INTDECR documented above. To control for selection bias that could arise due to different risk levels, Asquith *et al.* employ probit regressions predicting the propensity to use INTINCR and INTDECR PPC. In this paper, we control for risk differences through matched pairing. Our approach improves on Asquith *et al.* by allowing for perfect controls of borrower risk as well as of unobserved lender risk. This suggests that the positive coefficient on INTDECR (increasing spread) in their study may be due to unobservable risk imperfectly controlled. An alternative explanation is that our finding that INTDECR PPC is associated with lower spreads is biased due

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to imperfect controls for differences in loan features such as maturity and security. To distinguish between these explanations requires multivariate testing.

3.4 Nonparametric univariate counting tests

The results of the univariate tests discussed so far demonstrate that through using the matched pair methodology, we are able to create two groups that are highly similar. The parametric difference of means tests discussed above provide strong evidence that loan facilities without ACCPPCs have spreads that are approximately 45.762 basis points higher than loan facilities with ACCPPCs, while the difference between loan facilities without and with DEBTPPCs is only 3.728 basis points. These results in Table 4 remain significant at the 99% level employing nonparametric Wilcoxon tests. For further checking, we next count the number of times that the loan facility without PPCs of the matched pairs is associated with higher, identical, or lower spreads, than the paired loan facility with the PPC. We report the results of these counting tests in panels A (all matched pairs), B (ACCPPC) and C (DEBTPPC) of Table 5 separately for matched pairs associated with borrower Moody' senior debt ratings of A, B, C, and unrated. We also tabulate the percentage higher, identical, lower, and the number of pairs for each sample.

TABLE 5 HERE

For the all PPC and ACCPPC matched pair samples in Table 5, we find further strong evidence that loan facilities without PPCs are associated with higher spreads than the those with PPCs. Overall, for 71% of all matched pairs and 79% of ACCPPC matched pairs, the loan facility without the PPC is associated with higher spreads than the loan facility with the PPC, while the reverse is true for only 10% and 9% of the matched pairs, respectively. We find similar

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results for the A, B, C, and unrated borrower cases, with the exception of the A-rated case for the all PPC matched pair sample. In this case, we find a very large proportion where spreads are identical for both elements in the pair. This indicates that performance pricing is not as beneficial to high quality borrowers.

The results for the DEBTPPC matched pair sample are more ambiguous, and correspond to our findings for the parametric difference of means tests. Overall, 12% of matched pairs exhibit higher spreads for the loan facility without the PPC over the loan facility with the PPC, while the reverse is true in 18% of the matched pairs. More interestingly, spreads are identical in 70% of the matched pairs. These results are generally consistent for borrowers rated A, B, and unrated. There are no observations in this sample where the borrower is rated C.

In summary, the nonparametric counting tests in Table 5 confirm that loan spreads are typically higher for loans without PPC (Panel A), and without ACCPPC matched pairs (Panel B), and typically identical for DEBTPPC matched pairs (Panel C). Counting tests also reinforce the greater impact on spreads of interest-decreasing PPC (Panel E).

4. Multivariate tests

This section reports our multivariate tests. Table 6 presents the correlations between the variables used in the regression tests.

TABLE 6 HERE

To test the core spread-PPC relation, all of the regression tests use spreads as the dependent variable, and include indicator variables for the presence of the PPCs as independent variables, as well as other independent variables that are included as controls. For each sample, we estimate three regression models imposing different restrictions in turn. The first model tests

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the relation between the dependent variable and all variables. The second removes the control for loan facility maturity, TFCMAT. The third model reinstates TFCMAT and removes the controls for securitization, SECURED and SECUREDMISS. The justification for excluding maturity and security from some regressions is that they are jointly determined along with the spread and the inclusion and type of performance pricing. We therefore exclude these variables from some regressions to ensure that our results are robust in the possible presence of endogeneity.

We perform the regressions separately for the pooled, ACCPPC, and DEBTPPC matched pair samples as well as for the matched interest-increasing and decreasing samples. We further refine the regressions through testing the model for two groupings of facilities; those for which debt rating is provided (Table 7), and those loan facilities that are unrated (Table 8). Hence the regressions in Table 7 exclude the BONDRATE variable, as all loan facility observations tested in this table are rated. Similarly, the regressions in Table 8 exclude both the BWMD and BONDRATE variables, as all observations tested in this table are unrated.

TABLE 7 HERE

TABLE 8 HERE

4.1. Regression tests, pooled sample

The results for the pooled sample are reported in columns 1-3 of Tables 7, Panel A (rated) and Table 8, Panel A (unrated). For both groupings, there is strong evidence that both ACCPPC and DEBTPPC covenants reduce spreads. The results are similar when all controls are used and when TFCMAT is excluded, columns (1) and (2), respectively. For the rated grouping (Table 7), the coefficients associated with ACCPPC are –24.56 and –22.12 when all controls are used and when TFCMAT is excluded, respectively, while the coefficients associated with

DEBTPPC are –26.21 and –27.27 when all controls are used and when TFCMAT is excluded. These results are significant at the 1% level. For the unrated grouping (Table 8), the coefficients associated with ACCPPC are –27.72 and –29.21 when all controls are used and when TFCMAT is excluded, respectively, while the coefficient associated with DEBTPPC is –29.64 and –30.36 when all controls are used and when TFCMAT is excluded. These results are significant at the 1% level. When SECURED and SECUREDMISS are excluded, column (3), spreads remain lower in the presence of both ACCPPC and DEBTPPC, though smaller in magnitude for ACCPPC and larger in magnitude for DEBTPPC. For the rated grouping (Table 7), the coefficient values are –7.14 and –29.89 for ACCPPC and DEBTPPC, respectively, significant at the 1% level. For the unrated grouping (Table 8), the coefficient values are –11.58 and –43.64 for ACCPPC and DEBTPPC, respectively, significant at the 1% level.

4.2. Regression tests, ACCPPC and DEBTPPC matched samples

The above results suggest that both ACCPPC and DEBTPPC are associated with lower spreads than are loan facilities without PPCs. Yet as we demonstrated in Section 3, there are many important differences between the with- and without-PPC samples; hence even in a multivariate setting these results may be attributable to differences unrelated to the presence or absence of PPCs. If, however, as hypothesized, these results flow the presence of PPCs, then they should continue to hold in the more refined control setting that we created using our matching methodology.

The results for the ACCPPC matched sample are presented in columns 4-6 of Table 7, Panel A (rated) and Table 8, Panel A (unrated) and provide strong evidence that ACCPPC results in lower spreads. For the rated grouping (Table 7), the coefficients associated with ACCPPC are

–29.98 and –36.92 when all controls are used (column 4) and when TFCMAT is excluded (column 5), respectively, while the coefficient associated with ACCPPC for the unrated grouping (Table 8) is –36.26 and –42.92 when all controls are used and when TFCMAT is excluded. These results are significant at the 1% level. When SECURED and SECUREDMISS are excluded, column (6), the coefficient values associated with ACCPPC are –28.67 and –27.93 for the rated and unrated groupings, respectively, significant at the 1% level.

The results for the DEBTPPC matched sample are presented in columns 7-9 of Table 7, Panel A (rated) and Table 8, Panel A (unrated). These findings provide strong evidence that DEBTPPC does not result in lower spreads, similar to our results for the univariate tests. The significance associated with the DEBTPPC coefficient in the pooled sample tests vanishes in the matched sample consistent with the view that DEBTPCC does not have significant loan spread effects. Loan spread differences found in the pooled sample are attributable to differences in other variables, such as lender and borrower characteristics, thus, after controlling for these differences in our matched samples, loan spread effects disappear for DEBTPCC. . This result provides strong support for our contention that the matched sample represents a refinement of the pooled sample tests, and clearly indicates that the spread advantage associated with PPCs is limited to ACCPPs.

4.3. Regression tests, INTINCR and INTDECR matched samples

We also conduct similar regressions for the matched samples of INTINCR and INTDECR PPC for the rated (Table 7, Panel B) and unrated samples (Table 8, Panel B). The results for interest-increasing PPC are in columns 1-3 of Panel B of the respective tables. For the rated subsample, none of the INTINCR coefficients is significant: for the INTDECR subsample, the ACCPPC coefficients are similar to those for all ACCPPC in Panel A of Table 7. This reinforces

two earlier conclusions: first, interest-decreasing PPC has a greater impact on spreads and second, accounting-based PPC is more effective in controlling information asymmetry and reducing spreads.

Turning to the unrated subsample (Table 8, Panel B) , the conclusions are similar: only one of three coefficients for INTINCR is significant at the 99% level while INTDECR PPC generally is associated with a significantly lower spread for ACCPPC.

4.4 Control variables

As expected, in Tables 7 and 8 we find that spreads are lower for higher rated, publicly traded, and larger borrowers, though the coefficients associated with the variable that measures public trading, TICKER, is generally insignificant for the ACCPPC matched sample, for both rated and unrated groupings, and is generally insignificant for the DEBTPPC matched sample, for the unrated grouping. We also generally find a positive relation between spreads and facility maturity for the rated grouping. For the pooled sample and ACCPPC matched sample, we find strong evidence of lower spreads associated with revolvers, and find weak evidence of a positive relation between spreads and syndication for the pooled sample. We find strong evidence of higher spreads associated with securitization, reflecting the earlier literature, and also find broad evidence of higher spreads for facilities for which securitization status is missing. Finally, spreads are generally unrelated to financial covenants, with some exceptions.

5. Conclusions

Performance pricing covenants (PPC) are predicted to reduce loan spreads as they serve to control costs associated with asymmetric information, adverse selection, moral hazard and recontracting (Asquith *et al.* (2005)). This paper tests and supports this view using a carefully

matched sample of loan facilities initiated between 1994 and 1999 and documented in the *Loan Pricing Corporation DealScan* database.

Our main new result is that the type of performance pricing matters: compared against controls, loans with accounting-based performance pricing enjoy significantly lower spreads while we detect only small and weakly significant differences in loans which base performance pricing on debt ratings. After controlling for borrower and lender characteristics, accounting-based PPC results in spreads that are approximately 45 basis points lower than they would be without the PPC in univariate tests, and ranges from 30-35 in subsequent multivariate tests. In contrast, debt-rating-based PPC results in spreads that are only approximately 5 basis points lower than without the PPC, a difference that is statistically significant at a lower confidence level and which is largely insignificant in subsequent multivariate tests of the debt-rating based PPC matched pair sample. These results reflect the role of PPC in resolving information asymmetry which is more prevelant in riskier borrowers more likely to employ accounting-based covenants. Further, they are also consistent with Doyle (2003) who suggests that accounting ratios are more timely reflectors of changes in credit quality. While accounting ratios are updated quarterly, debt ratings are revised at most every six months except when a firm experiences a crisis. Accordingly, accounting ratios are more sensitive and better reflect changes in borrowers' credit risk and therefore, accounting-based performance pricing adds more value than debt-rating based. .

In addition, our paper identifies interest-decreasing PPC as a tight covenant in the covenant signaling framework of Demiroglu and James (2010) in which firms take on tight covenants as a signal that their financial condition will improve. This leads to the prediction,

strongly supported in our tests, that interest-decreasing PPC should be associated with lower spreads.

Finally, our matching methodology uncovers an interesting empirical regularity. Firms often take out several loan facilities from the same lenders on the same day and typically include a performance pricing feature in the shorter-maturity loan only. This finding contrasts with Asquith *et al*. (2005) who report that the probability of employing performance-pricing increases with maturity. According to our results, performance pricing tends most often to be a feature of loans with shorter maturities. This is consistent with the notion that borrowers have limited ability to predict their performance far into the future. Thus, for longer-maturity loans, borrowers might be unwilling to reduce their initial borrowing costs by including performance pricing fearing that, if their performance deteriorated in the future, loan spreads would increase resulting in higher *ex post* borrowing costs. For loans with shorter maturities, borrowers are likely able to predict their companies' performance with more confidence and if they think that their companies' performance will get better, or at least not get worse, they will be willing to include performance pricing in their loan contracts and obtain lower loan spreads. Put another way, firms balance the signaling benefits of performance pricing against the danger of facing higher costs in future if the signal is false. Since uncertainty in forecasts increases with the time horizon, there is a point beyond which performance pricing is seen as too risky. Testing this conjecture is left for future research.

Further, we find that firms enjoy significant spread reduction from usage of performance pricing covenants, particularly accounting based PPCs, and this raises the question why firms do not use PPCs more extensively. . In addition, it is worth examining whether there are any firms

utilizing both accounting based and debt-rating based performance pricing covenants within the same deal package. We leave these interesting issues for future research.

Acknowledgements

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Table 1: Descriptive statistics for each variable. The number of observations, mean value and standard deviation for each variable are reported for both the full and matched paired samples, for the following samples: For all observations, ACCPPC, and DEBTPPC (Panel A); for observations that are both ACCPPC and INTINCR and observations that are both ACCPPC and INTDECR (Panel B); and for observations that are both DEBTPPC and INTINCR and observations that are both DEBTPPC and INTDECR (Panel C). Variable definitions are as follows: All PPC is an indicator variable that is equal to unity if the loan facility has a performance pricing covenant (PPC). ACCPPC and DEBTPPC are indicator variables that are equal to unity if the loan facility has an accounting-based PPC or debt-rating-based PPC, respectively. INTINCR and INTDECR are indicator variables that are equal to unity if the loan facility's PPC is interest increasing or interest decreasing, respectively. RATEAISD is the basis point coupon spread over LIBOR plus the annual fee and upfront fee, spread over the life of the loan. BWMD is the Moody's senior debt rating, where the nonmissing ratings of Aaa through C are translated into an ordinal scale ranging from 28 to 8. BONDRATE is an indicator variable that equals unity if the borrower has a bond rating. TICKER is an indicator variable that is equal to unity if the borrower has a ticker symbol. BWSSIZE is the borrower's sales size. TFCMAT is the months to maturity. AMTFCSIZ is the facility size. REVOLVER and SYND are indicator variables that equal unity if the loan is a revolving loan or syndicated, respectively. SECURED and SECUREDMISS are indicator variables that equal to unity if the loan is designated as secured by the database or if the securitization status is missing, respectively. FCOVENT1-12 are indicator variables that are equal to unity if there is are coverage covenants based on the fixed charge (FCOVENT1); debt service (FCOVENT2); interest (FCOVENT3); cash interest (FCOVENT4); leverage ratio (FCOVENT5); debt-to-cash flow (FCOVENT6); senior debt-to-cash flow (FCOVENT7); debt-to-tangible net worth (FCOVENT8); debt-to-equity (FCOVENT9); current ratio (FCOVENT10); tangible net worth (FCOVENT11); and net worth (FCOVENT12).

Panel A: All observations, ACCPPC observations, and DEBTPPC observations.

	Pooled Sample									Matched Sample								
	All			ACCPPC			DEBTPPC			All			ACCPPC			DEBTPPC		
	Number	Mean	Std.	Number	Mean	Std.	Number	Mean	Std.	Number	Mean	Std.	Number	Mean	Std.	Number	Mean	Std.
All PPC	31,459	0.27	0.45	6,894	1.00	0.00	1,679	1.00	0.00	2,156	0.50	0.50	941	1.00	0.00	137	1.00	0.00
ACCPPC	31,459	0.22	0.41	6,894	1.00	0.00	1,679	0.00	0.00	2,156	0.44	0.50	941	1.00	0.00	137	0.00	0.00
DEBTPPC	31,459	0.05	0.22	6,894	0.00	0.00	1,679	1.00	0.00	2,156	0.06	0.24	941	0.00	0.00	137	1.00	0.00
INTINCR	1,022	0.56	0.50	836	0.51	0.50	151	0.89	0.32	245	0.13	0.34	233	0.10	0.30	12	0.67	0.49
INTDECR	1,022	0.94	0.24	836	0.94	0.24	151	0.93	0.26	245	0.99	0.11	233	0.99	0.11	12	1.00	0.00
RATEAISD	31,459	183.78	125.06	6,894	188.97	91.50	1,679	71.01	58.22	2,156	240.29	109.01	941	241.25	71.25	137	74.66	87.09
BWMD	6,679	18.12	3.75	1,726	15.95	2.48	1,182	20.24	2.54	888	16.53	3.40	344	15.20	2.14	100	21.09	2.97
BONDRATE	31,459	0.21	0.41	6,894	0.25	0.43	1,679	0.70	0.46	2,156	0.41	0.49	941	0.37	0.48	137	0.73	0.45
TICKER	31,459	0.39	0.49	6,894	0.56	0.50	1,679	0.73	0.44	2,156	0.49	0.50	941	0.45	0.50	137	0.75	0.43
log(BWSSIZE)	20,737	19.68	1.88	6,036	19.54	1.38	1,555	21.31	1.58	1,850	20.12	1.68	798	19.82	1.50	127	21.95	1.59
TFCMAT	26,725	51.35	107.66	6,781	57.88	25.47	1,667	43.44	22.91	2,119	68.84	31.42	925	67.71	25.58	136	57.14	31.34
log(AMTFCSIZ)	31,459	17.97	1.62	6,894	18.04	1.34	1,679	19.73	1.15	2,156	18.30	1.36	941	18.18	1.18	137	20.01	1.18
REVOLVER	31,459	0.58	0.49	6,894	0.64	0.48	1,679	0.71	0.45	2,156	0.33	0.47	941	0.53	0.50	137	0.85	0.36
SYND	31,407	0.88	0.33	6,894	0.92	0.27	1,679	0.99	0.08	2,156	0.97	0.18	941	0.97	0.17	137	0.96	0.21
SECURED	31,459	0.39	0.49	6,894	0.70	0.46	1,679	0.16	0.36	2,156	0.75	0.43	941	0.85	0.35	137	0.12	0.33
SECUREDMISS	31,459	0.51	0.50	6,894	0.17	0.38	1,679	0.31	0.46	2,156	0.18	0.38	941	0.13	0.33	137	0.42	0.49
FCOVENT1	31,459	0.05	0.21	6,894	0.05	0.22	1,679	0.07	0.25	2,156	0.05	0.22	941	0.05	0.22	137	0.09	0.29
FCOVENT2	31,459	0.03	0.16	6,894	0.03	0.17	1,679	0.04	0.19	2,156	0.03	0.17	941	0.03	0.17	137	0.02	0.15
FCOVENT3	31,459	0.05	0.22	6,894	0.05	0.23	1,679	0.06	0.23	2,156	0.05	0.22	941	0.05	0.22	137	0.07	0.25
FCOVENT4	31,459	0.00	0.05	6,894	0.00	0.06	1,679	0.00	0.05	2,156	0.00	0.04	941	0.00	0.05	137	0.01	0.12
FCOVENT5	31,459	0.02	0.15	6,894	0.03	0.16	1,679	0.03	0.16	2,156	0.03	0.16	941	0.03	0.18	137	0.04	0.19
FCOVENT6	31,459	0.05	0.22	6,894	0.06	0.24	1,679	0.07	0.26	2,156	0.06	0.23	941	0.06	0.24	137	0.09	0.29
FCOVENT7	31,459	0.01	0.10	6,894	0.01	0.11	1,679	0.01	0.10	2,156	0.01	0.11	941	0.01	0.10	137	0.01	0.09
FCOVENT8	31,459	0.03	0.17	6,894	0.03	0.18	1,679	0.04	0.20	2,156	0.03	0.18	941	0.03	0.18	137	0.01	0.12
FCOVENT9	31,459	0.00	0.05	6,894	0.00	0.06	1,679	0.00	0.05	2,156	0.01	0.08	941	0.01	0.09	137	0.01	0.09
FCOVENT10	31,459	0.02	0.15	6,894	0.02	0.16	1,679	0.03	0.17	2,156	0.03	0.16	941	0.03	0.17	137	0.01	0.12
FCOVENT11	31,459	0.04	0.20	6,894	0.05	0.21	1,679	0.06	0.23	2,156	0.04	0.21	941	0.04	0.19	137	0.03	0.17
FCOVENT12	31,459	0.03	0.18	6,894	0.04	0.19	1,679	0.05	0.21	2,156	0.04	0.21	941	0.05	0.22	137	0.01	0.12

Panel B: observations that are both ACCPPC and INTINCR and observations that are both ACCPPC and INTDECR.

	Pooled Sample						Matched Sample					
	ACCPPC and INTINCR			ACCPPC and INTDECR			ACCPPC and INTINCR			ACCPPC and INTDECR		
	Number	Mean	Std.	Number	Mean	Std.	Number	Mean	Std.	Number	Mean	Std.
All PPC	429	1.00	0.00	787	1.00	0.00	24	1.00	0.00	230	1.00	0.00
ACCPPC	429	1.00	0.00	787	1.00	0.00	24	1.00	0.00	230	1.00	0.00
DEBTPPC	429	0.00	0.00	787	0.00	0.00	24	0.00	0.00	230	0.00	0.00
INTINCR	429	1.00	0.00	787	0.48	0.50	24	1.00	0.00	230	0.09	0.29
INTDECR	429	0.89	0.32	787	1.00	0.00	24	0.88	0.34	230	1.00	0.00
RATEAISD	429	137.57	70.87	787	183.04	77.97	24	188.85	96.25	230	242.72	46.43
BWMD	151	16.66	2.53	346	15.93	2.28	7	14.14	1.46	105	15.40	1.39
BONDRATE	429	0.35	0.48	787	0.44	0.50	24	0.29	0.46	230	0.46	0.50
TICKER	429	0.64	0.48	787	0.60	0.49	24	0.54	0.51	230	0.44	0.50
log(BWSSIZE)	409	20.49	1.06	754	20.39	1.14	22	20.42	0.66	215	20.50	1.37
TFCMAT	426	62.79	19.27	783	66.07	18.49	24	51.58	19.28	229	67.03	13.60
log(AMTFCSIZ)	429	19.00	0.89	787	18.83	0.95	24	18.55	0.72	230	18.62	1.01
REVOLVER	429	0.63	0.48	787	0.56	0.50	24	0.63	0.49	230	0.47	0.50
SYND	429	1.00	0.00	787	1.00	0.04	24	1.00	0.00	230	1.00	0.00
SECURED	429	0.68	0.47	787	0.80	0.40	24	0.79	0.41	230	0.96	0.20
SECUREDMISS	429	0.11	0.31	787	0.09	0.28	24	0.17	0.38	230	0.04	0.20
FCOVENT1	429	0.03	0.18	787	0.04	0.19	24	0.00	0.00	230	0.05	0.21
FCOVENT2	429	0.03	0.16	787	0.02	0.15	24	0.08	0.28	230	0.01	0.09
FCOVENT3	429	0.04	0.19	787	0.04	0.19	24	0.00	0.00	230	0.05	0.22
FCOVENT4	429	0.00	0.05	787	0.01	0.07	24	0.00	0.00	230	0.00	0.00
FCOVENT5	429	0.03	0.17	787	0.02	0.15	24	0.00	0.00	230	0.03	0.17
FCOVENT6	429	0.03	0.17	787	0.04	0.19	24	0.04	0.20	230	0.04	0.20
FCOVENT7	429	0.00	0.07	787	0.00	0.06	24	0.00	0.00	230	0.00	0.00
FCOVENT8	429	0.04	0.21	787	0.04	0.19	24	0.21	0.41	230	0.02	0.15
FCOVENT9	429	0.00	0.05	787	0.01	0.07	24	0.00	0.00	230	0.03	0.16
FCOVENT10	429	0.02	0.14	787	0.02	0.14	24	0.13	0.34	230	0.01	0.11
FCOVENT11	429	0.05	0.23	787	0.04	0.19	24	0.21	0.41	230	0.03	0.17
FCOVENT12	429	0.03	0.17	787	0.03	0.16	24	0.00	0.00	230	0.09	0.28

Panel C: observations that are both DEBTPPC and INTINCR and observations that are both DEBTPPC and INTDECR.

	Pooled Sample						Matched Sample					
	DEBTPPC and INTINCR			DEBTPPC and INTDECR			DEBTPPC and INTINCR			DEBTPPC and INTDECR		
	Number	Mean	Std.	Number	Mean	Std.	Number	Mean	Std.	Number	Mean	Std.
All PPC	134	1.00	0.00	140	1.00	0.00	8	1.00	0.00	12	1.00	0.00
ACCPPC	134	0.00	0.00	140	0.00	0.00	8	0.00	0.00	12	0.00	0.00
DEBTPPC	134	1.00	0.00	140	1.00	0.00	8	1.00	0.00	12	1.00	0.00
INTINCR	134	1.00	0.00	140	0.88	0.33	8	1.00	0.00	12	0.67	0.49
INTDECR	134	0.92	0.28	140	1.00	0.00	8	1.00	0.00	12	1.00	0.00
RATEAISD	134	64.55	49.53	140	79.39	70.73	8	83.44	79.54	12	166.04	141.75
BWMD	96	19.38	1.90	93	19.24	1.89	5	20.60	3.29	5	20.60	3.29
BONDRATE	134	0.72	0.45	140	0.66	0.47	8	0.63	0.52	12	0.42	0.51
TICKER	134	0.74	0.44	140	0.72	0.45	8	0.63	0.52	12	0.58	0.51
log(BWSSIZE)	130	21.66	1.27	135	21.63	1.30	8	21.31	1.68	12	20.94	1.46
TFCMAT	134	45.19	21.32	140	46.14	21.84	8	53.88	21.24	12	61.83	21.85
log(AMTFCSIZ)	134	20.12	0.92	140	20.04	0.96	8	20.28	1.31	12	19.52	1.58
REVOLVER	134	0.67	0.47	140	0.66	0.47	8	0.75	0.46	12	0.67	0.49
SYND	134	0.99	0.09	140	0.99	0.08	8	1.00	0.00	12	1.00	0.00
SECURED	134	0.12	0.33	140	0.19	0.39	8	0.13	0.35	12	0.42	0.51
SECUREDMISS	134	0.15	0.36	140	0.15	0.36	8	0.25	0.46	12	0.17	0.39
FCOVENT1	134	0.07	0.26	140	0.09	0.29	8	0.00	0.00	12	0.00	0.00
FCOVENT2	134	0.02	0.15	140	0.02	0.15	8	0.00	0.00	12	0.00	0.00
FCOVENT3	134	0.03	0.17	140	0.05	0.22	8	0.00	0.00	12	0.08	0.29
FCOVENT4	134	0.00	0.00	140	0.00	0.00	8	0.00	0.00	12	0.00	0.00
FCOVENT5	134	0.02	0.15	140	0.02	0.15	8	0.00	0.00	12	0.00	0.00
FCOVENT6	134	0.04	0.21	140	0.06	0.23	8	0.00	0.00	12	0.00	0.00
FCOVENT7	134	0.02	0.15	140	0.02	0.15	8	0.00	0.00	12	0.00	0.00
FCOVENT8	134	0.04	0.19	140	0.04	0.19	8	0.00	0.00	12	0.00	0.00
FCOVENT9	134	0.00	0.00	140	0.00	0.00	8	0.00	0.00	12	0.00	0.00
FCOVENT10	134	0.04	0.21	140	0.04	0.20	8	0.00	0.00	12	0.08	0.29
FCOVENT11	134	0.06	0.24	140	0.05	0.22	8	0.00	0.00	12	0.00	0.00
FCOVENT12	134	0.03	0.17	140	0.03	0.17	8	0.00	0.00	12	0.00	0.00

Table 2. Percentage of loan facilities with performance pricing covenants. The number of loan facility observations, the percentage without performance pricing covenants (No PPC), with PPC (All PPC), with accounting-based PPC (ACCPPC), with debt-rating-based PPC (DEBTPPC), with interest increasing PPC (INTINCR), and with interest decreasing PPC (INTDECR) are reported for the entire sample, and separately for every year within our sample period.

Year	Number of loan facility observations	No PPC	All PPC	ACCPPC	DEBTPPC	INTINCR	INTDECR
Total	31,459	72.75%	27.25%	21.91%	5.34%	1.83%	3.04%
1994	3,575	81.34%	18.66%	13.31%	5.34%	0.67%	1.15%
1995	3,666	68.30%	31.70%	24.17%	7.53%	2.45%	3.41%
1996	5,135	69.56%	30.44%	23.82%	6.62%	1.91%	3.43%
1997	6,826	72.24%	27.76%	22.33%	5.44%	1.82%	2.84%
1998	6,308	68.53%	31.47%	26.97%	4.50%	2.43%	4.17%
1999	5,949	78.13%	21.87%	18.22%	3.65%	1.46%	2.66%

Table 3. Difference of means tests, pooled sample. We present the difference of the mean variable value between those loan facilities without PPCs and those with, and calculate the Student's T-statistic and Wilcoxon Signed Rank statistic. Variable definitions are as follows: RATEAISD is the basis point coupon spread over LIBOR plus the annual fee and upfront fee, spread over the life of the loan. BWMD is the Moody's senior debt rating, where the nonmissing ratings of Aaa through C are translated into an ordinal scale ranging from 28 to 8. BONDRATE is an indicator variable that equals unity if the borrower has a bond rating. TICKER is an indicator variable that is equal to unity if the borrower has a ticker symbol. BWSSIZE is the borrower's sales size. TFCMAT is the months to maturity. AMTFCSIZ is the facility size. REVOLVER and SYND are indicator variables that equal unity if the loan is a revolving loan or syndicated, respectively. SECURED and SECUREDMISS are indicator variables that equal to unity if the loan is designated as secured by the database or if the securitization status is missing, respectively. FCOVENT1-12 are indicator variables that are equal to unity if there is are coverage covenants based on the fixed charge (FCOVENT1); debt service (FCOVENT2); interest (FCOVENT3); cash interest (FCOVENT4); leverage ratio (FCOVENT5); debt-to-cash flow (FCOVENT6); senior debt-to-cash flow (FCOVENT7); debt-to-tangible net worth (FCOVENT8); debt-to-equity (FCOVENT9); current ratio (FCOVENT10); tangible net worth (FCOVENT11); and net worth (FCOVENT12).

	Without PPC	With PPC	Mean difference	T-stat	Wilcoxon Statistic
RATEAISD	22,886	8,573	24.631	17.899***	126515437.5***
BWMD	3,771	2,908	0.755	8.419***	9163705.5***
BONDRATE	22,886	8,573	-0.174	-30.758***	-151965142.5***
TICKER	22,886	8,573	-0.278	-45.289***	-162097822***
log(BWSSIZE)	13,146	7,591	-0.359	-14.15***	-84627600.5***
TFCMAT	18,277	8,448	-5.387	-5.42***	-124943780***
log(AMTFCSIZ)	22,886	8,573	-0.558	-28.982***	-153433955.5***
REVOLVER	22,886	8,573	-0.110	-18.07***	-145660310.5***
SYND	22,834	8,573	-0.082	-23.297***	-142702285***
SECURED	22,886	8,573	-0.280	-45.645***	-162289853***
SECUREDMISS	22,886	8,573	0.425	78.997***	93124092***
FCOVENT1	22,886	8,573	-0.009	-3.305***	-135749015.5***
FCOVENT2	22,886	8,573	-0.006	-3.081***	-135489457.5***
FCOVENT3	22,886	8,573	-0.008	-2.838***	-135643565.5***
FCOVENT4	22,886	8,573	-0.001	-1.636	-134963655.5*
FCOVENT5	22,886	8,573	-0.005	-2.323**	-135304731**
FCOVENT6	22,886	8,573	-0.011	-3.873***	-135978541.5***
FCOVENT7	22,886	8,573	-0.001	-0.702	-134943037
FCOVENT8	22,886	8,573	-0.005	-1.985**	-135295592.5**
FCOVENT9	22,886	8,573	-0.001	-2.105**	-134987921**
FCOVENT10	22,886	8,573	-0.004	-1.896*	-135221834**
FCOVENT11	22,886	8,573	-0.006	-2.16**	-135415567**
FCOVENT12	22,886	8,573	-0.006	-2.528**	-135443157***

***, **, and * indicate statistical significance at the 0.01, 005, and 0.10 level.

Table 4. Difference of means tests, matched sample. We present separately the difference of the mean variable value between those loan facilities without PPCs and those with for the matched pair sample where one element is an accounting-based performance pricing covenants (ACCPPC); the corresponding debt-rating-based performance pricing covenants (DEBTPPC) case; the interest increasing (INTINCR) case; and the interest decreasing (INTDECR) case. We calculate the Student's T-statistic and Wilcoxon Signed Rank statistic. Variable definitions are as follows: RATEAISD is the basis point coupon spread over LIBOR plus the annual fee and upfront fee, spread over the life of the loan. BWMD is the Moody's senior debt rating, where the nonmissing ratings of Aaa through C are translated into an ordinal scale ranging from 28 to 8. BONDRATE is an indicator variable that equals unity if the borrower has a bond rating. TICKER is an indicator variable that is equal to unity if the borrower has a ticker symbol. BWSSIZE is the borrower's sales size. TFCMAT is the months to maturity. AMTFCSIZ is the facility size. REVOLVER and SYND are indicator variables that equal unity if the loan is a revolving loan or syndicated, respectively. SECURED and SECUREDMISS are indicator variables that equal to unity if the loan is designated as secured by the database or if the securitization status is missing, respectively. FCOVENT1-12 are indicator variables that are equal to unity if there is are coverage covenants based on the fixed charge (FCOVENT1); debt service (FCOVENT2); interest (FCOVENT3); cash interest (FCOVENT4); leverage ratio (FCOVENT5); debt-to-cash flow (FCOVENT6); senior debt-to-cash flow (FCOVENT7); debt-to-tangible net worth (FCOVENT8); debt-to-equity (FCOVENT9); current ratio (FCOVENT10); tangible net worth (FCOVENT11); and net worth (FCOVENT12).

Panel A: All PPC, ACCPPC, and DEBTPPC

	All PPC (*pairs = 1,078*)			ACCPPC (*pairs = 941*)			DEBTPPC (*pairs = 137*)		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Mean difference	T-stat	Wilcoxon Statistic	Mean difference	T-stat	Wilcoxon Statistic	Mean difference	T-stat	Wilcoxon Statistic
RATEAISD	40.420	19.734***	149069***	45.762	20.077***	135590***	3.728	2.014**	56
BWMD	0	N/A	N/A	0	N/A	N/A	0	N/A	N/A
BONDRATE	0	N/A	N/A	0	N/A	N/A	0	N/A	N/A
TICKER	0	N/A	N/A	0	N/A	N/A	0	N/A	N/A
log(BWSSIZE)	0	N/A	N/A	0	N/A	N/A	0	N/A	N/A
TFCMAT	4.898	4.974***	70975***	10.332	11.379***	100177.5***	-31.581	-10.334***	-2989***
log(AMTFCSIZ)	-0.214	-7.472***	-63895***	-0.196	-6.325***	-43669***	-0.338	-4.582***	-1540***
REVOLVER	-0.480	-27.66***	-77291.5***	-0.442	-23.843***	-50856***	-0.737	-17.123***	-2777.5***
SYND	-0.002	-0.577	-6.5	-0.004	-1.265	-11	0.014	1.419	1.5
SECURED	-0.017	-3.195***	-148.5***	-0.021	-3.676***	-155***	0.014	1.419	1.5
SECUREDMISS	0.026	4.356***	301***	0.023	4.049***	170.5***	0.043	1.745*	19.5
FCOVENT1	-0.006	-0.734	-161	-0.002	-0.229	-38.5	-0.036	-1.294	-20
FCOVENT2	0	N/A	N/A	-0.003	-0.412	-40.5	0.022	1	7.5
FCOVENT3	-0.002	-0.204	-48.5	-0.002	-0.221	-41.5	0	N/A	N/A
FCOVENT4	-0.004	-2.003**	-5	-0.002	-1.415	-1.5	-0.014	-1.419	-1.5
FCOVENT5	-0.012	-1.787*	-175.5*	-0.010	-1.313	-108	-0.029	-1.643	-7
FCOVENT6	-0.019	-2.052**	-556.5**	-0.015	-1.511	-304.5	-0.050	-1.615	-35
FCOVENT7	0.004	0.784	27	0.004	0.816	25	0	N/A	N/A
FCOVENT8	0.008	1.116	148.5	0.003	0.404	42	0.043	1.915*	16.5
FCOVENT9	-0.003	-0.774	-12	-0.002	-0.534	-7.5	-0.007	-1	-0.5
FCOVENT10	-0.004	-0.566	-51	-0.004	-0.59	-47	0	0	0
FCOVENT11	0.015	1.791*	324*	0.012	1.344	187	0.036	1.391	17.5
FCOVENT12	-0.006	-0.639	-133.5	-0.006	-0.654	-127.5	0	N/A	N/A

***, **, and * indicate statistical significance at the 0.01, 005, and 0.10 level.

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Panel B: INTINCR and INTDECR

	INTINCR (pairs = 32)			INTDECR (pairs = 242)		
	(1)	(2)	(3)	(4)	(5)	(6)
	Mean difference	T-stat	Wilcoxon Statistic	Mean difference	T-stat	Wilcoxon Statistic
RATEAISD	28.203	2.997***	80.5***	50.3719	24.389***	11757.5***
BWMD	0	N/A	N/A	0	N/A	N/A
BONDRATE	0	N/A	N/A	0	N/A	N/A
TICKER	0	N/A	N/A	0	N/A	N/A
log(BWSSIZE)	0	N/A	N/A	0	N/A	N/A
TFCMAT	5.781	0.926	60.5	16.65833	14.971***	10948.5***
log(AMTFCSIZ)	-0.436	-2.448**	-88**	-0.03922	-0.718	-936.5
REVOLVER	-0.625	-6.387***	-115***	-0.46281	-13.741***	-3332***
SYND	0	N/A	N/A	0	N/A	N/A
SECURED	0	N/A	N/A	-0.02893	-2.679***	-14**
SECUREDMISS	0.031	1	0.5	0.028926	2.679***	14**
FCOVENT1	0.031	1	0.5	0	0	0
FCOVENT2	0	0	0	0.053719	3.213***	58.5***
FCOVENT3	0.063	1.438	1.5	-0.00826	-0.446	-10.5
FCOVENT4	0	N/A	N/A	0	N/A	N/A
FCOVENT5	0	N/A	N/A	-0.00826	-0.577	-6.5
FCOVENT6	-0.031	-1	-0.5	-0.00826	-0.499	-8.5
FCOVENT7	0	N/A	N/A	0.016529	2.013**	5
FCOVENT8	-0.094	-1.359	-4.5	0.028926	1.816*	28
FCOVENT9	0	N/A	N/A	-0.02479	-2.475**	-10.5**
FCOVENT10	-0.031	-0.571	-1	0.008264	0.706	4.5
FCOVENT11	-0.125	-2.104**	-5	-0.00826	-0.632	-5.5
FCOVENT12	0.031	1.000	0.5	-0.00826	-0.342	-17.5

***, **, and * indicate statistical significance at the 0.01, 005, and 0.10 level.

Table 5. Counting tests, matched sample. The number of times that the facility without a performance pricing covenant (PPC) of a matched pair has a higher, identical, or lower value for the rates all in spread (RATEAISD) variable relative to the facility with a PPC is reported. These values are reported for all matched pairs (Panel A), matched pairs where the facility with a PPC is an accounting-based PPC (ACCPPC), matched pairs where the facility with a PPC is a debt-rating-based PPC (DEBTPPC), matched pairs where the facility with a PPC is interest increasing (INTINCR), and matched pairs where the facility with a PPC is a interest decreasing (INTDECR). These results are reported for all rating categories, and are reported separately for matched pairs associated with borrower with Moody' senior debt ratings of A, B, C, and unrated. We also report the percentage higher, identical, lower, and the number of paired observations for each sample.

Panel A: All performance pricing covenants matched sample

	All		A-Rated		B-Rated		C-Rated		Unrated	
	Pairs	%	Pairs	%	Pairs	%	Pairs	%	Pairs	%
ΔRATEAISD > 0	760	71%	7	13%	293	79%	10	67%	450	71%
ΔRATEAISD = 0	210	19%	46	82%	51	14%	1	7%	112	18%
ΔRATEAISD < 0	108	10%	3	5%	29	8%	4	27%	72	11%
Total	1078	100%	56	100%	373	100%	15	100%	634	100%

Panel B: Accounting-based performance pricing covenants matched sample

	All		A-Rated		B-Rated		C-Rated		Unrated	
	Pairs	%	Pairs	%	Pairs	%	Pairs	%	Pairs	%
ΔRATEAISD > 0	744	79%	6	67%	285	89%	10	67%	443	74%
ΔRATEAISD = 0	114	12%	2	22%	21	7%	1	7%	90	15%
ΔRATEAISD < 0	83	9%	1	11%	14	4%	4	27%	64	11%
Total	941	100%	9	100%	320	100%	15	100%	597	100%

Panel C: Debt-rating-based performance pricing covenants matched sample

	All		A-Rated		B-Rated		C-Rated		Unrated	
	Pairs	%	Pairs	%	Pairs	%	Pairs	%	Pairs	%
ΔRATEAISD > 0	16	12%	1	2%	8	15%	0	N/A	7	19%
ΔRATEAISD = 0	96	70%	44	94%	30	57%	0	N/A	22	59%
ΔRATEAISD < 0	25	18%	2	4%	15	28%	0	N/A	8	22%
Total	137	100%	47	100%	53	100%	0	N/A	37	100%

Panel D: Interest increasing performance pricing covenants matched sample

	All		A-Rated		B-Rated		C-Rated		Unrated	
	Pairs	%	Pairs	%	Pairs	%	Pairs	%	Pairs	%
ΔRATEAISD > 0	18	56%	-	0%	6	75%	-	0%	12	60%
ΔRATEAISD = 0	10	31%	1	50%	2	25%	-	0%	7	35%
ΔRATEAISD < 0	4	13%	1	50%	-	0%	2	100%	1	5%
Total	32	100%	2	100%	8	100%	2	100%	20	100%

Panel E: Interest decreasing performance pricing covenants matched sample

	All		A-Rated		B-Rated		C-Rated		Unrated	
	Pairs	%	Pairs	%	Pairs	%	Pairs	%	Pairs	%
ΔRATEAISD > 0	216	89%	-	0%	97	92%	3	100%	116	88%
ΔRATEAISD = 0	20	8%	1	50%	7	7%	-	0%	12	9%
ΔRATEAISD < 0	6	2%	1	50%	1	1%	-	0%	4	3%
Total	242	100%	2	100%	105	100%	3	100%	132	100%

Table 6. Correlations. Correlations between variables for the pooled sample are presented. Variable definitions are as follows: ACCPPC and DEBTPPC are indicator variables that are equal to unity if the loan facility has an accounting-based performing pricing covenant (PPC) or debt-rating-based PPC, respectively. INTINCR and INTDECR are indicator variables that are equal to unity if the loan facility's PPC is interest increasing or interest decreasing, respectively. RATEAISD is the basis point coupon spread over LIBOR plus the annual fee and upfront fee, spread over the life of the loan. BWMD is the Moody's senior debt rating, where the nonmissing ratings of Aaa through C are translated into an ordinal scale ranging from 28 to 8. BONDRATE is an indicator variable that equals unity if the borrower has a bond rating. TICKER is an indicator variable that is equal to unity if the borrower has a ticker symbol. BWSSIZE is the borrower's sales size. TFCMAT is the months to maturity. AMTFCSIZ is the facility size. REVOLVER and SYND are indicator variables that equal unity if the loan is a revolving loan or syndicated, respectively. SECURED and SECUREDMISS are indicator variables that equal to unity if the loan is designated as secured by the database or if the securitization status is missing, respectively. FCOVENT1-12 are indicator variables that are equal to unity if there is are coverage covenants based on the fixed charge (FCOVENT1); debt service (FCOVENT2); interest (FCOVENT3); cash interest (FCOVENT4); leverage ratio (FCOVENT5); debt-to-cash flow (FCOVENT6); senior debt-to-cash flow (FCOVENT7); debt-to-tangible net worth (FCOVENT8); debt-to-equity (FCOVENT9); current ratio (FCOVENT10); tangible net worth (FCOVENT11); and net worth (FCOVENT12).

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]	[23]	[24]	[25]	[26]
ACCPPC	[1]																										
DEBTPPC	[2]	-0.13																									
INTINCR	[3]	-0.22	0.27																								
INTDECR	[4]	0.04	-0.02	-0.23																							
RATEAISD	[5]	0.02	-0.21	-0.55	0.18																						
BWMD	[6]	-0.34	0.26	0.36	-0.24	-0.67																					
BONDRATE	[7]	0.05	0.29	-0.06	0.04	-0.14	n.a.																				
TICKER	[8]	0.18	0.17	0.10	0.02	-0.05	0.13	0.29																			
log(BWSSIZE)	[9]	-0.05	0.25	0.15	-0.08	-0.51	0.52	0.41	0.18																		
TFCMAT	[10]	0.04	-0.02	-0.22	0.10	0.01	-0.26	-0.01	-0.05	0.01																	
log(AMTFCSIZ)	[11]	0.02	0.26	0.26	-0.09	-0.52	0.51	0.33	0.05	0.68	0.03																
REVOLVER	[12]	0.07	0.07	0.14	-0.01	-0.08	0.03	-0.03	0.08	-0.09	-0.02	0.00															
SYND	[13]	0.07	0.08	0.01	-0.01	-0.31	0.11	0.15	-0.07	0.44	0.07	0.58	-0.08														
SECURED	[14]	0.34	-0.11	-0.33	0.18	0.41	-0.53	-0.01	0.18	-0.37	-0.01	-0.35	0.03	-0.33													
SECUREDMISS	[15]	-0.36	-0.09	0.05	-0.05	-0.27	0.31	-0.08	-0.28	0.26	0.03	0.24	-0.07	0.29	-0.82												
FCOVENT1	[16]	0.01	0.02	0.01	0.02	-0.01	-0.02	0.01	0.00	0.00	0.00	0.00	0.03	-0.02	0.02	-0.03											
FCOVENT2	[17]	0.01	0.02	0.01	-0.04	-0.02	0.01	0.00	0.01	0.00	0.00	0.00	0.01	-0.01	0.02	-0.03	0.06										
FCOVENT3	[18]	0.01	0.01	-0.01	-0.01	-0.03	0.02	0.01	0.01	0.00	0.00	0.01	0.02	-0.01	0.01	-0.03	0.30	0.14									
FCOVENT4	[19]	0.01	0.00	-0.04	0.02	0.00	0.00	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	-0.01	0.06	0.05	0.02								
FCOVENT5	[20]	0.01	0.01	0.07	0.04	-0.01	0.02	0.01	0.00	0.01	0.00	0.01	0.01	0.00	0.01	-0.02	0.25	0.07	0.26	0.04							
FCOVENT6	[21]	0.01	0.02	-0.04	0.01	-0.01	-0.02	0.00	0.00	0.00	0.00	-0.01	0.02	-0.02	0.03	-0.04	0.54	0.17	0.53	0.12	0.16						
FCOVENT7	[22]	0.00	0.00	0.03	-0.03	-0.01	-0.01	0.00	0.00	0.01	0.00	0.00	0.00	-0.01	0.01	-0.02	0.25	0.11	0.24	0.09	0.07	0.31					
FCOVENT8	[23]	0.00	0.01	0.05	0.00	-0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.02	-0.01	0.02	-0.03	0.13	0.31	0.13	0.01	-0.01	0.05	0.00				
FCOVENT9	[24]	0.01	0.00	-0.04	0.02	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.01	-0.02	0.02	0.07	0.05	0.00	0.01	0.02	0.00	0.00			
FCOVENT10	[25]	0.01	0.01	0.03	0.01	-0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.01	-0.01	0.02	-0.03	0.16	0.23	0.16	0.01	0.12	0.14	0.06	0.35	0.09		
FCOVENT11	[26]	0.00	0.02	0.07	-0.03	-0.02	0.02	0.01	0.00	0.01	0.00	0.01	0.01	-0.01	0.01	-0.03	0.20	0.27	0.18	0.03	0.16	0.13	0.02	0.51	0.04	0.35	
FCOVENT12	[27]	0.01	0.01	0.01	-0.03	-0.02	0.01	0.01	0.01	0.01	0.00	0.01	0.02	-0.01	0.02	-0.03	0.31	0.12	0.29	0.05	0.22	0.35	0.15	0.09	0.07	0.12	-0.04

Table 7: Regression tests, rated subsample. RATEAISD is the dependent variables. Independent variables are as follows: ACCPPC and DEBTPPC are indicator variables that are equal to unity if the loan facility has an accounting-based performance pricing covenant (PPC) or debt-rating-based PPC, respectively. INTINCR and INTDECR are indicator variables that are equal to unity if the loan facility's PPC is interest increasing or interest decreasing, respectively. RATEAISD is the basis point coupon spread over LIBOR plus the annual fee and upfront fee, spread over the life of the loan. BWMD is the Moody's senior debt rating, where the nonmissing ratings of Aaa through C are translated into an ordinal scale ranging from 28 to 8. TICKER is an indicator variable that is equal to unity if the borrower has a ticker symbol. BWSSIZE is the borrower's sales size. TFCMAT is the months to maturity. AMTFCSIZ is the facility size. REVOLVER and SYND are indicator variables that equal unity if the loan is a revolving loan or syndicated, respectively. SECURED and SECUREDMISS are indicator variables that equal to unity if the loan is designated as secured by the database or if the securitization status is missing, respectively. FCOVENT1-12 are indicator variables that are equal to unity if there is are coverage covenants based on the fixed charge (FCOVENT1); debt service (FCOVENT2); interest (FCOVENT3); cash interest (FCOVENT4); leverage ratio (FCOVENT5); debt-to-cash flow (FCOVENT6); senior debt-to-cash flow (FCOVENT7); debt-to-tangible net worth (FCOVENT8); debt-to-equity (FCOVENT9); current ratio (FCOVENT10); tangible net worth (FCOVENT11); and net worth (FCOVENT12). YEAR1995-1999 are indicator variables that are equal to unity if the observation is associated with the given year. The year 1994 is the reference year.

Panel A: Pooled Sample, Matched Sample ACCPPC, and Matched Sample DEBTPPC.

	Pooled sample			Matched sample, ACCPPC			Matched sample, DEBTPPC		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Intercept	699.71***	739.35***	842.57***	534.22***	464.38***	700.19***	454.60***	451.93***	520.36***
ACCPPC	-24.56***	-22.12***	-7.14***	-29.98***	-36.92***	-28.67***			
DEBTPPC	-26.21***	-27.27***	-29.89***				2.13	0.62	-6.20
BWMD	-12.88***	-14.30**	-15.57***	-5.63***	-5.22***	-7.00***	-6.91***	-6.46***	-10.62***
TICKER	-6.21***	-11.71***	-4.86**	-3.89	-6.52	-2.80	-28.99***	-31.77***	-33.86***
log(BWSSIZE)	-6.90***	-8.10***	-8.59***	-5.80***	-4.70**	-6.33***	-14.46***	-15.29***	-15.89***
TFCMAT	0.49***		0.60***	0.54***		0.62***	-0.32*		0.09
log(AMTFCSIZ)	-10.73***	-9.20***	-12.6***	-10.60**	-8.46***	-11.60***	2.74	3.10	5.98
REVOLVER	-23.2***	-23.1***	-25.36***	-15.76***	-18.14***	-15.96***	6.46	-3.87	-1.71
SYND	5.46	15.67***	-0.52	-15.84	3.33	-13.66	12.21	16.15	6.77
SECURED	60.99***	62.46***		131.83***	157.67***		120.93***	113.56***	
SECUREDMISS	2.62	6.95**		114.77***	133.95***		23.90***	23.67***	
FCOVENT1	1.31	-0.04	1.11	11.35	12.33	9.73	-6.19	-2.71	7.55
FCOVENT2	0.88	0.15	-1.70	-8.59	-9.76	-7.08	9.77	19.28	11.15
FCOVENT3	-8.81*	-6.54	-8.83*	4.40	6.95	3.70	8.80	8.96	10.18
FCOVENT4	-30.38	-29.52	-18.06	-30.31	-19.74	-29.89	27.09	36.77	35.08
FCOVENT5	5.16	5.29	5.30	31.81*	28.76*	34.53**	-12.43	-22.98	-32.77
FCOVENT6	10.23*	9.38*	10.61*	22.19*	16.01	23.71*	-12.96	-14.48	-17.57
FCOVENT7	-13.98	-15.47	-13.00	6.99	5.71	9.28	32.02	22.07	22.81
FCOVENT8	-1.23	-0.11	-1.48	-16.28	-11.87	-17.48	-11.69	-21.24	-43.38
FCOVENT9	17.90	21.88	25.46				4.81	3.07	0.60
FCOVENT10	1.50	2.27	1.93	-2.42	-6.68	-1.39	3.77	10.98	20.96
FCOVENT11	-5.22	-7.58	-4.87	-0.97	-8.60	-1.53	6.40	9.97	19.46
FCOVENT12	-5.67	-9.02	-7.94	-21.27	-18.40	-22.57	-44.89	-55.48	-73.82
YEAR1995	-1.33	-1.81	-4.17	-1.24	3.60	2.89	9.29	6.49	9.64
YEAR1996	-0.96	1.09	-0.40	9.17	12.82	15.45*	15.89	10.97	11.04
YEAR1997	-12.05***	-11.55***	-12.33***	-13.16	-10.85	-6.92	13.17	10.03	4.45
YEAR1998	1.74	0.94	1.46	-3.33	1.04	1.87	25.81**	24.68**	31.56***
YEAR1999	33.21***	26.87***	34.23***	22.73**	22.70**	29.60***	95.72***	92.01***	147.3***
# Obs	5,578	6,033	5,578	627	632	627	186	188	186
Adj-R2	0.65	0.61	0.62	0.34	0.31	0.33	0.82	0.82	0.75

***, **, and * indicate statistical significance at the 0.01, 005, and 0.10 level

Panel B: Matched Sample INTINCR, and Matched Sample INTDECR.

	Matched sample, INTINCR			Matched sample, INTDECR		
	(1)	(2)	(3)	(4)	(5)	(6)
Intercept	-1204.05	-1337.11	841.17***	223.83**	332.22***	535.34***
ACCPPC	1.33	-4.69	19.76	-30.98***	-46.38***	-25.88***
DEBTPPC	-54.86	-24.93	-47.63	-36.47**	-39.21**	-68.59***
BWMD	8.08	10.50	-15.79**	-2.01	-4.21**	-8.52***
TICKER	-124.69*	-95.27	-75.01*	-7.36	3.81	-12.04*
log(BWSSIZE)	33.44	37.13	-20.47**	-6.08	-9.64**	-6.81*
TFCMAT	1.11		1.28*	1.09***		1.33***
log(AMTFCSIZ)	21.66	21.31	2.63	-4.24	-1.33	-5.42*
SECURED	306.66	369.21		187.11***	225.74***	
SECUREDMISS	-62.96	-43.34		167.30***	174.66***	
FCOVENT1				17.70	29.29	-7.92
FCOVENT3				28.87*	42.81**	15.31
FCOVENT6				-5.55	-9.33	10.64
FCOVENT8				28.33	63.29**	3.20
FCOVENT11				-72.02**	-151.12***	-36.59
FCOVENT12				-16.33	-23.48	2.86
YEAR1995				62.59***	61.01***	41.65**
YEAR1996				26.08**	18.83	22.11*
YEAR1997				-0.87	-3.48	-13.70
YEAR1998				10.08	4.67	5.37
YEAR1999				44.00***	24.98*	35.72**
# Obs	20	20	20	216	216	216
Adj-R2	0.85	0.83	0.86	0.71	0.64	0.61

***, **, and * indicate statistical significance at the 0.01, 005, and 0.10 level

Table 8: Regression tests, unrated subsample. RATEAISD is the dependent variables. Independent variables are as follows: ACCPPC and DEBTPPC are indicator variables that are equal to unity if the loan facility has an accounting-based performance pricing covenant (PPC) or debt-rating-based PPC, respectively. INTINCR and INTDECR are indicator variables that are equal to unity if the loan facility's PPC is interest increasing or interest decreasing, respectively. RATEAISD is the basis point coupon spread over LIBOR plus the annual fee and upfront fee, spread over the life of the loan. TICKER is an indicator variable that is equal to unity if the borrower has a ticker symbol. BWSSIZE is the borrower's sales size. TFCMAT is the months to maturity. AMTFCSIZ is the facility size. REVOLVER and SYND are indicator variables that equal unity if the loan is a revolving loan or syndicated, respectively. SECURED and SECUREDMISS are indicator variables that equal to unity if the loan is designated as secured by the database or if the securitization status is missing, respectively. FCOVENT1-12 are indicator variables that are equal to unity if there is are coverage covenants based on the fixed charge (FCOVENT1); debt service (FCOVENT2); interest (FCOVENT3); cash interest (FCOVENT4); leverage ratio (FCOVENT5); debt-to-cash flow (FCOVENT6); senior debt-to-cash flow (FCOVENT7); debt-to-tangible net worth (FCOVENT8); debt-to-equity (FCOVENT9); current ratio (FCOVENT10); tangible net worth (FCOVENT11); and net worth (FCOVENT12). YEAR1995-1999 are indicator variables that are equal to unity if the observation is associated with the given year. The year 1994 is the reference year.

Panel A: Pooled Sample, Matched Sample ACCPPC, and Matched Sample DEBTPPC.

	Pooled sample			Matched sample, ACCPPC			Matched sample, DEBTPPC		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Intercept	783.85***	804.93***	1012.09***	491.79***	455.59***	616.43***	530.49**	625.34***	1262.35***
ACCPPC	-27.72***	-29.21***	-11.58***	-36.26***	-42.92***	-27.93***			
DEBTPPC	-29.64***	-30.36***	-43.64***				-9.18	-5.98	-5.03
TICKER	-9.27***	-9.61***	-5.88***	-2.91	-7.23	2.33	-9.47	-27.17	-70.88*
log(BWSSIZE)	-13.04***	-14.07***	-16.79***	-7.40***	-8.30***	-5.06**	-22.77***	-22.44***	-17.08*
TFCMAT	0.01		0.01	0.52***		0.83***	0.25		0.28
log(AMTFCSIZ)	-20.52***	-20.76***	-26.15***	-11.79***	-7.39***	-15.85***	1.22	-2.98	-40.19***
REVOLVER	-22.81***	-20.95***	-26.41***	-10.87	-12.01*	-14.34**	11.89	21.43	-5.23
SYND	2.11	5.93**	-3.89	-4.66	6.25	-18.08			
SECURED	93.54***	92.19***		119.24***	128.32***		157.27***	153.14***	
SECUREDMISS	17.24***	20.78***		51.36***	55.95***		-13.45	-19.17	
FCOVENT1	2.9	2.06	4.99	-7.60	-16.07	-18.41	50.95	54.46	62.08
FCOVENT2	-1.25	-1.92	-1.2	-9.86	-8.97	-13.24			
FCOVENT3	-6.48	-6.08	-8.91*	-10.84	-10.13	-9.83	0.05	4.87	17.16
FCOVENT4	16.63	19.59	2.26	-61.67	-54.65	-57.79			
FCOVENT5	-1.89	1.09	0.31	-4.11	5.58	-18.93	35.49	48.94	82.63
FCOVENT6	-3.74	-2.76	-4.38	24.69	30.51*	33.75**	-57.84	-62.73*	-22.63
FCOVENT7	-1.6	-1.6	-0.29	-7.47	-21.34	-10.12			
FCOVENT8	-1.37	-1.83	2.93	4.29	14.8	0.84	5.18	9.15	-40.70
FCOVENT9	-8.9	-7.28	-12.1	-12.97	-8.76	-9.20			
FCOVENT10	1.83	2.39	6.2	0.05	2.76	9.81	-25.86	-33.93	-17.74
FCOVENT11	1.07	0.59	-1.84	21.17	7.96	20.79			
FCOVENT12	0.63	-0.23	3.13	9.98	6.99	12.73			
YEAR1995	0	0.15	2.25	15.69	10.69	16.97	47.38	48.35	86.36*
YEAR1996	-5.08*	-4.65*	0.27	12.74	10.81	10.94	-20.70	-19.36	52.43
YEAR1997	-14.07***	-13.5***	-9.89***	-7.88	-9.65	-7.09	-7.45	-5.01	-7.73
YEAR1998	-7.92***	-5.77**	-4.93	2.83	0.39	-6.73	-88.17**	-89.97**	-108.08*
YEAR1999	24.76***	23.22***	22.45***	36.22***	28.88**	21.33	39.93	46.99	81.51**
# Obs	13,046	14,678	13,046	935	964	935	66	66	66
Adj-R2	0.42	0.41	0.34	0.24	0.22	0.16	0.74	0.73	0.50

***, **, and * indicate statistical significance at the 0.01, 005, and 0.10 level

Panel B: Matched Sample INTINCR, and Matched Sample INTDECR.

	Matched sample, INTINCR			Matched sample, INTDECR		
	(1)	(2)	(3)	(4)	(5)	(6)
Intercept	569.74	726.54*	769.25**	158.75	76.13	304.59***
ACCPPC	-56.20	-50.35	-137.66***	-33.94***	-64.63***	-7.56
DEBTPPC	56.73*	39.02	46.34	-11.41	8.84	-64.11***
TICKER	12.95	18.22	7.87	-26.86***	-25.65***	-30.82***
log(BWSSIZE)	1.49		2.57***	-1.85	-0.84	-1.08
TFCMAT	-47.09	-55.11*	-50.90*	1.47***		2.39***
log(AMTFCSIZ)	569.74	726.54*	769.25**	-3.14	1.11	-5.67
SECURED	100.11*	86.32		175.6***	254.17***	
SECUREDMISS	25.86	-38.45		87.93***	162.22***	
FCOVENT1				1.26	2.44	0.17
FCOVENT3				-5.63	-16.23	7.17
FCOVENT6				17.84	20.62	21.48
FCOVENT8				-27.63*	-25.38	-21.08
FCOVENT11				-41.62**	-38.79*	-46.3**
FCOVENT12				-0.75	-3.09	-0.4
YEAR1995				-41.53*	-9.98	-63.36**
YEAR1996				-42.04*	-1.90	-86.15***
YEAR1997				-66.23***	-37.68	-96.23***
YEAR1998				-28.15	-5.09	-59.69**
YEAR1999				-0.34	20.4	-31.41
# Obs	20	20	20	235	238	235
Adj-R2	0.67	0.66	0.57	0.59	0.52	0.44

***, **, and * indicate statistical significance at the 0.01, 005, and 0.10 level