

Contractual Contingencies and Renegotiation: Evidence from the Use of Pricing Grids*

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Abstract

My results suggest that the primary role of performance pricing in bank debt contracts is to delay costly renegotiation. This effect is concentrated in long-term loans, indicating that the renegotiation reduction benefits of pricing grids are larger for long maturities. For instance, a five-year loan with a pricing grid is refinanced for pricing-related reasons on average a year later than a similar loan without such a provision. Since the average time to renegotiation of a five-year loan is roughly 2.5 years, performance pricing allows for substantial savings in contracting costs for non-opaque borrowers. My results also suggest that performance pricing reduces the probability of spread-decreasing outcomes, while having no effect on other types of renegotiation. Thus, pricing grids are most valuable in delaying re-contracting when the credit quality of the borrower improves.

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1 Introduction

There are two major ways in which contractual contingencies are related to renegotiation. One way is that the parties to an agreement employ contingencies to anticipate future events so that less renegotiation is necessary. Alternatively, contingencies could be designed to force renegotiation in the event of changes in firm fundamentals. Recent empirical work concludes that the purpose of bank loan contingencies is to induce renegotiation, instead of reducing it (see, e.g., Roberts and Sufi, 2009). However, given that contracting costs are economically significant,¹ it is puzzling that credit agreements do not include possible future states with respect to borrower financial health so that less renegotiation is necessary.

This paper shows that banks use contingencies with respect to pricing (performance pricing grids)² to make loans more contractually complete. I argue that the primary purpose of this loan provision is to reduce expected re-contracting costs by decreasing the probability of renegotiation. Given that such costs are most often paid by the borrower (see, e.g., Ivashina and Sun, 2011), delaying renegotiation is important because it results in significant costs savings over the life of the firm.

I test for the effect of performance pricing on renegotiation by employing a semi-parametric duration model. Hazard models allow for powerful empirical tests, especially when there is not much cross-sectional variation in whether an outcome of interest occurs, because they measure the length of time until a firm/loan exits the sample. Since almost all bank loans with maturity greater than one year are renegotiated (see, e.g., Roberts and Sufi, 2009), drawing statistical inference from the length of time to renegotiation is more informative than estimating a test of whether renegotiation occurs.

I find that long-term contracts with pricing grids have longer expected time to renegotiation than similar contracts without such a feature. The marginal effect of performance

¹Renegotiation costs typically range from 10 to 40 basis points of deal amount (see, e.g., Denis and Mulineaux, 2000)

²Performance pricing (pricing grids) is widely used in bank debt. Pricing grids tie loan spreads to a firm's credit rating, cash flows, earnings, collateral quality or other variables that are measures of a firm's financial health. In contrast, traditional contracts specify a single interest rate spread that can be modified only through renegotiation of the original contractual terms.

pricing on renegotiation in the long-term loan subsample is also economically large – deals with pricing grids are approximately 5% less likely to be amended at any given quarter than fixed-rate loans. More specifically, a five-year loan with a pricing grid is refinanced for pricing-related reasons on average a year later than a similar loan without such a provision. Since the average time to renegotiation of a five-year loan is roughly 2.5 years, this example illustrates that performance pricing allows for significant savings in contracting costs.

In contrast, short-term loans exhibit no significant differences in time to renegotiation along the performance pricing dimension. Taken together, these findings indicate that contingencies with respect to loan pricing delay renegotiation and that the corresponding benefits are larger for long-term than for short-term loans.

In addition, I find that larger, more profitable, less levered, and less volatile firms are more likely to include pricing grids in their private credit agreements. These results lend support to the practitioners views that performance pricing is offered to borrowers with large outside options to save them renegotiation costs and thus provide them with sufficient incentives to stay with the same lead lender. This is because the costs of including performance pricing provisions in the loans of large transactional borrowers are relatively low, while the benefits are high: 1) Borrowers with large outside options are usually less opaque, making it easier to anticipate potential states with respect to their financial health. 2) The benefits to offering performance pricing to such firms are also greater since they are the first to seek renegotiation when their credit condition improves.

I next analyze how performance pricing affects different types of renegotiation outcomes. My results suggest that pricing grids reduce the likelihood of spread-decreasing contractual amendments, while having no effect on outcomes that result in higher interest spreads. This finding suggests that pricing grids are most valuable in delaying renegotiation when credit quality improves, providing an important complement to studies such as Smith and Warner (1979) and Smith (1993). These authors establish that financial covenants are employed to force renegotiation in the event of increases in borrower credit risk. My study reveals that in contrast with deteriorations in borrower financial health,

banks are likely to handle credit quality improvements for non-opaque firms automatically, via performance pricing. Thus, financial covenants and pricing grids complement each other in handling borrower credit risk changes.

Another important implication of the above finding is that performance pricing directly benefits borrowers. In a loan without a pricing grid, the borrower would have to initiate renegotiation every time its financial health improves so that it receives more favorable pricing. Since costs to amend the contract are most often incurred by the firm, the inclusion of performance pricing results in economically large savings of contracting costs over the life of the firm.

In my last set of tests, acknowledging that incentives to renegotiate revolvers and term loans might differ and that most commercial loans are revolvers (see, e.g., Martin and Santomero, 1997), I estimate my main specification separately for each group. I find that the marginal effect of performance pricing on renegotiation is significantly negative only in the credit lines subsample. In contrast, performance pricing is associated with greater probability of renegotiation for term loans.

This result is not driven by deterioration in credit quality as predicted by Roberts and Sufi (2009), but instead by reductions in market interest spreads after loan origination. In the absence of substantial changes in market spreads, performance pricing does not have a significant effect on renegotiation probability in the term loans subsample. This is because the average term loan deal is renegotiated after approximately 25% of the stated maturity has elapsed and pricing is the primary reason for contractual amendments only if there has been sufficiently large reductions in market spreads.

These findings also suggest that the contractual rigidity of bank loan pricing could create distortions in renegotiations incentives in a highly volatile economic environment. That is why as uncertainty increases, the contractual parties substitute rigid contractual clauses with fully-contingent clauses in order to avoid such distortions (see, e.g., Battigalli and Maggi, 2002). Thus, my findings shed light on the current shift towards market-based pricing in the bank debt market. At the peak of the financial crisis banks started tying bank loan spreads to the price of credit default swaps of the borrower (or to

that of comparable borrowers). A few major financial institutions in the United States introduced this financial innovation in an attempt to mitigate their credit exposure in the turbulent economic environment of 2008.³

Although the duration framework is convenient for testing my hypotheses, it is possible that my results are driven by differences in renegotiation costs across deals. More specifically, it could be that loans with greater renegotiation costs are both more likely to include pricing grids (for reasons other than to delay renegotiation) and less likely to be subsequently renegotiated. I include firm and loan characteristics at deal origination that control for the magnitude of renegotiation costs in all my empirical specifications.

In addition, my empirical results provide strong evidence that if there is any bias it works against finding support for my hypotheses. My findings suggest that performance pricing delays renegotiation only in the long-term loan subsample. However, long-term loans with performance pricing belong to borrowers with greater outside options (less levered and more profitable) than similar maturity loans without such contractual features. Firms with larger outside options are also more likely to renegotiate their loans for a given improvement in economic fundamentals. Overall, the empirical evidence in this paper indicates that the primary purpose of performance pricing is to delay renegotiation, making bank loans more complete. Thus, pricing grids are different from other types of loan contingencies such as financial covenants that govern contractual incompleteness (see, e.g., Berlin and Loeys, 1988; Berlin and Mester, 1992; Rajan and Winton, 1995; Garleanu and Zwiebel, 2009).

The paper proceeds as follows: Section 2 motivates the study and discusses some relevant empirical work. Section 3 presents the sample used in the paper, while section 4 describes the empirical strategy. Section 5 provides descriptive statistics and some preliminary results. Section 6 discusses the empirical findings and the contribution of the paper and section 7 concludes, outlining some areas for future research.

³Please see the following newspaper articles for further information on market-based pricing: “Banks seek market-based pricing scheme”, *Financial Times*, July 1st 2008; “Banks Use Markit CDS Data as New Corporate Loan Benchmark”, *Markit.com*, July 1st 2008.

2 Motivation

2.1 Institutional Background

Contracting costs in bank loans consist of upfront fees that are due at the time of loan origination (renegotiation). These are labeled “arrangement”/“agency”/“amendment” fees and compensate lead banks for the time and effort spent on loan origination/renegotiation (see, e.g., Gadanez, 2004). The upfront fees are fixed and typically range from 10 to 40 basis points of deal amount (see, e.g., Denis and Molineaux, 2000). Deals that belong to opaque borrowers are associated with higher upfront fees than deals that belong to transparent firms.

Discussions with practitioners revealed that saving on renegotiation costs was one of the primary reasons for the trend towards widespread adoption of performance pricing in the bank debt market in the early 1990s. Coming out of the downturn of 1990/1991, spreads in the commercial loan market were high relative to historical levels because of the high proportion of risky borrowers in the market. However, since economic conditions were expected to substantially improve in the near future, borrower risk was also expected to decrease. In order to stay competitive with large (transactional) borrowers, banks started to include performance-based pricing features in commercial loans such that pricing grids accommodated mostly credit improvements. The first pricing grids were designed for investment-grade companies, were ratings-based, and saved firms renegotiations costs (obviated borrower incentives to renegotiate) if financial health improved. Subsequently, bankers started to include cash flow based grids for unrated companies, and to use the same concept for below-investment grade firms.

Performance-based pricing became widely used in the credit agreements of non-opaque borrowers by the mid 1990s (please see Figure 1). At that point commercial banks also started relaxing financial covenant constraints and instead using pricing grids to accommodate increases in borrower risk. As a result, the structure of pricing grids changed such that loan pricing started in the middle of the grid, as compared to the high-rate end in 1990/1991. The main benefit of this change is that it reduces renegotiation when firm

financial health deteriorates.

2.2 Relevant Theory and Prior Empirical Work

The vast majority of theoretical work on security design since the late 1980s investigates incomplete contracts, with the recognition that contracts could be incomplete either because it is too costly to specify every state of the world or because realized states are not verifiable (see, e.g., Hart and Moore, 1999; Grossman and Hart, 1986). The incompleteness assumption is also appealing for empirical researchers because it describes observed data fairly well. For instance, Roberts (2010) finds that bank loans are renegotiated frequently, well before the stated maturity. The borrower and the lender(s) amend credit agreements on average every eight months, even though the typical loan maturity is three years.

There are two major ways in which contingencies are related to renegotiation in an incomplete contracts setting. One way is that the parties to an agreement employ contingencies to anticipate future events so that less renegotiation is necessary *ex post* (see, e.g., Dewatripont, 1988; Dewatripont, 1989). This benefits both parties, or the party usually responsible for paying the re-contracting costs, if renegotiation is costly and the states of the world written in the contract are sufficiently verifiable/measurable. Thus, this type of contingencies makes contracts more complete.

In contrast, a large body of corporate finance theories argues that a purpose of contractual terms is to allocate bargaining power/decision rights in a state-contingent manner (see, e.g., Smith and Warner, 1979; Berlin and Mester, 1992; Garleanu and Zwiebel, 2008; Aghion and Bolton, 1992; Grossman and Hart, 1986). Instead of specifying possible states of the world, such contractual features induce renegotiation if there are changes in firm fundamentals. Prior research shows that the purpose of financial covenants in bank debt is to allocate decision rights to lenders in borrower-unfavorable states. For instance, large deterioration in credit quality triggers financial covenant violations, in which case the lender receives the right to call the loan or force renegotiation. This security mechanism allows banks to be fairly compensated for increases in borrower credit risk (see, e.g.,

Smith, 1993). In addition, employing such type of contingencies has also been shown to alleviate informational asymmetry problems at contract origination (see, Aghion, Dewatripont, and Rey, 1994; Smith, 1993).

The goal of this paper is to test whether loan pricing contractual contingencies (performance pricing provisions) are used to allocate bargaining power in a state-contingent manner or to incorporate anticipated states of the world so that less renegotiation is necessary in the future. This is an interesting empirical question because pricing is one of the most important loan terms and because prior empirical work reaches conflicting conclusions.

Asquith, Beatty, and Weber (2005) examine the use of performance pricing in bank debt and find that syndicated loans are more likely to include pricing grids. The authors interpret this result as indirect evidence that the purpose of performance pricing is to decrease expected renegotiation costs. However, the lack of available data does not allow the authors to directly test their claim.

Roberts and Sufi (2009), which is the only empirical study that directly analyzes bank debt renegotiation, finds that loan contingencies are (at least) weakly positively associated with whether renegotiation occurs and that pricing grids are positively associated with what they define as “unfavorable” renegotiation.⁴ The authors argue their empirical evidence suggests that the primary purpose of performance pricing is to increase the incidence of renegotiation. They conclude that performance pricing serves similar role to that of financial covenants by allocating bargaining power to lenders in borrower-unfavorable states.

While the the explanation in Roberts and Sufi (2009) is intuitive, there are several reasons why the above empirical evidence warrants further investigation. First, the interplay between contractual contingencies and renegotiation is most interesting for long-term loans. This is because the longer the loan maturity, the higher the benefits of including pricing grids since there is a greater probability of changes in the financial health of the borrower over the life of the loan. For instance, under the “renegotiations costs” explana-

⁴“Unfavorable” renegotiation means that either one or more of the following events occurred: 1) the loan spread has increased, 2) the loan amount has decreased, or 3) the loan maturity was shortened.

tion, the decision of whether to include certain future states of the world in the contract is most relevant for long-term credit agreements.

Second, since almost all long-term loans are renegotiated prior to maturity, a cross-sectional empirical setting, investigating the determinants of whether renegotiation occurs, may lack statistical power. Figure 2 exemplifies this, showing that there is more variation in the time to renegotiation than in whether a loan is renegotiated. Thus, any cross sectional test of whether a loan is renegotiated prior to maturity gets identified primarily from the distinction between short- and long-term loans.

Last but not least, Asquith, Beatty, and Weber (2005) document that firms start in the high-rate end of pricing grids with most grid steps allowing for credit improvements. This begs the question of why performance pricing provisions mostly anticipate borrower-favorable states if, based on Roberts and Sufi (2009), they are primarily used to increase renegotiation in borrower-unfavorable states. Since prior work on bank debt renegotiation has not paid special attention to different maturities/pricing grid structure and has mostly investigated cross sectional tests to conclude on the role of contractual contingencies for renegotiation, the question of why debt contracts include performance pricing has yet to be resolved.

The above facts lend substantial support to the “contracting costs” explanation and lead to my hypotheses. I argue that loan pricing contractual contingencies are used to incorporate anticipated states of the world into the contract so that less renegotiation is necessary in the future. If this holds I expect to find that loans with performance pricing provisions are less likely to be renegotiated to amend loan spreads. In addition, I expect the association between the presence of pricing grids and renegotiation to be stronger in long-term than in short-term loans because there is a higher probability of changes in firm financial health in longer time horizons.

It is important to note that performance pricing is characterized by contractual rigidity that could distort renegotiation incentives if there are sufficiently large changes in interest spreads in the market. Rigidity means that a contractual feature is “not sufficiently contingent on the external state” (see, e.g., Battigalli and Maggi, 2002). Pricing

grids are rigid because they specify a **fixed** interest spread above LIBOR for each step in the measure of borrower financial health (credit rating or accounting ratios), instead of market-based spread for each risk-category. Market spreads changes make the the fixed spreads corresponding to each level of borrower financial health “incorrect”. The extent to which the “incorrectness” of performance pricing induces more or less renegotiation than a fixed-interest rate provision is an interesting empirical question and it depends on the pricing grid starting point.

An alternative to my hypothesis is the explanation in Manso, Strulovici, and Tchisty (2009). These authors propose a signaling theory for the existence of performance pricing, in which firms are offered two types of contracts – with and without performance pricing. In their model performance pricing can accomodate both credit improvements and deteriorations and it is costly because it accelerates default in borrower-unfavorable states of the world. In contrast, fixed spreads in their model reflect the average expected financial health over the life of the firm. In equilibrium, “good” firms choose performance-sensitive debt, while “bad” types opt for fixed-rate loans because signaling is costly. As a result, “good” types receive more favorable loan terms than “bad” firms.

Although signaling is a plausible explanation for the existence of performance pricing in public bonds,⁵ it is not likely to explain the use of pricing grids in bank debt contracts. Unlike public debt, spreads in bank loans are based on the financial health of the firm at the time of origination (see, e.g., Smith, 1993). In addition, bank loans contain financial covenants that are set tightly at loan origination resulting in frequent covenant violations ex post (see, e.g., Dichev and Skinner, 2002). More importantly, Beatty, Dichev, and Weber (2002) report that financial covenants are set *less tightly* in contracts with performance pricing than in those without such a contractual feature.

If the firm chooses performance pricing and credit quality deteriorates, the firm automatically pays higher spreads based on its existing pricing grid. Without a pricing grid if financial health gets worse, the firm hits a covenant and the bank increases the interest spread through renegotiation of the loan. Thus, accounting for the institutional

⁵For discussion of performance pricing in debt markets, please see Houweling, Mentink, and Vorst (2004).

nature of bank lending and assuming no changes in interest spreads in the market and no transaction costs, the option of including performance pricing is equivalent to choosing no pricing grid in terms of how well loan spreads reflect credit quality in the case of credit deteriorations. If anything, relaxing some of the above assumptions will result in credit quality deterioration being more costly in fixed-rate loans because it involves financial covenant violations. For these reasons, signaling is unlikely to explain the existence of performance pricing in private credit agreements.

3 Renegotiation Sample

Since the focus of my empirical analysis is on renegotiation and performance pricing, I employ the handcollected data set of 1000 private credit agreements described in Roberts and Sufi (2009). The authors record a renegotiation of a contract only if one or more of the amount, the interest rate, or the maturity change. They also gather information on loan contingencies such as financial covenants and pricing grids because the DealScan coverage of these areas is not complete.⁶

I observe all loan characteristics at the deal level. A private credit agreement sometimes contains more than one facility (tranche). For instance, a deal might consist of both a one-year revolving line of credit and a five-year term loan. The respective loan features I observe for each loan are: a binary variable of whether there is a term loan in the deal, the average spread of the deal, the average maturity of the deal, the total deal amount, the number of lenders, and whether any facility in the deal includes contractual contingencies such as performance pricing, borrowing bases, and financial covenants. The average spread and maturity of a deal are computed using weights that are proportional to the dollar amount of each facility.

Since a renegotiation is defined as any change in the amount, maturity, or interest rate of the loan, the sample is likely to be weighted towards debt refinancings and renegotiations triggered by changes in investment opportunities and away from contractual

⁶The authors do not record changes in the amount, maturity, or interest rate if these are pre-specified in the original contract. For instance, they do not consider a renegotiation any change in the interest spread if the company moves along its pricing grid.

amendments induced by tightness of financial covenants, dividend, CAPEX, and M&A restrictions. Performance pricing is unlikely to trigger renegotiations related to financial covenant tightness, CAPEX, dividend, or M&A restrictions. Thus, not including such contractual amendments should increase the power of my tests to detect significance for the performance pricing variables if LIBOR spreads are one of the primary determinants of renegotiations.

In some of my empirical tests, I attempt to assess the effect of performance pricing on renegotiation for different loan maturities. For instance, one of the hypotheses I test is that the benefits to including pricing grids is higher in long-term than in short-term loans. Assessing this hypothesis at the deal level might be problematic, especially for the medium-maturity loans, because one-year loans are often packaged with five-year loans. Thus, investigating how the inclusion of pricing grids is associated with renegotiation in three-year loans might not be very informative if a deal contains more than one facility. Manually checking the data indicates that this is not likely to be a problem for one and five year deals. That is why I put most weight on the results in the subsamples of one-year and five-year deals. Figure 3 presents the frequencies of loans of different maturities where maturity is measured in days. Consistent with prior work and the institutional structure of the bank lending market, most deals have maturity of either one, three, or five years.

Several additional notes are worth mentioning. The set of 3720 contracts downloaded from Professor Amir Sufi's website is weighted towards larger deals with longer maturities and lower interest spreads, more of which are syndicated. These contracts typically belong to more profitable firms as measured by cash flow to total assets than the ones that are missed by his data search algorithm (please see Table A1 in Nini, Smith and Sufi (2009) for further detail). I do not expect these differences to bias my results in any meaningful way, except making it difficult to generalize to small firms.

A large portion of the loans in the sample are renegotiations of prior credit agreements. Persistent borrower-lender relationships and the empirical regularity that loans are renegotiated very often makes it difficult to separate between new deals and renegotiations.

tiations of existing loans. More specifically, it makes it difficult to identify what a new loan is. Roberts and Sufi (2009) report that 47% percent of their renegotiations generate independent observations in DealScan and Roberts(2010) argues that many observations in DealScan are renegotiations of prior deals, instead of new deals. Discussions revealed that DealScan representatives view the contractual changes that generate independent observations in DealScan as essentially separate deals because the new deal subsumes/is used to repay the prior loan and the loan maturity clock is always restarted for renegotiations involving amount changes.⁷ Overall, since my analysis focuses on how the inclusion of performance pricing affects subsequent renegotiation, I do not expect the inability to distinguish between “new loans” and “renegotiations” of prior deals to affect my results in any meaningful way.

Another caveat here is that data on renegotiation costs are difficult to obtain. The tear sheets in DealScan contain information on upfront fees only on a minority of deals. Renegotiation costs data is not even available from SEC filings. Looking up a few deals on the SEC website confirms that the magnitude of upfront fees is often omitted. Instead the following reference is provided: “The Borrower shall pay to the Administrative Agent (for its own account) the agency fees described in the Bank of America Fee Letter, which payments shall be made on the dates and in the amounts specified in the Bank of America Fee Letter.” Since it is important to control for renegotiation costs in my empirical specifications, I employ a number of variables that are measures of renegotiation costs such as loan and firm characteristics at deal origination.

3.1 On The Empirical Mechanism Behind Bank Loan Renegotiations

Empirically, renegotiations are different from the contractual changes described in existing theories. The main distinction is that renegotiation described in theoretical work is closest to contractually amending term loans, in which borrowed amounts are fixed. In

⁷I thank Stuart Lynn of Thomson Reuters for helpful discussions about deal refinancings and the definitions of the DealScan variables.

contrast, most loans in DealScan and 73% of the deals in the sample used in this study are revolving lines of credit. The incentives to renegotiate revolving lines of credit and term loans could be different because credit lines are not drawn in most firm-quarters.

Ivanov (2011) shows that credit commitments are used for short-term/bridge financing and that the majority of sample firms repay large drawdowns within three to four quarters, mostly with permanent capital such as bonds or equity. Nevertheless, I expect deal pricing to be a major reason for renegotiating both revolvers and term loans. Although revolving lines of credit might not be fully drawn, firms pay commitment fees on the unused portion of revolvers. More importantly, such fees fluctuate with borrower financial health if the deal includes performance pricing, creating the exact same renegotiation distinctions between credit lines with traditional and performance pricing as discussed in Section 2.

The main drivers of contractual amendments appear to be companies' demand for capital and/or companies' attempt to alter loan pricing because their financial health has changed since loan origination. Approximately 85% and 55% of the contractual amendments in this sample result in changes in deal amount and interest spreads, consistent with my conjecture. In addition, the 55% number (renegotiation outcomes that change loan pricing) is likely to be biased downward because Roberts and Sufi cannot determine whether there is an interest spread change in approximately 25% of renegotiation outcomes.

4 Econometric Specification

I employ a duration model to test my empirical predictions. The most important piece in a duration framework is the hazard function that measures the probability that a loan is renegotiated in the time interval from time t to $t+1$, given that it has not been renegotiated up to time t . It is a useful statistical technique, especially when there is not much variation in an outcome cross-sectionally (see, e.g., Kiefer, 1988; Wooldridge, 2001). For instance, almost all bank loans with maturity greater than one year are renegotiated,

while almost all deals with stated maturity of less than a year are not renegotiated. Thus, drawing statistical inference from the length of time until renegotiation is more informative than estimating a cross-sectional test in which the outcome of interest is whether a deal is renegotiated.

In the case of bank debt a duration spell represents the time until a bank loan is renegotiated, right censored, terminated with stock/bonds issuance or it matures. Right censoring occurs when a firm leaves the sample prior to maturity of a financial contract because the firm stops filing with the SEC. I correct for right censoring in all my empirical specifications.

Because of the discrete nature of the data (measured quarterly), I estimate a semi-parametric grouped duration model in the spirit of Prentice and Gloeckler (1978).⁸ This method is superior to employing a pooled probit or logistic regressions because it does not assume a parametric form of the baseline hazard function. More specifically, the baseline hazard is estimated by including a collectively exhaustive set of indicator variables for whether loans are observed in each quarter after loan origination (1st, 2nd, 3rd, and so on⁹). Whenever there is insufficient number of deals leaving the sample in the n-th quarter, I set the dummy variables to cover more than one quarter.

5 Descriptive Statistics

Table 1 presents descriptive statistics for the characteristics of pricing grids tied to a credit rating. The data includes all ratings-based pricing grids from the DealScan database and it is at the facility level. Even though I do not use these data in my empirical tests, Table 1 is useful because it introduces the structure of performance pricing in bank debt. I select ratings-based grids because, unlike accounting ratios, credit ratings constitute a standardized benchmark. Panel A of Table 1 indicates that the average pricing grid has approximately 5 steps with an average rating of **A-** at the low-rate end and an average rating of **BBB-** at the high-rate end. The average spreads over LIBOR range from 53

⁸This model is the grouped data version of the Cox (1972) proportional hazard model.

⁹Some of the indicator variables might be in larger increments if there is a very low number of renegotiations in a given quarter following loan origination.

basis points at the low-rate end to 115 basis points at the high-rate end. Overall, it appears that the contractual parties attempt to anticipate a wide range of possible states with respect to borrower financial health and include these into the original contract.

Approximately 17% of the facilities are term loans and the remaining tranches are revolving lines of credit. Term loans are significantly larger than the credit lines. The term loan grids appear to belong to less financially healthy borrowers and have on average fewer steps than the revolvers, going from **BBB+** to **BB+** in terms of credit ratings. This is consistent with high-quality firms issuing long-term debt in public bonds markets, while issuers with high information asymmetry utilizing bank financing.

Table 2 presents summary statistics on the structure of pricing grids for the five-year loans employed in this study. I focus on the five-year loans because I expect performance pricing to have larger effect on renegotiation in deals with longer maturities than in short-maturity loans and because of the time substantial involved in collecting the data. The grids in my sample are comparable to the rating grids in DealScan. Both revolver and term loan grids have approximately 5 steps with term loans having slightly fewer steps. Firms start on average in the middle of the pricing grid in the credit lines subsample and in the high-rate end for the term loan deals. Overall this descriptive evidence suggests that performance pricing is used to accommodate both improvements and deteriorations in financial health when employed in revolving loans, and primarily credit improvements in the case of term loans.

Table 3 summarizes the distribution of different types of performance pricing provisions for the deals that include performance pricing. Descriptive evidence is further presented for different loan maturities. The descriptive evidence in this table suggests that performance pricing provisions in short-term loans are more likely to be tied to a credit ratings measure than to accounting numbers. In contrast, in longer-term loans (with maturity of greater than one year) pricing grids are more likely to be benchmarked to a cash flow or another accounting variable.

Figures 4 and 5 provide important motivating evidence for this paper. They presents the difference between the position on the pricing grid at loan renegotiation and the po-

sition on the pricing grid at loan origination. I order the pricing grid steps as follows: I count the high-rate end as the first step and the low rate end as the last step. Thus, a negative (positive) difference means that the credit condition of the firm has deteriorated (improved) between origination and renegotiation. Out of the 226 five-year loans with pricing grids, I am able to hand collect data on grid movement for only 135 loans. I do not employ this measure in my empirical tests because the 135 loans I find data for belong to larger firms that are less likely to experience movements on the grid. In addition, while this figure is informative, I only observe movement on the grid at two specific time points (out of an average of 8-10 quarters) and it is possible that some firms move back to their grid starting points after initial deviations.

Nevertheless, the descriptive evidence from Figure 4 indicates that firms are more likely to improve on the grid than deteriorate – 30% of the time I observe credit quality improvements vs. 20% of the time credit quality deteriorations. Splitting the sample into three groups based on the grid starting point (Figure 5) shows that firms that start in the high-rate end of grids are much more likely to experience a financial health improvement and to go down their respective pricing grids. In contrast, firms that start in the middle of pricing grids are as likely to improve as to deteriorate, while most companies that start in the low-rate end of grids do not experience substantial movement along the grid and some deteriorate. This reinforces the evidence from above that pricing grids are more likely to accommodate improvements in financial health and that performance pricing is put in place to make bank loan contracts more complete.

Table 4 summarizes covenant structure conditional on the type of performance pricing. The results are suggestive of complementarity between pricing grids and financial covenants on the same accounting variable. For instance, conditional on a deal including a cash flow based pricing grid, the probability of a deal including cash flow financial covenants is approximately 97%. In contrast, the likelihood of a bank loan including a cash flow covenant is lower for loans with all other types of pricing grids. Similarly, conditional on a deal including an interest coverage based pricing grid, the probability of a deal including a financial covenant tied to interest coverage is approximately 92%.

Table 5 presents descriptive statistics on the distribution of contractual contingencies across different loan maturities. The proportion of pricing grids included in private credit agreements is increasing with loan maturity – 63% of loans with maturity of less than 1 year, 62% of 1-3 year loans, 78% of 3-5 year loans, and above 80% of contracts with stated maturity of greater than or equal to five years include performance pricing. This empirical evidence suggests that performance pricing is positively associated with deal maturity, and longer maturity loans are more likely to be renegotiated. However, these statistics are consistent with both renegotiation explanations outlined above.

Table 6 provides additional descriptive evidence on how firm and deal characteristics are associated with the inclusion of performance pricing. It immediately stands out from Table 6 that deals with performance pricing have on average a greater number of banks on the syndicate than loans without pricing grids. The difference in the average number of banks for loans with and without this contractual feature is statistically different from zero (t-statistic of 6.99). Assuming that the number of banks in the syndicate is a measure of future renegotiation costs, it appears that the greater the expected renegotiation costs, the more likely it is for a loan to include pricing grids.

To reinforce the evidence from Tables 5 and 6, I estimate probit models predicting the probability of including a pricing grid in bank loans. In the first column of Table 7 I only include firm characteristics at loan origination, while in all other columns I also include macroeconomic factors. Table 7 indicates that larger, more profitable, less volatile, and less levered firms are more likely to have performance pricing in their private credit agreements, while macroeconomic factors are not associated with the probability of inclusion of a pricing grid. These results lend support to the practitioners views that performance pricing is offered to borrowers with large outside options to save them renegotiation costs and thus provide them with sufficient incentives to stay with the same lead lender.

This descriptive evidence provides additional support for the “renegotiation costs” explanation since the costs of including performance pricing provisions in the loans of large transactional borrowers are relatively low, while the benefits are high. Borrowers with large outside options are usually less opaque, making it easier to anticipate potential

states with respect to their financial health. At the same time, the benefits to offering performance pricing to such firms are also greater since they are the first to seek renegotiation when their credit condition improves. In addition, these descriptive probits suggest some important control variables for my duration model specifications. The results remain qualitatively the same when the sample is partitioned into various maturities even though they weaken significantly for long maturities.

The above findings are also interesting in light of the recent theory of Manso, Strulovici, and Tchisty (2010) which predicts that performance pricing is used to signal borrower type. The signaling explanation would predict that the opaque borrowers have greatest incentives to include performance pricing provisions in their bank loans. The results, however, indicate otherwise, suggesting that signaling does not play much role in selecting pricing grids. This is because bank lending is characterized by persistent relationships and the proportion of loans from new lenders in my sample is low, making adverse selection less important.

As a precursor to my duration analysis, I estimate the Kaplan-Meier cumulative hazard function for the bank loans in my sample – this represents the fraction of credit agreements that have been renegotiated or terminated at the start of a given quarter as a fraction of all credit agreements in the sample. I describe the Kaplan-Meier cumulative hazard function together with a 95% confidence interval in Figure 6. The Kaplan-Meier failure estimates indicate that almost all bank loans are renegotiated or terminated after 20 quarters. This figure also suggests that the hazard function of private credit agreements renegotiations exhibits concavity. Figure 7 shows that this pattern is different across various maturities. This suggests that it is important to control for the time since loan origination in a non-linear way, something that I do in my empirical model. It is also important to note that Figures 6 and 7 indicate that there is sufficient variation in when renegotiation occurs over the life of loans.

6 Results

6.1 Main Specification

I estimate the Prentice and Gloeckler (1978) duration model for the entire sample and then separately for each type of maturity – 1, 3, and 5 years. The dependent variable takes the value of 1 if a loan is renegotiated in a given quarter and 0 otherwise. The independent variables include: positive and negative changes in firm characteristics and macro factors since loan origination, deal contingencies, firm and deal characteristics at origination (number of lenders, loan amount to firm assets, and initial spread), credit rating fixed effects (6 groups), industry fixed effects (Fama-French 5), and a time trend. Following Roberts and Sufi (2009), I split changes in firm and macroeconomic characteristics since loan origination into its positive and negative components to allow for differential asymmetric effects. The results for my first set of tests are reported in Table 8, I only report the changes in firm characteristics and selected deal characteristics. The table presents marginal effects and standard errors (in parentheses) for the each variable.

The marginal effect of the performance pricing variable is statistically insignificantly different from zero for the full sample and short-term (one-year and three-year) loans and significantly negative for long-term (five-year) loans. The marginal effect of performance pricing in the five-year loan subsample is economically large – deals with pricing grids are approximately 5% less likely to be renegotiated at any given quarter than deals without this contractual feature. Thus, a five-year loan with a pricing grid is refinanced for pricing-related reasons an average of a year later than a similar loan without performance pricing. Since the average time to renegotiation of a five-year loan is roughly 2.5 years, performance pricing allows for substantial savings in contracting costs.

This lends support for the idea that pricing grids are included in financial contracts to decrease/delay renegotiation and that the benefits to inclusion of such pricing are increasing in maturity. This finding is contrary to what the state-contingent allocation of bargaining power explanation implies. In addition, the inclusion of pricing grids in short-term loans and its corresponding insignificant effect on renegotiation probability

suggests that the costs to inclusion of pricing grids in short-maturity loans are low for non-opaque borrowers.

Overall, my findings in Table 8 indicate that borrowers and lenders include pricing grids in financial contracts to reduce ex post renegotiation. Since pricing grids have a fixed interest spread (usually above LIBOR) at each pricing step, contractual amendments to alter loan pricing could still occur in equilibrium given sufficiently large changes in market spreads.¹⁰ Nevertheless, the “automatic renegotiation” features of pricing grids appear to dominate any contractual rigidity of grids induced by changes in market spreads since the probability of renegotiation for credit agreements with performance pricing is significantly lower than for those without such contractual contingencies. In other words, pricing is less likely to be the reason for contractual amendments given a grid is included in a debt agreement. In that sense performance pricing is a unique feature of private credit agreements, differing from other contingencies such as financial covenants that govern contractual incompleteness.

6.2 Pricing Grids and Renegotiation Outcomes

I next study how the inclusion of performance pricing affects different types of renegotiation outcomes. According to the “contracting costs” explanation, pricing grids could reduce renegotiation that leads to both increases and decreases in interest spreads. In contrast, the state-contingent allocation of bargaining power explanation implies that pricing grids make it more likely to observe spread-increasing renegotiation outcomes. In addition, the starting point of the pricing grid will affect whether grids are effective in delaying both spread-increasing and spread-decreasing outcomes. For instance, if a loan starts in the high-rate end of the grid and the “contracting costs” hypothesis holds, the performance pricing provision will only be effective in delaying spread-decreasing contractual amendments.

To isolate these effects, I estimate a multinomial pooled logit with three categories – spread increases, spread decreases, and all other contractual changes. The spread change

¹⁰In unreported tests, I control for the contractual rigidity of pricing grids by interacting the performance pricing variable with the absolute value of changes in credit spreads. Results remain unchanged.

outcomes could be accompanied by changes in amount or maturity. Unfortunately, I do not have a clean enough sample of amendments that lead to spread changes only. Nevertheless, the advantage of such partition is that it allows me to test whether performance pricing is effective delaying both spread increasing and spread decreasing renegotiation outcomes as compared to observations with no renegotiation. To increase the power of my tests, I estimate the model for the subsample of loans with maturity of greater than three years because the results in Table 8 indicate that “automatic renegotiation” benefits of performance pricing are largest in the long-maturity loans:

$$\Pr(Y_{it}) = \frac{\exp(\beta_j X_{it})}{\sum_{k=1}^3 \exp(\beta_k X_{it})}, \quad j = 1, 2, 3 \quad (1)$$

where $j = 1$ denotes a spread-increasing renegotiation outcome, $j = 2$ denotes a spread-decreasing renegotiation outcome, $j = 3$ denotes all other renegotiation outcomes. The null category is all loan-quarters in which loans are not renegotiated. Table 9 shows the results for the multinomial logit specification. Here the performance pricing coefficient is significantly negative in the spread decreases group and indistinguishable from zero in all other groups. Further, the insignificance of the pricing grid variable in the spread increases category indicates that the state-contingent allocation of bargaining power is not supported by the data. Overall, pricing grids appear to delay renegotiation of outcomes in borrower-favorable states. This finding sheds more light on the finding in Asquith, Beatty, and Weber (2005) that loans with performance pricing usually start in the high-rate end of pricing grids, thus allowing borrowers to take advantage of lower interest spreads if their credit quality improves.

The above results also complement Smith and Warner (1979) and Smith (1993). These authors argue that financial covenants are employed to induce credit agreement renegotiation when the risk of the borrower has increased substantially, a practice referred to by Smith as “dynamic interaction between borrowers and lenders”. Instead, improvements in borrower credit quality increase the bargaining power of the borrower, leading to a greater probability that the borrower renegotiates to reduce the pricing of the contract.

My results indicate that in contrast with deteriorations in borrower financial health, banks are likely to handle improvements in credit quality automatically, via performance pricing. Overall, financial covenants and pricing grids (often tied to the same measure of credit quality¹¹) complement each other in handling borrower credit risk changes.

It is interesting to note here that performance pricing does not appear to reduce the likelihood of spread-increasing renegotiation outcomes even though pricing grids accommodate credit deteriorations. Even if performance pricing is designed to delay renegotiation in borrower-unfavorable states, my empirical tests might not have enough power to detect such incentives. This could be due to borrowers renegotiating their loans before they face high probability of covenant violations. This result is consistent with studies such as Lummer and McConnel (1989) and James (1987). These authors argue that there are substantial costs (negative capital market consequences) to violating financial covenants and that firms have incentives to renegotiate their credit agreements well before violations.

Table 9 also indicates that the interaction term between the absolute value of changes in interest spreads in the market and the performance pricing variable is positive and significant for spread-decreasing renegotiation outcomes. This means that the contractual rigidity of pricing grids combined with sufficiently large changes in market spreads increase the incidence of spread-reducing renegotiation outcomes compared to fixed-rate loans. This is because changes in interest spread margins make the steps on pricing grids “incorrect” and such imprecision might incentivize either contractual party to seek loan renegotiation more often than in the fixed-rate cases.

6.3 Lines of Credit vs. Term Loans

It is important to note here that renegotiation incentives could be different between lines of credit and term loans. Revolvers are rarely fully drawn and even if drawn, they are repaid within four quarters after a drawdown (see, e.g., Ivanov, 2011). In contrast, interest on term loans is paid quarterly with the principal due at maturity (Term Loans type

¹¹Beatty, Dichev, and Weber (2002) report that almost all debt contracts with performance pricing tied to accounting ratios have financial covenants on the same variable set *tightly* above the high end of the grid.

“A”), or the entire borrowed amount and accumulated interest is due at maturity (Term Loan types “B” and “C”).

Although revolving lines of credit might not be fully drawn, firms pay commitment fees on the unused portion of revolvers and such fees fluctuate with borrower financial health if the deal includes performance pricing. This creates the exact same distinctions in renegotiation incentives between credit lines with traditional and performance pricing as discussed in my motivation section. As long as both groups are renegotiated in order to amend loan spreads, I do not expect any significant differences in the results for each subgroup. However, because term loans are substantially more risky than revolvers it could be that they are renegotiated less often for pricing-related reasons, and that instead they are renegotiated more often to amend other contractual features such as loan amount and maturity.

To understand how such differential incentives shape the effect of pricing grids on renegotiation, I partition the five-year loans into revolvers and term loans and estimate my main specification for each subgroup (see Table 10). I find that the marginal effect of performance pricing variable is significantly negative in the credit lines subsample. Its marginal effect is also economically large – revolvers with pricing grids are approximately 7.5% less likely to be renegotiated at any given quarter than lines of credit without this contractual feature. However, the marginal effect of the performance pricing variable is positive and significant at the 10% level in the term loans subgroup. I then expand the term loan sample to all loans with maturity of greater than three years to obtain a larger sample size since there are only 68 five-year term loans. The results in the larger term loan sample are similar and the marginal effect of performance pricing is statistically significant at the 5% level.

At a first glance one could argue that the state-contingent allocation of bargaining power explains the finding that term loans with performance pricing are more likely to be renegotiated than term loans without pricing grids. However, the positive effect of the pricing grid variable on subsequent renegotiation could be due to changes in market spreads. Since pricing grids have a fixed spread at each pricing step, market movements

in interest rates could make pricing grids “incorrect” in a sense that the fixed spreads charged at each step could be either too high or too low based on current market standards. For instance, if the pricing grid was contracted upon in a high interest spread environment and spreads in the market subsequently fell, the borrower has additional incentives to renegotiate the loan in order to reduce loan pricing.¹² The extent to which these incentives are greater in a performance pricing loan than in a fixed rate loan is an empirical question.

The first two columns of Table 11 estimate the same specification as in column 3 of Table 10 (except including interaction terms in column 2) but present coefficients instead of marginal effects. The second column adds an interaction term between the pricing grid variable and the negative changes in the interest spread since the quarter of loan origination. The coefficient of the interaction term subsumes almost entirely the positive coefficient of the performance pricing variable. More specifically, adding the interaction term makes the positive coefficient of the performance grids variable approximately 4 times smaller than before and indistinguishable from zero.

This means that term loan deals with pricing grids are more likely to be renegotiated than similar deals without such contractual feature only when market interest spreads drop since loan origination. In the absence of significant changes in market spreads, performance pricing does not appear to have a significant effect on ex post renegotiation probability in the term loans subsample. This is because term loan deals are renegotiated early in the life loans, on average after approximately 25% of the stated maturity has elapsed and pricing is the primary reason for contractual amendments only if there has been sufficiently large changes in market spreads (please see figure 9). Overall, during the sample period the contractual rigidity of grids in long-maturity term loans induced distortions in renegotiation incentives and increased the incidence of renegotiation, instead of delaying it.

Column 4 shows that in the revolver subsample, the interaction term between negative changes in market spreads and the performance pricing variable is insignificant indicating

¹²Please see Figure 8 for examples of interest spread changes across the risk spectrum.

that the contractual rigidity of grids did not create additional renegotiation incentives above what was observed for fixed-rate credit lines.

7 Further Research

The results in this paper provide support for the “renegotiation costs” view of performance pricing. I show that the primary role of pricing grids in bank debt contracts is to delay costly renegotiation. Further analysis is needed to understand why incomplete contracts are observed in practice, and in what different ways, renegotiation costs drive private credit agreements towards a more contractually complete direction. Providing an explanation for contractual incompleteness of bank loans and understanding the role of different types of contingencies in such incompleteness will have important implications for the theoretical literature in financial contracting.

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APPENDIX: VARIABLE DEFINITIONS

Borrowing Base - An indicator variable that takes the value of 1 if a deal includes borrowing base, and 0 otherwise.

Pricing Grid - An indicator variable that takes the value of 1 if a deal includes a pricing grid, and 0 otherwise.

Cash Flow Covenant - An indicator variable that takes the value of 1 if a deal includes a financial covenant tied to a measure of cash flow, and 0 otherwise.

Net Worth Covenant - An indicator variable that takes the value of 1 if a deal includes a financial covenant tied to a measure of net worth, and 0 otherwise.

Liquidity Covenant - An indicator variable that takes the value of 1 if a deal includes a financial covenant tied to a liquidity measure, and 0 otherwise.

Spread over Fed Funds Rate - Average spread over the federal funds rate in the commercial loan market (source: Federal Reserve Board of Governors)

Stock Market Ret - The quarterly stock return of the value-weighted market portfolio (source: CRSP)

Real GDP growth - Quarterly real GDP growth rate (source: Economagic.com)

Bank Leverage - (Total Liabilities/Total Book Assets) of commercial banks in the US. Data are at the annual level. (source: FDIC)

VIX - The end of calendar quarter value of the VIX index (source: CBOE.com)

BBB Spread - The average quarterly spread over LIBOR for BBB-rated commercial loans (source: DealScan)

Leveraged Spread - The average quarterly spread over LIBOR for term loans (source: DealScan)

A Spread - The average quarterly spread over LIBOR for A-rated commercial loans (source: DealScan)

EBITDAVar./BookAssets - The variance of earnings before interest taxes depreciation and amortization calculated over the most recent 8 quarters scaled by the average value of book assets over the most recent 8 quarters (source: COMPUSTAT).

MarketTOBook - The market value of equity divided by the book value of equity at the end of a given calendar quarter (source: COMPUSTAT).

Equity Return - The quarterly stock return of a given firm (source: COMPUSTAT)

LogBookAssets - The natural log of the end of quarter value of total book assets (source: COMPUSTAT)

BookLeverage - The end of quarter value of the book value of total firm liabilities scaled by the end of quarter value of total book assets (source: COMPUSTAT)

EBITDA/BookAssets - The end of quarter value of EBITDA scaled by the end of quarter value of total book assets (source: COMPUSTAT)

DebtTOEBITDA - The end of quarter value of total liabilities scaled by the end of quarter value of total book assets (source: COMPUSTAT)

Figure 1: THE USE OF PERFORMANCE PRICING OVER TIME

This figure presents the use of performance pricing provisions in bank loans over the 1990-2008 period. I use the entire DealScan database to calculate the fraction of bank loan facilities including pricing grids each year. The x-axis denotes calendar time (in years) starting in 1990 and ending in 2008. The y-axis denotes the fraction of bank loan facilities including performance pricing provisions.

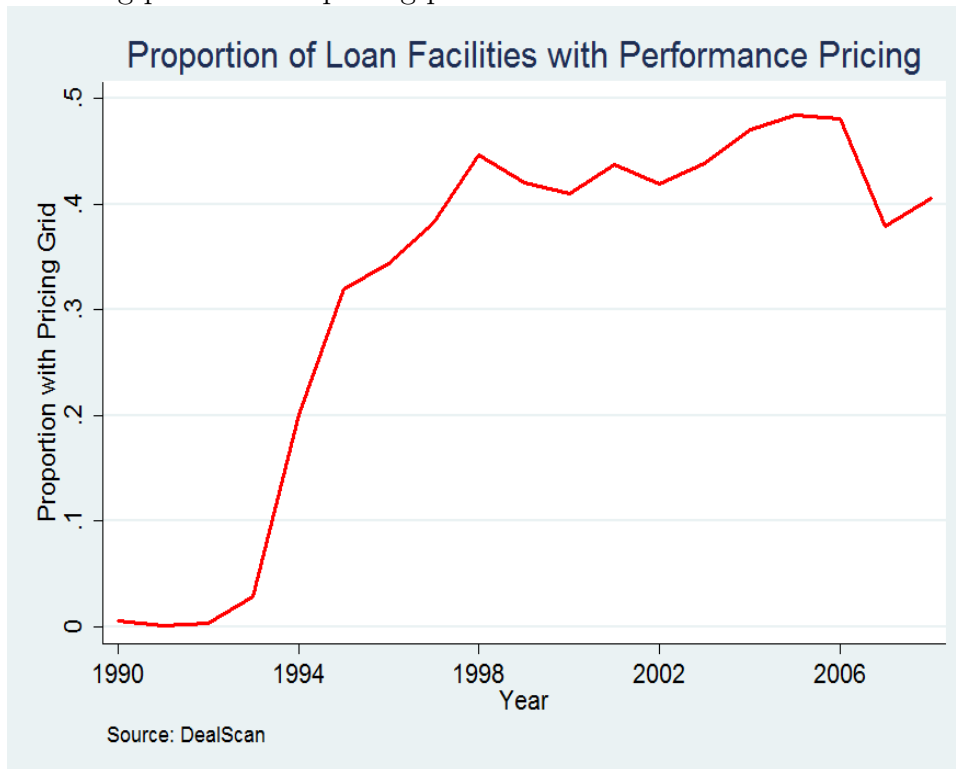


Figure 2: CROSS-SECTION VS. TIME SERIES

The first panel of this figure presents a histogram of how frequent five-year deals are renegotiated prior to maturity - 1 indicates the deal is renegotiated and 0 otherwise. The second panel presents a histogram of the variation in time to renegotiation of five-year deals. Loans enter the sample from 1996 to 2005 and the sample ends in the first quarter of 2007.

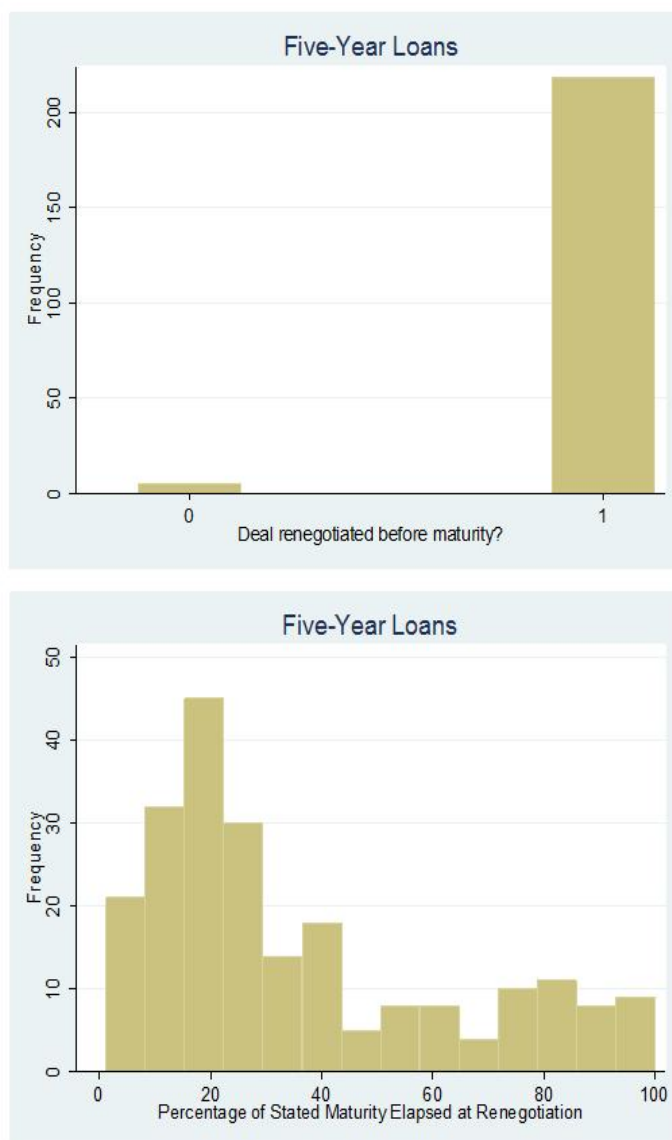


Figure 3: MATURITIES

This figure presents the frequencies of loans of different maturities where maturity is measured in days. Loan maturity is defined at the deal level as the (amount-weighted) average of the maturities of all facilities in a certain deal. Loans enter the sample from 1996 to 2005 and the sample end in the first quarter of 2007.

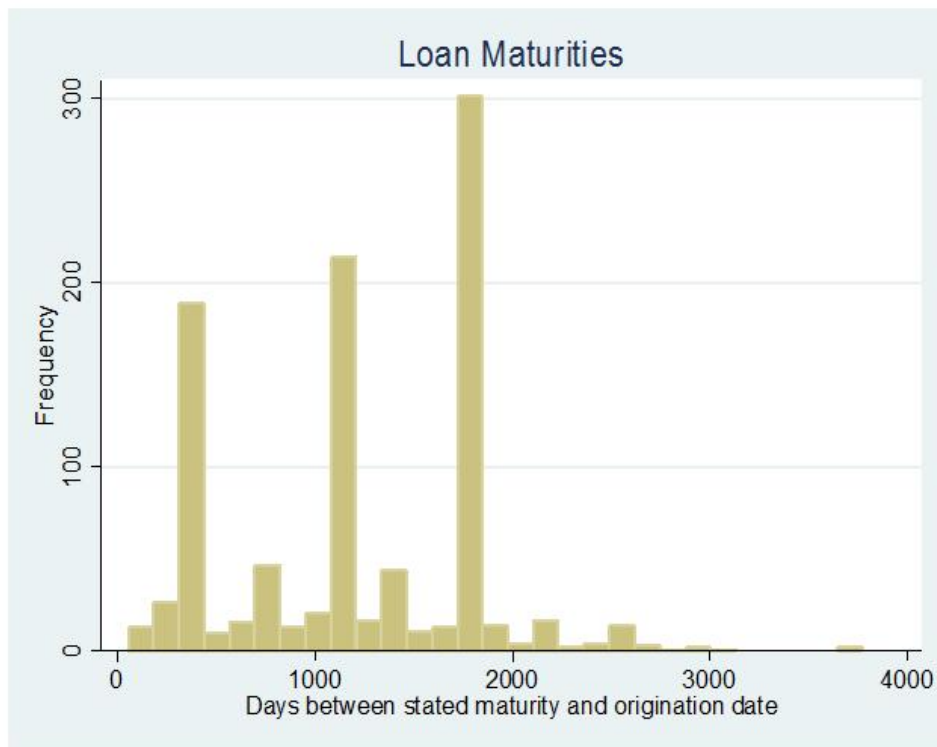


Figure 4: GRID MOVEMENT

This figure presents the difference between the position on the pricing grid at loan renegotiation and the position on the pricing grid at loan origination. I order the pricing grid steps as follows: I count the high-rate end as the first step and the low rate end as the last step. Thus, a negative (positive) difference means that the credit condition of the firm has deteriorated (improved) between origination and renegotiation. Out of the 226 five-year loans with pricing grids, I am able to hand collect data on grid movement for only 135 loans. The descriptive evidence from this figure indicates that firms are more likely to improve on the grid than deteriorate – 30% of the time I observe credit quality improvements vs. 20% of the time credit quality deteriorations.

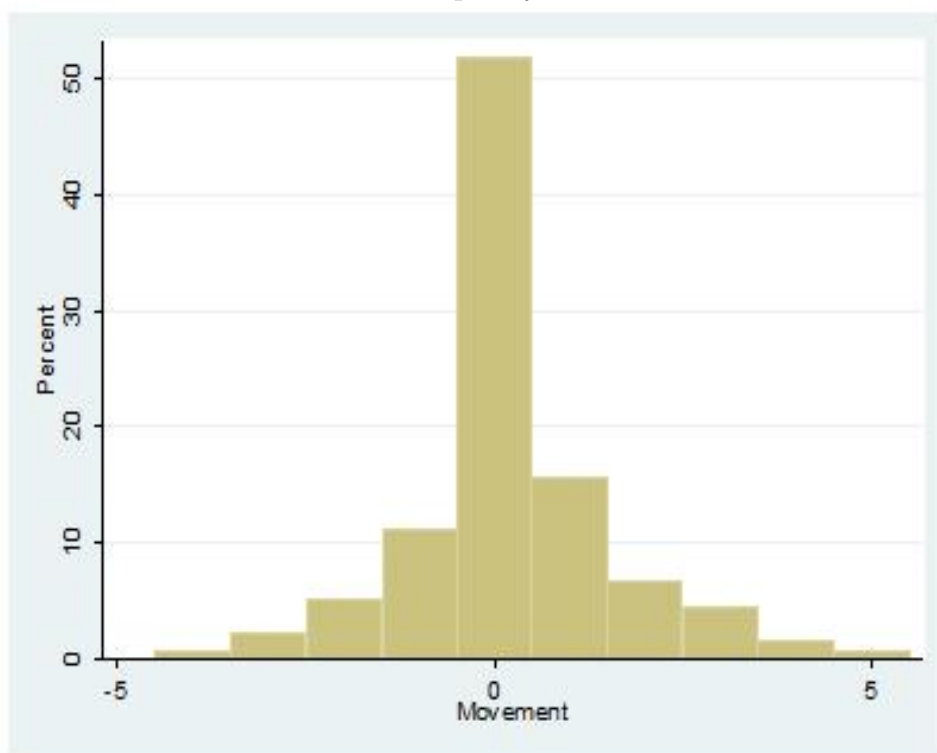


Figure 5: GRID MOVEMENT CONDITIONAL ON GRID STARTING POINT

This figure presents the difference between the position on the pricing grid at loan renegotiation and the position on the pricing grid at loan origination for different grid starting points. I order the pricing grid steps as follows: I count the high-rate end as the first step and the low rate end as the last step. Thus, a negative (positive) difference means that the credit condition of the firm has deteriorated (improved) between origination and renegotiation. Out of the 226 five-year loans with pricing grids, I am able to hand collect data on grid movement for only 135 loans. Panel A presents results for grids that start close to the high rate end (starting not more than 30% of the entire grid distance from the high-rate end), while Panel C presents results for low-rate end grids (starting not more than 30% of the entire grid distance away from the low-rate end). Panel B shows a histogram for all other grids, starting close to the midpoint.

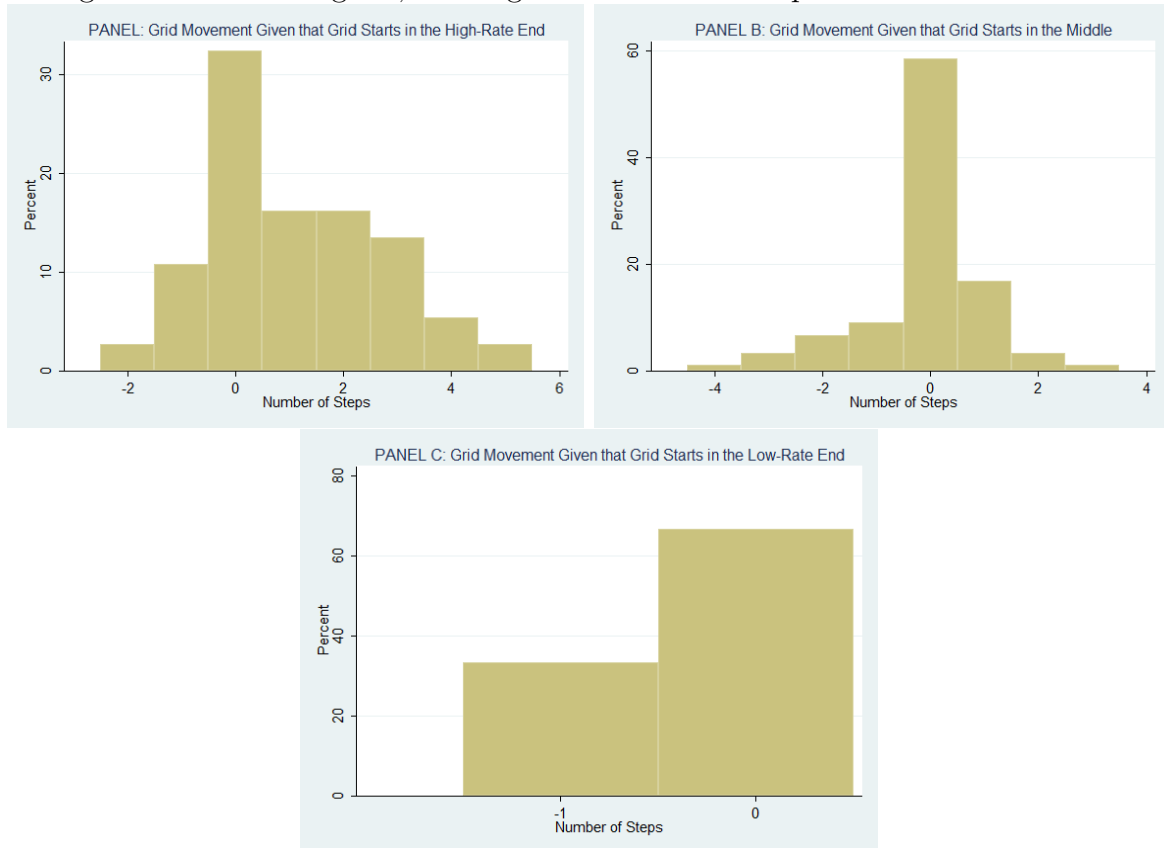


Figure 6: KAPLAN-MEIER HAZARDS

This figure presents Kaplan-Meier failure estimates for the sample of loans from Roberts and Sufi (2009). Loans enter the sample from 1996 to 2005 and the sample end in the first quarter of 2007. The x-axis measures time in quarters since loan origination. The y-axis measures the probability that loans have left the sample.

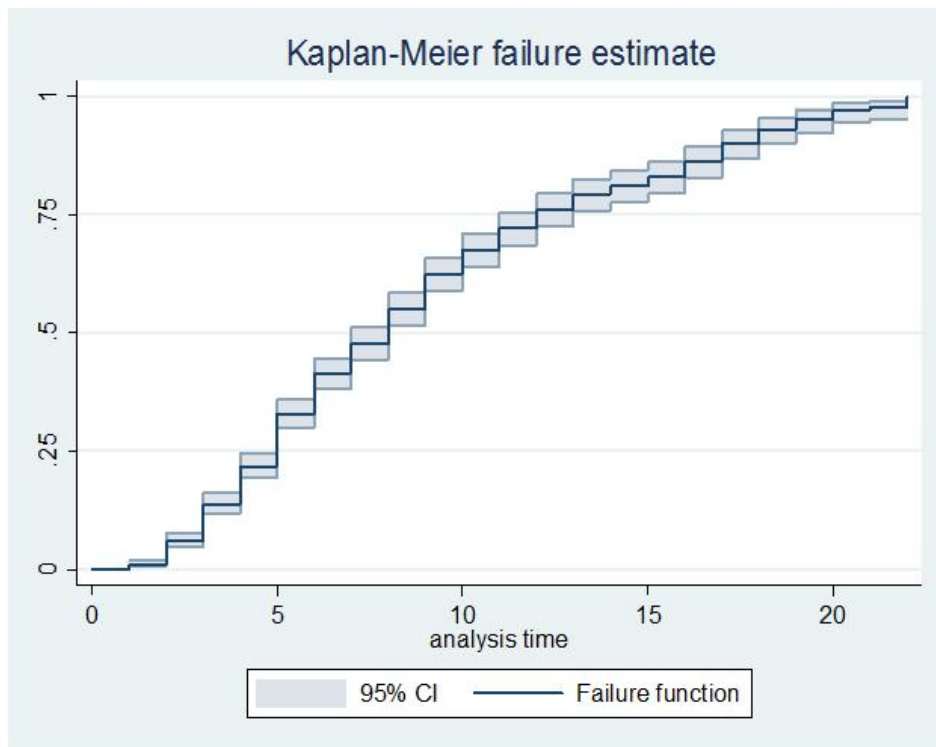


Figure 7: KAPLAN-MEIER HAZARDS FOR DIFFERENT MATURITIES

This figure presents Kaplan-Meier failure estimates for the sample of loans from Roberts and Sufi (2009). Loans enter the sample from 1996 to 2005 and the sample end in the first quarter of 2007. The x-axis measures time in quarters since loan origination. The y-axis measures the probability that loans have left the sample. The first panel depicts the failure estimates for one-year loans, while the second and the third panels show the failure estimates for three- and five-year loans, respectively.

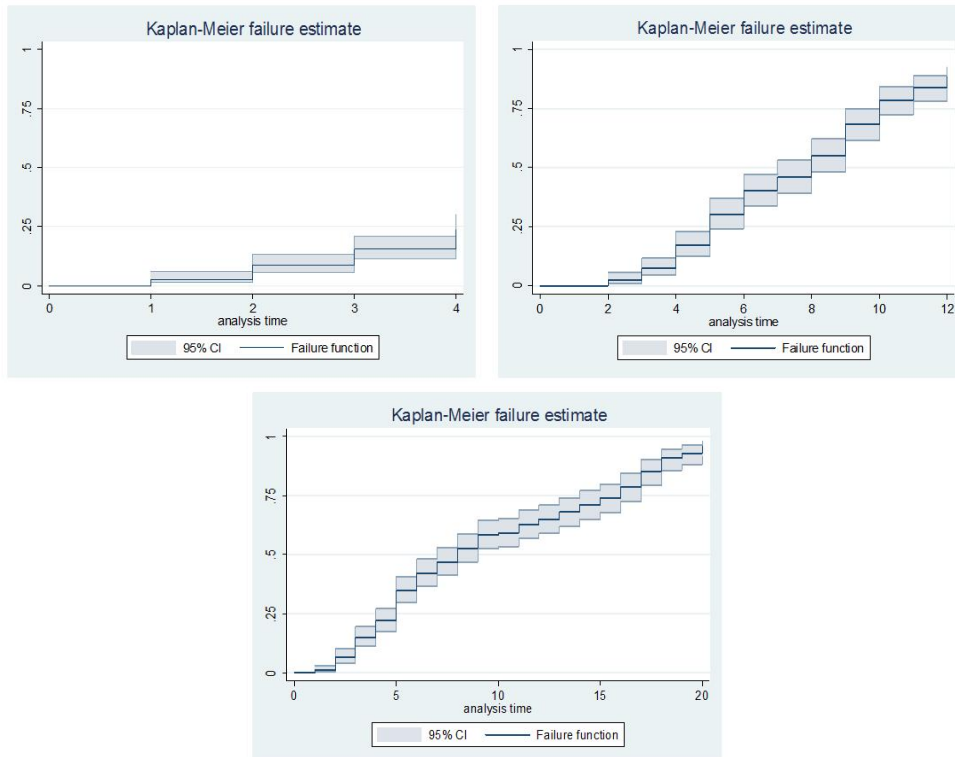


Figure 8: LIBOR SPREADS FOR DIFFERENT CREDIT QUALITY

This figure presents the loan spreads for both A-rated and BBB-rated borrowers from the first quarter of 1997 to the first quarter of 2007. The x-axis presents time in measured in year-quarters. The y-axis measures the basis points above LIBOR.

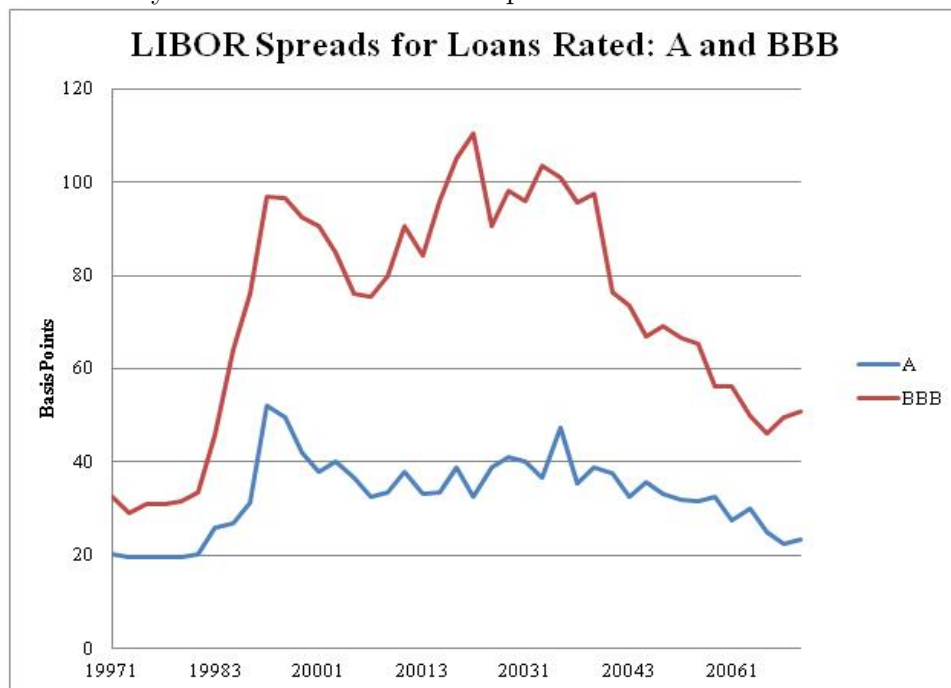


Figure 9: FRACTION OF STATED MATURITY ELAPSED AT RENEGOTIATION FOR TERM LOANS AND REVOLVERS

This figure presents histograms of the fraction of stated maturity at loan renegotiation for deals with maturity of greater than three years. The first panel presents a histogram for the term loans subsample, while the second panel depicts revolving lines of credit. The x-axis presents the fraction of stated maturity. The y-axis measures the percent of observations.

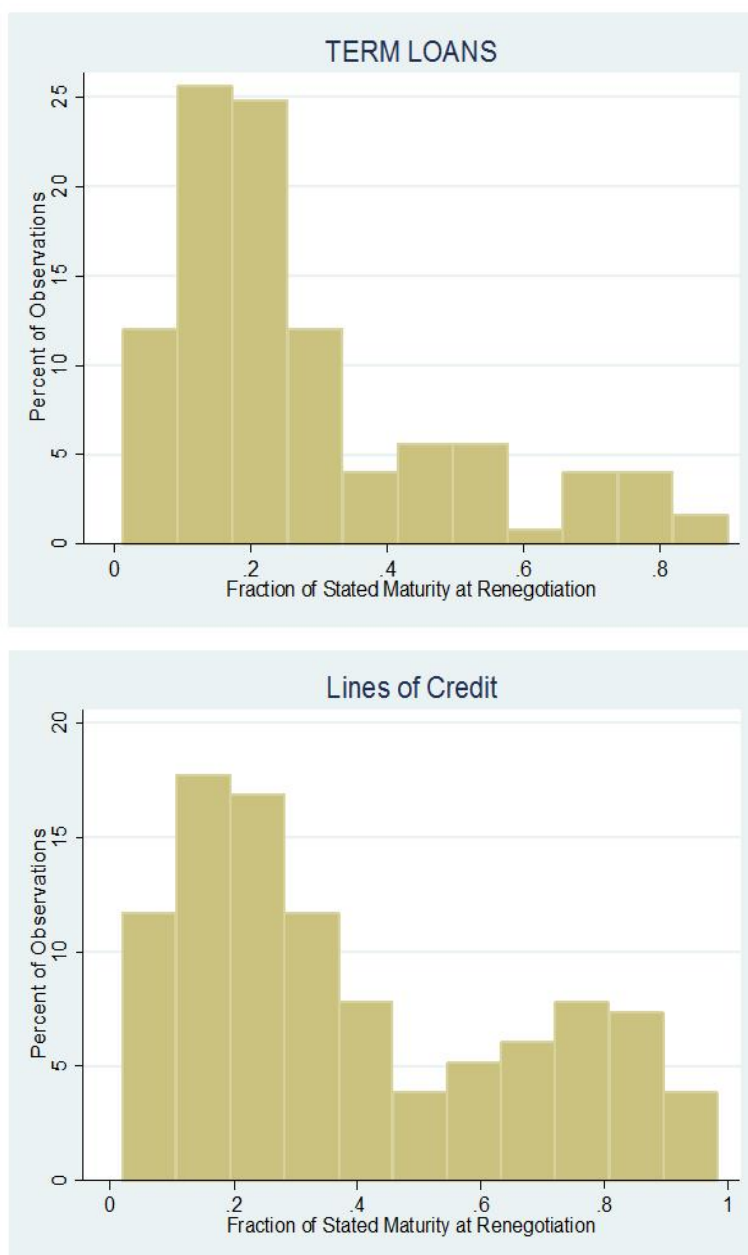


Table 1: THE STRUCTURE OF PRICING GRIDS: DEALSCAN SAMPLE

This table presents descriptive statistics for the characteristics of pricing grids tied to a credit rating. The data include all ratings-based pricing grids from the DealScan database and it is at the facility level. Even though I do not use these data in my empirical tests, Table 1 is useful because it introduces the structure of performance pricing in bank debt. I select ratings-based grids because, unlike accounting ratios, credit ratings constitute a standardized benchmark. The rating variable runs from 1 to 17, 1 indicating AAA and 17 indicating CCC or lower. All interest rates variables represent an interest rate margin above LIBOR. Panel A describes results for the entire sample, while panels B and C split the sample between revolvers and terms loans.

PANEL A: FULL SAMPLE					
VARIABLES	MEAN	SD	P25	P75	N
Number of Steps	4.929	1.173	4.000	6.000	5705
Rating at Low-Rate End	6.881	2.010	6.000	8.000	5705
Rating at High-Rate End	10.174	1.581	10.000	11.000	5705
Interest Rate at Low-Rate End	52.556	54.144	20.000	62.500	5705
Interest Rate at High-Rate End	114.864	75.803	60.000	150.000	5705
Commitment Fee at Low-Rate End	9.312	5.235	6.500	10.000	3284
Commitment Fee at High-Rate End	24.794	14.509	17.500	30.000	3280
Facility Amount (millions of USD)	792	1370	200	900	5703
Term Loan	0.147	0.354	0.000	0.000	5705
Maturity (months)	40.400	22.197	12.000	60.000	5705
PANEL B: REVOLVERS					
VARIABLES	MEAN	SD	P25	P75	N
Number of Steps	5.022	1.102	5.000	6.000	4865
Rating at Low-Rate End	6.651	1.807	6.000	8.000	4865
Rating at High-Rate End	10.042	1.516	9.000	11.000	4865
Interest Rate at Low-Rate End	44.427	40.956	19.000	52.500	4865
Interest Rate at High-Rate End	104.716	66.098	57.500	135.000	4865
Commitment Fee at Low-Rate End	9.302	5.206	6.500	10.000	3207
Commitment Fee at High-Rate End	24.811	14.563	17.500	30.000	3204
Facility Amount (millions of USD)	766	1230	200	900	4863
Maturity (months)	39.827	21.574	12.000	60.000	4865
PANEL C: TERM LOANS					
VARIABLES	MEAN	SD	P25	P75	N
Number of Steps	4.393	1.407	3.000	5.000	840
Rating at Low-Rate End	8.211	2.539	7.000	9.000	840
Rating at High-Rate End	10.940	1.727	10.000	12.000	840
Interest Rate at Low-Rate End	99.635	87.197	42.250	125.000	840
Interest Rate at High-Rate End	173.637	98.394	100.000	225.000	840
Facility Amount (millions of USD)	943	1960	195	852	840
Maturity (months)	43.718	25.265	18.000	60.000	840

Table 2: THE STRUCTURE OF PRICING GRIDS: FIVE-YEAR LOANS USED IN THIS STUDY

This table presents summary statistics on the structure of pricing grids for the five-year loans employed in this study. I focus on the five-year loans because I expect performance pricing to have larger effect on renegotiation in deals with longer maturities than in short-maturity loans and because of the time involved in collecting the data. The pricing grids are based both on credit ratings and accounting ratios. All interest rates variables represent an interest rate margin above LIBOR. Panel A describes results for the entire sample, while panels B and C split the sample between revolvers and terms loans.

PANEL A: FULL SAMPLE					
VARIABLES	MEAN	SD	P25	P75	N
Number of Steps	4.912	1.080	4	6	226
Starting Step	3.058	1.202	2	4	224
Interest Rate at Low-Rate End	75.371	65.500	25	100	225
Interest Rate at High-Rate End	144.629	84.561	80	200	225
Starting Interest Rate	109.269	85.953	40	150	223
PANEL B: REVOLVERS					
VARIABLES	MEAN	SD	P25	P75	N
Number of Steps	4.977	1.011	4	6	177
Starting Step	2.903	1.178	2	3	175
Interest Rate at Low-Rate End	58.582	51.700	22	75	176
Interest Rate at High-Rate End	123.297	73.450	70	175	176
Starting Interest Rate	85.201	68.258	35	125	174
PANEL C: TERM LOANS					
VARIABLES	MEAN	SD	P25	P75	N
Number of Steps	4.673	1.281	4	5	49
Starting Step	3.612	1.133	3	5	49
Interest Rate at Low-Rate End	135.674	74.368	75	175	49
Interest Rate at High-Rate End	221.250	77.709	175	275	49
Starting Interest Rate	194.735	88.434	125	250	49

Table 3: DIFFERENT TYPES OF PERFORMANCE PRICING PROVISIONS

This table summarizes the distribution of different types of performance pricing provisions for the deals that include performance pricing. Descriptive evidence is further presented for different loan maturities. *Stated Loan Maturity* is measured in years, *Ratings Grid* shows the proportion of bank loans that include pricing grids tied to a credit ratings measure, *Cash Flow Grid* measures the proportion of bank loans that include pricing grids tied to a cash flow measure CF Covenant, while *Other* summarizes the fraction of loan that include all other pricing grid types. This table suggests that performance pricing provisions in short-term loans are more likely to be tied to a credit ratings measure than to accounting numbers. In contrast, in longer-term loans (with maturity of greater than one year) pricing grids are more likely to be benchmarked to a cash flow or another accounting variable.

Stated Maturity	Ratings Grid	Cash Flow Grid	Other
≤ 1 (N=128)	0.766	0.133	0.102
1-3 (N=117)	0.154	0.590	0.256
3-5 (N=233)	0.180	0.597	0.223
≥ 5 (N=248)	0.298	0.573	0.129
Total (N=726)	0.320	0.506	0.175

Table 4: FINANCIAL COVENANT STRUCTURE CONDITIONAL ON THE TYPE OF PERFORMANCE PRICING PROVISIONS

This table summarizes covenant structure conditional on the type of performance pricing provisions included in bank loans. *Ratings Grid* denotes the column with bank loans that include pricing grids tied to a credit ratings measure, *Cash Flow Grid* denotes the column with bank loans that include pricing grids tied to a cash flow measure, *Leverage Grid* denotes the column with bank loans that include pricing grids tied to a leverage measure, *Coverage Grid* denotes the column with bank loans that include pricing grids tied to an interest coverage measure, while *Other* denotes the column with bank loans that include pricing grids tied to any other measure. Each entry in the table reports the fraction of deals that include various types of financial covenants (the row entries) conditional on deals including a certain type of performance pricing provisions (the column entries). This table suggests that performance pricing provisions and financial covenants on the same measure complement each other.

	Cash Flow Grid	Ratings Grid	Leverage Grid	Coverage Grid	Other Grid
Coverage Covenant	0.894	0.578	0.730	0.923	0.654
Liquidity Covenant	0.123	0.009	0.189	0.154	0.331
Debt-BS Covenant	0.183	0.509	0.784	0.500	0.394
Net Worth Covenant	0.548	0.319	0.622	0.538	0.449
Cash Flow Covenant	0.970	0.685	0.757	0.923	0.803
Any Financial Covenant	0.981	0.983	0.946	0.962	0.945
N	367	232	37	26	127

Table 5: CONTRACTUAL CONTINGENCIES ACROSS DIFFERENT MATURITIES

This table presents descriptive statistics on the distribution of contractual contingencies across different loan maturities (in years). The Pricing Grid, CF Covenant, Borrowing Base, Any Covenant, Coverage, Liquidity, Debt-to-BS, Any Net Worth, Any Debt, and the St. Equity variables measures whether a deal includes performance pricing, cash flow covenant, borrowing base, any financial covenant, coverage covenant, liquidity covenant, debt-to-balance sheet covenant, any net worth covenant, any debt-based covenant, and a stockholders equity covenant in any of its facilities. N denotes sample size. The proportion of pricing grids included in private credit agreements is increasing with loan maturity – 63% of loans with maturity of less than 1 year, 62% of 1-3 year loans, 78% of 3-5 year loans, and above 80% of contracts with stated maturity of greater than or equal to five years include performance pricing. This empirical evidence suggests that performance pricing is positively associated with deal maturity, and longer maturity loans are more likely to be renegotiated.

Stated Maturity	Pricing Grid	CF Covenant	Borrowing Base	Renegotiated
≤ 1	0.634 N=202	0.683 N=202	0.069 N=202	0.268 N=194
1-3	0.616 N=190	0.832 N=190	0.353 N=190	0.731 N=171
3-5	0.779 N=299	0.896 N=299	0.278 N=299	0.941 N=255
≥ 5	0.803 N=309	0.848 N=309	0.097 N=309	0.983 N=232

Stated Maturity	Any Covenant	Coverage	Liquidity	Debt-to-BS	Any Net Worth	Any Debt	St. Equity
≤ 1 (N=202)	0.965	0.569	0.084	0.475	0.381	0.807	0.010
1-3 (N=190)	0.953	0.695	0.263	0.358	0.526	0.758	0.011
3-5 (N=299)	0.953	0.826	0.181	0.278	0.525	0.786	0.003
≥ 5 (N=309)	0.945	0.773	0.065	0.230	0.372	0.861	0.010

Table 6: FIRM AND LOAN CHARACTERISTICS SPLIT ON WHETHER A DEAL INCLUDES A PRICING GRID

This table provides additional descriptive evidence on how firm characteristics are associated with the inclusion of performance pricing. It immediately stands out from this table that deals with performance pricing have on average a greater number of banks on the syndicate than loans without pricing grids. The difference in the average number of banks for loans with and without this contractual feature is statistically different from zero (t-statistic of 6.99). Assuming that the number of banks in the syndicate is a measure of future renegotiation costs, it appears that the greater the expected renegotiation costs, the more likely it is for a loan to include pricing grids.

Pricing Grid VARIABLES	NO (N=274)			YES (N=726)			Total (N=100)		
	MEAN	MEDIAN	SD	MEAN	MEDIAN	SD	MEAN	MEDIAN	SD
Number of Lenders	5.726	3.000	7.435	9.689	8.000	8.200	8.603	6.000	8.187
Cash Flow Covenant	0.763	1.000	0.426	0.850	1.000	0.357	0.826	1.000	0.379
Borrowing Base	0.274	0.000	0.447	0.164	0.000	0.370	0.194	0.000	0.396
Loan Amount/Assets	0.338	0.242	0.321	0.332	0.249	0.295	0.334	0.248	0.302
Spread over LIBOR	214	200	133	143	125	99	162	138	114
Assets	2596	397	7015	3052	802	6390	2927	670	6567
Market to Book	1.718	1.417	1.016	1.791	1.438	1.109	1.771	1.433	1.085
Book Leverage	0.322	0.298	0.208	0.295	0.280	0.187	0.303	0.287	0.193
Rated	0.343	0.000	0.476	0.490	0.000	0.500	0.450	0.000	0.498
Earnings Variance	0.024	0.014	0.026	0.016	0.011	0.017	0.019	0.012	0.020
EBITDA/Assets	0.028	0.028	0.029	0.038	0.035	0.024	0.036	0.034	0.026

Table 7: WHAT TYPES OF DEALS ARE MORE LIKELY TO INCLUDE PERFORMANCE PRICING?

This table presents results from cross-sectional probit regressions explaining the inclusion of pricing grids in bank loans. The dependent variable takes the value of 1 if a deal includes performance pricing and 0 otherwise. The independent variables include firm and macroeconomic characteristics at loan origination. The table presents coefficients and heteroskedasticity-consistent standard errors (in parentheses) for the each variable. Significance at the 10%, 5%, and 1% is indicated as ***, **, and * respectively. Columns (1) and (2) present results for the entire sample of Roberts and Sufi (2009). Column (3) is restricted to loan with less than or equal to 1 year in maturity. Column (4) presents results for loans with maturity of 3 years and column (5) includes only 5 year loans. This table indicates that larger, more profitable, less volatile, and less levered firms are more likely to have performance pricing in their private credit agreements, while macroeconomic factors are not associated with the probability of inclusion of a pricing grid. This descriptive evidence provides additional support for the “renegotiation costs” explanation since loans to less opaque borrowers are more likely to include performance pricing. One explanation for this is that banks do not include performance pricing in the loans of opaque borrowers because of difficulty in anticipating outcomes with respect to firm financial health.

VARIABLES	(1) ALL	(2) ALL	(3) ≤1 year	(4) 3 year	(5) 5 year
LogBookAssets	0.108*** (0.038)	0.110*** (0.038)	0.261*** (0.082)	0.233** (0.099)	0.054 (0.086)
MarketBook	-0.043 (0.048)	-0.050 (0.048)	-0.041 (0.099)	0.234 (0.146)	-0.120 (0.154)
BookLeverage	-0.779*** (0.247)	-0.793*** (0.250)	0.035 (0.714)	-1.627*** (0.546)	-1.383** (0.580)
Credit Rating	0.155 (0.123)	0.178 (0.125)	0.0704 (0.289)	0.451 (0.330)	0.401 (0.258)
EBITDAVar./BookAssets	-9.916*** (2.287)	-10.35*** (2.318)	-19.39*** (5.879)	-13.95*** (5.330)	-5.929 (5.785)
EBITDA/BookAssets	10.48*** (2.008)	10.79*** (2.032)	13.41*** (4.872)	6.392 (4.709)	13.41** (6.456)
Bank Leverage		15.03 (13.69)	44.62* (26.93)	39.67 (36.11)	84.74** (35.29)
Real GDP growth		-16.19 (10.18)	-35.35* (18.84)	-2.039 (25.26)	-49.48* (26.00)
Spread over FFR		0.025 (0.268)	0.966 (0.590)	0.364 (0.678)	0.420 (0.614)
Stock Market Return		0.447 (0.599)	0.028 (1.107)	-1.233 (1.270)	0.875 (1.602)
VIX		-0.005 (0.010)	-0.011 (0.019)	-0.008 (0.024)	-0.043* (0.025)
Constant	-0.013 (0.265)	-13.51 (12.73)	-43.84* (25.06)	-37.19 (33.72)	-75.90** (32.65)
Pseudo R-Squared	8.36%	8.75%	19.31%	19.78%	10.38%
N	990	990	219	207	292

Table 8: HOW ARE PERFORMANCE PRICING AND RENEGOTIATION RELATED ACROSS DIFFERENT MATURITIES?

This table presents results from a Prentice and Gloeckler (1978) duration model of whether a loan is renegotiated at a given quarter. The dependent variable takes the value of 1 whenever a loan is renegotiated and 0 otherwise. The independent variables include: changes in firm and macro characteristics since loan origination, deal contingencies, firm and deal (number of lenders, loan amount to firm assets, and initial spread) characteristics at origination, credit rating fixed effects (6 groups), industry fixed effects (Pama-French 5) and a time trend. For clarity of exposition, I have only presented estimates for contractual contingencies and changes in firm and macroeconomic characteristics. The table presents marginal effects and standard errors (in parentheses) for the each variable. The standard errors are clustered at the deal level. Significance at the 10%, 5%, and 1% is indicated as ***, **, and * respectively. Column (1) presents results for the entire sample of Roberts and Sufi (2009). Column (2) presents results for loans with maturity of 1 year. Column (3) presents results for loans with maturity of 3 years, while column (4) uses only 5 year loans. Each subcolumn (i) includes positive changes in firm and macro characteristics, while subcolumns (ii) include negative changes in firm and macro characteristics. Specifications (1) and (2) also include the log of loan maturity.

VARIABLES	(1)	(2)	(3)	(4)
Pricing Grid	0.008 (0.008)	0.015 (0.010)	0.006 (0.014)	-0.048** (0.021)
Borrowing Base	0.011 (0.009)	-0.014* (0.008)	0.032 (0.019)	0.013 (0.018)
Cash Flow Covenant	0.035*** (0.007)	0.015** (0.0077)	0.031** (0.013)	0.007 (0.013)
Net Worth Covenant	0.007 (0.007)	0.005 (0.012)	0.004 (0.013)	0.028** (0.012)
Liquidity Covenant	0.009 (0.010)	0.055 (0.052)	0.025 (0.018)	-0.015 (0.018)
Δ Spread over Fed Funds Rate	0.002 (0.026)	(i) -0.032 (0.044)	(i) 0.019 (0.041)	(i) -0.039 (0.038)
Δ Stock Market Ret	0.050 (0.051)	(ii) -0.067** (0.027)	(ii) -0.042 (0.044)	(ii) -0.076** (0.034)
Δ Real GDP growth	-0.111 (1.012)	-0.055 (0.073)	-0.093 (0.105)	-0.103 (0.082)
Δ Bank Leverage	15.69 (11.18)	-0.390 (1.651)	1.912 (1.694)	-1.488 (1.698)
Δ VIX	-0.001 (0.001)	-2.546** (1.103)	-14.54 (1.899)	-3.061 (1.875)
Δ LogBookAssets	0.126*** (0.015)	-0.004 (0.025)	-0.005 (0.002)	0.0004 (0.002)
Δ EBITDAVar./BookAssets	-1.071 (0.715)	2.130 (1.326)	0.321 (1.257)	0.04 (1.046)
Δ MarketTOBook	-0.001 (0.001)	-0.0003 (0.002)	0.004 (0.002)	-0.00001 (0.0007)
Equity Return	0.001 (0.003)	0.072 (0.078)	-0.0004 (0.004)	0.010** (0.004)
Δ BookLeverage	0.183*** (0.052)	0.105* (0.054)	0.105 (0.126)	0.190** (0.086)
Δ EBITDA/BookAssets	-0.030 (0.238)	-1.937*** (0.746)	-0.0005** (0.0002)	0.209*** (0.078)
Δ DebtTOEBITDA	-0.0001 (0.0002)	-0.757*** (0.221)	-0.720 (0.493)	0.697* (0.356)
Predicted Probability	7.05%	0.0002 (0.0002)	0.0016 (0.0004)	-0.00004 (0.0003)
Number of Deals	933	1.81%	5.85%	5.76%
Observations	6,171	162	196	273
		704	1,428	2,120

Table 9: HOW DOES PERFORMANCE PRICING AFFECT THE LIKELIHOOD OF DIFFERENT RENEGOTIATION OUTCOMES?

This table presents results from a pooled multinomial logit model in which the dependent variable takes the value of $j=0,1,2,3$; $j=1$ denotes a spread increase renegotiation outcome, $j=2$ denotes a spread decrease renegotiation outcome, $j=3$ denotes all other renegotiation outcomes. The null category ($j=0$) is all loan-quarters in which loans are not renegotiated. The independent variables include: changes in firm and macro characteristics since loan origination, deal contingencies, firm and deal characteristics (number of lenders, loan amount to firm assets, and initial spread) at origination, credit rating fixed effects (6 groups), industry fixed effects (Fama-French 5) and a time trend. For clarity of exposition, I have only presented estimates for contractual contingencies and changes in firm and macroeconomic characteristics. The table presents coefficients and standard errors (in parentheses) for the each variable. The standard errors are clustered at the deal level. Significance at the 10%, 5%, and 1% is indicated as ***, **, and * respectively. Column (1) presents results spread increase renegotiation outcomes. Column (2) presents results for spread decrease renegotiation outcomes. Column (3) presents results for all other renegotiation outcomes. Each subcolumn (i) includes positive changes in firm and macro characteristics, while subcolumns (ii) include negative changes in firm and macro characteristics. All specifications include the log of loan maturity.

VARIABLES	SPREAD INCREASES		SPREAD DECREASES		ALL OTHER	
Pricing Grid	0.271		-1.451***		-0.248	
	(0.487)		(0.513)		(0.416)	
Pricing Grid*abs(Δ LeveragedSpread)	-49.49		378.4***		-21.37	
	(101.9)		(144.6)		(71.43)	
abs(Δ LeveragedSpread)	-130.4		-356.1**		176.2***	
	(101.0)		(146.0)		(59.68)	
Borrowing Base	0.355		-0.483		0.392	
	(0.443)		(0.503)		(0.315)	
Cash Flow Covenant	1.244*		-0.442		0.833**	
	(0.655)		(0.410)		(0.356)	
Net Worth Covenant	0.358		-0.290		0.276	
	(0.268)		(0.353)		(0.237)	
Liquidity Covenant	0.175		-0.083		-0.035	
	(0.481)		(0.671)		(0.291)	
	(i)	(ii)	(i)	(ii)	(i)	(ii)
Δ Spread over Fed Funds Rate	0.751	-0.497	1.239	-0.157	-0.793	-1.862**
	(1.248)	(1.002)	(1.003)	(1.175)	(1.223)	(0.834)
Δ Stock Market Ret	3.263	2.182	6.506**	-3.581	1.848	-2.198
	(2.046)	(2.163)	(3.245)	(3.036)	(1.694)	(1.794)
Δ Real GDP growth	-23.15	-15.12	-114.6*	105.0**	-10.71	-6.760
	(37.03)	(29.81)	(67.28)	(44.72)	(33.04)	(25.14)
Δ Bank Leverage	196.8	-76.72	-390.0	-131.8**	526.8	40.86
	(449.8)	(49.80)	(816.4)	(64.64)	(391.1)	(48.93)
Δ VIX	0.068**	-0.031	-0.159*	0.089*	-0.041	0.017
	(0.030)	(0.031)	(0.097)	(0.048)	(0.032)	(0.028)
Δ BBB Spread	0.030***	-0.001	-0.022	-0.025	-0.030***	0.009
	(0.011)	(0.017)	(0.016)	(0.016)	(0.010)	(0.013)
Δ EBITDAVar./BookAssets	-48.59	24.23	-122.6***	-36.91	-26.66	-2.772
	(30.81)	(22.27)	(45.11)	(31.39)	(22.70)	(20.88)
Δ MarketTOBook	-0.079*	-0.006	-0.001	-0.004	-0.028	0.032
	(0.041)	(0.004)	(0.020)	(0.005)	(0.043)	(0.027)
Equity Return	2.475***	0.242	1.583**	-0.196	2.880***	-1.345
	(0.566)	(1.797)	(0.776)	(1.636)	(0.440)	(0.967)
Δ LogBookAssets	2.479***	0.315	1.709**	-0.304	2.889***	-1.343
	(0.572)	(1.814)	(0.750)	(1.635)	(0.439)	(0.963)
Δ BookLeverage	4.555**	5.971***	5.806*	2.125	2.319	1.473
	(1.848)	(2.306)	(3.441)	(2.464)	(1.546)	(2.167)
Δ EBITDA/BookAssets	-11.92	-16.80**	14.40	13.85	10.38	-8.939
	(14.84)	(8.007)	(11.04)	(17.83)	(7.542)	(7.942)
Δ DebtTOEBITDA	-0.007	-0.002	-0.016	-0.004	-0.0004	-0.004
	(0.007)	(0.008)	(0.012)	(0.010)	(0.006)	(0.006)
Observations				3,266		

Table 10: TERM LOANS VS. REVOLVING LINES OF CREDIT

This table presents results from a Prentice and Gloeckler (1978) duration model of whether a loan is renegotiated at a given quarter. The dependent variable takes the value of 1 whenever a loan is renegotiated and 0 otherwise. The independent variables include: changes in firm and macro characteristics since loan origination, deal contingencies, firm and deal characteristics (number of lenders, loan amount to firm assets, and initial spread) at origination, credit rating fixed effects (6 groups), industry fixed effects (Fama-French 5) and a time trend. For clarity of exposition, I have only presented estimates for contractual contingencies and changes in firm and macroeconomic characteristics. The table presents marginal effects and standard errors (in parentheses) for the each variable. The standard errors are clustered at the deal level. Significance at the 10%, 5%, and 1% is indicated as ***, **, and * respectively. Column (1) presents results for five-year revolvers. Column (2) presents results for five-year deals with term loans. Column (3) presents results for term loan deals with maturity of greater than 3 years. Each subcolumn (i) includes positive changes in firm and macro characteristics, while subcolumns (ii) include negative changes in firm and macro characteristics. Specifications (3) also include the log of loan maturity.

VARIABLES	(1)		(2)		(3)	
Pricing Grid	-0.076**		0.031*		0.030**	
	(0.032)		(0.017)		(0.015)	
Borrowing Base	-0.009		0.029		0.090**	
	(0.018)		(0.028)		(0.039)	
Cash Flow Covenant	-0.006		0.014		0.062***	
	(0.016)		(0.024)		(0.015)	
Net Worth Covenant	0.018		-0.004		-0.016	
	(0.011)		(0.013)		(0.015)	
Liquidity Covenant	-0.021		0.077		0.063	
	(0.014)		(0.093)		(0.052)	
	(i)	(ii)	(i)	(ii)	(i)	(ii)
ΔSpread over Fed Funds Rate	0.063	-0.098***	-0.096	0.007	-0.091	-0.059
	(0.046)	(0.032)	(0.067)	(0.056)	(0.063)	(0.070)
ΔStock Market Ret	0.209**	-0.185**	0.138	-0.047	0.163	0.106
	(0.095)	(0.091)	(0.130)	(0.122)	(0.119)	(0.125)
ΔReal GDP growth	-3.394*	1.818	0.551	-1.216	-1.276	2.521
	(1.973)	(1.427)	(1.784)	(1.648)	(2.330)	(1.656)
ΔBank Leverage	13.13	-4.553**	-18.15	1.107	-14.77	-1.367
	(21.04)	(1.919)	(27.27)	(2.995)	(27.36)	(3.070)
ΔVIX	-0.001	0.001	-0.003	0.002	0.002	0.002
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
ΔBBB Spread	-0.0003	-0.001**				
	(0.0004)	(0.0005)				
ΔLeveragedSpread			-2.525	4.618	3.708	-3.304
			(4.843)	(3.778)	(4.252)	(3.757)
ΔEBITDAVar./BookAssets	-3.218**	0.591	-3.445	-0.118	-1.764	-2.048
	(1.599)	(0.999)	(2.694)	(2.012)	(1.883)	(1.641)
ΔMarketTOBook	-0.001	-0.001	-0.001	-0.004**	0.0002	-0.0004
	(0.003)	(0.001)	(0.001)	(0.002)	(0.001)	(0.0003)
Equity Return	0.013**	-0.078***	0.033**	-0.052	0.0001	-0.037
	(0.005)	(0.029)	(0.015)	(0.049)	(0.008)	(0.041)
ΔLogBookAssets	0.110***	0.020	0.057	-0.024	0.149***	0.009
	(0.0229)	(0.082)	(0.039)	(0.052)	(0.043)	(0.092)
ΔBookLeverage	0.236***	0.306***	0.181	0.015	0.034	0.100
	(0.081)	(0.094)	(0.163)	(0.140)	(0.157)	(0.140)
ΔEBITDA/BookAssets	0.537	-0.212	1.180**	-1.472*	0.601	-1.357**
	(0.388)	(0.370)	(0.557)	(0.767)	(0.744)	(0.604)
ΔDebtTOEBITDA	-0.0003	-0.00003	0.0007	-0.0009*	-0.0003	-0.001**
	(0.0004)	(0.0003)	(0.0004)	(0.0005)	(0.0005)	(0.0004)
Predicted Probability	4.82%		2.93%		6.26%	
Number of Deals	205		68		151	
Observations	1,653		467		1,049	

Table 11: PRICING GRIDS IN TERM LOANS AND REVOLVERS AND CHANGES IN MARKET SPREADS

This table presents results from a Prentice and Gloeckler (1978) duration model of whether a loan is renegotiated at a given quarter. The dependent variable takes the value of 1 whenever a loan is renegotiated and 0 otherwise. The independent variables include: changes in firm and macro characteristics since loan origination, deal contingencies, firm and deal characteristics (number of lenders, loan amount to firm assets, and initial spread) at origination, credit rating fixed effects (6 groups), industry fixed effects (Fama-French 5) and a time trend. For clarity of exposition, I have only presented estimates for the performance pricing variable, negative changes in market spreads, and interaction terms. The table presents coefficients and standard errors (in parentheses) for the each variable. The standard errors are clustered at the deal level. Significance at the 10%, 5%, and 1% is indicated as ***, **, and * respectively. Column (1) presents results for term loan deals with maturity of greater than 3 years, while column (2) presents results for five-year revolvers.

VARIABLES	(1)		(2)	
	TERM LOANS	REVOLVERS	TERM LOANS	REVOLVERS
pos Δ LeveragedSpread	61.23 (70.13)	63.58 (70.91)		
neg Δ LeveragedSpread	-54.55 (61.76)	162.0 (141.7)		
Pricing Grid	0.514* (0.273)	0.135 (0.299)	-1.044*** (0.300)	-1.143*** (0.414)
neg Δ LeveragedSpread*Pricing Grid		-294.2** (138.4)		
pos Δ BBBSpread			-0.007 (0.008)	-0.007 (0.008)
neg Δ BBBSpread			-0.024** (0.012)	-0.019 (0.018)
neg Δ BBBSpread*Pricing Grid				-0.008 (0.019)
Number of Deals	151	151	205	205
Observations	1,049	1,049	1,653	1,653