DISCUSSION PAPER SERIES

No. 4287

MULTIPLE LENDERS AND CORPORATE DISTRESS: EVIDENCE ON DEBT RESTRUCTURING

Antje Brunner and Jan Pieter Krahnen

FINANCIAL ECONOMICS

Centre for Economic Policy Research

www.cepr.org

Available online at: **www.cepr.org/pubs/dps/DP4287.asp**

ISSN 0265-8003

MULTIPLE LENDERS AND CORPORATE DISTRESS: EVIDENCE ON DEBT RESTRUCTURING

Antje Brunner, Humboldt Universität zu Berlin and Center for Financial Studies, Frankfurt
Jan Pieter Krahnen, Goethe-Universität Frankfurt, Center for Financial Studies, Frankfurt and CEPR

Discussion Paper No. 4287
March 2004

Centre for Economic Policy Research
90–98 Goswell Rd, London EC1V 7RR, UK
Tel: (44 20) 7878 2900, Fax: (44 20) 7878 2999
Email: cepr@cepr.org, Website: www.cepr.org

CEPR Discussion Paper No. 4287

March 2004

ABSTRACT

Multiple Lenders and Corporate Distress: Evidence on Debt Restructuring*

In the recent theoretical literature on lending risk, the common pool problem in multi-bank relationships has been analysed extensively. In this Paper we address this topic empirically, relying on a unique panel dataset that includes detailed credit-fie information on distressed lending relationships in Germany. In particular, it includes information on bank pools: a legal institution aimed at coordinating lender interests in borrower distress. We find that the existence of small bank pools increases the probability of workout success and that coordination costs are positively related to pool size. We identify major determinants of pool formation, in particular the distribution of lending shares among banks, the number of banks, and the severity of the distress shock to the borrower.

JEL Classification: D74, G21, G33 and G34
Keywords: bank lending, bank pool, bankruptcy, coordination risk, distress and reorganization

Antje Brunner
Humboldt Universität zu Berlin
Spandauer Strasse 1
D-10178 Berlin
GERMANY
Tel: (49 30) 2093 5872
Fax: (49 30) 2093 5787
Email: abrunner@wiwi.hu-berlin.de

Jan Pieter Krahnen
Lehrstuhl für Kreditwirtschaft und Finanzierung
Goethe-Universität Frankfurt
Mertonstrasse 17-21
60054 Frankfurt am Main
GERMANY
Tel: (49 69) 7982 2568
Fax: (49 69) 7982 8951
Email: krahnen@wiwi.uni-frankfurt.de

*This research is part of the CFS project on Credit Risk Management in Germany. We thank all participating banks for the intensive cooperation in this project. We have also benefited from discussions with Ron Anderson, Sudipto Bhattacharya, Hans Degryse, Doug Diamond, Ralf Elsas, Karl-Hermann Fischer, Nicolas Kiefer, Kjell Nyborg, Steven Ongena, Hyun Shin, Josef Zechner and conference and seminar participants in Cologne, Frankfurt, Freiburg, London (FMG), Tilburg, Vienna, and Zurich. An earlier version of this Paper was entitled 'Corporate debt restructuring - Evidence on lender coordination in financial distress'. This Paper is produced as part of a CEPR Research Network on 'Understanding Financial Architecture: Legal and Political Frameworks and Economic Efficiency', funded by the European Commission under the Research Training Network Programme (Contract No: HPRN-CT-2000-00064).

Submitted 23 January 2004

1 Introduction

In the aftermath of the sudden collapse of Swissair in 2001, then one of Europe's most prestiguous airlines, Oliver Hart noted that the company could probably have been saved if, in the Swiss financial market, it would have been able to achieve the coordination among all lenders prior to the initiation of formal bankruptcy proceedings [see Hart 2001].

Relying on inside information collected from major German banks, this paper uncovers a financial institution, the bank pool ('Bankenpool'), that is able to eliminate the risk of uncoordinated creditor action when corporate distress is imminent. We find bank pools to be a commonly used coordination device within the German financial system. Despite its importance for financial contracting and for the economics of relationship lending in distress, bank pools have hardly at all been taken into account by outside observers and academics. To the best of our knowledge, this is the first analysis of the pool institution, and its role in corporate distress.

Our data set comprises mid-sized privately held non-financial firms in Germany, sampled from the credit files of the largest commercial banks. Most firms in the sample (117 out of 124) have multiple bank relationships, with a median of 5, and a maximum of 30 banks. Multiple banking may well be beneficial in normal times, because it eliminates the hold up risk inherent in single-source bank financing [Rajan 1992]. Multiple banking also protects the debtor against a sudden deterioration of the liquidity position of the bank [Detragiache/Garella/Guiso 2000]. However, if the borrower himself is in distress, multiple banking is likely to be a disadvantage. In such a situation coordination between creditors is required, but may be difficult to achieve. There is a large literature stressing the difficulties of multiple lenders to coordinate their action. For example, Gertner/Scharfstein [1991] analyze the free rider problem in corporate distress, and Morris/Shin [1999] emphasize the associated welfare loss of a creditor run.

We find no systematic evidence of creditor runs before or during the distress episodes experienced by the firms in our sample. Loan terminations typically occur after a prolonged distress episode only. However, we observe an extensive involvement of banks in debt restructuring and workout acitivities. The involvement in distress episodes covers, among other things, the allocation of fresh money to the troubled company, the hiring of experts to provide management consultancy and, in some cases, the pressing for management dismissal. The active involvement of the banks is often, but not always, accompanied by an explicit coordination among the lenders. In 45% of all cases in our sample, the group of bank lenders strike a formal contractual agreement that effectively aligns investment incentives. This agreement is called a pool arrangement. The pool is initiated around the onset of a distress episode, and it will be resolved when the company has been successfully worked out, or when it is liquidated. The rules and regulations governing the life of the pool are a result of private contracting. The pool institution, together with its internal decision rules, is an arrangement that is strictly based on incentive compatibility, and reputation

effects.

Our paper therefore analyzes how, in distress episodes, lender coordination is achieved through private contracting. We also evaluate to what extent coordination facilitates workouts. Our major findings can be summarized as follows. First, multiple lending is widespread among medium-sized firms in Germany. Second, and contrary to the common belief held by many observers, we find that banks engage regularly and intensively in the workout of distressed companies. This fact has elapsed the perception of political and academic observers, and government statistics alike, because private workout activities are instituted well before formal bankruptcy proceedings are initiated.Third, at the onset of financial distress of a borrower, explicit coordination among its lenders is common, leading to the formation of bank pools. These pools initially aim at the revitalization of the distressed borrower. Bank pools with few members (small pools) significantly shorten the length of the workout period, and they increase the likelihood of a successful turnaround during a reorganization process. In contrast, pools with many member banks tend to comprise more serious distress incidences, experiencing a longer workout duration, and a smaller turnaround probability. Fourth, the formation of the pool itself depends on the severity of the workout task. Thus, pools are more likely to emerge, when the ex-ante default probability is high, when the number of bank relationships is large, and when, among all lenders of a given borrower, the outstanding debt does not differ considerably. The results reported in this paper refute the hypothesis that a creditor-friendly bankruptcy code, like the one in Germany, engenders a bias towards liquidation.

We will proceed as follows. Section 2 gives a brief account of the relevant theoretical and empirical literature and states our major hypotheses. Section 3 lays out the institutional details of the bank pool and describes the data set in some detail, including the clients' debt structure and the occurrence and the structure of bank pools. Section 4 comprises the testing methodology and presents the main results. Section 5 discusses our findings, and relates them to the prevailing insolvency code.

2 Literature review and derivation of main hypotheses

Much of the recent literature on the pricing of debt, on the design of debt contracts and, with a broader perspective, on the properties of the banking system, focusses on the borrower-lender bargaining process when there are several lenders. The case of multiple lending is interesting from a modelling perspective, and it is relevant from an empirical perspective. In the models of Bergman/Callen [1991], Rajan [1992], Bolton/Scharfstein [1996], and Berglöf/Roland/von Thadden [2000] multiple lending solves the moral hazard problem underlying the basic borrower-lender relationship. The incentive for the borrower to default strategically can be overcome by establishing several

lending relationships since multiple debt is harder to renegotiate, or even non-renegotiable. In Rajan's [1992] model, multiple banking achieves the first best if (and only if) all banks are equally close monitors.

Empirically it has been shown that multiple banking is common in many countries around the world. For large public companies from 22 countries, Ongena/Smith [2000, O/S] find the average number of bank relationships to vary from 2.9 in Norway to 15.2 in Italy. They attribute the cross-country differences to the concentration of the banking system, and to the strength of creditor rights. Less concentration in the local banking market, and stronger creditor rights tend to go hand in hand with more bank relationships. For the UK, Franks/Sussman [2000] find a predominance of single bank relationships. In our data set of mid-sized non-public corporations in Germany, the median number of relationships is 5, the same as in O/S, with maximum value of 30 [O/S: 29]. 5.6% of firms in our data set maintain single bank relationships, against 15.9% in O/S.

All the papers enumerated so far recognize that the benefits of multiple lending have to be traded off against its costs. The common source of the costs in all models is a state of low return realization in which the firm is not able to meet its contractual repayment obligations. In this state, inefficiencies arise from the inability to renegotiate multiple debt, from higher cost of renegotiation, or from reduced expected liquidation values. Rajan [1992] and Bergman/Callen [1991] argue that inefficiencies in liquidity default stem from free-rider problems. An increase in the number of lenders lowers the probability that a single lender is pivotal in renegotiation. Hence, especially small lenders have an incentive to free ride.

In a second group of papers, it is argued that the major problem associated with multiple lending arises from bargaining among lenders rather than between lenders and a common borrower. The common pool or collective action problem addresses the risk of coordination failure. Although renegotiation is in the collective interest of all creditors, individually they may find pre-emptive debt collection favorable. They will tend to foreclose on their loans in fear of similar actions by other lenders although the firm's prospects may in fact be sound. Underinvestment will be the consequence. Multiple self-fulfilling equilibria arise, which resemble a bank run as modelled by Diamond/Dybvig [1983]. Morris/Shin [1999] apply the idea of coordination risk to corporate debt and its pricing. In our study we find, nevertheless, that lenders coordinate themselves quite often. We observe pool arrangements in almost half of all cases.

2.1 Determinants of pool formation

As an initial test we will try to identify the determinants of the formation of pools. We hypothesize, first, that the formation of pools is more likely when the number of bank relationships is large, because in distress, fixed monitoring costs tend to be high for each bank, yielding economies of pool formation that are rising in the number of banks included in the pool. These monitoring costs

refer to both, the monitoring of the borrower and the monitoring of the actions of all other lenders. The all-or-nothing nature of the pool (either all banks join, or there will be no pool), is credible due to reputation effects. Reputation in the market assures that, for each bank, the full marginal benefit is tied to the participation decision. Second, we postulate that free-riding incentives are small when lending shares are equal among all lenders. Thus, the more heterogeneous the distribution of lending shares, the lower is the probability of pool formation. Third, the severity of the distress shock should be positively related to the probability of pool formation, since only substantial shocks will unambiguously be interpreted as signals of distress by all lenders. To form a pool, eventually all the banks will have to agree that the prospects of the borrower are such that unified action is warranted.

Additional factors that may influence the decision to form a pool are the size of the firm, the quality of the bank relationship, the individual strategy of the banks involved, the general economic condition prevailing at the time of the distress event, and the industry to which the distressed company belongs.

Borrower size. Given that a bank pool involves coordination costs, the banks' decision on pool formation also depends on the size of the borrower. We measure size by the firm's total assets. Size should have an impact on expected future revenues out of which banks' costs will have to be covered. We therefore hypothesize that firm size is positively related to the probability of pool formation. Furthermore, including borrower size enables us to control for the possibility that also the number of banks proxies size rather than coordination issues.

Housebank and collateralization. The housebank is not likely to be a driving force in forming a bank pool. Given its senior position in terms of collateral, as was shown by Elsas/Krahnen [2002], and given its superior information status, the housebank stands to lose less than the other banks from an inefficient liquidation of firm's assets due to coordination failure. Note that the housebank status and the degree of collateralization are mutually reinforcing factors in this regard.

Bank identity. There may well be systematic differences between banks in our sample with respect to their willingness to engage in a bank pool. Recall that the banks in our sample comprise the biggest banks from all three German banking sectors, namely private banks, savings banks (mostly owned by communities), and cooperative banks. Thus, we want to control for systematic differences of policies with respect to the formation of pools.

Economic condition and industry. The willingness to engage in pool operations may also be influenced by the general economic condition prevailing at the onset of distress, and the company's business focus.

2.2 Determinants of workout success

The second group of hypotheses addresses the effect of pool formation on the workout success of a distressed borrower. If the formation of a pool helps to

avoid the costs resulting from inefficient liquidations and retarded workouts, the presence of a pool arrangement should increase the probability of workout success, and it should reduce the length of time needed to conclude a workout process. These hypotheses reflect the costs of free riding that are key in the models of Rajan [1992] and Bergman/Callen [1991].

A second explanatory variable is the number of bank relationships. Due to free-rider problems, the probability of successful renegotiation of debt in a distress situation is expected to be negatively related to the number of lenders [see Bergman/Callen 1991, and Hege 1997]. This is caused by the probability of each individual lender being pivotal for the firm's failure, which is decreasing in the number of banks. We thus hypothesize that unconditionally, a larger number of bank relationships decreases the probability of workout success. However, given that a bank pool is formed, we expect bargaining costs to be directly proportional to the number of banks in a pool. The main reason for this belief rests on the incentive of small creditors to deny concessions, or in general to be less actively involved in a restructuring process and, therefore, to be less committed to timely action. In comparison to pools with a small number of members, "large" pools are expected to need more time for decision-making. Stretching a workout over time may be costly in terms of opportunity costs as well as in terms of options foregone. Furthermore, since "large" pools are less prepared to act flexibly, they are likely to liquidate distressed firms more often than "small" pools.

The available empirical literature on workout processes and results is almost exclusively dealing with data from large US companies. They compare formal procedures under Chapter 11 of the US Bankruptcy Reform Act with informal, private reorganizations of distressed firms. Gilson/John/Lang [1990], for example, study the characteristics of 169 financially distressed US firms. About half of these firms have restructured their outstanding debt privately, while the other half sought protection under Chapter 11. Their findings suggest that firms are more likely to be successfully restructured when the number of lenders is small, and the share of bank debt is high. Franks/Torous [1994] compare private restructuring, organized as an exchange offer, with Chapter 11 reorganizations. Their analysis shows that, in private restructuring, recovery rates are on average higher, and deviation from absolute priority is more likely. James [1996] adds to this by showing that exchange offers are more likely when the debt structure of the distressed companies involves bank loans. The only paper dealing with non-US data that we are aware of is Franks/Sussman [2000], who investigate debt forgiveness in a sample of non-financial private UK firms. Their study reports a predominance of single bank relationships in the sample of small and medium sized firms. There is no indication of either debt forgiveness or creditor run, which the authors relate to the specificity of the British insolvency code.

3 Distressed loans and bank pools: Descriptive statistics and institutional design

Almost half of the distressed firms analyzed in this paper involve so-called bank pools as part of the restructuring. These pools have a sophisticated institutional structure, with potentially important implications for the behavior of banks when their corporate client is in trouble. The contractual features of bank pools are outlined in the next subsection, followed by detailed description of the data set and some descriptive statistics.

3.1 Bank pools: contract features

The institution of a "bank pool" is a formal contractual arrangement in which lenders pool their individual claims vis-à-vis a particular borrower in distress in order to coordinate their decision-making. Typically, when a firm with multiple bank relationships becomes distressed, its banks summon a so-called "bank meeting". The meeting serves the purpose to discuss how to deal with the company then in distress, and in particular whether or not a formal pool among the banks should be set up.

The standard pool contract has been used throughout the last thirty years. Its special format is adapted to the needs of distress situations. An abbreviated English version of the standard pool contract is in the appendix [see Scholz/Lwowski 1994, and Hellner/Steuer 2001 for a complete German text]. Core elements of the standard pool contract are as follows:

- a list of contracting parties and outstanding loans;
- a description of pool leader responsibilities, including the administration of collateral;
- an agreement as to the joint and mutual settlement of credit account balances between participating banks;
- an agreement as to the distribution of revenues from liquidation or ongoing client business;
- a sharing rule concerning the costs of running the pool;
- a sharing arrangement concerning relevant default information, and
- an agreement as to the duration of the contract, and exit rules.

From interviews we know that typically a bank pool comprises all active bank lenders. The contract specifies in particular how proceeds from outstanding loans, as well as costs related to the workout, are to be shared among pool members. Failure to reach a consensus on these issues usually prevents the establishment of the pool. The existence of a pool arrangement is revealed to the participating institutions, and to the distressed company. The latter is

actually co-signing the pool contract. Third parties are not informed about the establishment of a pool, except for cases where the firm's distress is already public information. In our field interviews, this disclosure policy was justified as follows: If the distress is public information, the existence of a pool is a positive signal that lenders are willing to engage in a workout. However, if the distress is not publicly known, the establishment of a pool is a negative signal, indicating a distress situation. The liquidity situation of a troubled company will be adversely affected by a negative signal.

When does a pool start, and when does it end? The initiation of a pool is subject to a group decision involving all designated pool members. This decision process may require some time. For this reason, the actual date of the establishment of the pool will, in most cases, not exactly equal the date of the distress event, i.e. the date of the loan downgrading to non-investment grade. Rather, pool formation occurs in the vast majority of cases shortly before, at, or shortly after the distress event. The duration of the pool arrangement is unlimited, a priori. Once established, it will last until the reorganization is completed, i.e. until the company is able to attract new lenders, or else until it is liquidated. In either case, the pool contract is phased out, rather than formally dissolved.

From field interviews, supported by our data, we know that only uncollateralized junior loans are pooled. (Partially) collateralized creditors' participation in the pool corresponds to the uncollateralized portion of their debt. Thus, junior lenders will bear the burden of a workout since fresh money is typically provided by the pool according to pre-specified pool quotas. This scenario has been observed throughout decades since bank pools were established. It is important to mention that this scenario does not at all imply that senior banks, notably highly collateralized housebanks, are left out of pool negotiations altogether. The reason is that even housebanks typically have part of their loans unsecured. Furthermore, banks have an informal stand-still agreement regarding the collateralized (non-pooled portion) of their debt which, although not contractually binding, is apparently sufficient to prevent pre-emptive action by these parties. Once a pool exists, attempts are made to collateralize the hitherto uncollateralized junior pool loans, i.e. to obtain additional collateral from the borrower. This explains the existence of pool collateral, which refers to collateral obtained after the pool was established. This must not be confounded with individual ('inherited') collateral agreements already in existence before pool formation. Of course, collateralized banks are not willing to share their inherited collateral assets with other banks.

The pool contract establishes a binding commitment for every bank to coordinate its client-related actions with all other pool banks. Most importantly, each bank commits herself to keep its credit line open. This is believed to be to the benefit of every pool member, since it reduces uncertainty and stabilizes the liquidity position of the firm. Thus, the seizure of collateral or any forced repayment is ruled out, unless the pool members decide unanimously to the contrary. In general, revenues from client's ongoing business, or from the realization of collateral are shared among pool banks in proportion to their relevant

credit balances. If banks learn individually about circumstances that endanger the repayment of debt, information has to be shared among all pool banks and, therefore, the otherwise rigid rule of bank secrecy is lifted.

A priori, there is no reason why trade creditors, or trade credit insurers, should not join the pool. In the present study, however, we have no information whether or not trade creditors have been part of the pool. Our empirical analysis, therefore, does not explicitly address the role of trade creditors in the restructuring process.

3.2 The data set

The study relies on the CFS Loan Data Set, collected under the Center for Financial Studies' field research project on Credit Management [see Elsas et al. 1998 for a detailed description]. The data underlying our analysis include distressed and potentially distressed corporate debtors of the following six major German banks: Deutsche Bank, Dresdner Bank, Commerzbank, Bayerische Vereinsbank (now HypoVereinsbank), DG Bank (Deutsche Genossenschaftsbank, now DZ Bank), and WestLB (Westdeutsche Landesbank). The unit of observation is a particular firm or, more specifically, a particular bank-firm relationship, using all information regarding the firm contained in the credit files of a bank. The data set contains in particular

- general characteristics of the borrowing firm (e.g. legal form, industry);
- a time series of firm's balance sheet data (up to 7 years);
- an assessment of borrower risk, according to the bank's internal risk rating;
- a complete account of all outstanding loans vis-à-vis a particular borrower, taken from the bank's loan book; it includes information on loan terms, e.g. volume, maturity, collateral, spread;
- general information concerning other bank relationships, including the existence of a bank pool;
- a complete time-stamped list of measures taken by the bank in order to reorganize or liquidate the firm, or its assets.

This information was collected directly from the banks' credit files. Observations range from 1991 up to 1999. The sample was randomly drawn from a population of all corporate customers who met the following set of conditions at least once during 1992-1997.

- First, companies had to be medium-sized, i.e. with an annual turnover between EUR $25 - 250$m. Due to the absence of surveillance by rating agencies and the lack of rigorous disclosure requirements, we expected this company size segment to be subject to a significant degree of asymmetric information between lenders and borrowers, thus constituting a

prime population for the analysis of issues related to relationship lending, loan contract design, and renegotiation.

- Second, to ensure a minimum level of information regarding the clients' total bank debt and the number of the borrower's bank relationships, a minimum total loan size of about EUR 1.5m (DEM 3m) was imposed. All loans surpassing this level are subject to the regulatory notification requirement of Article 14 of the KWG (German Banking Act), and have to be communicated to the federal banking supervisory agency BAFin (formerly BAKred).

- Third, clients with registered offices in the former GDR (East Germany) were excluded.

- Fourth, to generate a sample of potentially distressed borrowers, a random selection was chosen from the set of firms that had recorded a poor internal credit rating at least once within the 1992-1997 period. The rating reflects the expected default probability of the firm, as seen by the bank, before collateralization is taken into account[1]. A poor rating is defined as a rating of 5 or 6 on a standardized rating scale ranging from 1 (highest grade) to 6 (lowest grade) for all banks in this sample. Rating categories 5 and 6 indicate that banks expect the borrower to be problematic, i.e. potentially distressed, or actually distressed. More detailed information on the standardization is compiled in Table 1.

{insert Table 1 here}

The sample includes 124 borrowers and a total number of 597 year-end observations[2]. Panel A of Table 2 shows the frequencies of credit files collected from each bank. Among the 124 firms in the sample there are 58 credit relationships involving pool arrangements with Bank3 more and Bank5 less often involved in such arrangements. Grouped according to industry sectors, Panel B of Table 2 shows that the majority of firms come from the engineering (33) and manufacturing (30) sectors. The third largest sector is trade, including both retail and wholesale, with a total of 17 firms in our data set. Other sectors are of rather minor importance in this sample.

3.3 Descriptive statistics

3.3.1 Firm size and debt structure

The major sample selection criterion refers to company size, proxied by annual turnover, representing medium-sized companies. Annual turnover had to be

[1] Internal ratings are typically derived from scoring models that measure the probability of default. These probabilities refer to borrower rather than to the individual loan.

[2] When there is more than one observation per year we only consider the last observation. However, we cumulate the information on distress measures taken by the bank over all observations in the respective year.

larger than EUR 25m and smaller than EUR 250m. In our sample of 124 distressed firms, the average company size is EUR 73.8m, with a median of EUR 53.2m shown in Panel C of Table 2. In this size class, German firms typically have not issued any public debt instruments. The average debt-to-assets ratio is 70.8%, the bank-debt to total-debt ratio is 75.6%. The remaining debt comprises other forms of debt, e.g. trade credit and debt given by owners. The fraction of bank debt in total debt is considerably larger in the distressed sample than in a comparable representative sample. For the latter, the average bank-debt to total-debt ratio is about 50%. With respect to the number of bank relationships, however, there is no significant difference between these samples[3]. As can be seen from Panel C of Table 2, firms tend to borrow from several banks, with a mean value of 6 and a median of 5 (minimum is 1, maximum is 30).

{insert Table 2 here}

Comparing subsamples, firms with pools tend to be larger than those of the no-pool subsample in terms of annual turnover (significant at the 5% level), total assets, or the number of banks (both 1% level of significance). The median number of banks when there is a bank pool is 6 whereas the median is 4 for firms without a pool.The frequency distribution of the number of banks for the pool subsample vs. the non-pool subsample is presented in Figure 1.

{insert Figure 1 here}

Additionally, we analyzed whether larger borrowers tend to have more bank relationships and higher amounts of debt outstanding per bank. The results, comprised in Panel D of Table 2, suggest that the number of banks is increasing in firm size both measured by annual turnover and total assets. However, the average debt per bank is not increasing with firm size. These findings hold for both the pool and the no pool subsample.

3.3.2 Internal ratings

An important characteristic of our data set concerns internal ratings provided by lenders. For none of the firms in our sample we have evidence of external ratings from agencies such as Dunn&Bradstreet. The rating information has been collected on every borrower and for each observation recorded in the files. Each bank in our sample uses its own rating system in order to assess the probability of default of its borrowers. Ratings are reviewed at regular intervals, typically every second year for high-graded firms and at least once a year for firms of medium and low quality. Commonly, low-quality firms are rated even more frequently, especially if information touching upon the firm's creditworthiness is revealed.

[3] See Elsas/Krahnen [2000],and Machauer/Weber [1998] for descriptive statistics relating to the representative sample.

The standard methodology of the rating process relies on a scoring system with up to five different main criteria, including quantitative and qualitative information about firm performance and prospects, and a linear weighting system with both fixed and varying weighting factors depending on the bank in question [see Brunner/Krahnen/Weber 2000 for details].

We treat ratings as unbiased and efficient estimates of expected default probabilities, as judged by the individual bank. As long as internal ratings remain the private information of the bank, i.e. as long as rating information is not communicated to either the management of the rated firm, or to some supervisory body, there is no inherent incentive for the bank to systematically misrepresent the information available. Internal ratings are thus expected to be informationally efficient [see Krahnen/Weber 2001].

The ratings of different banks representing different rating scales have been standardized in a transformed rating scale with six rating categories, in which grades 5 and 6 describe borrowers that are either potentially distressed (problematic), or actually distressed. The standardization process is based on the bank-individual rating categories and their verbal descriptions taken from the banks' rating manuals guiding credit officers when to assign a firm to a certain rating category. Using these descriptions each category of a bank-individual rating system was assigned to one of the six new categories of the standardized system (see Table 1). Figure 2 shows the frequency distributions of client ratings of the five banks on the standardized rating scale for a representative sample of 1996 data ($n = 101$). Obviously, the frequency distributions of ratings across the banks appear to be similar, although Bank2 seems to have clients with superior average quality[4].

{insert Figure 2 here}

Bank-specific credit policies may be responsible for this observation, rather than an incorrect calibration of the rating scale. In particular, two banks may assign identical ratings to the same client, but differ w.r.t. the average internal rating of their client pools due to different lending policies. In the case of Bank2, for example, credit officers were explicitly instructed to minimize the number of low-rated customers. Other banks maintain close relationships with their clients and rather adjust prices in order to make up for the increase in default risk.

3.3.3 Credit Event

We define a credit event as the point in time when, for the first time, a bank downgrades its borrower to a distress notch. The credit event thus describes the onset of financial distress. For some of the banks in our sample, the credit event corresponds to the moment when competence for a certain client is transferred from the local credit manager to a workout group on a senior level (not all

[4] Based on a χ^2-homogeneity test applied to the frequency distributions of banks 1,3,4,5 we cannot reject the hypothesis that all ratings come from the same distribution. Adding the internal ratings of bank 2 leads to a rejection of this hypothesis.

banks have had such workout groups by the time of data collection, however). The workout group has specific expertise regarding the reorganization, and also liquidation, of borrowers. At the onset of financial distress, the event rating, which can either be rating class 5 or 6, indicates the severity of the distress shock. In our sample, we find 101 credit events to rating 5 and 23 credit events to rating 6 where the latter imply the default of a borrower (see Panel H of Table 2).

3.3.4 Bank behavior in distress

The onset of financial distress measured by the downgrade typically goes along with the bank adjusting its behavior vis-à-vis the firm. Bank activities will have an effect on the borrower's financing constraint:

- *loosening* the firm's financial constraints by postponing due repayments and interest payments or even providing additional funds (fresh money) to help the firm overcome a liquidity shortage.
- *tightening* the firm's financial constraints by reducing credit lines, terminating individual loans or requiring additional collateral in order to discipline the firm's management.

However, loosening and tightening are not necessarily mutually exclusive. The bank may, for example, provide fresh money and require additional collateral at the same time. Additionally, the bank reacts to declining borrower quality in ways not directly related to the size and structure of loan agreements, for instance by increasing its monitoring. The term 'workout' is commonly used to describe a bank's efforts to carry on the lending relationship with a distressed or potentially distressed borrower.

As argued in previous sections, the bank pool can be seen as a coordinating device, facilitating the reorganization of distressed firms. In 7 cases (out of 101 in the data set), distressed firms are immediately liquidated. In 11 additional cases, the firm is liquidated after an attempt to reorganize the firm had failed. Thus, there are 18 liquidations altogether, 12 of which led to formal bankruptcies. Pools were involved in half of the liquidation cases, and in 5 of the formal bankruptcies.

3.3.5 Collateralization

The degree of collateralization is important for lender decision-making. It affects expected payout, and it is likely to influence pool formation, given that the latter comprise unsecured loans only. In our sample, the average share of collateralized loans at the time of the distress event amounts to 41.0% for the pool subsample, and 44.1% for the no-pool subsample [see Panel E of Table 2].

In both subsamples this number is one third higher than in a representative sample[5].

Fresh money has priority over other claims if and only if it is collateralized, otherwise it is pari passu with all unsecured claims. Note that collateralization at the distress event is higher than in the periods before and after the event, as is evident from Panel G of Table 2. Changes in the degree of collateralization maybe due to different developments: a re-evaluation of collateral assets, the acquisition of additional assets, or a change in loan volume. The collateral valuation in Panel G reflects the value of collateral assets around the distress event, thereby eliminating the influence of changes in outstanding bank debt. It reveals that collateral value is slightly increasing shortly before the distress event. Banks apparently acquire additional collateral when borrower quality is declining. After the event collateral is further increasing in the no-pool subsample and declining in the pool subsample, suggesting that pool formation is more frequent when there is no free collateral left.

4 Estimation methodology and results

4.1 Methodology

After a brief description of the estimation procedures used in this study, we will discuss the results of testing our hypotheses on pool formation, and will then turn to workout success. Both sets of regressions use cross-sectional data. Estimation relies on the full data set, excluding only those cases with less than one year of observation between the start of the distress period and the end of our observation window.

The regression on pool formation is a standard probit. The underlying latent dependent variable is the probability of pool formation and the variable actually observed is binary, representing either 'pool formation' or 'no pool formation' within our observation window. The set of explanatory variables include both quantitative variables and qualitative dummy variables.

In the estimated model, workout success is related to the existence of a bank pool. Referring to the literature on treatment effects [Heckman 1990, 1997 and Angrist/Imbens 1991], the formation of a pool and its subsequent assistance in restructuring the debtor can be regarded as a treatment with impact on the outcome, i.e. workout success or failure. We are interested in the average treatment effect on the treated [Angrist/Imbens 1991], measuring the extent to which firms gain from pool assistance, in terms of the restructuring outcome. This effect coincides with the average treatment effect[6] if, ex ante, clients with identical characteristics (i.e. the same set of regressors X) have the same expectations concerning gains from treatment. However, there may also be a selection bias

[5] In 1996, the average collateralization of loans in a representative sample of 98 firms was 31.5%. See Elsas and Krahnen [2000] for further details.

[6] The average treatment effect (ATE) describes the gain of an average person randomly chosen from the treatment population.

leading to an endogeneity problem. This is the case if the decision to form a pool is correlated with the error term from the workout success regression. In this case, the idiosyncratic component of workout success is related to the pool formation decision. As a remedy, we will instrument the pool variable when estimating workout success.[7] In both types of regressions the latent dependent variable is the probability of workout success with realizations 'success' or 'no success', where the latter comprises both liquidations and unresolved cases. The set of explanatory variables include qualitative and quantitative variables. Workout is defined to be successful, when a distress episode is finished, i.e. when the rating returns to investment grade (notches $1-4$), from a distress level (5 or 6).

In addition, we estimate the determinants of the length of the distress episode as an alternative measure of workout success, relying on a duration model. This estimation is essentially an extension of the workout success variable in the time dimension. It allows to predict the average length of a workout for a distressed company with given characteristics.

4.2 Determinants of pool formation

The first regression analysis will help us to understand the determinants of pool formation. The sample consists of 101 observations, after excluding all relationships that experienced the distress event in the last period of the observation window.[8] Firms with single bank relationships are included in the sample since there is positive probability of observing pools comprising the bank as well as one, or several, non-bank creditors. As noted before, pool formation occurs in the vast majority of cases either shortly before, at, or shortly after the distress event. In the year of the distress event, almost 80% of all bank pools in our sample have been established, one year later this number increases to 86%.

In all specifications, the dependent variable is the POOL-dummy variable, equal to one if a bank pool has been formed and zero otherwise. The set of explanatory variables of Table 3 comprise the number of bank relationships, the heterogeneity (skewness) of banks' lending shares, the severity of the initial distress shock, the leading German IFO business climate index, and the company size. We furthermore include the housebank (HB) status, the collateralization at the distress event, the bank identity, the company's relevant industry sector, and the time between the distress event and the end of the observation period. For further variable description see Table 5.

$$pool = f\left(\begin{array}{l} \#banks, skewness, rating6, ifo, size, hb, \\ collateral, bank1...6, industry, time2end \end{array}\right) \qquad (1)$$

[7] This is equivalent to a two-stage probit regression, with the pool dummy in the second-stage regression being replaced by its estimated value from the first-stage regression, as suggested by Maddala [1983].

[8] There are 23 firms for which the distress event occurred in the last period of the observation window. Furthermore, when a variable is missing at the time of the distress event, e.g. the number of bank relationships, we replace it by the nearest observation.

The results reported in Table 3 indicate major determinants of pool formation, where the base case is estimated in specification (i). We find the coefficient of $\log(\#\text{BANKS})$ to be always positive and significant in all but one specification asserting that a higher number of bank relationships renders pool formation more likely. To check for monotonicity between the number of bank relationships and the incidence of pool formation, we divide the variable #BANKS in specification (v) into three groups based on the tertiles of the distribution. The middle group of $5-7$ bank relationships serves as a reference group. Non-monotonicity is rejected by the data. A small number of banks has a significant negative impact on pool formation while the coefficients of the two larger groups do not differ significantly from one another.

{insert Table 3 here}

The severity of the distress shock measured by RATING6 has a positive (and significant) impact on pool formation in all specifications. The business climate prevailing at the time of the distress event has no additional influence on pool formation. To check robustness, we also run a regression without 'late' rating downgrades (specification (vi)), with similar results.

Controlling for the identity of banks in our sample, we find that one institution, Bank5, behaves significantly different from all other institutions, i.e. Bank5 engages significantly less often in pool arrangements. Both the housebank dummy and the collateral variable are insignificant (specifications $(iii)-(iv)$). In specification (iv), industry classifications are added to the controls, producing a significant coefficient for the manufacturing industry.

4.3 Determinants of workout success

4.3.1 Ordinary probit

To determine the success of a workout and the impact of a bank pool in this context, we include all relationships in the sample for which we have observations covering at least one period after the rating downgrade. The final sample again consists of 101 relationships. Our dependent variable shall differentiate between successful and non-successful workouts. One way to operationalize workout success relies on bank-internal corporate ratings. As explained earlier, these ratings are expected to represent an unbiased estimate of borrower default probability. The estimates are based on the information acquired by the bank through the relationship with its borrower. We define a workout to be successful whenever, at the end of our observation window, the internal rating migrates back to investment grade, thereby overcoming the distress classification. On our calibrated 1 to 6 rating scale (best to worst), the notches 5 and 6 are reserved for distress, or junk cases, while the notches $1-4$ are categorized as investment grade. Thus, success is defined as the recovery of a formerly distressed borrower from a negative (non-investment grade) rating.

The dependent variable will be labeled SUCCESS, and is set equal to one if rating 4 or better has been achieved subsequent to a distress rating of 5 or 6, and

zero otherwise. Note, a dummy value of zero does not imply that the workout has failed, and corporate assets are liquidated. It may simply reflect the fact that the case has not yet been resolved at the end of our observation window. Thus, the dependent variable does not differentiate between 'failure' and 'not yet resolved'.

We have chosen investment grade rating as our indicator of successful reorganization because we believe that this is the best performance assessment available in our data. Though one might wish to use other data as well, e.g. the firm's balance sheet data, these are typically not available in distress, or are delivered by distressed firms only with a substantial time lag. This is evident from our data, where the number of balance sheet items that are missing or are stale, becomes large after the initial distress event. Since banks do not stop evaluating the borrower quality once the borrower is in distress and accounting data are poor, internal ratings provide the most reliable information for indicating business success or business failure.

We estimate two variants of the model. The first is described by equation (2). It includes a pool dummy, the number of banks and an interaction term of both. In the second variant, following equation (3), we differentiate between small pools (up to four banks) and large pools (five or more banks). Explanatory variables in models (2) and (3) include the existence of a bank pool and the number of bank relationships, and several control variables. From conversations with bankers we know, however, that under normal circumstances a bank pool comprises all relevant lending institutions. Since we cannot account for the size of the pool per se, the number of banks will also serve as a proxy of pool size within the interaction term of POOL and #BANKS in model (2) or the dummy variables POOLSMA and POOLBIG in model (3). In order to test whether small and large pools have different effects on workout success, we replace POOL (and the interaction term) in model (3) by two dummies, poolsma and poolbig, where poolsma equals one whenever there is a pool and the number of bank relationships is at most 4, the lower tertile of the distribution. Analogously, poolbig is one when a pool exists and the number of banks potentially involved is larger than 4. The reference group consists of all relationships without a pool.

Additionally, the set of explanatory variables include the severity of the distress shock, the IFO business climate index, the housebank-dummy, the size of the firm, two industry dummies, and the time between the distress event and the end of the observation period. Since distress can start any time within our window, we expect the success of a workout activity to display some time dependency. The economic consequences of workout activities will not be visible instantaneously, but probably need some time to unfold. For a detailed variable description see Table 5.

$$success_i = f_i \left(\begin{array}{l} pool, \#banks, rating6, ifo, \\ size, hb, industry, time2end \end{array} \right) \qquad (2)$$

$$success_{ii} = f_{ii} \left(\begin{array}{l} poolsma, poolbig, \#banks, rating6, ifo, \\ size, hb, industry, time2end \end{array} \right) \qquad (3)$$

Under model (2), which is estimated as a binary probit, we find the existence of a pool to have a positive and significant impact on workout success (specifications (i) and (iii) of Table 4). A large number of banks tends to reverse the effect on workout success, as can be seen from the interaction term. Both the POOL dummy as well as the interaction term are significantly different from zero at the 1% level.

{insert Table 4 here}

Model (3), which differentiates between small and large pools pools, allows to capture the impact of the bank pool on workout performance depending on the size of the pool (specifications (ii) and (iv) of Table 4). For small pools, the impact on workout success is positive, while it is negative for large pools, comprising 5 or more banks. The coefficients are significant at the 1% or at the 5% level of significance. Thus, relating the impact of pools to the number of banks involved yields an important observation. Although the declared objective of bank pool formation is to facilitate workout, the pools are actually successful in doing so only if they are small. When pools have many member banks, i.e. 5 or more, we find a negative pool effect. Pools now reduce the likelihood of workout success. These results are invariant to different specifications.

Apart from these key observations, the coefficients of the other explanatory variables in specifications $(i) - (iv)$ of Table 4 are insignificant. In particular, there is no dependency of workout success on firm size, nor is there a dependency on the length of workout period, captured by the TIME2END-dummies.

4.3.2 Two-stage estimation

Since the pool variable is endogenous, we cannot rule out the possibility that it may be correlated with the error terms in models (2) or (3) respectively. A way to estimate model (3) consistently is an instrumental variable approach suggested by Maddala [1983]. Our model is similar to the following recursive system of equations, where y_1^* describes the probability of pool formation which is observed as a dummy y_1. The variable y_2^* describes the probability of workout success, observed as a dummy y_2 as well.

$y_1^* = \gamma_1' x_1 + \varepsilon_1 \qquad (4)$

$y_2^* = \beta_2' y_1 + \gamma_2' x_2 + \varepsilon_2 \qquad (5)$

There will be two stages of estimation. We take the probit on pool formation (specification (ii) of Table 3) as the first stage and then take the estimated probability of pool formation as an instrument for pool and recalculate the variables $\widehat{\text{POOLSMA}}$ and $\widehat{\text{POOLBIG}}$. With respect to the model, we then replace y_1 by $\Phi(\gamma_1' x_1)$, namely the variables $\widehat{\text{POOLSMA}}$ and $\widehat{\text{POOLBIG}}$, and estimate equation (5) as a probit or, similar, reestimate specifications (i) and (ii) of Table 4 based on the estimated probability of a pool formation. The results of the second stage are reported in columns (v) and (vi) of Table 4.

As can be seen from the entries in column (vi), controlling for a possible endogeneity of the pool variable does not alter the results of our estimation. We therefore conclude that the probability of workout success is a positive function of the existence of a bank pool when the number of pool banks is small and the effect becomes negative when more when five or more banks are involved.

4.3.3 Duration analysis

In determining the probability of workout success, we have so far used TIME2END-dummy variables as controls for the length of the observation window after the distress event. These dummies turn out to be insignificant in all specifications.

To look more closely into the time dependence of workout success, we employ a duration model with workout time measured on a monthly basis. Workout success is now measured as the number of months spent in distress. The set of explanatory variables coincides with those of the preceding probit regressions $(i) - (ii)$ of Table 4. The coefficients are expected to have opposite signs compared to the probits since the dependent variable, length of the workout period, is a reverse measure of success. A workout is more successful when recovery is reached after a shorter time period. Thus, the duration model uses the full set of information we have on the time dimension of workout success.

The duration model is specified as a loglinear survival model with an underlying Weibull distribution.

Specifications $(vii) - (viii)$ of Table 4 report the two basic specifications of the duration model. The results and significance levels are in line with those of the probit estimation, where workout success instead of workout duration served as the dependent variable. Thus, the existence of a pool reduces the time needed to achieve success, while an increasing number of banks, conditional on a pool being formed, lengthens the time required to terminate a workout successfully. If we differentiate between large and small pools, small pools decrease and large pools increase workout duration.

The length of the workout spell predicted by the model is as follows: 95% of all cases spend at least 11 months in distress, 75% of firms spend 31 months or more in distress, and the the median spell is 52 months. These numbers are in line with what bankers have told us in conversations, namely that workout episodes in Germany tend to be quite extended, typically lasting for several years.

5 Conclusion

In this paper, we analyze empirically how banks cope with distressed corporate borrowers in a multiple banking environment. In particular, the paper sheds light on how coordination among lenders is achieved, and what implications successful coordination has for the survival of the firm. We can rely on a unique data set that contains detailed credit-file information on distressed medium-sized corporates sampled from the six largest German banks.

While the distress of corporate borrowers has always been an important topic in financial economics, the more specific question of how the debt structure, in particular how multiple lending, affects the performance of distressed firms has not yet received much attention.

The major contribution of our study concerns the identification of bank pools as viable and relevant contractual arrangements. The occurrence of bank pools as a common instrument in German corporate lending demonstrates that lender coordination can be reached outside court supervision. We show that bank pools affect the probability of workout success. The sign of this impact depends on pool size. Small pools significantly increase the probability of workout success, while large pools tend to reduce the likelihood of success. This finding supports the view that the benefit of pool formation, the exclusion of a run on firm assets, has to be traded off against the negotiation costs among pool members. These costs tend to increase with pool size. The shape of the workout success function squares well with reports from practitioners who claim that large pools are a nightmare, while small pools tend to operate more smoothly. A duration analysis of the length of time needed for a workout to be successful finds that large pools increase the required workout spell significantly, while it estimates median workout episodes to last for 50 months.

The formation of a bank pool is an important decision, requiring an initial attempt to coordinate the interests of several lenders. In particular, lenders have to be convinced that they will benefit individually from not terminating the relationship with the borrower right away. We have modelled the decision to form a bank pool and find that it is more likely to emerge when the number of banks is large, individual banks' lending shares are heterogenous, and firm quality is hit by a substantial shock, according to the initial distress rating. Furthermore, pool formation decisions are to some extent bank-specific, with one bank being significantly more pool-averse than the other institutions.

The economic rationale for the emergence of pools needs still to be uncovered, especially the question why large pools are formed. It requires a cross-country perspective, where elements of the legal infrastructure, such as the bankruptcy code, can be used as explanatory variables. We leave this exploration to future research, and restrict ourselves now to a speculative first step into explaining why bank pools emerge. It builds on two major characteristics of the German insolvency code, which stand in sharp contrast to the rules of the US bankruptcy code (Chapter 11). The German insolvency code relevant for the data used in this study existed until January 1999. Court-supervised proceedings could take one of two routes, compulsory liquidation (*Konkursordnung*), or settlement (*Vergleichsordnung*), although the latter had only rarely been chosen. In both cases, control is shifted from the owner-manager to a trustee who is empowered and supervised by the court. There are two important differences to the US code, Chapter 11 in particular. First, debt seniority is respected throughout the proceedings, giving privately negotiated arrangements, especially collateral rights, a high and predictable value. Second, the old German code does not stipulate an automatic stay against secured creditors, i.e. a period in which creditors are barred from liquidating their secured claims, and management

has the freedom of action to reorganize the firm. Both aspects have profound implications for the relationship between borrowers and lenders. The strict validity of collateral rights allows creditors to enter into a private contract that stipulates the pooling of claims and cash flows with no fear of unilateral breach of contract. This feature of the insolvency code offers an explanation of why bank pools can reach stable arrangements among all members. Furthermore, the legal force of debt seniority rules in a possible court ruling explains why lenders are willing to invest jointly fresh money for a workout into an otherwise distressed company. Given the widespread existence of bank pool arrangements, it is no wonder that, once a firm has filed for bankruptcy, one observes only very few workout activities. The reason is that all serious workout attempts that receive support from the lenders are carried out well before the initiation of formal bankruptcy proceedings. If this interpretation is correct, a common criticism of the German *Konkursordnung*, namely its poor workout performance, is in fact misplaced. A more reasonable view emphasizes the strong pre-bankruptcy workout incentives embedded in the old code. As suggested by our findings, the code supports timely lender coordination and pool formation, activities which would probably not be supported in a more debtor-friendly legal environment.

It is noteworthy that the common, but misplaced criticism of the former *Konkursordnung* had convinced the legislator in Germany to change the bankruptcy code. The new code became effective on January 1, 1999. It is intended to improve the old code by allowing an early start of court proceedings when illiquidity is imminent, and by facilitating the reorganization of the firm. The new code blends elements of the old, creditor-friendly *Konkursordnung* with an US style, debtor-oriented code. It allows for considerable flexibility regarding possible arrangements among creditors. Since it holds on to respecting individual creditor rights, the basic motivation to form a bank pool is likely to remain intact under the new code. However, the observance of creditor rights is no longer unconditional. Under the new code, management is allowed to file for bankruptcy, referring to expected illiquidity as a trigger. The transition to a more debtor-friendly code is likely to weaken the pool formation incentives of lenders, and it may thereby also scale down the willingness to engage in joint workout activities.

We will need cross-country data of firms operating under different insolvency regimes to understand more fully the extent to which debt restructuring and workouts are influenced by the microstructure of bankruptcy legislation and judiciary. The hypothesis emerging from this study relates the evolution of pool-like commitments between multiple lenders to the stringency with which privately agreed collateral rights are expected to be honoured in any subsequent court proceedings. Therefore, bank pools can be seen as institutions within a bank-oriented financial system that can evolve if the legal system is appropriately designed.

References

[1] Angrist, Joshua D. and Guido W. Imbens (1991). "Sources of Identifying Information in Evaluation Models," NBER Technical Working Paper No. 117.

[2] Asquith, Paul, Robert Gertner, and David Scharfstein (1994). "Anatomy of Financial Distress: An Examination of Junk-Bond Issuers," *Quarterly Journal of Economics* 109(3), 625-658.

[3] Bebchuk, Lucian Ayre and Howard F. Chang (1992). "Bargaining and the Division of Value in Corporate Reorganization," *Journal of Law, Economics, and Organization* 8(2), 253-279.

[4] Bergman, Yaakov Z. and Jeffrey L. Callen (1991). "Opportunistic Underinvestment in Debt Renegotiation and Capital Structure," *Journal of Financial Economics* 29, 137-171.

[5] Bergloef, Erik, Gérard Roland, and Ernst-Ludwig von Thadden (2000). "An Incomplete Contracts Approach to Corporate Bankruptcy," Working Paper.

[6] Bergloef, Erik and Ernst-Ludwig von Thadden (1994). "Short-Term Versus Long-Term Interests: Capital Structure with Multiple Investors," *Quarterly Journal of Economics* 109, 1055-1084.

[7] Bester, Helmut (1994). "The Role of Collateral in a Model of Debt Renegotiation," *Journal of Money, Credit, and Banking* 26(1), 72-86.

[8] Bolton, Patrick and David S. Scharfstein (1996). "Optimal Debt Structure and the Number of Creditors," *Journal of Political Economy* 104(1), 1-25.

[9] Boot, Arnout W. A. (2000). "Relationship Banking: What Do We Know?" *Journal of Financial Intermediation* 9(1), 7-25.

[10] Brown, David T. (1989). "Claimholder Incentive Conflicts in Reorganization: The Role of Bankruptcy Law," Review of Financial Studies 2(1), 109-123.

[11] Brunner, Antje, Jan Pieter Krahnen, and Martin Weber (2000). "Information production in credit relationships: On the role of internal ratings in commercial banking," Center for Financial Studies Working Paper.

[12] Diamond, Douglas W. and P. Dybvig (1983): "Bank Runs, Deposit Insurance and Liquidity," *Journal of Political Economy* 91(3), 401-419.

[13] Edwards, Jeremy and Klaus P. Fischer (1994). *Banks, Finance and Investment in Germany.* Cambridge, Mass.: Cambridge University Press.

[14] Elsas, Ralf, Sabine Henke, Achim Machauer, Roland Rott, and Gerald Schenk (1998). "Empirical Analysis of Credit Relationships in Small Firm Financing: Sampling Design and Descriptive Statistics," Center for Financial Studies Working Paper #98/14.

[15] Elsas, Ralf and Jan Pieter Krahnen (2002). "Collateral, Default Risk, and Relationship Lending: An Empirical Study on Financial Contracting," Center for Financial Studies Working Paper.

[16] Gertner, Robert and David Scharfstein (1991). "A Theory of Workouts and the Effects of Reorganization Law," *Journal of Finance* 46, 1189-1223.

[17] Gilson, Stuart C. (1997). "Transactions Costs and Capital Structure Choice: Evidence from Financially Distressed Firms," *Journal of Finance* 52, 161-196.

[18] Gilson, Stuart C., Kose John, and Harry H. P. Lang (1990). "Troubled Debt Restructurings," *Journal of Financial Economics* 27, 315-353.

[19] Hart, Oliver (2001). "Firms vs. Markets," Manuscript, Center for Economic Studies, University of Munich.

[20] Hart, Oliver and John Moore (1998). "Default and Renegotiation: A Dynamic Model of Debt," *Quarterly Journal of Economics* 113(1), 1-41.

[21] Heckman, James (1990). "Varieties of Selection Bias," AEA Papers and Proceedings 80(2), 313-318.

[22] Heckman, James (1997). "Instrumental Variables: A Study of Implicit Behavioral Assumptions Used in Making Program Evaluations," Journal of Human Resources 32, 441-462.

[23] Hege, Ulrich (1997). "Multi-Party Debt Renegotiation and the Maturity and Seniority of Large Creditors," University of Tilburg CentER Working Paper.

[24] Heinemann, Frank and Gerhard Illing (2000). "Speculative Attacks: Unique Sunspot Equilibrium and Transparency," Universitaet Frankfurt Working Paper.

[25] Hellner, Thorwald and Stephan Steuer (2001). *Bankrecht und Bankpraxis*, Koeln: Bank Verlag.

[26] Hubert, Franz and Dorothea Schaefer (2000). "Coordination Failure with Multiple Source Lending," Freie Universitaet Berlin Working Paper.

[27] Imbens, Guido W. and Joshua D. Angrist (1994). "Identification and Estimation oof Local Average Treatment Effects," *Econometrica* 62, 467-475.

[28] Krahnen, Jan Pieter and Martin Weber (2001). "Generally Accepted Rating Principles: A Primer," *Journal of Banking and Finance 25, 2-24.*

[29] Longhofer, Stanley D. and Stephen R. Peters (1999). "Protection for Whom? Creditor Conflicts in Bankruptcy," Working Paper 9909R, Federal Reserve Bank of Cleveland.

[30] Longhofer, Stanley D. and Joao A. C. Santos (2000). "The Importance of Bank Seniority for Relationship Lending," *Journal of Financial Intermediation* 9(1), 57-89.

[31] Maddala, G. S. (1983). *Limited-Dependent and Qualitative Variables in Econometrics*. Cambridge, Mass.: Cambridge University Press.

[32] Morris, Stephen and Hyun Song Shin (1997). "Approximate Common Knowledge and Co-ordination: Recent Lessons from Game Theory," *Journal of Logic, Language and Information* 6, 171-190.

[33] Morris, Stephen and Hyun Song Shin (1998). "Unique Equilibrium in a Model of Self-Fulfilling Currency Attacks," *American Economic Review* 88(3), 587-597.

[34] Morris, Stephen and Hyun Song Shin (1999). "Coordination Risk and the Price of Debt," Working Paper.

[35] Obstfeld, Maurice (1996): "Models of Currency Crises with Self-Fulfilling Features," *European Economic Review* 40, 1037-1047.

[36] Ongena S. and D.C. Smith, 2000, What determines the number of bank relationships? Cross-country evidence, *Journal of Financial Intermediation*, 9, 26-56.

[37] Preece, Dianna and Donald J. Mullineaux (1996). "Monitoring, Loan Renegotiability, and Firm Value: The Role of Lending Syndicates," *Journal of Banking and Finance* 20, 577-593.

[38] Rajan, Raghuram (1992). "Insiders and Outsiders: The Choice between Informed and Arm's-Length Debt," *Journal of Finance* 47(4), 1367-1400.

[39] Rajan, Raghuram and Andrew Winton (1995). "Covenants and Collateral as Incentives to Monitor," *Journal of Finance* 50(4), 1113-1146.

[40] Repullo, Rafael and Javier Suarez (1998). "Monitoring, liquidation, and security design," *Review of Financial Studies* 11, 163-187.

[41] Scholz, Hellmut and Hans-Juergen Lwowski (1994). *Das Recht der Kreditsicherung*, Berlin: Erich Schmidt.

[42] Schwartz, Alan (1997). "Contracting About Bankruptcy," *Journal of Law, Economics, and Organization* 13(1), 127-146.

[43] Welch, Ivo (1997). "Why is Bank Debt Senior? A Theory of Asymmetry and Claim Priority Based on Influence Costs," *Review of Financial Studies* 10(4), 1203-1236.

Appendix

A Standard pool contract - Abbreviated English version

The Creditor Pool contract is to be agreed upon as a non-trading partnership between the Pool leader (Bank A),
Bank B,
Bank C,
...
and the company (borrower), as well as third party debtors.

§1 Credit Facilities
· Listing of credit lines granted by the contact for each bank and type of credit concerned.
· The banks agree to uphold the credit lines for the duration of the contract. Reductions or deletions shall only occur by mutual consent. This does not hold for credit commitments granted outside the pool.

§2 Collateral
· Listing of
1a) collateral furnished by the company to the banks and collateral to be furnished per bank.
1b) collateral to be furnished by the company in favor of the pool leader and each individual bank simultaneously and with equal ranking.
2a) collateral furnished by third party debtors to the banks and collateral to be furnished per bank.
2b) collateral to be furnished by third party debtors in favor of the pool leader and of each bank simultaneously and with equal ranking.
· In the event that a specific bank in the future is to be is furnished with collateral with regard to one of the credit lines cited in §1, then this shall considered to be part of the pool contract.
· In the event that a bank extends additional credit, then the collateral furnished in this context shall also be included in the pool contract but shall serve primarily to repay these additional credit facilities.
· The company can furnish collateral to third parties only after having instructed the banks of its intention.

§3 Collateral Purpose
· Company collateral as well as that of third party debtors serves to secure existing and future bank claims arising from the granting of credits cited in §1.

§4 Retransfer/Collateral Release

· When all claims have been satisfied in accordance with §3, then the banks are required to retransfer to the company and third party debtors collateral against which no claims have been made.
· Pool collateral must be partially or wholly released if its realizable value more than temporarily exceeds __% of the secured claims.

§5 Trust Relationship/Collateral Administration

· The Pool leader administers in a fiduciary capacity for the other banks the collateral collected within this contract.
· The release of collateral requires the consent of all the banks.

§6 Realization

· The Pool leader realizes in its own name the collateral cited in §2 for the banks' account.
· When and whether collateral is to be realized is decided by the banks in mutual consent.

§7 Balance Settlement

· As far as possible the company is to draw upon the credit lines cited in §1 equally.
· The banks are committed in the event of realization and as requested at any time by a specific bank to bring into line via transfer entries that part of their credit utilization which does not exceed the credit lines cited in §1, such that it corresponds to that of the credit lines.

§8 Revenue Distribution

· Revenue deriving from the realization of collateral is to be utilized according to the following order of priorities:
a) costs, taxes and other expenses incurred during the administration and realization of collateral, Pool leader remuneration,
b) repayment of the banks' credit demands in accordance with §1 in equal proportion to the utilization after the balance settlement,
c) repayment of those claims exceeding the credit lines in equal ranking with the excesses,
d) repayment of the bank's additional credits in equal ranking to the utilization as long as this has not been ascribed to the utilization of separately furnished collateral,
e) the satisfying of other bank claims in equal ranking with the ratio of these claims.
· The banks are entitled to alter the distribution key.
· Any revenue ensuing, which is not needed, is to be paid over to the company or the third party creditors respectively.

§9 Costs, Taxes, Remuneration

· All costs and taxes deriving from this Pool contract, particularly those from

the administration or any realization, are to be borne by the company.
· In the event that these costs and taxes are not paid by the company, then they shall be borne by the banks in keeping with the credit lines cited in §1.

§10 Briefing
· The banks are to inform each other reciprocally when circumstances become known, which may persistently endanger a repayment of the credit lines cited in §1.
· The banks are required to provide one another on request with information about both debts outstanding to the company and collateral. The banks are exempted from banking secrecy.

§11 Deadlines and Notice of Termination
· The Pool contract is to be drawn up for an unspecified duration.
· Each bank is entitled to terminate the contract with three months notice at the end of a calendar quarter. The Pool contract will continue with the remaining banks.
· In the event of notice being served, the banks are reserved the right of distribution with respect to collateral relating to special agreements.
· At the request of any bank a settlement of balance must be undertaken when the bank which has served notice quits.
· The company and third party creditors may only quit this contract after all obligations from §1 have been met.

§12 Place of Fulfillment and Jurisdiction, and Applicable Law

§13 Contract Amendments and Supplements

§14 Escape Clause

B Tables and Figures

Table 1: Rating standardization procedure[1)]

Standardized Rating Category	Bank 1	Bank 2	Bank 3	Bank 4	Bank 5	Bank 6
1 outstanding quality	1 very good risk	1 outstanding quality	1.0 - 1.2 outstanding quality, low risk	1 outstanding performance, lowest risk	1.00 - 1.49 outstanding quality	A+, A minimum risk,
2 good quality, above average	2 good risk	2 good quality	1.3 - 2.7 good quality, above average	2 high quality, above average	1.50 - 2.49 good quality	A-, B+ low risk
3 average quality, increased risk	3 - 3/4 satisfactory/ adequate risk	3 satisfactory quality with weaknesses	2.8 - 3.7 average quality/risk	3 average performance	2.50 - 2.99 satisfactory quality	B, B- satisfactory risk
4 speculative grade, below average quality	4 sufficient risk	4 sufficient quality, intensive care	3.8 - 4.2 speculative grade, intensive care	4 - 5 sufficient quality, increased risk	3.00 - 3.49 sufficient quality	C+, C high risk, problematic
5 problematic, intensive care, reorg.	4/5 - 5 just sufficient / insufficient risk	5 deficient quality, substantial problems	4.3 - 5.7 default imminent, intensive care/reorg.	6 - 7 intensive care, weak/neg. prospects	3.50 - 4.49 low quality	C- very high risk, insufficient quality
6 default, reorg./liquidation	6 extremely bad risk	6 - 7 inadequate quality, default	5.8 - 6.5 default, reorg./liquidation	8 default, operating loss, neg. prospects	4.50 - 5.00 default or imminent default	D extremely high risk / default, neg. prospect

[1)] Numbering of banks does not correspond to other tables and figures in this paper.

Table 2: Descriptive statistics, pool vs. non-pool subsample

The table exhibits several descriptive statistics on the sample of 124 distressed firms collected from 6 banks major German banks; all descriptives are presented for the two subsamples with and without bank pools. Mean and median equality test statistics are provided for Panels C and E. Panel A lists the number of cases collected from each individual bank. Panel B shows the distribution of industry sectors within the sample. General firm characteristics taken from the last balance sheet before entering distress and corresponding size correlation figures are presented in Panel C and D respectively. Relationship characteristics observed at the distress event are shown in Panel E. Workout results are enlisted in Panel F. Panel G represents some dynamics around the distress event w.r.t. collateralization and provisioning ranging from one year before distress to one year after. Panel H gives a frequency distribution of the number of bank relationships and the distress rating. Levels of significance are indicated as follows: 10%(*), 5%(**), and 1%(***).

	POOL				**NO POOL**				
Panel A: Bank identity	*Obs.*				*Obs.*				
Bank 1	8				8				
Bank 2	14				16				
Bank 3	12				2				
Bank 4	8				8				
Bank 5	6				22				
Bank 6	10				10				
Total	58				66				
Panel B: Industry sectors	*Obs.*				*Obs.*				
Mining	0				1				
Manufacturing	20				10				
Engineering	17				16				
Energy	0				4				
Construction	2				7				
Trade	7				10				
Services	1				3				
Transportation	2				3				
Real Estate	1				1				
Panel C: General characteristics	*Obs.*	*Mean*	*Median*	*SD*	*Obs.*	*Mean*	*Median*	*SD*	*Mean / Median Equality (F-stat. / Mann-Whitney)*
Annual turnover (m EUR)	58	86,2	63,5	75,4	63	62,4	41,0	65,8	3.415* / 2.483**
Total assets (m EUR)	58	71,3	45,9	72,2	63	53,4	26,7	85,7	1.533 / 2.773***
Total debt (m EUR)	58	48,6	33,1	54,0	63	27,0	17,9	29,5	7.578*** / 3.209***
Total bank debt (m EUR)	53	39,2	22,9	46,9	56	24,3	15,7	30,3	3.868* / 2.301**
Bank debt/total debt (%)	53	76,7	84,4	24,9	54	74,5	79,5	25,9	0.207 / 0.380
No. banks	57	6,5	6,0	3,1	66	5,6	4,0	5,0	1.130 / 2.609***

Table 2 (continued)

	POOL				NO POOL				
Panel E: Relationship at distress event	*Obs.*	*Mean*	*Median*	*SD*	*Obs.*	*Mean*	*Median*	*SD*	*Mean / Median Equality (F-stat. / Mann-Whitney)*
Spread on short term debt (%)	43	3,9	4,1	1,2	45	3,8	3,9	2,2	0.045 / 0.317
Collateralization (%)	58	41,0	38,2	30,8	66	44,1	42,2	31,7	0.306 / 0.488
Fresh money (% change after event)	44	0,0	0,0	0,3	55	0,0	0,0	0,5	0.002 / 0.461
Panel F: Workout outcome	*Obs.*				*Obs.*				
Success (Rating improvement)	11				21				
Termination / winding up	9				9				
Insolvency	5				7				
Panel G: Dynamics around distress		*t=-1*	*t=0*	*t=1*		*t=-1*	*t=0*	*t=1*	
Collateralization (mean in %)		38,2	41,5	38,0		38,4	48,9	44,8	
Collateral valuation (mean; t=0: 100)		99,2	100,0	84,7		88,6	100,0	115,0	
Provisioning (% of firms)		7,3	32,8	44,2		0,0	12,1	23,9	
Panel H: No. banks & severity	*Obs.*	*Rating5*	*Rating6*		*Obs.*	*Rating5*	*Rating6*		
Single banks	0	0	0		7	5	2		
2-4 banks	16	11	5		28	25	3		
5-7 banks	28	21	7		16	15	1		
>7 banks	13	9	4		15	14	1		

Table 3: Regression on pool formation

The table reports regression coefficients and the corresponding t-statistics. All regressions estimate the probability of pool formation as a binary probit, the dependent variable is a dummy equal to 1 if a pool is formed during our observation period and 0 otherwise. Regressions (i)-(iv) are run on the full sample whereas (vi) is run on a reduced sample which excludes cases for which pool negotiations have been recorded before the distress event. The results of regression (ii) are used as the first stage in estimating the probability of workout success (v, vi). Levels of significance are indicated as follows: 10%(*), 5%(**), and 1%(***).

Variable	(i)	(ii)	(iii)	(iv)	(v)	(vi)
CONSTANT	-5.485 (-2.003)**	-5.974 (-1.979)**	-5.473 (-1.731)*	-6.551 (-1.999)**	-4.156 (-1.377)	-6.958 (-1.821)*
log(#BANKS)	.484 (1.852)*	.680 (2.100)**	.622 (1.804)*	.510 (1.525)	-	1.084 (2.622)***
BANKS1-4	-	-	-	-	-.613 (-1.707)*	-
BANKS8+	-	-	-	-	-.183 (-.444)	-
SKEWNESS	-1.005 (-1.208)	-2.289 (-2.163)**	-2.245 (-2.100)**	-1.945 (-1.857)*	-1.696 (-1.782)*	-1.632 (-1.315)
RATING6	1.000 (2.413)**	1.154 (2.384)**	1.211 (2.362)**	1.328 (2.486)**	.913 (2.064)**	1.761 (3.196)***
IFO	.043 (1.416)	.051 (1.477)	.048 (1.371)	.056 (1.550)	.041 (1.225)	.048 (1.108)
HB	-	-	-.182 (-.469)	-.046 (-.125)	-	-
COLLATERAL	-	-	-.204 (-.387)	-.380 (-.726)	-	-
log(ASSET)	.203 (1.282)	.274 (1.523)	.256 (1.478)	.251 (1.451)	.316 (1.900)*	.303 (1.305)
B1	-	-.815 (-1.346)	-.885 (-1.416)	-	-	-.823 (-1.112)
B3	-	.705 (.945)	.672 (.881)	-	-	.956 (1.147)
B4	-	-.412 (-.834)	-.442 (-.867)	-	-	-.210 (-.349)
B5	-	-1.816 (-3.294)***	-1.889 (-3.272)***	-1.498 (-3.626)***	-1.424 (-3.611)***	-1.898 (-2.790)***
B6	-	-.434 (-.824)	-.426 (-.809)	-	-	-.370 (-.546)
ENGINEERING	-	-	-	.602 (1.445)	-	-
MANUF	-	-	-	.658 (1.661)*	-	-
TIME2END1-2	.106 (.294)	.165 (.396)	.151 (.359)	.240 (.584)	.125 (.315)	-.010 (-.019)
TIME2END3	-.194 (-.436)	-.050 (-.100)	-.023 (-.047)	-.266 (-.523)	-.228 (-.486)	-.708 (-1.032)
McFadden	.151	.314	.317	.305	.263	.417
Obs.	95	95	95	95	95	79

Table 4: Regression on workout success

The table reports regression coefficients and the corresponding t-statistics. Regressions (i)-(vi) estimate the probability of workout success as a binary probit, the dependent variable is a dummy equal to 1 if the firm emerges from distress indicated by an rating upgrade to rating class 4 or above during our observation period. Regressions (v), (vi) use the estimates of pool formation regression (ii) as an instrument for POOL. Regressions (vii),(viii) represent a duration model using Weibull distribution where the dependent variable is the time a firm spends in distress , i.e. rating class 5 or 6, measured in months. Levels of significance are indicated as follows: 10%(*), 5%(**), and 1%(***).

Variable	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)
CONSTANT	-.730	-1.306	-.586	-.224	1.125	.334	5.629	5.695
	(-.263)	(-.467)	(-.182)	(-.707)	(.416)	(.122)	(3.037)***	(3.019)***
POOL	5.752	-	5.325	-	1.962	-	-2.718	-
	(3.873)***		(3.606)***		(2.014)**		(-2.398)**	
POOLSMA	-	1.285	-	1.198	-	1.054	-	-.501
		(2.789)***		(2.458)**		(2.279)**		(-1.819)*
POOLBIG	-	-1.696	-	-1.680	-	-.764	-	.996
		(-3.402)***		(-3.284)***		(-1.989)**		(2.140)**
log(#BANKS)	.494	.396	.431(1.213)	.292	.169	.203	-.260	-.198
	(1.786)*	(1.520)		(.878)	(.592)	(.767)	(-1.130)	(-.931)
(POOL)x(#BANKS)	-3.911	-	-3.691	-	-1.205	-	1.849	-
	(-4.011)***		(-3.184)***		(-2.186)**		(2.470)**	
RATING6	-.804	-.406	-.680	-.359	-.672	-.629	.979	.490
	(-1.360)	(-.766)	(-1.112)	(-.659)	(-1.429)	(-1.298)	(2.040)	(1.242)
IFO	-.003	.006	.001	.002	-.019	-.011	-.016	-.018
	(-.093)	(.182)	(.035)	(.046)	(-.616)	(-.352)	(-.792)	(-.862)
HB	-	-	-.155	-.313	-	-	-	-
			(-.434)	(.857)				
log(ASSET)	-	-	-.173	-.168	-	-	-	-
			(-.956)	(-.960)				
ENGINEERING	-	-	.324	.247	-	-	-	-
			(.775)	(.597)				
MANUF	-	-	.658	.034	-	-	-	-
			(1.597)	(.808)				
TIME2END1-2	-.082	-.305	-.102	-.316	-.067	-.023	-	-
	(-.216)	(-.781)	(-.250)	(-.771)	(-.185)	(-.060)		
TIME2END3	.159	.030	.112	.034	.327	.269	-	-
	(.355)	(.068)	(.233)	(.070)	(.747)	(.607)		
Sigma	-	-	-	-	-	-	.588	.589
							(5.539)***	(5.159)***
McFadden	.257	.270	.287	.290	.071	.133	-	-
Obs.	100	100	97	97	95	95	100	100

Figure 1: Frequency distribution of the number of bank relationships (n=123)

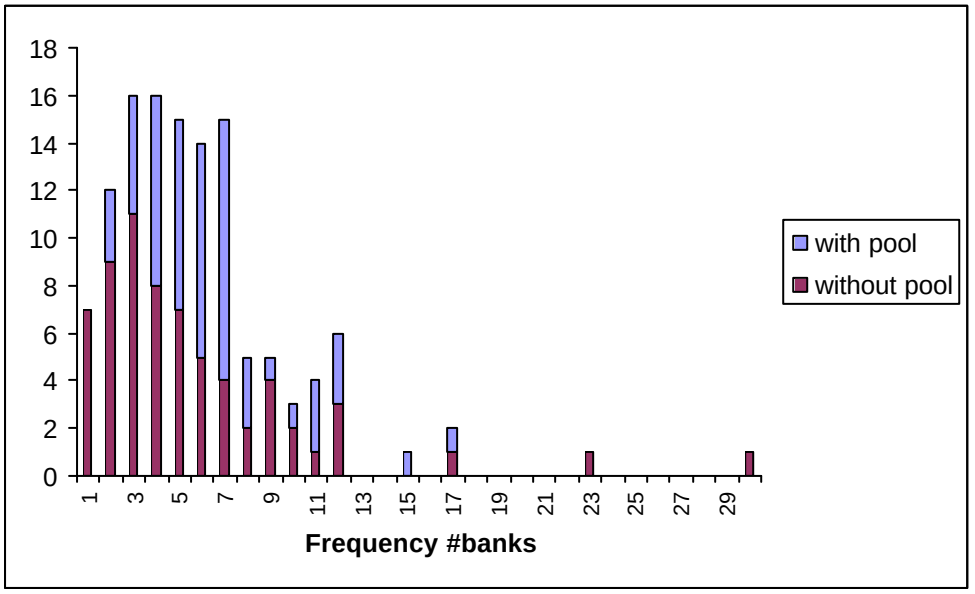

Figure 2: Frequency distributions of internal ratings by bank after standardization (year 1996)